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New data on the lice (Phthiraptera) of some birds in Northern Dobrogea (Romania)

Novi podatki o ušeh (Phthiraptera) na nekaterih pticah v severni Dobrudži (Romunija)

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The authors present new data on the lice (Phthiraptera) from birds collected between 14 Apr 2004 and 20 May 2006 in northern Dobrogea. In this period 186 individuals of 30 bird species were checked. 31 louse species were collected from 76 birds representing 21 species, while 110 birds belonging to 15 species were free of lice. The occurrence of some of these parasite species in this area had already been published, however, 5 species are new to the area and another 5 species (*Eucolpocephalum femorale, Laemobothrion maximum, Austromenopon phaeopodis, Strigiphilus portigi, Brueelia obligate)* are new to the Romanian fauna. The authors also provide data on host body specificity and abundance of lice.

Key words: Phthiraptera, birds, Dobrogea, Romania
Ključne besede: Phthiraptera, ptice, Dobrudža, Romunija

1. Introduction

A total of 306 louse species were described from 194 bird species up to 1996 by Rékási & Kiss (1997) out of the 306 bird species known to occur in Northern Dobrogea. Another paper described lice collected from diurnal raptors between 1996 and 2004 (Rékási & Kiss 2005). Although many species of louse are known in Romania, there are a number of bird species which have never been studied as bird lice hosts. Moreover, there are species of birds which may host more than one species of louse, and lice which may parasitize many bird species. The aim of the present paper is to present new data on the lice from wild bird species found in Northern Dobrogea. We present results of our more recent louse collections from 14 Apr 2004 to 20 May 2006.

2. Methods

The research area is depicted on Figure 1. Lice were collected by the second author, following collection methods detailed previously (Rékási & Kiss 1994, 1997, Rékási *et al.* 1997). To enable a better understanding of the ecology of host-parasite interactions we also paid attention on the localisation of parasites on different parts of the bird body. We were not able to collect all louse individuals from each of the hosts analysed (e.g. there is no time and possibility for a complete body survey during ringing pelican nestlings in a colony). Mist-netted birds could be stressed by too long surveys, thus louse collection was often limited to a short visual screening, particularly in the case of birds with large bodies. Mist netting was employed on the site Grindul Lupilor, between May and Dec 2005. The mist nets were erected in reed and between bush vegetation of Russian Olive *Eleagnus angustifolia*. The nets were controlled on an hourly basis and all captured birds were extracted and ringed at the nearby station. Most birds were freed within a few minutes of their capture.

Lice were collected from nestlings of pelicans and herons breeding on small islands of the Sinoie Lake. Each nestling was briefly checked for ectoparasites, either in the guttural sack (pelicans) or on the head (of a dead Spoonbill *Platalea leucorodia*, none were found on ringed live birds).

In addition, a number of corpses of species that are difficult to capture using mist nets were collected. A total of 15 birds from 4 species were received from

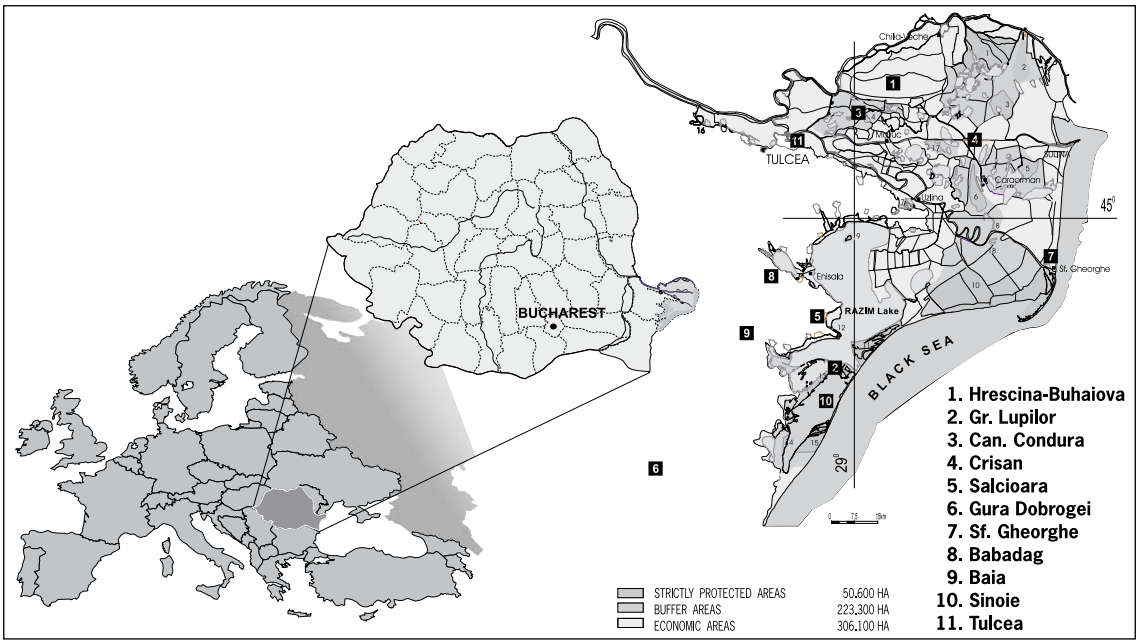

Figure 1: The research area in northern Dobrogea with localities of lice (Phthiraptera) findings

Slika 1: Območje raziskave v severni Dobrudži z označenimi lokalitetami najdb uši (Phthiraptera)

hunters. These hunting bags were received fresh and stored individually until lice survey. Corpses were collected from beneath power lines and from the roadside. A Red-crested Pochard *Netta rufina* accidentally drowned in a fishing gill and a poisoned Black Kite *Milvus migrans* were also checked.

Each bird was scanned visually, paying particular attention to those parts likely to host bird lice (head, neck, and underwing). Each louse encountered was carefully collected with the use of scissors and stored in 70% ethanol in a labelled tube. The specimens were subsequently cleared and mounted on a microscope slide in Canada Balsam for identification. The slides were examined using a 20X Wild-type Heerbrug stereo microscope as well an NfpK2 type light microscope. Mounting and identification of lice was carried out by the first author. All specimens were identified using the works of Hopkins & Clay (1952) and Price *et al.* (2003). The specimens are deposited in the personal collection of J. Rékási. Louse taxonomy follows Hopkins & Clay (1952), while bird nomenclature is based on Munteanu (1992). The list of lice known to the Romanian fauna is based on Bechet (1961, 1961a), Constantineanu *et al.* (1961), Pisică (1980), Rékási & Kiss (1994, 1997 & 2005) and Rékási *et al.* (1997).

3. Results

A total of 186 birds of 30 species were surveyed. Of these, 76 individuals of 21 species hosted 31 species of lice. No lice were found on 110 individuals of 15 avian species (Table 1). All controlled Great White Pelican *Pelecanus onocrotalus* nestlings were infested with bird lice in the guttural sack. 60 Dalmatian Pelican *Pelecanus crispus* nestlings were controlled but only one had bird lice in the guttural sack. Only one dead Spoonbill had lice, and none were found on ringed live birds. Of the birds checked as dead individuals, no lice were found on 13 birds belonging to 8 species. From the birds captured alive, no lice were detected on a total of 97 birds belonging to 7 species.

The parasitological survey provided samples of 31 louse species belonging to 25 genera, 3 families and 2 suborders (Subord. Amblycera: Fam. Menoponidae: 6 spp., Fam. Laemobothriidae: 2 spp., Subord. Ischnocera, Fam. Philopteridae: 23 spp; see Table 2 for the bird species parasitized and lice found).

We probably didn't collect all the louse species that were present on the host, because of the relatively small sample size and because of relatively short surveys of individual birds, surveys which did not include the whole body.

Table 1: Bird species and numbers of individuals controlled for the presence of bird lice between 17 Apr 2004 and 15 Jul 2005

Tabela 1: Vrste in število ptic v raziskavi o pojavljanju uši med 17.4.2004 in 15.7.2005

No./ Št.	Bird species/ Vrsta ptice	No. of birds assessed/ Št. obravnavanih ptic	No. of birds hosting lice/ Št. ptic z ušmi	Notes / Beležke
1	*Pelecanus onocrotalus*	39	39	nestlings in colonies / mladiči v kolonijah
2	*Pelecanus crispus*	60	1	nestlings in colonies / mladiči v kolonijah
3	*Platalea leucorodia*	17	1	nestlings in colonies / mladiči v kolonijah
4	*Anas platyrhynchos*	6	5	hunting bag / žrtev lova
5	*Netta rufina*	1	1	drowned in fishing net / utopljena v ribiški mreži
6	*Fulica atra*	8	8	hunting bag / žrtev lova
7	*Milvus migrans*	1	1	poisoned / zastrupljena
8	*Buteo buteo*	1	1	traffic casualty / žrtev prometa
9	*Falco subbuteo*	1	1	traffic casualty / žrtev prometa
10	*Falco tinnunculus*	1	0	traffic casualty / žrtev prometa
11	*Scolopax rusticola*	1	1	hunting bag / žrtev lova
12	*Tringa hypoleucos*	2	0	mist-netted / ujeta z mrežo
13	*Numenius phaeopus*	1	1	electrocution / elektrokucija
14	*Cuculus canorus*	1	1	mist-netted / ujeta z mrežo
15	*Strix aluco*	1	1	traffic casualty / žrtev prometa
16	*Asio otus*	1	1	traffic casualty / žrtev prometa
17	*Upupa epops*	2	2	mist-netted / ujeta z mrežo
18	*Alcedo atthis*	4	1	mist-netted / ujeta z mrežo
19	*Coracias garrulus*	3	1	traffic casualty / žrtev prometa
20	*Dendrocopus syriacus*	1	1	mist-netted / ujeta z mrežo
21	*Hirundo rustica*	1	0	traffic casualty / žrtev prometa
22	*Delichon urbica*	1	0	traffic casualty / žrtev prometa
23	*Motacilla flava*	1	0	traffic casualty / žrtev prometa
24	*Turdus merula*	3	0	mist-netted / ujeta z mrežo
25	*Acrocephalus arundinaceus*	12	0	mist-netted / ujeta z mrežo
26	*Lanius collurio*	5	0	traffic casualty / žrtev prometa
27	*Oriolus oriolus*	1	1	traffic casualty / žrtev prometa
28	*Sturnus vulgaris*	1	0	traffic casualty / žrtev prometa
29	*Passer domesticus*	5	5	traffic casualty / žrtev prometa
30	*Emberiza schoeniclus*	4	2	mist-netted / ujeta z mrežo

4. Discussion

From faunistic and ecological points of view, the following points are worthy of mention (listed according to host taxonomy):

(1) *Piagetiella titan* (Piaget, 1880). This louse species belongs to a species-poor genus and lives in the guttural sack of pelicans. Adults migrate to the hind neck to lay eggs and, after hatching, the larvae move back to the guttural sack. The two pelican species breeding in the Danube Delta host different species of lice. The Great White Pelican hosts *Colpocephalum eucarenum* (Burmeister, 1838) and *Pectinopygus forficulatus* (Nitzsch [In Giebel] 1866),

Table 2: Lice (Phthiraptera) recorded from wild birds in northern Dobrogea; M – Male, F – Female, L – Larvae; asterisk denotes first record for Romania

Tabela 2: Uši (Phthiraptera), najdene na divjih pticah v severni Dobrudži; M – samec, F – samica, L – ličinka; zvezdica pomeni prvi zapis za Romunijo

No.	Host / Gostitelj	Collection locality/ Lokaliteta	Date / Datum	Parasite / Parazit	M	F	L
1	*Pelecanus onocrotalus*	Hrecisca (45°20'N; 29°25'E)	17 Jul 2004	*Piagetiella titan* (Piaget, 1880)	8	16	13
2	*Pelecanus crispus*	Grindul Lupilor (44°37'N; 28°48'E)	23 Jun 2005	*Piagetiella titan* (Piaget, 1880)	1		
3	*Platalea leucorodia*	Grindul Lupilor (44°37'N; 28°48'E)	23 Jun 2005	*Ibidoecus plataleae* (Denny, 1842)	10	21	6
				Ardeicola plataleae (L., 1758)	2	6	
		Canal Candura (45°07'N; 29°20'E)		* *Eucolpocephalum femorale* (Piaget, 1880)	1		5
4	*Anas platyrhynchos*	Canal Candura (45°07'N; 29°20'E)	12 Dec 2004	*Trinoton querquedulae* (Linne, 1758)	1		
5	*Anas platyrhynchos*	Crişan (45°05'N; 29°24'E)	15 Jan 2005	*Anaticola crassicornis* (Scopoli, 1763)	1		
6	*Anas platyrhynchos*	Crişan (45°05'N; 29°24'E)	01 Feb 2005	*Trinoton querquedulae* (Linne, 1758)	1		
				Anaticola crassicornis (Scopoli, 1763)	1		1
				Anatoecus dentatus (Scopli, 1763)	1	1	
7	*Netta rufina*	Sălcioara (44°46'N; 28°51'E)	14 Apr 2005	*Acidoproctus moschatus* (L., 1758)	1	3	1
8	*Fulica atra*	Crişan (45°05'N; 29°24'E)	02 Feb 2005	*Laemobothrion atrum* (Nitzsch, 1818)	2	3	3
				Rallicola fulicae (Denny, 1842)	21	38	19
				Fulicoffula lurida (Nitzsch, 1818)	4	7	9
				Incidifrons fulicae (Linne, 1758)	6	6	4
				Pseudomenopon pilosum (Scopoli, 1763)	3	37	4
9	*Fulica atra*	Crişan (45°05'N; 29°24'E)	06 Mar 2005	*Fulicoffula lurida* (Nitzsch, 1818)	1		1
				Pseudomenopon pilosum (Scopoli, 1763)	7	7	21
10	*Milvus migrans*	Gura Dobrogei (44°30'N; 28°25'E)	24 May 2005	* *Laemobothrion maximum* (Scopoli, 1763)	6	6	9
				Degeeriella regalis (Giebel, 1866)	1	1	
11	*Buteo buteo*	Gura Dobrogei (44°30'N; 28°25'E)	13 Jun 2005	*Degeeriella fulva* (Giebel, 1874)	4	19	1
				Colpocephalum turbinatum (Denny, 1842)	1	2	1

continuation of Table 2 / nadaljevanje tabele 2

No.	Host / Gostitelj	Collection locality/ Lokaliteta	Date / Datum	Parasite / Parazit	M	F	L
12	*Falco subbuteo*	Sfântu Gheorghe (44°53'N; 29°36'E)	05 May 2005	*Degeeriella rufa* (Burmeister, 1838)		1	1
13	*Scolopax rusticola*	Can. Candura (45°07'N; 29°20'E)	12 Dec 2004	*Rhynonirmus helvolus* (Burmeister, 1838)		2	
14	*Numenius phaeopus*	Murighiol (45°02'N; 29°08'E)	06 May 2003	**Austromenopon phaeopodis* (Schrank, 1802)	2	3	2
				Lunaceps numenii phaeopi (Denny, 1842)	2	3	6
15	*Cuculus canorus*	Grindul Lupilor (44°37'N; 28°48'E)	22 Jun 2005	*Cuculoecus latifrons* (Denny, 1842)	4	14	1
16	*Strix aluco*	Babadag (44°54'N; 28°44'E)	05 Dec 2004	* *Strigiphilus portigi* (Eichler, 1952)	3	7	7
17	*Asio otus*	Baia (44°43'N; 28°40'E)	09 Sep 2004	*Strigiphilus barbatus* (Osborn, 1902)	2	3	1
18	*Alcedo atthis*	Grindul Lupilor (44°37'N; 28°48'E)	15 Jul 2005	*Alcedoffula alcedinis* (Denny, 1842)		2	
19	*Coracias garrulus*	Tulcea (45°10'N; 28°48'E)	18 Aug 2005	*Capraiella subcuspidata* (Burmeister, 1838)		1	1
20	*Dendrocopus syriacus*	Tulcea (45°10N; 28°48E)	09 Jul 2005	*Penenirmus auritus* (Scopoli, 1763)		1	
21	*Passer domesticus*	Sinoie (44°37'N; 28°43'E)	22 May 2005	*Philopterus fringillae* (Scopoli, 1772)	1	3	5
				Brueelia cyclothorax (Burmeister, 1838)			1
22	*Passer domesticus*	Tulcea (45°10'N; 28°48'E)	10 Jul 2005	* *Brueelia obligata* (Eichler, 1954)	1	3	3
				Philopterus fringillae (Scopoli, 1772)	1	1	2
23	*Passer domesticus*	Baia (44°43'N; 28°40'E)	12 Jul 2005	*Philopterus fringillae* (Scopoli, 1772)	2	2	3
				* *Brueelia obligata* (Eichler, 1954)	1	1	
24	*Emberiza schoeniclus*	Grindul Lupilor (44°37'N; 28°48'E)	13 Jul 2005	*Philopterus residuus* (Zlotorzycka, 1964)		1	
25	*Emberiza schoeniclus*	Grindul Lupilor (44°37'N; 28°48'E)	15 Jul 2005	*Philopterus residuus* (Zlotorzycka, 1964)	1	1	
	Total / Skupaj				104	221	131

while the Dalmatian Pelican hosts *Pectinopygus bifasciatus* (Piaget, 1880). They share the same species of guttural sack lice, i.e. *P. titan* (see e.g. Rékási & Kiss 1994 & 1997). As direct body contact between the two host species is rare, we suggest that the consumption of regurgitated food from the other species may be responsible for cross-infestation.

(2) *Ibidoecus plataleae* (Denny, 1842) was already known from the region, and now the occurrence of a further two Spoonbill lice, i.e. *Ardeicola plataleae* (L., 1758) and the *Eucolpocephalum femorale* (Piaget, 1880) is also documented. The latter species is new to the Romanian fauna. Most *A. plataleae* specimens were aggregated around the cloaca, and the other two species were found on the head and the upper neck. The infestation on the individual examined was high, probably because it was caught in a large colony.

(3) High infestation was found on Coot *Fulica atra*; a large number of individuals belonging to 5 louse species were found. In the study area, great richness of louse species was already found on a

few other hosts; Ferruginous Duck *Aythya nyroca* – 10 species, Mallard *Anas platyrhynchos* and a Red-crested Pochard – 8 species, Grey-lag Goose *Anser anser* – 7, and 6 louse species were found on Pheasant *Phasianus colchicus*. Five louse species were found on individuals of Garganey *Anas querquedula*, Lapwing *Vanellus vanellus*, Black-tailed Godwit *Limosa limosa*, Ruff *Philomachos pugnax* and Yellow-legged Gull *Larus cachinanns*. The phenomenon of multispecies infestation may be attributed to the gregarious habits of these species (Rékási *et al.* 1997 & 1998). In contrast, several other gregarious, colony breeding species, like pelicans, cormorants, herons, egrets, and most gull and tern species, have much fewer parasite species.

(4) *Laemobothrion maximum* (Scopoli, 1763) is a species new to the fauna of Romania. Its host, the Black Kite, had not been studied in Northern Dobrogea. This species exhibits a remarkable mobility that is rare in this order of arthropods.

(5) *Colpocephalum turbinatum* (Denny, 1842) from a Common Buzzard *Buteo buteo* is a species new to the region.

(6) *Degeeriella rufa* (Burmeister, 1838) was found on a Hobby *Falco subbuteo*, and this is a new host record.

(7) *Austromenopon phaeopodis* (Schrank, 1802) from a Whimbrel *Numenius phaeopus* is new to fauna of Romania. The only louse we previously found on Whimbrel is *Lunaceps numenii phaeopi* (Denny, 1842).

(8) *Cuculoecus latifrons* (Denny, 1842) specific to the Cuckoo *Cuculus canorus* was already known from the area (Rékási & Kiss 1997). This species, together with *Cuculiphilus fasciatus* (Scopoli, 1763), parasitizes exclusively the Cuckoo, however, neither occurs on Cuckoo nestlings (Brooke & Nakamura 1998).

(9) *Strigiphilus portigi* (Eichler, 1952) from a Tawny Owl *Strix aluco* is new to the fauna of Romania; only the *Strigiphilus laticephalus* (Uchida, 1949) had previously been collected from this host.

(10) *Alcedoffula alcedinis* (Denny, 1842) was collected from only one Kingfisher *Alcedo atthis* out of a sample of four. We consider that it is a fairly rare parasite, as we searched many hosts in the past without finding it.

(11) Several individuals of *Philopterus residuus* (Zlotorzycka, 1964) were collected from feathers close to the eyes of a Reed Bunting *Emberiza schoeniclus*.

(12) *Philopterus fringillae* (Scopoli, 1772) and *Brueelia obligata* (Eichler, 1954), species new to the region, were found on House Sparrows *Passer domesticus*, and the latter is new to the fauna of Romania. Formerly, *Brueelia cyclothorax* (Burmeister, 1838), *Docophorulus fringillae fringillae* (Scopoli, 1772) and *Rostrinirmus* (*Sturnidoecus*) *refractariolus* (Zlotorzycka, 1964) were collected from House Sparrows. Being a fairly common species, the House Sparrow did not motivate us to carry out a formal search before.

A total of 186 birds of 30 species were surveyed, of which 76 individuals of 21 species hosted 31 species of lice. No lice were found on 110 individuals of 15 avian species. The lice collected belong to 25 genera, 3 families and 2 suborders. Five of the species are new to the Romanian fauna: *E. femorale* (Piaget, 1880), *L. maximum* (Scopoli, 1763), *A. phaeopodis* (Schrank, 1802), *S. portigi* (Eichler, 1952) and *B. obligata* (Eichler, 1954).

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5. Povzetek

Avtorja članka predstavljata nove podatke o ušeh (Phthiraptera), najdenih na divjih pticah, pregledanih med 14. aprilom in 20. majem 2006. V tem obdobju sta pregledala 186 osebkov 30 različnih vrst ptic. Skupaj sta našla 31 vrst uši na 76 pticah, pripadajočih 21 vrstam, medtem ko na 110 pticah, pripadajočih 15 vrstam, uši nista našla. Čeprav so bili podatki o pojavljanju teh zajedalskih vrst v tem območju že objavljeni, pa je 5 vrst novih za to območje, še nadaljnjih 5 vrst (*Eucolpocephalum femorale, Laemobothrion maximum, Austromenopon phaeopodis, Strigiphilus portigi, Brueelia obligate*) pa novih za celotno romunsko favno. Avtorja hkrati predstavljata podatke o specifičnosti gostiteljskih teles in o številčnosti uši.

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