

New species and host association records for the Hungarian avian louse fauna (Insecta: Phthiraptera)

ZOLTÁN VAS^{1,2,3}, CSABA PRIVIGYEI³, VIOLA JUDIT PROHÁSZKA⁴,
TIBOR CSÖRGŐ⁵ & LAJOS RÓZSA⁶



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Abstract A recently published checklist of Hungarian louse fauna (Insecta: Phthiraptera) listed 279 species and subspecies which have been recorded in Hungary. According to that checklist several louse species still await detection in Hungary, and many of the previously reported louse species have not been found on all expected host species yet. Our faunistic survey on avian lice started in 2005 at Ócsa Bird Ringing Station, resulting hundreds of ectoparasite samples collected from over 70 bird species. Additionally, our louse collection has grown by collecting samples in other research projects focusing on various bird species, and by sampling cadavers before taxidermy in the Bird Collection of the Hungarian Natural History Museum. As the results of a preliminary exploration of this collection, we list 20 louse species which are new to the Hungarian fauna, as well as the first Hungarian records of 17 host-parasite associations. We also found 3 louse-bird association records new for the World fauna.

Keywords: faunistics, ectoparasite, parasitism, lice, bird

Összefoglalás A tetvek rendjének (Insecta: Phthiraptera) hazai faunalistája 279 tetűfaj és alfaj előfordulásáról számol be. A faunalista szerint számos további tetűfaj fordul elő nagy valószínűséggel Magyarországon, és a már megtalált tetűfajok jelentős része sem került még elő valamennyi várható gazdafajáról. A madarakon élősködő tetvek faunisztikai kutatását 2005-ben az Ócsai Madárvártán kezdtük, ahol több mint 70 madárfaj ektoparazitáit mintavételeztük. A több száz, Ócsán gyűjtött minta mellett más madártani kutatások keretében is gyűjtöttünk külső élősködőket, illetve a Magyar Természettudományi Múzeum Madárgyűjteményében is vettünk mintákat a preparálásra előkészített madártetemekről. A gyűjtött minták előzetes feldolgozása során magyar faunára új 20 tetűfajt, és Magyarországon eddig nem jegyzett 17 gazda-parazita kapcsolatot dokumentáltunk. Eredményeink közt további 3, a nemzetközi irodalomból eddig ismeretlen gazda-parazita kapcsolatról is beszámolunk.

Kulcsszavak: faunisztika, ektoparazita, élősködés, tetű, madár

¹Hungarian Natural History Museum, Department of Zoology, H-1088 Budapest, Baross str. 13., Hungary, e-mail: vas.zoltan@gmail.com, ²Szent István University, Faculty of Veterinary Science, Department of Biomathematics and Informatics, H-1078 Budapest, István str. 2., Hungary, ³Ócsa Bird Ringing Station, H-2364 Ócsa, Némedi str. 592/1., Hungary, ⁴Szent István University, Faculty of Agricultural and Environmental Sciences, H-2100 Gödöllő, Péter Károly str. 1., Hungary, ⁵Eötvös Loránd University, Faculty of Science, Institute of Biology, Department of Anatomy, Cell and Developmental Biology, H-1117 Budapest, Pázmány str. 1/C., Hungary, ⁶MTA-ELTE-MTM Ecology Research Group, H-1117 Budapest, Pázmány str. 1/C., Hungary

Introduction

Avian lice (Insecta: Phthiraptera) are wingless obligate ectoparasites that complete their entire life-cycle on the body surface of their hosts. They feed mainly on feathers and dead skin parts and are often highly specific to their hosts (Johnson & Clayton 2003). A recent world checklist of avian lice by Price *et al.* (2003) critically reviewed their nomenclature, taxonomy and host-parasite associations. They list 3910 louse species infesting 3248 bird species. Most probably a large number of louse species still await description (see e.g. Palma & Price 2010, Sychra *et al.* 2010, Valim & Weckstein 2012).

According to a recently published checklist, 279 louse species (and subspecies) have been recorded in Hungary (Vas *et al.* 2012). Additionally, this paper also lists over 550 louse species, subspecies, and host associations which have not been detected in Hungary yet; however, their occurrence may seem to be likely as judged from host distribution. Further research shall reveal several louse species new for the Hungarian fauna, as well as new host records. These are new, formerly undocumented associations between host and louse species.

In this paper we report the results of a recent faunistic survey on the Hungarian louse fauna. We identified louse samples from various bird species collected at different locations between 1998–2012. Below we provide a list of louse species new to the Hungarian fauna (as compared to Vas *et al.* 2012). Furthermore, we also list host association records that are new either as compared to the Hungarian checklist or new as compared to the world checklist of Price *et al.* (2003).

Materials and methods

Our faunistic survey of avian lice (Insecta: Phthiraptera) started in 2005 at Ócsa Bird Ringing Station, resulting in hundreds of ectoparasite samples collected from over 70 bird species. Other research projects on various bird species (e.g. Barn swallows (*Hirundo rustica*), European bee-eaters (*Merops apiaster*), and Red-footed falcons (*Falco vespertinus*)) provided further hundreds of louse samples. Additionally, a few samples were collected from bird cadavers before taxidermy in the Bird Collection of the Hungarian Natural History Museum (HNHM). All investigated cadavers were known to originate from Hungarian wild populations. Furthermore, many colleagues studying birds collected and sent us samples to help our work.

Lice sampled in focused ectoparasitological research projects (see e.g. Vas *et al.* (2008) on Barn swallows) were collected with pyrethroid insecticide in a standardised way to allow further quantitative analyses (Johnson & Clayton 2003, Rózsa 2003). However, some samples we obtained were collected by visual examination without following any standard; hence they satisfy faunistic purposes only. The samples were stored in 70% ethanol. The identification of louse species was made by the first author using a stereoscopic microscope. The samples are presently held by the last author for further research, and will be deposited in the Department of Zoology of HNHM in the future.

Our lists follow the nomenclature and host-parasite associations of the world checklists of chewing lice (Price *et al.* 2003) with a few complements based on Sychra and Literák (2008), and Sychra *et al.* (2008). Bird taxonomy follows Dickinson (2003).

Asterisk (*) marks the type host-parasite relationship. We also report the locality, date, and collector(s) for each louse sample in brackets. In the case of multiple samples from the same louse species the earliest one's data is given.

Results

New species for the Hungarian louse fauna

AMBLYCERA: MENOPONIDAE

Actornithophilus piceus piceus (DENNY, 1842)

Sterna hirundo LINNAEUS, 1758
[Nagybivalyos lake, Várpalota, 2012.06.08., Árpád Ferincz, Tibor István Fuisz, Bálint Preiszner, Szandra Sütő, Zoltán Vas]

Austromenopon atrofulvum (PIAGET, 1880)

Sterna hirundo LINNAEUS, 1758
[Nagybivalyos lake, Várpalota, 2012.06.08., Árpád Ferincz, Tibor István Fuisz, Bálint Preiszner, Szandra Sütő, Zoltán Vas]

Colpocephalum subzerafae TENDEIRO, 1988

Falco vespertinus LINNAEUS, 1766
[Kardoskút, 2012.07.07., Péter Fehérvári, Éva Horváth, Szabolcs Solt, Zoltán Vas]

Menacanthus camelinus (NITZSCH, 1874)

Lanius collurio LINNAEUS, 1758 [Máriahalom, 2006.07.28., Bálint Preiszner, Zoltán Vas]

Menacanthus fertilis (NITZSCH, 1866)

Upupa epops LINNAEUS, 1758* [Ápor-kai tanya, Bugyi, 2012.06.09., Lajos Rózsa]

Menacanthus obrteli BALÁT, 1981

Locustella luscinioides (SAVI, 1824)*
[ringing station, Ócsa, 2007.06.20., Csaba Privigyey, Viola Judit Prohászka]

Myrsidea latifrons (CARRIKER & SHULL, 1910)

Riparia riparia (LINNAEUS, 1758)*
[sandmine lake, Ócsa, 2008.07., Lajos Tóth, Zoltán Vas]

Myrsidea sylviae SYCHRA & LITERÁK, 2008

Sylvia atricapilla (LINNAEUS, 1758)*
[ringing station, Ócsa, 2008.08.22., Zoltán Vas]

Nosopon clayae PRICE & BEER, 1963

Pernis apivorus (LINNAEUS, 1758)*
[ringing station, Ócsa, 2008.09.14., Zoltán Vas]

ISCHNOCERA: PHILOPTERIDAE

Aegypocercus trigonoceps (GIEBEL, 1874)

Gyps fulvus (HABLIZL, 1783)* [Egyed, 2005.09.05., Viktor Molnár]

Brueelia glizi BALÁT, 1955

Fringilla montifringilla LINNAEUS, 1758* [ringing station, Ócsa, 2006.03.11., Zoltán Vas]

Craspedorrhynchus dilatatus (RUDOW, 1869)

Buteo lagopus (PONTOPPIDAN, 1763)*
[Bugyi, 2010.12.29., Zoltán Vas]

Degeeriella vagans (GIEBEL, 1874)

Accipiter gentilis (LINNAEUS, 1758)*
[ringing station, Ócsa, 2005.07.15., Lajos Rózsa, Zoltán Vas]

Falcolipeurus quadripustulatus (BURMEISTER, 1838)

Gyps fulvus (HABLIZL, 1783) [Egyed, 2005.09.05., Viktor Molnár]

Falcolipeurus sulcifrons (DENNY, 1842)

Haliaeetus albicilla (LINNAEUS, 1758)* [HNHM Bird Collection, 2010.05.20., Zoltán Vas]

Philopterus modularis (DENNY, 1842)

Prunella modularis (LINNAEUS, 1758)* [ringing station, Ócsa, 2008.10.11., Csaba Privigyeyi, Viola Judit Prohászka]

Philopterus rapax (ZLOTORZYCKA, 1964)

Fringilla montifringilla LINNAEUS, 1758* [ringing station, Ócsa, 2008.01., Zoltán Vas]

Rallicola minutus (NITZSCH, 1866)

Gallinula chloropus (LINNAEUS, 1758)* [ringing station, Ócsa, 2005.09.01., Zoltán Vas]

Strigiphilus goniodicerus EICHLER, 1949

Bubo bubo (LINNAEUS, 1758)* [HNHM Bird Collection, 2010.10.08., Zoltán Vas]

Strigiphilus heterocerus (GRUBE, 1851)

Strix uralensis PALLAS, 1771* [Arka, 1998.10.05., Márton Horváth]

Host association records new for the Hungarian fauna

AMBLYCERA: MENOPONIDAE

Ciconiphilus decimfasciatus (BOISDUVAL & LACORDAIRE, 1835)

Ardea cinerea LINNAEUS, 1758* [Petőháza, 2006.02., Lajos Rózsa]

Colpocephalum subzerafae TENDEIRO, 1988

Falco tinnunculus LINNAEUS, 1758 [Kardoskút, 2012.07.07., Péter Fehérvári, Éva Horváth, Szabolcs Solt, Zoltán Vas]

Menacanthus alaudae (SCHRANK, 1776)

Emberiza citrinella LINNAEUS, 1758 [ringing station, Ócsa, 2008.11.11., Csaba Privigyeyi, Viola Judit Prohászka]

Menacanthus curuccae (SCHRANK, 1776)

Acrocephalus schoenobaenus (LINNAEUS, 1758) [ringing station, Ócsa, 2008.09.29., Csaba Privigyeyi, Viola Judit Prohászka]

Acrocephalus scirpaceus (HERMANN, 1804) [ringing station, Ócsa, 2008.08.01., Csaba Privigyeyi, Viola Judit Prohászka]

Menacanthus eurysternus (BURMEISTER, 1838)

Garrulus glandarius (LINNAEUS, 1758) [ringing station, Ócsa, 2007, Zoltán Vas]

Lanius collurio LINNAEUS, 1758 [ringing station, Ócsa, 2007.08.11., Csaba Privigyeyi, Viola Judit Prohászka]

Turdus merula LINNAEUS, 1758 [ringing station, Ócsa, 2006.02.11., Zoltán Vas]

Turdus philomelos BREHM, 1831 [ringing station, Ócsa, 2008.04.03., Zoltán Vas]

Fringilla coelebs LINNAEUS, 1758 [ringing station, Ócsa, 2008.11.30., Csaba Privigyeyi, Viola Judit Prohászka]

Menacanthus sinuatus (BURMEISTER, 1838)

Parus caeruleus LINNAEUS, 1758 [ringing station, Ócsa, 2006.11.04., Zoltán Vas]

Nosopon lucidum (RUDOW, 1869)
Circus aeruginosus (LINNAEUS, 1758)
 [HNHM Bird Collection, 2009.07.20.,
 Zoltán Vas]
Accipiter nisus (LINNAEUS, 1758)
 [ringing station, Ócsa, 2011.03.21., Csa-
 ba Privigyei, Viola Judit Prohászka]
Pseudomenopon pilosum (SCOPOLI,
 1763)
Gallinula chloropus (LINNAEUS, 1758)
 [ringing station, Ócsa, 2005.09.01., Zol-
 tán Vas]

Trinoton anserinum (FABRICIUS, 1805)
Anser albifrons (SCOPOLI, 1769)
 [HNHM Bird Collection, 2004.01., Lajos
 Rózsa]

AMBLYCERA: RICINIDAE

Ricinus fringillae DE GEER, 1778
Emberiza schoeniclus (LINNAEUS,
 1758) [ringing station, Ócsa, 2008.03.15.,
 Zoltán Vas]

ISCHNOCERA: PHILOPTERIDAE

Degeeriella fusca (DENNY, 1842)
Circus pygargus (LINNAEUS, 1758)
 [HNHM Bird Collection, 2009.07.20.,
 Zoltán Vas]

Host association records new for the World fauna (ordered by birds, alphabetically)

Acrocephalus melanopogon (TEMMINCK,
 1823)
Philopterus sp. [ringing station, Ócsa,
 2006.07.21., Zoltán Vas]

Carduelis spinus (LINNAEUS, 1758)
Philopterus sp. [ringing station, Ócsa,

2008.12.06., Csaba Privigyei, Viola Judit
 Prohászka]

Emberiza schoeniclus (LINNAEUS, 1758)
Menacanthus sp. [ringing station, Ócsa,
 2008.05.03., Csaba Privigyei, Viola Judit
 Prohászka]

Discussion

The most recent checklist (Vas *et al.* 2012) reported 279 louse species and subspecies infesting 156 bird species in Hungary. The present study increases these numbers to 299 louse species and subspecies infesting 170 bird species in Hungary. The species-level identification of the host records new for the world fauna requires further sampling and investigation as the specimens we found were almost exclusively nymphs. Future research will reveal whether these lice are accidentally “stragglers” from other host species or yet unknown host associations. As the louse list is still far from complete further updates to the Hungarian louse fauna are expected, contributing to the understanding of parasite biogeography.

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