

Chewing lice (Phthiraptera) species infesting the Lesser Spotted Eagle (*Clanga pomarina*) in Türkiye: First record of *Craspedorrhynchus naevius* (Giebel, 1861) (Ischnocera: Philopteridae)

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Abstract Ornitho-parasitological studies in Türkiye began in the early 2000s, focusing on chewing lice, and have continued to increase to the present day – new studies, records, and host-parasite associations – are published each year. Despite this progress, the chewing lice fauna of many wild bird species in Türkiye remains poorly known, especially among raptor species (Accipitriformes and Falconiformes). Faunistic records of birds of prey are still limited, and each novel record or novel host-parasite association provides valuable data for understanding host specificity and ectoparasite distribution. The material of this study consists of chewing lice specimens collected from the Lesser Spotted Eagle (*Clanga pomarina*) and were mounted on slides using standard clearing and mounting techniques and examined under a light microscope for identification. As a result, the specimens were identified as *Colpocephalum impressum* Rudow, 1866, *Craspedorrhynchus naevius* (Giebel, 1861), *Degeeriella fulva* (Giebel, 1874), and *Falcolipeurus suturalis* (Rudow, 1869). Among these species, *Craspedorrhynchus naevius* represents a new record for the chewing lice fauna of Türkiye. This study contributes to the understanding the ectoparasite biodiversity of birds of prey in Türkiye and emphasises the importance of continued parasitological studies of wild avian species.

Keywords: Accipitriformes, avian parasitology, Phthiraptera, Psocodea

Összefoglalás A madárparazitológiai vizsgálatok Törökországban a 2000-es évek elején kezdődtek, főként a tolltetvekre összpontosítva, és napjainkig folyamatosan bővülnek – évente új kutatások, adatok és gazda-parazita kapcsolatok – kerülnek közlésre. E fejlődés ellenére sok vadon élő madárfaj tolltetűfaunája még mindig kevésbé ismert Törökországban, különösen a ragadozó madarak (Accipitriformes és Falconiformes) körében. A ragadozó madarak faunisztikai adatai továbbra is korlátozottak, ezért minden új adat vagy új gazda-parazita kapcsolat értékes információt nyújt a gazdaspecificitás és az ektoparaziták elterjedésének megértéséhez. A vizsgálat anyagát a békászó sas (*Clanga pomarina*) egyedéről gyűjtött tolltetvek alkotják. A tárgylemezes preparátumokat standard macerálási és beágyazási technikákkal készítettük, majd fénymikroszkóp alatt identifikáltuk. Ennek eredményeként a következő fajokat azonosítottuk: *Colpocephalum impressum* Rudow, 1866, *Craspedorrhynchus naevius* (Giebel, 1861), *Degeeriella fulva* (Giebel, 1874), és *Falcolipeurus suturalis* (Rudow, 1869). Ezek közül a *Craspedorrhynchus naevius* új fajt képvisel Törökország tolltetű-faunájában. Tanulmányunk hozzájárul a ragadozó madarak ektoparazita-biodiverzitásának megértéséhez, és hangsúlyozza a vadon élő madárfajok további parazitológiai vizsgálatainak fontosságát.

Kulcsszavak: Accipitriformes, madárparazitológia, Phthiraptera, Psocodea

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Introduction

The ectoparasite fauna of diurnal birds of prey of the orders Accipitriformes and Falconiformes primarily includes chewing lice, ticks, mites, fleas, and louse flies (Philips 2000, de Oliveira *et al.* 2021, Gherardi *et al.* 2021, Dik *et al.* 2022). Chewing lice (Psocodea, Phthiraptera) represent the most extensively studied group among these parasitic arthropods worldwide. Diurnal predators are associated with members of the families Menoponidae and Laemobothriidae (suborder Amblycera), and Philopteridae (suborder Ischnocera) (Price *et al.* 2003).

Türkiye has a species-rich raptor fauna, the order Accipitriformes comprises 31 species belonging to the families Accipitridae and Pandionidae, whereas the order Falconiformes includes 10 species belonging to the family Falconidae (Karataş *et al.* 2021). Ornithoparasitological studies conducted in Türkiye to date suggest that diurnal birds of prey are relatively well studied. In these studies, ectoparasite examinations were conducted on 28 (68.29%) of the 41 diurnal predator species, and chewing lice infestations were detected in 22 (53.65%) of them. As a result, 29 species of chewing lice were reported from diurnal predatory bird species (Dik 2006, 2010, Gülanber *et al.* 2006, Dik & Aydenizöz Özkayhan 2007, 2013, 2015, 2017, Dik & Yamaç 2008, Dik & Uslu 2009, 2011, İnci *et al.* 2010, Ulutaş Esatgil *et al.* 2012, Girisgin *et al.* 2013, 2023, Göz *et al.* 2015, Dik & Kandir 2021). Of these, 13 species from the genus *Colpocephalum* and one species from the genus *Kurodaia* (family Menoponidae), as well as three species from the genus *Laemobothrion* (family Laemobothriidae), belong to the suborder Amblycera. The remaining species – three from *Craspedorrhynchus*, seven from *Degeeriella*, and two from *Falcolipeurus* – belong to the family Philopteridae in the suborder Ischnocera.

This study aims to report the chewing lice species identified on the Lesser Spotted Eagle (*Clanga pomarina*) subjected to ectoparasitic examination in Türkiye, and also aims to contribute to the avian ectoparasitological studies in Türkiye and globally.

Material and Methods

In July 2025, chewing lice specimens were collected using blunt-ended forceps during the ectoparasitological examination of a Lesser Spotted Eagle brought to the clinics of the Department of Wild Animal Diseases, Faculty of Veterinary Medicine, Ondokuz Mayıs University (Samsun, Türkiye). The collected specimens were preserved in microtubes containing 70% ethanol until microscopic identification. In the laboratory conditions, all lice specimens were initially cleared in 10% potassium hydroxide (KOH), rinsed with distilled water, and then immersed in transparent lactophenol for 24–48 hours to enhance

transparency. Following this, they were dehydrated by sequentially transferring them through 70%, 80%, 90%, and 99% ethanol solutions (each for 24 hours), and finally mounted in Canada balsam (Palma 1978) on microscope slides. Finally, permanent slides of all specimens were examined under a light microscope (Nikon Eclipse 80i, Tokyo, Japan), and species identification was carried out based on the descriptions and illustrations provided in the relevant literature (Rudow 1869, Price & Beer 1963, Tandan 1964, Mey 2001). Following identification, high-resolution images of the specimens were captured with the integrated camera of the stereo microscope (Mshot Mdx4-t, Guangzhou, China). All permanent glass slides are deposited in the Parasitology Museum of the Parasitology Laboratory, Faculty of Veterinary Medicine, Ondokuz Mayıs University.

Results and Discussion

The chewing lice specimens were identified as *Colpocephalum impressum* Rudow, 1866 (Figure 1 A, B), *Craspedorrhynchus naevius* (Giebel, 1861) (Figure 1 C–E), *Degeeriella fulva* (Giebel, 1874) (Figure 1 F, G), and *Falcolipeurus suturalis* (Rudow, 1869) (Figure 1 H). The number of specimens and life stages of the identified species are presented in Table 1. Among these, only *C. naevius* represents a new record for the chewing lice fauna of Türkiye.

Ornithoparasitological studies on diurnal raptors worldwide and in Türkiye have reported numerous species belonging to six genera: *Laemobothrion* spp., *Colpocephalum* spp., and *Kurodaia* spp. from the suborder Amblycera, and *Craspedorrhynchus* spp., *Degeeriella* spp., and *Falcolipeurus* spp. from the suborder Ischnocera (Price *et al.* 2003, Dik *et al.* 2022).

Current parasitological literature indicates that the chewing lice diversity of the Lesser Spotted Eagle includes *Colpocephalum impressum* Rudow, 1866, *Craspedorrhynchus naevius* (Giebel, 1861), *Degeeriella aquilarum* Eichler, 1943, *D. fulva* (Giebel, 1874), *Falcolipeurus suturalis* (Rudow, 1869), and *Laemobothrion vulturis* (Fabricius, 1775) (Price *et al.* 2003). In ornitho-parasitological studies conducted in Türkiye, the chewing lice species *Falcolipeurus*

Table 1. Chewing lice species detected on a Lesser Spotted Eagle in this study

1. táblázat A vizsgálat során a békászó sasból gyűjtött tolltetű-fajok

Chewing lice species and taxonomic status			Number of specimens and life stages
Amblycera	Menoponidae	<i>Colpocephalum impressum</i>	♀ (n: 3) – ♂ (n: 5)
Ischnocera	Philopteridae	<i>Craspedorrhynchus naevius</i> *	♀ (n: 1) – ♂ (n: 2) – N (n: 2)
		<i>Degeeriella fulva</i>	♀ (n: 2) – ♂ (n: 1)
		<i>Falcolipeurus suturalis</i>	♀ (n: 3) – ♂ (n: 1)

*new record for chewing lice fauna of Türkiye

Abbreviations: ♀: female, ♂: male, and N: nymph

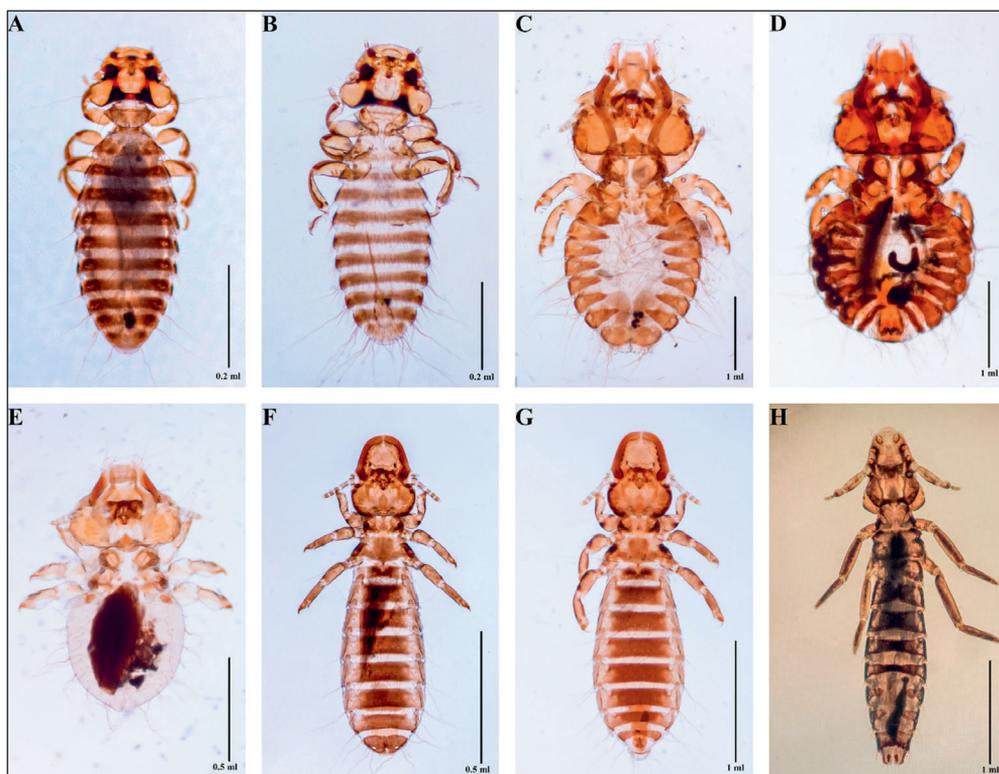


Figure 1. Original micrographs of chewing lice detected on the Lesser Spotted Eagle (*C. pomarina*): *Colpocephalum impressum* ♀ (A) and ♂ (B); *Craspedorrhynchus naevius* ♀ (C), ♂ (D), and nymph (E); *Degeeriella fulva* ♀ (F) and ♂ (G); and *Falcolipeurus suturalis* ♀ (H)

1. ábra A békászó sasból gyűjtött tolltetvek eredeti mikroszkópos felvételei: *Colpocephalum impressum* ♀ (A) és ♂ (B); *Craspedorrhynchus naevius* ♀ (C), ♂ (D), és lárva (E); *Degeeriella fulva* ♀ (F) és ♂ (G); és *Falcolipeurus suturalis* ♀ (H)

suturalis, *Colpocephalum impressum*, and *Degeeriella fulva* have been reported on the Lesser Spotted Eagle (Dik & Yamaç 2024). In addition, *Laemobothrion maximum*, a common ectoparasite of diurnal raptors, has also been reported (Zerek *et al.* 2024).

The genus *Colpocephalum* comprises approximately 100 species associated with birds of prey (Accipitriformes, Falconiformes), as well as various other bird orders, including Ciconiiformes, Columbiformes, Cuculiformes, Galliformes, Gruiformes, Pelecaniformes, Passeriformes, Piciformes, and Strigiformes (Price *et al.* 2003). According to the literature, the genus *Colpocephalum* is represented by 16 species in Türkiye: *Colpocephalum apivorus*, *C. ecaudati*, *C. eucarenum*, *C. heterosoma*, *C. impressum*, *C. milvi*, *C. nanum*, *C. napiforme*, *C. nigrae*, *C. percnopteri*, *C. polonum*, *C. subzerafae*, *C. trachelioti*, *C. turbinatum*, *C. zebra*, and *C. zerafae* (Dik *et al.* 2022, Eren *et al.* 2022, Dik & Yamaç 2024, Zerek *et al.* 2024). *Colpocephalum impressum*, detected on the Lesser Spotted Eagle in the present study, has previously been reported from various eagles belonging to the genera *Aquila*, *Hieraetus*, and *Nisaetus* in studies conducted both in Türkiye and worldwide (Price & Beer 1963, Morishita *et al.* 2001, Price *et al.* 2003, Dik *et al.* 2022, Bahiraei *et al.* 2024, Talabante *et al.* 2024).

The genus *Craspedorrhynchus* currently includes 41 described species associated with birds of prey (Accipitriformes, Falconiformes) (Gállego Berenguer *et al.* 1987, Mey 2001, Price *et al.* 2003, Gustafsson *et al.* 2024). Prior to the present study, this genus was represented in Türkiye by three species: *Craspedorrhynchus aquilinus* from the Golden Eagle (*Aquila chrysaetos*), *C. fraterculus* from the Imperial Eagle (*Aquila heliaca*), and *C. platystomus* from the Common Buzzard (*Buteo buteo*) and the Long-legged Buzzard (*Buteo rufinus*) (Dik *et al.* 2022, Eren *et al.* 2022). *Craspedorrhynchus naevius*, a new record for the fauna of Türkiye, was originally described from the Lesser Spotted Eagle in Germany (Giebel 1861). Subsequent studies have also reported *Craspedorrhynchus naevius* on the same host in several countries, including Italy, Hungary, Romania, and Slovakia (Picaglia 1885, Rékási & Kiss 1980, Solt 1998, Ošlejšková *et al.* 2021). The *Craspedorrhynchus naevius* specimens detected in the present study (Figure 1, Table 2) are consistent with the morphological descriptions and morphometric measurements reported in the literature (Giebel 1861, Picaglia 1885, Mey 2001).

The genus *Degeeriella* comprises approximately 40 species, primarily associated with diurnal predators (Accipitriformes, Falconiformes) (Price *et al.* 2003). To date, studies conducted in Türkiye have reported seven species of this genus: *Degeeriella aquilarum* from the Imperial Eagle; *D. fulva* from the Lesser Spotted Eagle, the Common Buzzard, and the Long-legged Buzzard; *D. fusca* from the Western Marsh Harrier (*Circus aeruginosus*); *D. leucopleura* from the Short-toed Snake Eagle (*Circaetus gallicus*); *D. nisus* from the Eurasian Sparrowhawk (*Accipiter nisus*) and the Common Buzzard; *D. phlyctopygus* from the Osprey (*Pandion haliaetus*) and the European Honey Buzzard (*Pernis apivorus*); and *D. rufa* from the Eurasian Hobby (*Falco subbuteo*) (Dik *et al.* 2022, 2024, Eren *et al.* 2022). Similar to previous studies, *Degeeriella fulva* was also detected on the Lesser Spotted

Table 2. Comparative morphometric measurement of *Craspedorrhynchus naevius*
2. táblázat A *Craspedorrhynchus naevius* összehasonlító morfológiai mérései

	Present study (Samsun, Türkiye)						Picaglia (1885) (Modena, Italy)		
	Female (n: 1)	Male (n: 2)			Nymph (n: 2)			Female (n: ?)	Male (n: ?)
	–	Min.	Max.	Avg.	Min.	Max.	Avg.	Avg.	Avg.
CL	0.88	0.78	0.88	0.83	0.57	0.62	0.59	0.80	0.83
CW	0.91	0.79	0.79	0.79	0.68	0.75	0.71	0.94	0.82
CI	1.03	0.89	1.00	0.94	1.19	1.20	1.19	–	–
TL	0.55	0.40	0.48	0.44	0.38	0.38	0.38	0.43	0.43
TW	0.48	0.44	0.60	0.52	0.48	0.54	0.51	0.80	0.62
AL	1.00	0.86	0.88	0.87	0.73	0.79	0.76	1.31	1.07
AW	0.99	1.00	1.08	1.04	0.79	0.82	0.80	1.18	1.10
ToL	2.43	2.14	2.14	2.14	1.68	1.79	1.73	–	–
Col	2.45	1.98	2.14	2.06	2.12	2.18	2.15	–	–

Abbreviations: CL: Cephalic length; CW: Cephalic width; CI: Cephalic index (CW/CL); TL: Thoracic length; TW: Thoracic width; AL: Abdominal length; AW: Abdominal width; ToL: Total length; and Col: Corporal index (ToL/AW).

Eagle in the present study. *Degeeriella fulva*, a heteroxenous species of chewing louse, has been reported from various species of buzzards (*Buteo*, *Geranoaetus*), eagles (*Aquila*, *Hieraaetus*, *Ichthyophaga*, *Lophaetus*, *Pandion*, *Spilornis*), hawks (*Accipiter*, *Melierax*), and kites (*Milvus*) in Türkiye and worldwide (Price *et al.* 2003, Gonzalez-Acuña *et al.* 2008, Gherardi *et al.* 2011, Dik *et al.* 2022, Lade *et al.* 2023).

The genus *Falcolipeurus* comprises 19 species associated with diurnal raptors belonging to the orders Accipitriformes and Falconiformes (Price *et al.* 2003). In Türkiye, this genus is represented by two species, including *Falcolipeurus suturalis* from the Common Buzzard and the Lesser Spotted Eagle, and *F. quadripustulatus* from the Cinereous Vulture (*Aegypius monachus*) and the Short-toed Snake Eagle (Dik *et al.* 2022, Dik & Yamaç 2024). *Falcolipeurus suturalis*, detected on the Lesser Spotted Eagle in the present study, has also been reported from various eagle species belonging to the genera *Aquila*, *Hieraaetus*, *Nisaetus*, and *Terathopius* in previous studies conducted worldwide (Tandan 1964, Ledger 1980, Price *et al.* 2003, Gaponov 2023, Bahiraei *et al.* 2024).

Conclusion

This study is based on the identification of chewing lice specimens obtained during ectoparasitic examination of a Lesser Spotted Eagle. As a result, one of the four identified species is a new record for Türkiye. Given the diversity of the ornithofauna of Türkiye and the large number of bird species that have not yet been examined, future ornithoparasitological studies are likely to yield new records, host-parasite associations, and even new species for the chewing lice fauna of Türkiye.

References

- Bahiraei, Z., Sazmand, A., Khedri, J., Babae, M., Moeinifard, E. & Dik, B. 2024. Chewing lice of wild birds in Iran: new data and a checklist of avian louse species reported in Iran. – *Frontiers in Veterinary Science* 10: 1324619. DOI: 10.3389/fvets.2023.1324619
- de Oliveira, J., Santos, T., Vaughan, C. & Santiago, H. 2021. External parasites of raptors (Falconiformes and Strigiformes): identification in an ex situ population from Mexico. – *Revista de Biología Tropical* 59(3): 1257–1264.
- Dik, B. 2006. Mallophaga species on Long-legged Buzzards (*Buteo rufinus*) new records from Turkey. – *Türkiye Parazitoloji Dergisi* 30(3): 226–230.
- Dik, B. 2010. Türkiye’deki Evcil ve Yabani Kanatlılarda Bulunan Çiğneyici Bit (Phthiraptera) Türleri [Chewing-lice species (Phthiraptera) found on domestic and wild birds in Turkey]. – *Türkiye Parazitoloji Dergisi* 34(1): 55–60. (in Turkish)
- Dik, B. & Aydenizöz Özkayhan, M. 2007. Mallophaga species on Long-legged Buzzards (*Buteo rufinus*) in Turkey. – *Türkiye Parazitoloji Dergisi* 31(4): 298–301.
- Dik, B., Çoban, A., Kırpık, M. A., Keskin, A., Çatalkaya, B., Çoban, E. & Şekercioglu, Ç. H. 2024. Lice (Phthiraptera, Amblycera, Ischnocera) collected on the birds in the Aras basin in Iğdır Province, Türkiye with new records and new host associations. – *Parasitology Research* 123(1): 100. DOI: 10.1007/s00436-023-08113-w
- Dik, B., Erciyas-Yavuz, K. & Per, E. 2017. Chewing lice (Phthiraptera: Amblycera, Ischnocera) on birds in the Kızılırmak delta, Turkey. – *Revue de Médecine Vétérinaire* 167(1–2): 53–62.
- Dik, B. & Kandir, E. H. 2021. Ectoparasites in some wild birds (Aves) in Turkey. – *Progress in Nutrition* 23(2): e2021261.

- Dik, B., Naz, S. & Sajid, M. S. 2022. Data on the chewing lice (Phthiraptera) parasitizing the accipitrid birds (Accipitriformes) in Turkey. – *Journal of Animal Health and Production* 10(4): 443–453. DOI: 10.17582/journal.jahp/2022/10.4.443.453
- Dik, B., Per, E., Erciyas-Yavuz, K. & Yamaç, E. 2015. Chewing lice (Phthiraptera: Amblycera, Ischnocera) species found on birds in Turkey, with new records and a new host association. – *Turkish Journal of Zoology* 39(5): 790–798. DOI: 10.3906/zoo-1411-45
- Dik, B. & Uslu, U. 2009. Konya Hayvanat Bahçesi'ndeki kanatlı hayvanlarda görülen çiğneyici bit (Phthiraptera: Amblycera, Ischnocera) türleri [Chewing-lice (Phthiraptera: Amblycera, Ischnocera) occurring on birds in the Konya zoo]. – *Türkiye Parazitoloji Dergisi* 33(1): 43–49. (in Turkish)
- Dik, B. & Uslu, U. 2011. Chewing lice (Phthiraptera) found on wild birds in Turkey. – *Kafkas Üniversitesi Veteriner Fakültesi Dergisi* 17(5): 787–794.
- Dik, B. & Yamaç, E. 2008. First report of *Colpocephalum trachelioti* (Amblycera: Menoponidae) on a Black Vulture (*Aegypius monachus* L.) in Turkey. – *Türkiye Parazitoloji Dergisi* 32(2): 149–152.
- Dik, B. & Yamaç, E. 2024. New data on the chewing lice (Psocodea: Phthiraptera) of domestic and wild birds in Türkiye. – *Veterinary Parasitology: Regional Studies and Reports* 49: 101000. DOI: 10.1016/j.vprsr.2024.101000
- Dik, B., Yamaç, E. & Uslu, U. 2013. Studies on chewing lice (Phthiraptera: Amblycera, Ischnocera) species from domestic and wild birds in Turkey. – *Kafkas Üniversitesi Veteriner Fakültesi Dergisi* 19(4): 553–560. DOI: 10.9775/kvfd.2012.8207
- Eren, G., Özkoç, Ö. Ü. & Açııcı, M. 2022. Contributions to the knowledge of the diversity of the chewing lice fauna in Turkey. – *Turkish Journal of Zoology* 46(6): 444–455. DOI: 10.55730/1300-0179.3099
- Gállego Berenguer, J., Martín Mateo, M. P. & Aguirre Martí, J. M. 1987. Malófagos de rapaces españolas. II. Las especies del género *Craspedorrhynchus* Keler, 1938 parásitas de falconiformes, con descripción de tres especies nuevas [Mallophages of Spanish raptors: II. Species of the genus *Craspedorrhynchus* Kéler, 1938 parasites of Falconiformes, with description of three new species]. – *Eos* 63: 31–66. (in Spanish)
- Gaponov, S. P. 2023. Фауна пухоедов (Mallophaga) Воронежской области. Подотряд Amblycera [Checklist of bird chewing lice (Mallophaga) of the Voronezh Region. Suborder Ischnocera]. – *Transactions of the Karelian Research Centre RAS* 5: 79–92. DOI: 10.17076/bg1699 (in Russian)
- Gherardi, R., D'Agostino, C. & Perrucci, S. 2021. Lice, flies, mites, and ticks on raptors (Accipitriformes, Falconiformes and Strigiformes) in rescue centers in Central Italy. – *Parasitologia* 1: 61–68. DOI: 10.3390/parasitologia1020008
- Giebel, C. G. A. 1861. Die Federlinge der Raubvögel aus Chr. L. Nitzsch's handschriftlichem Nachlass zusammengestellt [The chewing lice of birds of prey compiled from the manuscript estate of Chr. L. Nitzsch]. – *Zeitschrift für (die gesammten) Naturwissenschaften (Halle)* 17(6): 515–529. (in German)
- Girisgin, A. O., Dik, B. & Girisgin, O. 2013. Chewing lice (Phthiraptera) species of wild birds in northwestern Turkey with a new host record. – *International Journal for Parasitology: Parasites and Wildlife* 2: 217–221. DOI: 10.1016/j.ijppaw.2013.07.001
- Girişgin, O., Girişgin, A., Cimenlikaya, N. & Saygin B. 2023. A survey of the ectoparasites found on wild birds in northwest Turkey. – *Indian Journal of Animal Research* 57(8): 1059–1065. DOI: 10.18805/IJAR.BF-1474
- Gonzalez-Acuña, D., Ardiles, K., Figueroa, R. A., Barrientos, C., Gonzalez, P., Moreno, L. & Cicchino, A. 2008. Lice of Chilean diurnal raptors. – *Journal of Raptor Research* 42: 281–286. DOI: 10.3356/JRR-07-69.1
- Göz, Y., Dik, B., Kılınç, Ö. O., Yılmaz, A. B. & Aslan, L. 2015. Chewing lice (Phthiraptera: Amblycera, Ischnocera) on several species of wild birds around the lake Van Basin, Van, eastern Turkey. – *Kafkas Üniversitesi Veteriner Fakültesi Dergisi* 21(3): 333–338. DOI: 10.9775/kvfd.2014.12484
- Gustafsson, D. R., Tian, C., Ren, M., Li, Z., Sun, X. & Zou, F. 2024. Two new species of *Craspedorrhynchus* Kéler, 1938 (Phthiraptera: Ischnocera: Philopteridae) from Chinese birds of prey (Accipitriformes). – *Journal of Natural History* 58(13–16): 491–510. DOI: 10.1080/00222933.2024.2335114
- Gülanber, A., Kaya, Ü., Vaassen, E. W. A. M. & Yavuz, E. 2006. Chewing lice on Long-legged Buzzard. – *Indian Veterinary Journal* 83: 1238–1239.
- İnci, A., Dik, B., Kibar, M., Yıldırım, A. & Düzlü, Ö. 2010. Chewing lice (Phthiraptera) species on wild birds in Cappadocia region, Turkey. – *Türkiye Parazitoloji Dergisi* 34(4): 174–178.
- Karataş, A., Erciyas, Y. K., Yavuz, N., Ünlü, M., Necipoğlu, Ö., Kahraman, V., Salman, M., Özkoç Ö. Ü., Bacak, E., Kulaçoğlu, K. C., Kurnuç, Z., Gezgin, C., Güngör, U., Özkan, K., Döndüren, Ö., Kap, B. & Yeltekin, O. Ö. 2021. *Trakuş Türkiye'nin Kuşları*, 5th ed. [Trakuş The Birds of Türkiye]. – *Türkiye İş Bankası Kültür Yayınları* (in Turkish)

- Lade, D., Verma, R., Podhade, D. N., Das, G., Sinha, Y. K. & Jawre, S. 2023. Occurrence of *Laemobothrion maximum* and *Degeeriella fulva* lice infestation in Black Kites (*Milvus migrans*). – Journal of Veterinary Parasitology 37(1): 60–63. DOI: 10.5958/0974-0813.2023.00009.8
- Ledger, J. A. 1980. The Arthropod Parasites of Vertebrates in Africa South of the Sahara. Vol. IV. Phthiraptera (Insecta). – Publications of the South African Institute for Medical Research
- Mey, E. 2001. A new *Craspedorrhynchus* species (Phthiraptera, Ischnocera) from Australia, with an annotated checklist of this chewing louse genus. – Deutsche Entomologische Zeitschrift 48(1): 117–132.
- Morishita, T. Y., Mertins, J. W., Baker, D. G., Monahan, C. M. & Brooks, D. L. 2001. Occurrence and species of lice on free-living and captive raptors in California. – Journal of Avian Medicine and Surgery 15(4): 288–292. DOI: 10.1647/1082-6742(2001)015[0288:OASOLO]2.0.CO;2
- Ošlejšková, L., Křištofik, J., Trnka, A. & Sychra, O. 2021. An annotated checklist of chewing lice (Phthiraptera: Amblycera, Ischnocera) from Slovakia. – Zootaxa 5069(1): 1–80. DOI: 10.11646/zootaxa.5069.1.1
- Palma, R. L. 1978. Slide-mounting of lice: a detailed description of the Canada balsam technique. – New Zealand Entomologist 6(4): 432–436.
- Philips, J. R. 2000. A review and checklist of the parasitic mites. – Journal of Raptor Research 34(3): 210–231.
- Picaglia, L. 1885. Pediculini nuovi del Museo di Zoologia ed Anatomia Comparata della R. Università di Modena [New Pediculini from the Museum of Zoology and comparative anatomy of the Royal University of Modena]. – Atti della Società Italiana di Scienze Naturali 28: 82–90. (in Italian)
- Price, R. D. & Beer, J. R. 1963. Species of *Colpocephalum* (Mallophaga: Menoponidae) Parasitic upon the Falconiformes. – The Canadian Entomologist 95(7): 731–763.
- Price, R. D., Hellenthal, R. A., Palma, R. L., Johnson, K. P. & Clayton, D. H. 2003. The Chewing Lice: World Checklist and Biological Overview. – Illinois Natural History Survey, Champaign
- Rékási, J. & Kiss, J. B. 1980. Weitere Beiträge zur Kenntnis der Federlinge (Mallophaga) von Vögeln der Nord-Dobrudscha [Further contributions to the knowledge of the chewing lice (Mallophaga) of birds from Northern Dobruja]. – Parasitologia Hungarica 13: 67–93. (in German)
- Rudow, F. 1869. Beitrag zur Kenntniss der Mallophagen oder Pelzfresser: Neue exotische Arten der Familie *Philopterus* [Contribution to the Knowledge of the Mallophaga or Fur-Eaters: New Exotic Species of the Family Philopterus]. – Thesis, The University of Leipzig (in German)
- Solt, S. 1998. Lice (Phthiraptera: Amblycera, Ischnocera) of raptors in Hungarian zoos and Rehabilitation Centers. – Journal of Raptor Research 32(3): 264–266.
- Talabante, C., Bernal, I., Moraleda, V., Iglesias-Lebrija, J. J., Torrijos, M. & Álvarez, E. 2024. Chewing lice (Phthiraptera) on the Bonelli's Eagle *Aquila fasciata* in the Iberian Peninsula (Spain). – Ornis Hungarica 32(2): 309–314. DOI: 10.2478/orhu-2024-0038
- Tandan, B. K. 1964. Mallophaga from birds of the Indian subregion. Part VI. *Falcolipeurus* Bedford. – Proceedings of the Royal Entomological Society of London 33(11–12): 173–180. DOI: 10.1111/j.1365-3113.1964.tb01599.x
- Ulutaş Esatgil, M. U., Efil, I. I. & Tüzer, E. 2012. Two chewing lice species, *Colpocephalum subzerafae* and *Laemobothrion tinnunculi*, on a Kestrel (*Falco tinnunculus*) in Istanbul: two new records from Turkey. – Kafkas Üniversitesi Veteriner Fakültesi Dergisi 18: 241–244. DOI: 10.9775/kvfd.2012.6313
- Zerek, A., Erdem, I., Yaman, M., Altuğ, M. & Dik, B. 2024. Chewing lice (Psocodea: Phthiraptera) detected in wild birds in Hatay, Türkiye, a new record of the *Colpocephalum ecaudati* Price and Beer from Black Kite (*Milvus migrans*). – Kafkas Üniversitesi Veteriner Fakültesi Dergisi 30(2): 201–205. DOI: 10.9775/kvfd.2023.30713

