

# Chewing Lice (Phthiraptera) Species on Wild Birds in Cappadocia Region, Turkey

Türkiye'nin Kapadokya Bölgesi'ndeki Yabani Kuşlarda Bulunan Çiğneyici Bit (Phthiraptera) Türleri

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## ABSTRACT

**Objective:** This study was performed on 70 injured wild birds belonging to 7 different species in the Cappadocia region between 2005 and 2009. All birds were inspected for ectoparasites and 29 of 70 (41.4%) birds were found to be infested by at least one chewing louse species.

**Methods:** All lice were cleared in 10% KOH, mounted in Canada balsam on slides and identified under a light microscope.

**Results:** The lice were identified as *Laemobothrion maximum*, *Craspedorrhynchus platystomus*, *Degeeriella fulva* and *Colpocephalum nanum* from the long-legged buzzards (*Buteo rufinus*), as *C. platystomus*, *L. maximum*, *D. fulva* and *C. nanum* from the common buzzards (*Buteo buteo*), as *D. fulva* and *Colpocephalum sp.* from the honey buzzard (*Pernis apivorus*), as *Colpocephalum milvi* and *L. maximum* from the black kites (*Milvus migrans*), as *Strigiphilus barbatus* from the long-eared owl (*Asio otus*), as *Comatomenapon elongatum* from the great egret (*Egretta alba*) and as *Colpocephalum zebra* from the white stork (*Ciconia ciconia*).

**Conclusion:** Honey buzzard was found as a new host for *Degeeriella fulva* and *Colpocephalum sp.* and these lice were recorded for the first time in this study. *Colpocephalum milvi* from the black kite and *Comatomenapon elongatum* from the great egret have been reported for the first time with this study in Turkey. (*Türkiye Parazitolojisi Dergisi* 2010; 34: 174-8)

**Key Words:** Chewing lice, wild birds, Cappadocia, Turkey

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## ÖZET

**Amaç:** Bu çalışma, 2005-2009 yılları arasında Kapadokya Bölgesi'nde bulunan 7 farklı türe ait 70 yabani yaralı kuş üzerinde yapılmıştır.

**Yöntemler:** Bütün kuşlar ektoparazit yönünden muayene edilmiş ve 70 kuştan 29'unun (%41.4) en az bir çiğneyici bit türü ile enfeste olduğu saptanmıştır. Toplanan bit örnekleri %10'luk KOH ile saydamlaştırıldıktan sonra Kanada balsamı ile lam üzerine yapıştırılmış ve ışık mikroskobu altında teşhis edilmiştir.

**Bulgular:** Kızıl şahinden toplanan bitler *Laemobothrion maximum*, *Craspedorrhynchus platystomus*, *Degeeriella fulva* ve *Colpocephalum nanum*, şahinden toplananlar *C. platystomus*, *L. maximum*, *D. fulva* ve *C. nanum*, arı şahininden toplananlar *D. fulva* ve *Colpocephalum sp.*, kara çaylaklardan toplananlar *Colpocephalum milvi* ve *L. maximum*, uzun kulaklı orman baykuşundan toplanan *Strigiphilus barbatus*, beyaz balıkçıdan toplanan *Comatomenapon elongatum* ve beyaz leylekten toplanan bit ise *Colpocephalum zebra* olarak teşhis edilmiştir.

**Sonuç:** Arı şahininin *Degeeriella fulva* ve *Colpocephalum sp.* için yeni bir konak olduğu belirlenmiş ve arı şahinindeki bu bit türleri ilk defa bu çalışma ile kayıt altına alınmıştır. Kara çaylaklardan toplanan *Colpocephalum milvi* ve beyaz balıkçıdan toplanan *Comatomenapon elongatum* Türkiye'den ilk kez bu çalışma ile bildirilmektedir. (*Türkiye Parazitolojisi Dergisi* 2010; 34: 174-8)

**Anahtar Sözcükler:** Çiğneyici bitler, yabani kuşlar, Kapadokya, Türkiye

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## INTRODUCTION

It is generally accepted that lice (Phthiraptera *parasitic lice*, *Hemimetabola*) are derived from the insect order Psocoptera (the so-called *book lice* or *bark lice*), and it is speculated that their origin was between the Late Carboniferous and the end of the Cretaceous era, 66-320 million years ago. The order Phthiraptera comprises four suborders, three of which (Amblycera, Ischnocera, and Rhynchophthirina) are known as chewing or biting lice and the fourth (the Anoplura) as sucking lice. Chewing lice (Phthiraptera: Amblycera, Ischnocera) are permanent obligate ectoparasites and are distributed worldwide throughout most bird families (1). Chewing lice have mandibulate mouthparts and have probably evolved on birds. They are thought to have fed initially on skin and feathers, with some groups ultimately expanding their diets to include tissue fluids and blood. Some chewing lice eventually made a transition from birds to mammals and some Ricinidae (Amblycera) have mouthparts adapted to pierce host skin (2). Living mainly on the skin, amblyceran lice may cause irritation of the skin, restlessness, overall weakening and cessation of feeding, loss of weight, inferior laying capacity, and skin lesions that may become sites of secondary infection (3, 4). Chewing lice living on feathers, such as ischnocerans, although causing damage to feathers, affect their hosts much less than do amblycerans (1). With regard to the economic importance of chewing lice on poultry, various aspects of their biology have been studied, such as distribution on the host body, population dynamics, geographical distribution or economic damage (5, 6).

The order Phthiraptera has nearly 5000 species in some 28 families and moreover, those lice have been reported from birds (7). The current knowledge on the louse fauna of birds and mammals in Turkey is quite incomplete. Up to today, a total of 109 species belonging to 50 genera of lice have been recorded from animals and humans, based on the morphological identification of these parasites. Eighty two louse species belonging to 37 genera in three families have been reported from birds in Turkey, although there are only a few studies (8-12). Eleven louse species belonging to 11 genera and 67 species belonging to 32 genera have been reported from poultry (3, 13, 14) and wild birds (8, 9, 11, 15-30), respectively.

The objective of this study was to identify louse species collected from injured wild birds found in the Cappadocia region.

## MATERIAL AND METHODS

Between 2005 and 2009, 70 wounded wild birds including 39 long-legged buzzards (*Buteo rufinus*), 14 common buzzards (*Buteo buteo*), 7 black kites (*Milvus migrans*), 4 eagle-owls (*Bubo bubo*), 3 great egrets (*Egretta alba*), 1 honey buzzard (*Pernis apivorus*), 1 long-eared owl (*Asio otus*) and 1 white stork (*Ciconia ciconia*) which were found around the Cappadocia region were transferred to the surgery clinic of the Faculty of Veterinary Medicine, Erciyes University. All birds were inspected for ectoparasites. The manually collected lice from infested birds were transferred to vials with 70% ethyl alcohol and stored in the laboratory until the microscopic examination. At the same time the protocols for each bird species and the collected lice from all

infested birds were recorded. The louse specimens were cleared in 10% KOH, mounted in Canada balsam on slides and identified under a light microscope.

## RESULTS

During the clinical examination, a total of 65 (35 females, 23 males and 7 nymphs) louse species were found in 29 of 70 (41.4%) birds (9 Long-legged Buzzards, 14 Common Buzzards, 2 Black Kites, 1 Great Egret, 1 Honey Buzzard, 1 Long-eared Owl and 1 White Stork). The identified louse species and their hosts were shown in Table 1. The distributions of louse species around the Cappadocia region are shown in Figure 1.

As seen in Table 1, the most prevalent louse species was determined as *Degeeriella fulva* (Figure 2A) at an incidence of 41.5%, and this rate was followed by *Laemobothrion maximum* (Figure 2B) 20.0%, *Colpocephalum nanum* (Figure 2C) 16.9%, *Craspedorrhynchus platystomus* (Figure 2D) 13.8% and the rest [*Colpocephalum milvi* (Figure 2E), *Colpocephalum zebra* (Figure 2F), *Strigiphilus barbatus* (Figure 2G) and *Comatomenapon elongatum* (Figure 2H), *Colpocephalum* sp. (Figure 2I, 2J)] with 1.5%.

## DISCUSSION

There are few studies on the louse species of wild birds in Turkey. The louse species collected from wild birds in Turkey are also limited (19). Up to the present, 3 louse species on wild partridges (15), 1 on the wild geese (16), 5 on the long-legged buzzards (*Buteo rufinus*) (17), 4 on the white stork (*Ciconia ciconia*) (22), 1 on the Eurasian eagle owl (*Bubo bubo*) (24), 2 on the ring-necked pheasants (*Phasianus colchicus*) (23, 29), 4 on the starlings (*Sturnus vulgaris*) (28), 1 on the nightjars (*Caprimulgus europaeus*) (18), 1 on the black vulture (*Aegypius monachus*) (27), 20 on the shorebirds (*Chlidonias leucopterus*, *Gallinago gallinago*, *Tringa glareola*, *Calidris minuta*, *Calidris alpina*, *Calidris temminckii*, *Philomachus pugnax*) (10), 1 on the dove (*Streptopelia decaocto*) (20), 1 on the budgerigar (*Melopsittacus undulatus*) (20), 1 on the marbled duck (*Marmaronetta angustirostris*) (20), 3 on the mallards (*Anas platyrhynchos*) (8), 3 on the wild quails (*Coturnix coturnix*) (9) and 1 on the red-backed shrikes (*Lanius collurio*) (11) were reported from wild birds in Turkey. In addition, 25 birds belonging to 15 different species at the zoo in Konya were inspected for the presence of chewing-lice and 3 long-legged buzzards (*Buteo rufinus*), 1 imperial eagle (*Aquila heliaca*) and 1 marsh harrier (*Circus aeruginosus*) were found to be infested by chewing-lice. *Craspedorrhynchus fraterculus* (Eichler & Zlotorzycza, 1975), *Degeeriella aquilarum* (Eichler, 1943) and *Colpocephalum impressum* (Rudow, 1866) on the imperial eagle; and *Degeeriella fusca* (Denny, 1842) on the marsh harrier were found for the first time in Turkey (25).

In the previous studies on long-legged buzzards (*Buteo rufinus*) in Turkey (17, 25, 26, 29), *L. maximum*, *C. nanum*, *Colpocephalum* sp., *D. fulva* and *C. platystomus* were detected. In the present study, long-legged buzzards were found to be infested with *L. maximum*, *C. platystomus*, *D. fulva* and *C. nanum*. Dik (19) reported *Kurodaia fulvofasciata* on a common buzzard (*Buteo buteo*) and *Strigiphilus barbatus* on the long-eared owl (*Asio otus*). In the present study, *C. platystomus*, *L. maximum*, *D. fulva* and *C. nanum*



Figure 1. Distribution of louse species found on wild birds around Cappadocia

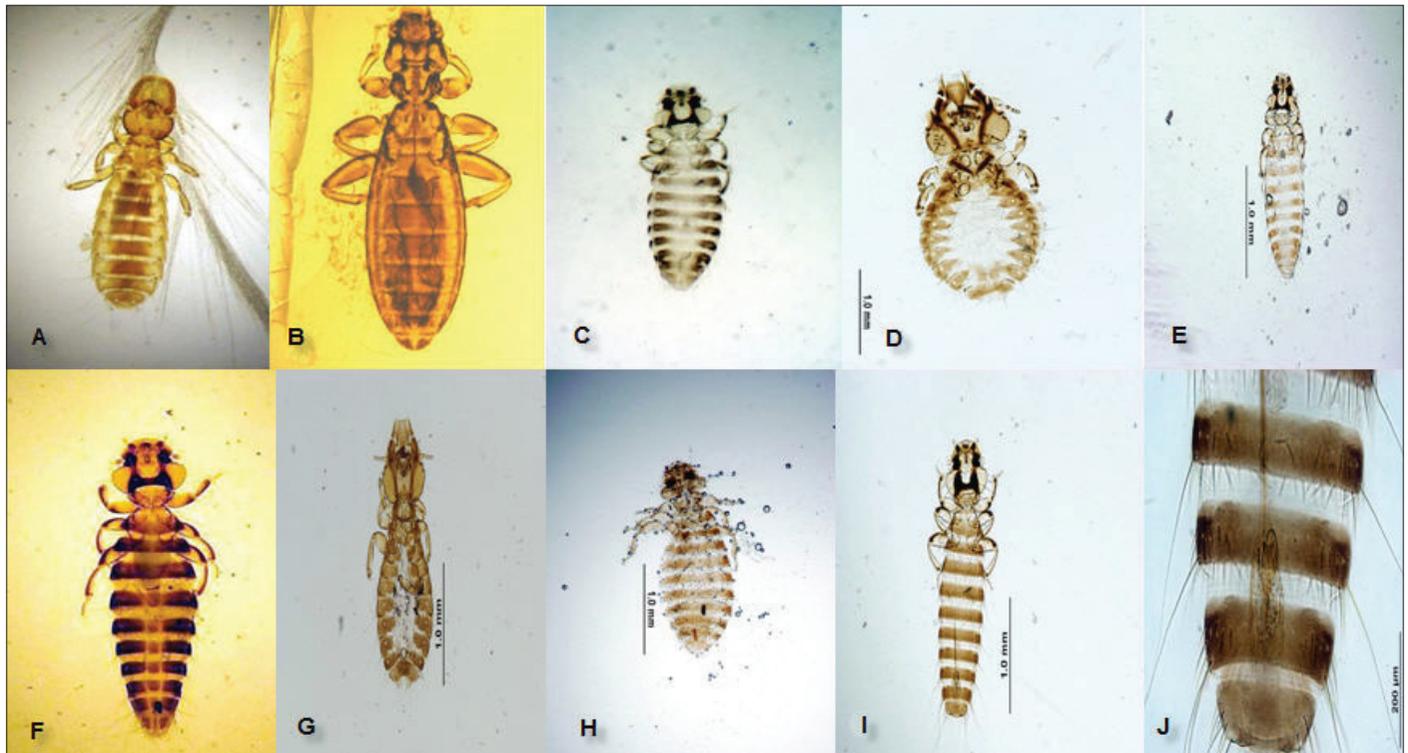


Figure 2. A) *Degeeriella fulva* (female), B) *Laemobothrion maximum* (male), C) *Colpocephalum nanum* (female), D) *Craspedorrhynchus platystomus* (female), E) *Colpocephalum milvi* (female), F) *Colpocephalum zebra* (female), G) *Strigiphilus barbatus* (female), H) *Comatomenapon elongatum* (female), I) *Colpocephalum* sp. male, J) *Colpocephalum* sp. male genitalia

**Table 1.** Louse species collected from wild birds around Cappadocia region

Host	Location	Louse species														Total		
		<i>Degeeriella fulva</i>		<i>Laemobothrion maximum</i>			<i>Colpocephalum nanum</i>		<i>Colpocephalum platystomus</i>			<i>Colpocephalum sp.</i>	<i>Colpocephalum milvi</i>	<i>Colpocephalum zebra</i>	<i>Strigiphilus barbatus</i>		<i>Comatomenapon elongatum</i>	
		♂	♀	♂	♀	N*	♂	♀	♂	♀	N*	♂	♀	♀	♀	♀	♀	
Long-legged buzzard ( <i>Buteo rufinus</i> )	Nevşehir	-	1	2	2	-	1	1	-	-	2	-	-	-	-	-	-	9
	Kayseri	1	4	-	-	1	3	-	1	-	-	-	-	-	-	-	-	10
	Niğde	1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Sivas	2	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-	6
	Total	4	7	2	2	1	4	3	1	-	2	-	-	-	-	-	-	26
Common buzzard ( <i>Buteo buteo</i> )	Nevşehir	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	2
	Kayseri	2	4	-	1	1	-	2	1	3	-	-	-	-	-	-	-	14
	Kırşehir	1		-			1	-	-	2	-	-	-	-	-	-	-	4
	Sivas	3	5	-	2	1	1	-	-	-	-	-	-	-	-	-	-	12
	Total	6	9	-	4	3	2	2	1	5	-	-	-	-	-	-	-	32
Black kite ( <i>Milvus migrans</i> )	Kayseri	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	2
Great egret ( <i>Egretta alba</i> )	Kayseri	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Honey buzzard ( <i>Pernis apivorus</i> )	Kayseri	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2
Long-eared owl ( <i>Asio otus</i> )	Kayseri	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
White stork ( <i>Ciconia ciconia</i> )	Kayseri	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
TOTAL		10	17	2	6	5	6	5	2	5	2	1	1	1	1	1	1	65

N: Nymph

on common buzzards (*Buteo buteo*) and *Strigiphilus barbatus* on the long-eared owl (*Asio otus*) were determined.

### CONCLUSION

Four louse species on the long-legged buzzard (*Buteo rufinus*), 4 on 14 common buzzards (*Buteo buteo*), 2 on the honey buzzard (*Pernis apivorus*), 2 on black kites (*Milvus migrans*), 1 on the long-eared owl (*Asio otus*), 1 on the great egret (*Egretta alba*) and 1 on the white stork (*Ciconia ciconia*) were found. The honey buzzard is a new host for *Degeeriella fulva* and *Colpocephalum sp.* and these lice were recorded for the first time in this study. In addition, *Colpocephalum milvi* from the black kite and *Comatomenapon elongatum* on the great egret were reported for the first time in Turkey.

### Conflict of Interest

No conflict of interest was declared by the authors.

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