

Mallophaga Species on Long-Legged Buzzards (*Buteo rufinus*): New Records from Turkey

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SUMMARY: This study was carried out on two long-legged buzzards that were brought for treatment to the surgery clinic of the Veterinary Faculty, University of Selçuk. A few lice were observed on the body surfaces of the birds. Forty-seven lice were collected from the buzzards. The lice were preserved in a tube containing 70% ethanol. They were mounted on slides separately after being cleared in lactophenol. Four species of lice (*Laemobothrion maximum*, *Degeeriella fulva*, *Craspedorhynchus platystomus*, and *Colpocephalum* sp.) were identified by microscopical examination. The specimens of *Colpocephalum* could not be identified at the species level because of poor conditions of some morphological characteristics such as chaetotaxy of the body or male genitalia.

Key Words: *Laemobothrion maximum*, *Degeeriella fulva*, *Craspedorhynchus platystomus*, *Colpocephalum* sp., *Buteo rufinus*, Turkey.

Kızıl Şahinlerde (*Buteo rufinus*) Görülen Mallophaga Türleri: Türkiye'den Yeni Kayıtlar

ÖZET: Bu araştırma, Selçuk Üniversitesi Veteriner Fakültesi'nin Cerrahi kliniğine tedavi amacıyla getirilen iki kızıl şahin üzerinde yapılmıştır. Şahinlerden, toplam 47 adet bit toplanmıştır. Bitler, içinde % 70'lik alkol bulunan tüplere alınmıştır. Laktofenolde saydamlaştırılan bitler daha sonra lam üzerine ayrı ayrı yapıştırılmışlardır. Mikroskopik incelemeler sonucunda, dört tür (*Laemobothrion maximum*, *Degeeriella fulva*, *Craspedorhynchus platystomus*, *Colpocephalum* sp.) saptanmıştır. *Colpocephalum* cinsine ait örnekler, vücuttaki setaelerin bazılarının kopmuş olmalarından ya da erkeklerde genitalinin yeterince saydamlaşmamasından dolayı tür seviyesinde teşhis edilememiştir.

Anahtar Sözcükler: *Laemobothrion maximum*, *Degeeriella fulva*, *Craspedorhynchus platystomus*, *Colpocephalum* sp., *Buteo rufinus*, Türkiye

INTRODUCTION

The lice of falconiformes have been studied by many authors on the world wide. Tendeiro (8) published a report on some Mallophaga of avies. The author also reported (9) that two species and three subspecies belonging to the genus *Degeeriella*. Clay (1) published a revision of the genus *Degeeriella* from the falconiformes. Price and Beer (6) recognized twenty-five species of *Colpocephalum* from falconiformes, eight of them have been described as new species and given identification keys of species. Nelson and Price (4) investigated 435 *Laemobothrion* specimens from 74 different species of falconiformes and only identified 4 species; *L.tinnunculi*, *L.maximum*, *L.vulturis*, *L.glutinans* and gave a key of the genus *Laemobothrion*. Tendeiro *et al.* (10) reported three species of *Colpocephalum*, two of

them new for Science in Sardinia. Gallego *et al.* (2) published a paper on the species of the genus *Craspedorhynchus* of falconiformes in Spain and gave identification keys of the genus. Perez-Jimenez *et al.* (5) reported 6 *Mallophaga* species (*Degeeriella fulva*, *Craspedorhynchus platystomus*, *L.maximum*, *L.iberum*, *Colpocephalum meridionale* and *Columbicola c.columbae*) on the buzzard (*Buteo b.buteo*) in southern Spain. Price *et al.* (7) published a checklist of chewing lice and their identification keys of the worldwide.

Investigation about this subject in Turkey is not sufficient. There could be found only one study published on chewing-lice of falconiformes in Turkey. Kaya *et al.* (3) found some specimens belonging to the genera *Laemobothrion*, *Craspedorhynchus* and *Degeeriella* from long-legged buzzard (*Buteo rufinus*) in Central Anatolia of Turkey, but did not inform about the species of the lice. This report will be the first record of *Laemobothrion maximum*, *Craspedorhynchus platystomus*, *Degeeriella fulva* and *Colpocephalum* sp. on falconiformes in this country.

Geliş tarihi/Submission date: 20 Ağustos/20 August 2005

Düzeltilme tarihi/Revision date: 23 Mart/23 March 2006

Kabul tarihi/Accepted date: 24 Mayıs/24 May 2006

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Bu makale 14. Ulusal Parazitoloji Kongresi'nde (18-25 Eylül 2005, İzmir) sunulmuştur

MATERIAL AND METHODS

In the years of 1988 and 1990, two long-legged buzzards (*Buteo rufinus*) wounded were to be brought to Surgery Clinic of our Faculty. Presence of a few lice were observed on some parts of the bodies. The lice were collected by using a pens in a petri dish and then preserved in a tube which is containing 70% ethanol. They were mounted on slides separately by using Faure Forte medium after cleared in lactophenol.

RESULTS

Forty-seven lice were collected from the buzzards. Three species, *Lameobothrion maximum*, *Craspedorhynchus platystomus* and *Degeeriella fulva* were identified. Three specimens belonging to the genus *Colpocephalum* could not identified since some morphological characteristics such as chaetotaxy of the body and male genitalia were not clear enough.

***Degeeriella fulva* (Giebel), 1874**

Studied material : 13 ♀♀ , 4 ♂♂.

Female:The head slightly rounded in front. Ventral suture reaches to anterior margin of head. Dorsal head sutures not apparent. Inner dorsal margin of marginal carina notched medially. There are two long submarginal setae on each side of the temple. The anten has five segments (Fig 1). Pterothorax has five submarginal setae on posterolateral part. Tergocentral setae in female; II, 3-8; III, 7-8; IV, 8; V, 7-8; VI, 7; VII, 6-8; VIII, 6-7, pleural setae in female; II-IV, 0; V, 1; VI-VIII, 2, in male; II-IV, 0; V, 1; VI-VIII, 2; IX, 1; X, 3 on each side.

In male, segment X has three posterolateral setae on each side. Genitalia as in Figure 2. Some dimensions of *D. fulva* were given in Table 1.

Table 1. Some dimensions of *Degeeriella fulva*

	Female			Male		
	Min	Max	Av.	Min	Max	Av.
C.L.	0.57	0.63	0.60	0.55	0.58	0.56
C.W.	0.45	0.50	0.48	0.44	0.46	0.45
C.I.	0.77	0.80	0.78	0.78	0.80	0.79
T.L.	0.34	0.38	0.36	0.35	0.37	0.36
Pr.W.	0.28	0.32	0.30	0.30	0.31	0.31
Pt.W.	0.47	0.52	0.50	0.46	0.50	0.48
A.L.	1.23	1.45	1.33	1.19	1.26	1.22
A.W.	0.61	0.73	0.65	0.62	0.63	0.63
Tot.L.	2.21	2.42	2.30	2.14	2.23	2.19

Min. Minumum, **Max.** Maximum, **Av.** Average, **C.L.** Cephalic Length, **C.W.** Cephalic Width, **C.I.** Cephalic Index, **T.L.** Thoracic Length, **Pr. W.** Prothoracic Width, **Pt. W.** Pterothoracic Width, **A.L.** Abdomen Length, **A.W.**Abdomen Width, **Tot. L.** Total Length

***Craspedorhynchus platystomus* (Burmeister, 1838)**

Studied material : 15 ♀♀ , 4 ♂♂ 2 immatures.

Female: In comparison to body, the head is rather large. It is narrowed in front and cone shaped. The anterior margin of the head is concaved in medial. The width of the head is slightly bigger than of the head length. The largest part of the head is temple. The anten has five segments. The clypeal signature is tongue shaped extended to posterior. The gular plate is subpentagonal. Thorax is relatively small and prothorax narrowed in laterally. Abdomen is oval shaped. Paratergal plates are well-sclerotized and trianguler (Fig 3).

Male: It likes female. Male genitalia is shown in Figure 4.

Some dimensions of *C.platystomus* were given in Table 2.

Table 2. Some dimensions of *Craspedorhynchus platystomus*

	Female			Male		
	Min	Max	Av.	Min	Max	Av.
C.L.	0.83	0.90	0.85	0.73	0.77	0.75
C.W.	0.85	0.93	0.88	0.77	0.82	0.80
C.I.	1.01	1.06	1.04	1.06	1.07	1.07
T.L.	0.41	0.45	0.43	0.35	0.40	0.38
Pr.W.	0.49	0.59	0.54	0.46	0.50	0.48
Pt.W.	0.67	0.75	0.70	0.62	0.64	0.63
A.L.	1.00	1.28	1.13	0.83	0.92	0.88
A.W.	1.07	1.27	1.15	0.98	1.07	1.03
Tot.L.	2.26	2.64	2.40	1.91	2.09	2.00

Min. Minumum, **Max.** Maximum, **Av.** Average, **C.L.** Cephalic Length, **C.W.** Cephalic Width, **C.I.** Cephalic Index, **T.L.** Thoracic Length, **Pr. W.** Prothoracic Width, **Pt. W.** Pterothoracic Width, **A.L.** Abdomen Length, **A.W.**Abdomen Width, **Tot. L.** Total Length

***Laemobothrion maximum* (Scopoli), 1763**

Studied material : 3 ♀♀ , 1 ♂ and 2 immatures.

Female: Total length of adults approximately one centimeter or slightly longer. The head narrowed in anterior. Temples are not very big in width. There are four long setae on each side of the temple. Sitophore sclerite of hypopharynx possess two large holes, with an obvious U- shaped structer. There are prominent lateral preocular swellings in front of eyes. The palpes have four segments. Gula has one setae on each side. Prosternal plate has four or five setae in anterolateral. Mesometasternal plate with a short setae on each lateroanterior part. Femur II possesses four setae in proximodorsal portion. Subvulvar region is without pigmentation and has two long, three short setae on each side (Fig 5).

Male: Femur II has two setae in proximodorsal part. Other morphological characteristics of male were recorded as like those of female. Genitalia as in Figure 6.

Some dimensions of this species were shown in Table 3.

Table 3. Some dimensions of *Laemobothrion maximum*

	Female (n: 2)		Male (n: 1)	
	Min	Max	Av.	Av.
C.L.	1.58	1.63	1.61	1.47
C.W.	1.72	1.80	1.76	1.60
C.I.	1.05	1.14	1.10	1.09
T.L.	1.99	2.13	2.06	1.72
P.W.	1.41	1.47	1.44	1.33
M.W.	2.02	2.02	2.02	1.74
A.L.	6.09	6.61	6.35	5.12
A.W.	2.60	3.35	2.93	2.70
Tot.L.	9.71	10.32	10.01	8.30

Min. Minimum, **Max.** Maximum, **Av.** Average, **C.L.** Cephalic Length, **C.W.** Cephalic Width, **C.I.** Cephalic Index, **T.L.** Thoracic Length, **P. W.** Prothoracic Width, **M. W.** Metathoracic Width, **A.L.** Abdomen Length, **A.W.** Abdomen Width, **Tot. L.** Total Length

Table 4. Some dimensions of *Colpocephalum sp.*

	Male (n: 2)		Female (n: 1)	
	Av.	Min	Max	Av.
C.L.	0.36	0.31	0.31	0.31
C.W.	0.62	0.43	0.45	0.44
C.I.	1.71	1.37	1.43	1.40
Th.L.	0.52	0.22	0.32	0.27
P.W.	0.41	0.26	0.29	0.28
M.W.	0.55	0.36	0.43	0.40
A.L.	1.11	0.53	0.77	0.65
A.W.	0.88	0.50	0.51	0.51
Tot.L.	1.99	1.15	1.30	1.23

Min. Minimum, **Max.** Maximum, **Av.** Average, **C.L.** Cephalic Length, **C.W.** Cephalic Width, **C.I.** Cephalic Index, **T.L.** Thoracic Length, **P. W.** Prothoracic Width, **M. W.** Metathoracic Width, **A.L.** Abdomen Length, **A.W.** Abdomen Width, **Tot. L.** Total Length

Colpocephalum sp.

Studied material: 1 ♀, 2 ♂♂

The members of this genus are characterized with ctenidia on venter of femora III and abdominal sternite III, very dark pre-ocular and occipital nodi.

Female: A typical head for this genus is seen. Preocular and occipital regions are very dark (Fig 7). Two long setae on each side of temple. Posterior part of the occipital region has four long setae. The antenna are placed in anten holes. Prothorax has five long and three short setae on each side marginally. Mesosternal plate as subtriangular shaped. It has four long setae and two short spines anteriorly. Metasternal plate with ten setae and concaved laterally. Two ctenidia on each side of abdominal segment III. Some abdominal tergites have anterior setae. Anus is oval shaped. It has a dorsal fringe consisting of 28 setae. Due to poor conditions of the slide ventral fringe was not observed enough. It has one inner seta on each side. Tergocentral setae are 9 in segments II and III, 17 in IV, 14 in V, 11 in VI, 4 in VII and VIII.

Male: Like female (Fig 8). The head with preocular and occipital nodi. Metasternal plate has 13 setae. Genital sclerite was not clear sufficiently. Penis was long and with barbs posteriorly placed. Tergocentral setae were 6 in segments II and III, 7 in IV, 8 in V, 6 in VI, 5 in VII, 4 in VIII and 0 in IX. Some measurements of *Colpocephalum sp.* were shown in Tab 4.

DISCUSSION

There are many studies on Mallophaga of falconiformes in the worldwide Tendeiro (8) stated that the species of the genera *Laemobothrion* and *Degeeriella* living on Falconiformes (*Aquila chrysaetos chrysaetos*). Clay (1) gave a detailed information about the genus *Degeeriella* found on Falconiformes together with identification keys of the species belonging to the genus.

According to Clay (1) inner dorsal margin of marginal carina indented medially, ventral suture passes to anterior margin of head, tergite II only with definite median unsclerotized indentation, pleural thickening narrow with inner edges comparatively straight in male.

Perez-Jimenez *et al.* (5) stated that the anterior margin of head slightly rounded, frontal carina divided in ventral level, temporal carina and dorsal plate absent and ventral suture reaches to anterior margin of head. In this study, morphological characteristics of *D.fulva* collected from *Buteo rufinus* similar to that by Clay (1) and Perez-Jimenez *et al.* (5).

The species in the genus *Laemobothrion*, postvulvar region of female is without pigmentation and has particular chaetotaxy (5). These morphological characteristics differs this species from the others in the genus (5). In this study, postvulvar area of female had two long and three short setae and without pigmentation. Nelson and Price (4) reported that proximodorsal aspect of femur II with no more than 4 stout spiniform setae, sitophore sclerite of hypopharynx with two large holes and there is medioanterior U or V shaped structure. According to Perez-Jimenez *et al.*, (5) dorsal forepart of femur II possesses less than 6 setae. In this study, four stout setae on proximodorsal part of femur II were observed. Sitophore sclerite of hypopharynx had two big holes and medioanterior U shaped structure.

The clypeal signature is elongated with tongue shaped posterior extremes, gular plate subpentagonal shaped and prosternal plate variable in both sexes in *Craspedorhynchus platystomus* (5). In our specimens, clypeal signature was elongated as tongue shaped and gular plate subpentagonal. Prosternal plate was triangular shaped. There was no setae on prosternal plate. Male genitalia and other morphologic characteristics were similar to those reported by Perez-Jimenez *et al.* (5).

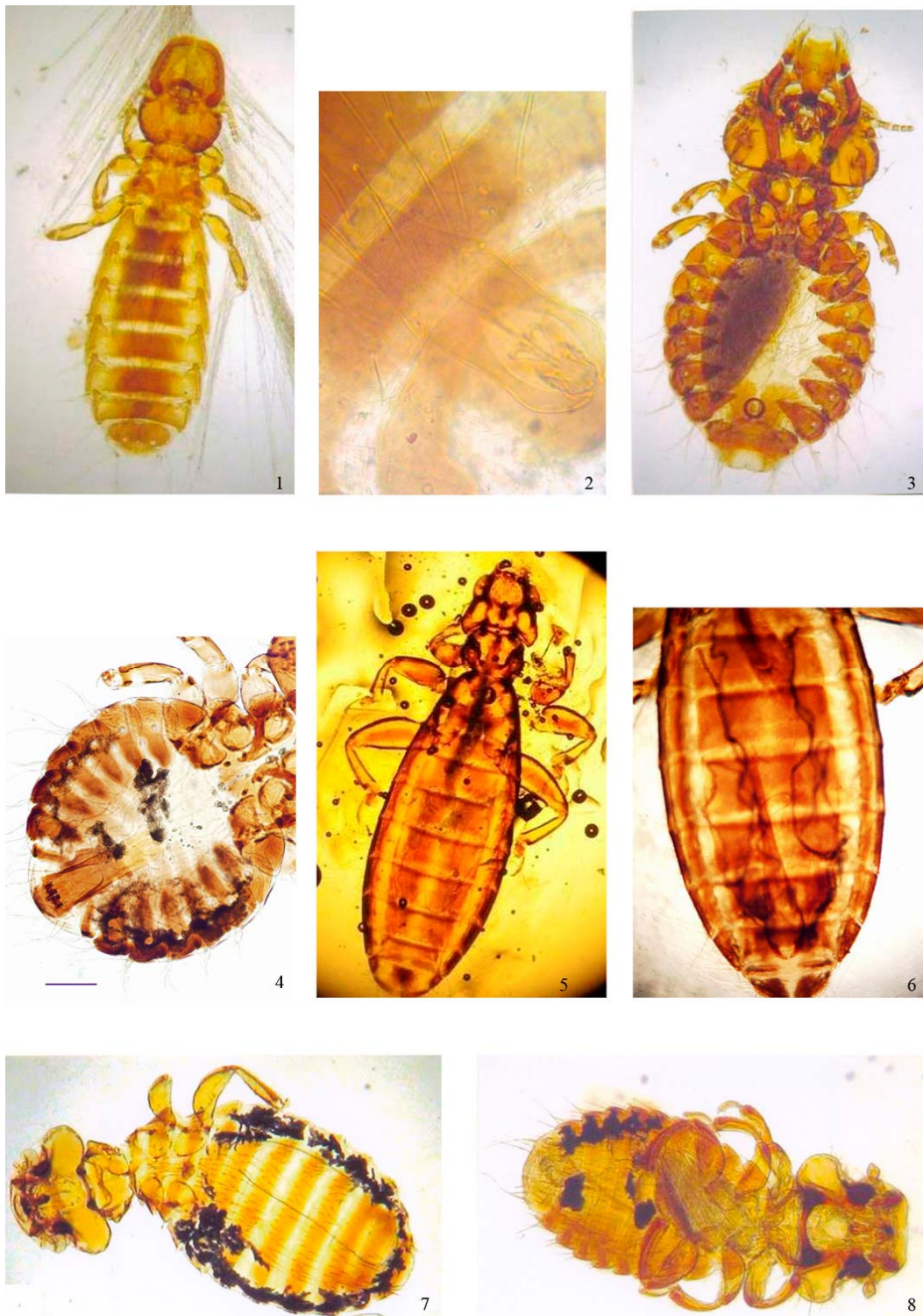


Figure 1. *Degeeriella fulva*, ♀; 2. *D. fulva*, ♂, genitalia; 3. *Crasspedorhynchus platystomus*, ♀; 4. *C. platystomus*, ♂ genitalia; 5. *Laemobothrion maximum*, ♀; 6. *L. maximum*, ♂ genitalia; 7. *Colpocephalum* sp., ♀; 8. *Colpocephalum* sp., ♂

Price *et al.*, (7) stated that the genus *Colpocephalum* has ctenidia on only one abdominal sternite and head with strong occipital nodi. According to Nelson and Peer (6) the genus *Colpocephalum* characterized with the combs of short spiniform setae restricted to venter of femora III and abdominal sternite III, prominent preocular and occipital nodi, in female without ventral sclerites bearing setae between vulva and anus. These authors (6) noticed that the species belonging to *flavescens*, *impressum*, *osborni*, *turbinatum*, *zerafae* and *chelictiniae* groups have five long and three short setae on each side margin of prothorax. In present study, the specimens of the genus *Colpocephalum* had five long and three short setae on each side of prothorax in male, however, these setae on prothorax had already been broken in female. In addition, first and second legs, mid dorsal setae, occipital setae, marginal setae on abdomen and anal fringes had been destroyed in female. For this reason, it could not give an opinion about for the number and long of these setae. Male genitalia resembles to *C.flavescens*, *C.turbinatum* and *C.nanum*. Nevertheless, latero-posterior projections of genital sclerites had not visible clearly due to the slides' poor condition. However it may belonging to the *flavescens*, *turbinatum* or *osborni* groups because of the penis barbed. Structure of penis was considered as very similar to *C.flavescens* when text-figures of Price and Beer (6) are taken into account. In this study, the anus was oval like *C.flavescens* and not resemble to *C.nanum* and *C.turbinatum*'s. Therefore, specimens of *Colpocephalum* could not be identified at the level of species.

As a result, *Degeeriella fulva*, *Laemobothrion maximum*, *Craspedorhynchus platystomus* and *Colpocephalum sp* are reported for the first time from *Buteo rufinus* in Turkey.

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