

The Presence of Chewing Lice (Insecta: Phthiraptera) Species on Wild Quails (*Coturnix coturnix*)

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Abstract: This research was conducted to determine species of chewing lice (Phthiraptera) on wild quails (*Coturnix coturnix*). For this purpose, 30 wild quails obtained in different areas of Elazig province (the Eastern Anatolian region) of Turkey in 2006 and 2008 during the hunting season between August-October were examined in terms of ectoparasites. It was established that 19 (63.33%) wild quails were infested with at least one chewing lice species. A total of 53 chewing lice were collected from the infested quails and the diagnosis of them led to the discovery of three different species. Of the infested quails, 6 (31.58%) were found to have *Menacanthus abdominalis*, 12 (63.15%) were found to have *Cuclotogaster cinereus* and 1 (5.27%) was found to have *Goniodes astrocephalus*. In this study, the evidence of *Menacanthus abdominalis*, *Goniodes astrocephalus* and *Cuclotogaster cinereus* on wild quails is reported for the first time in Turkey.

Key words: Chewing lice, quail, *Coturnix coturnix*, *M. abdominalis*, *C. cinereus* and *G. astrocephalus*, Turkey

INTRODUCTION

Species of chewing lice (Phthiraptera: Amblyocera, Ischnosera) have a significant place among the winged ectoparasites. The wild birds often are infected with chewing lice ectoparasites (Keymer, 1972). Chewing lice living mainly on the feathers, ischnocerans lice feed on keratinized cells and feathers of the host skin and their movement causes irritation, weakening, shedding of feathers and a decrease in productivity, while living mainly on the skin, amblyoceran lice feed on blood and lymph fluid, may cause irritation of the skin, restlessness, overall weakening, cessation of feeding, loss of weight, inferior laying capacity and skin lesion that may become secondary infection and are therefore more pathogenic, causing death in cases of heavy infestation (Mullen and Durden, 2002). It was reported in studies carried out in various countries that quails were infested with *M. abdominalis*, *C. cinereus* and *G. astrocephalus* (Aguirre and Gallego-Berenger, 1984; Doster *et al.*, 1980; Kellog and Chapman, 1899; Rekasi *et al.*, 1997; Otify, 1988). Price *et al.* (2003) reported that the *M. abdominalis*, *C. cinereus* and *G. astrocephalus* were found on galliformes (Phasianidae) suborder of birds.

However, Martin-Mateo (2006) stated that *M. abdominalis*, *C. cinereus* and *G. astrocephalus* were found on wild quails in Spain.

Manila and Cicolani (1985) recorded that they found *G. astrocephalus* and *Amyridea* sp. on quail (*Coturnix coturnix*). There is very little information on species of

chewing lice on wild quails. This study was conducted to determine species of chewing lice on wild quails in Turkey.

MATERIALS AND METHODS

Collection of wild quail: The present survey was conducted to determine species of chewing lice on wild quails. For this purpose, 30 wild quails (Galliformes: Phasianidae) captured from different areas of Elazig province (the Eastern Anatolian region) of Turkey in 2006 and 2008 during the hunting season between August-October were killed. Each quail was brought to the laboratory in a transparent bag and their protocols were noted.

Laboratory method and identification: Transparent bag was placed immediately on freezing until it could be examined for ectoparasites. Each frozen quail was kept for approximately 30 min at room temperature before inspection. Thereafter, each quail was placed in a white tray and thoroughly brushed for collection of ectoparasites.

The ectoparasites were collected under a stereomicroscope by needle. The lice collected were transferred into petri dishes containing 70% alcohol and each dish was assigned a number. The lice were kept in lactophenol for 7 days for the transparenting procedure. Transparented lice were mounted on slides with Fourie Forte medium and examined under a microscope. Transparented lice were examined under a microscope



Fig 1: *Menacanthus abdominalis*, male



Fig 2: *Cuscutogaster cinereus*, male

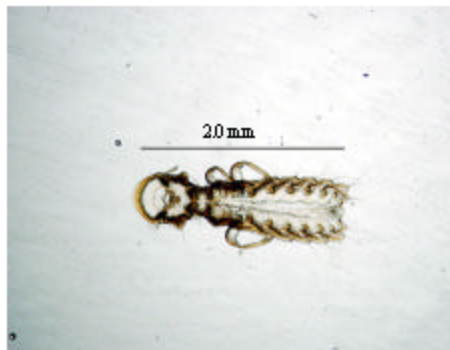


Fig 3: *Goniodes astrocephalus*, male

M. abdominalis (Fig. 1), *C. cinereus* (Fig. 2) and *G. astrocephalus* (Fig. 3) were identified according to literature data (Ansari, 1947, 1951; Séguy, 1944).

Statistical analysis: The following statistical analyses were carried out after Margolis *et al.* (1982).

RESULTS AND DISCUSSION

Out of the 30 wild quails examined throughout the study, ectoparasites were found on 19 (63.33%) and quails

Table 1: Chewing lice collected from wild quail on a host of species distribution (prevalance, abundance, mean intensity)

Chewing lice species collected	No. of host infested/ examined	Prevalance (%)	Mean intensity	
			Abundance	Mean intensity
<i>Menacanthus abdominalis</i>	6/80	31.58	56.66	89.47
<i>Cuscutogaster cinereus</i>	12/80	63.15	86.67	136.84
<i>Goniodes astrocephalus</i>	1/80	5.27	33.33	52.63
Total	19/80	63.33	176.66	278.94

were infested with at least one ectoparasite species. A total of 53 samples of chewing lice belonging to three species were collected from wild quails. The *M. abdominalis* male of this species is 1.6 mm in length and the female is 1.8 mm in length (Fig. 1).

The *C. cinereus* male of this species is 1.6 mm in length and female is 1.7 mm in length (Fig. 2). The *G. astrocephalus* male of this species is 3 mm in length and the female is 2.2 mm in length (Fig. 3). The prevalence of chewing lice species on infested quails is as follows: 6 (31.58%) *M. abdominalis*, 12 (63.15%) *C. cinereus* and 1 (5.27%) *G. astrocephalus* (Table 1).

The highest number of ectoparasites collected from the infested quails are 26 (49.05%) *C. cinereus* which was followed by 17 (32.08%) *M. abdominalis* and the lowest numbers collected are 10 (18.87%) *G. astrocephalus* (Table 2).

C. cinereus was found with the highest prevalence, abundance and mean intensity, followed *M. abdominalis* was found with the medium prevalence, abundance and mean intensity, while *G. astrocephalus* showed the lowest prevalence abundance and mean intensity of infestation (Table 1). A total of 53 chewing lice were collected in according to stage of development are shown in Table 2.

There is only a limited number of studies about the species of chewing lice on wild and domestic quails. Species *M. abdominalis*, *C. cinereus* and *G. astrocephalus* are common on quail birds (Aguirre and Gallego-Berenger, 1984; Doster *et al.*, 1980; Kellog and Chapman, 1899; Rekasi *et al.*, 1997; Oüfy, 1988).

Ansari (1951) reported that the measurements of *M. abdominalis* male 1.163-1.290 mm in length and the female 1.819-1.924 in length. According to the same researcher (1947) described that the measurements *C. cinereus* male 1.478-1.665 mm length and the female 1.692-1.906 mm length, while the species *G. astrocephalus* male 2.051-0.605 mm length and female 1.819-1.924 mm length. Doster *et al.* (1980) reported that they found 13% *M. pricei*, 25% *Colinicola numidiana*, 47% *Goniodes ortygis* and 63% *Oxylipurus clavatus* on bobwhite quails (*Colinus virginianus*) in southeastern states. Manila and Cicolari (1985) recorded that they found *G. astrocephalus* and *Amyridea* sp. on quail (*Coturnix coturnix*) in Abruzzo.

Table 2: Species and numbers of chewing lice collected from infested quail in according to the development phase

Ectoparasite sp.	Infestation rate % (Female/total) (n)	Infestation rate % (Male/total) (n)	Infestation rate % (immature/total) (n)	Infestation rate % total (n)
<i>M. abdominalis</i>	16.98 (9/53)	11.32 (6/53)	3.78 (2/53)	32.08 (17/53)
<i>C. cinereus</i>	22.64 (12/53)	18.87 (10/53)	7.54 (4/53)	49.05 (26/53)
<i>G. astrocephalus</i>	11.32 (6/53)	7.54 (4/53)	-	18.87 (10/53)
Total	50.94 (27/53)	37.73 (20/53)	11.32 (6/53)	100 (53)

Khan *et al.* (2008) reported that *M. abdominalis* and *C. cinereus* on the grey quails. In the present study, out of the 30 wild quails examined, 19 (63.33%) were infested with 6 (31.58%) with *M. abdominalis*, 12 (63.15%) *C. cinereus* and 1 (5.27%) *G. astrocephalus*. Species of lice recorded on wild quails in this study are consistent with the report cited earlier.

CONCLUSION

In this study, the evidence of *Menacanthus abdominalis*, *Goniodes astrocephalus* and *Cuclotogaster cinereus* on wild quails is reported for the first time in Turkey.

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REFERENCES

Aguirre, J.M. and J. Gallego-Berenger, 1984. *Colocera piageti* (Johnson and Harrison, 1912), *Cuclotogaster cinereus cinereus* (Nitzsch, 1866) and *Ornithobius bucephalus* (Giebel, 1874) (Mallophaga: Ischnocera) in Spanish domestic birds. *Rev. Iber. Parasitol.*, 44: 227-233.

Ansari, M.A.R., 1947. Mallophaga (Ischnocera) infesting birds in the Punjab (India). *Proc. Natl. Inst. Sci. India*, 13: 253-303.

Ansari, M.A.R., 1951. Mallophaga (Amblycera) infesting birds in the Panjab (India). *Proc. Natl. Inst. Sci. India*, 17: 127-203.

Doster, G.L., N. Wilson and F.E. Kellogg, 1980. Ectoparasites collected from bobwhite quail in the southeastern United States. *J. Wildl. Dis.*, 16: 515-520.

Kellog, V.L. and B.L. Chapman, 1899. Mallophaga from birds of California. (With Plates V to IX.) California academy of sciences. *Occas. Pap. Calif. Acad. Sci.*, 6: 53-143.

Keymer, I.F., 1972. Diseases of birds of prey. *Vet. Rec.*, 90: 579-594.

Khan, V., S. Kumar, N. Gupta, A. Ahmad and A.K. Saxena, 2008. Prevalence of phthirapteran ectoparasite on poultry. *Indian Vet. J.*, 85: 447-448.

Manila, G. and B. Cicolani, 1985. Mallophaga found on birds in Abruzzo. *Riv. Parassitol.*, 44: 217-232.

Margolis, L., G.W. Esch, J.C. Holmes, A.M. Kuris and G.A. Schad, 1982. The use of ecological terms in parasitology (Report of an ad hoc committee of the American Society of Parasitologists). *J. Parasitol.*, 68: 131-133.

Martin-Mateo, M.P., 2006. Diversity and distribution of species of Mallophaga (Insecta) on birds and mammals from Comunidad de Madrid. *Graellsia*, 62: 21-32.

Mullen, G.R. and L.A. Durden, 2002. *Medical and Veterinary Entomology*. Academic Press, London, pp: 597.

Otify, Y.Z., 1988. Mallophaga of quails (*coturnix coturnix*) in Egypt. *J. Egypt. Soc. Parasitol.*, 18: 705-709.

Price, R.D., R.A. Hellenthal, R.L. Palma, K.P. Johnson and D.H. Clayton, 2003. The chewing lice: World checklist and biological overview. *Illinois Natural History Survey Special Publication No. 24*, pp: 501.

Rekasi, J., J.B. Kiss and Z.S. Török, 1997. Data on the bird lice (Mallophaga) parasiting the bird species of the Danube Delta (Romania). *Anal. Stiinþ ale Inst. Delta Dunării*, 5: 41-46.

Séguy, E., 1944. *Insectes ectoparasites (Mallophages, Anoploures, Siphonaptères)*, 43. *Faune de France*. Paul Lechevalier et Fils, Paris, pp: 684.