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The Presence of Chewing Lice (Insecta: Phthiraptera) Species on Wild Grey Partridge (*Perdix perdix canescens*)

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Abstract: This research was conducted to determine species of chewing lice (Phithiraptera) on wild grey partridge (*Perdix perdix canescens*) (Galliformes: Phasianidae). For this purpose, 36 wild grey partridges, obtained in different areas of Elazig, Tunceli, Bingol, Erzurum provinces (the Eastern Anatolian region) of Turkey in 2006 and 2009, during the hunting season between October-January were examined in terms of ectoparasites. It was established that 21 (59.00%) wild grey partridges were infested with at least one chewing lice species. A total of four chewing lice were collected from the infested grey partridges and the diagnosis of them led to the discovery of four different species. Of the infested grey partridges, 8 (22%) were found to have *Goniodes dispar*, 6 (17%) were found to have *Goniocotes microthorax*, 5 (14%) were found to have *Cuclotogaster heterogrammicus* and 2 (6%) was found to have *Amyrsidea perdicis*. In this study, the evidence of *G. dispar*, *G. microthorax*, *C. heterogrammicus* and *A. perdicis* on wild grey partridges is reported for the first time in Turkey.

Key words: Chewing lice, grey partridge, *Perdix perdix canescens*, hunting season, wild grey, Turkey

INTRODUCTION

Species of chewing lice (Phthiraptera: Amblycera, Ischnocera) have a significant place among the birds. The wild birds often are infested 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, amblyceran lice may 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). Price *et al.* (2003) reported that the *G. dispar*, *G. microthorax*, *C. heterogrammicus* and *A. perdicis* were found on galliformes birds (Phasianidae). It was reported in studies carried out in various countries that grey partridge (*Perdix perdix canescens*) were infested with *Goniocotes microthorax*, *Goniodes dispar*, *Cuclotogaster heterogrammicus* and *Amyrsidea perdicis* (Aksin, 2003; Malcomson, 1960; Martinez *et al*., 1981; Sychra, 2005). On the other hand, there is very parasitological characteristic such as prevalence, mean abundance or mean intensity of particular species of chewing lice on wild grey partridges. This study was conducted to determine species of chewing lice and present their parasitological characteristics on grey partridges in Turkey.

MATERIALS AND METHODS

Collection of wild grey partridge: The present survey was conducted to determine species of chewing lice on wild grey partridges. For this purpose, 36 wild grey partridges (Galliformes: Phasianidae) captured from different areas of Elazig, Tunceli, Bingol, Erzurum province (the Eastern Anatolian region) of Turkey in 2006 and 2009, during the hunting season between October-January were shot. Each grey partridge was brought to the laboratory in a transparent bag and their protocols were noted.

Laboratory methods and identification: Transparent bag was placed immediately on freezer until, it could be examined for ectoparasites. Each frozen grey partridge was kept for approximately 30 min at room temperature before inspection. Thereafter, each grey partridge was placed in a white tray and thoroughly brushed for collection of ectoparasites. The ectoparasites were collected under a stereo-microscope by needle. The lice collected were transferred into petri dishes containing 70% alcohol and each dish was assigned a number. The

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lice were kept in lactophenol for 7 days for the transparenting procedure. Transparented lice were mounted on slides in Foure forte medium and examined under a microscope. The chewing lice were were identified according to literature data (Clay, 1938, 1940; Modrzejewska and Zlotorzycka, 1987; Seguy, 1944).

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

RESULTS AND DISCUSSION

Out of the 36 wild grey partridge examined throughout the study, ectoparasites were found on 21 (59%) and grey partridges were infested with at least one species of chewing louse. Four species of lice were determined: *G. dispar*, *G. microthorax*, *C. heterogrammicus* and *A. perdicis*. A total of 121 samples of chewing lice belonging to four species were collected from wild grey partridges. The prevalence of chewing lice species on infested grey partridges is as follows: 8 (22%) *G. dispar*, 6 (17%) *G. microthorax*, 5 (14%) *C. heterogrammicus* and 2 (6%) *A. perdicis* (Table 1). The highest number of ectoparasites collected from the infested grey partridges are 42 dominance (35%) *G. microthorax* which was followed by 38 (31%) *G. dispar* and 31 (26%) *C. heterogrammicus*, the lowest numbers collected are 10 (8%) *A. perdicis* (Table 2).

G. microthorax was found with the highest prevalence, abundance and mean intensity followed *G. dispar* and *C. heterogrammicus* was found with the medium prevalance, abundance and mean intensity while *A. perdicis* showed the lowest prevalence abundance and mean intensity of infestation (Table 1). A total of 121 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 grey partridges. Species *G. dispar*, *G. microthorax*, *C. heterogrammicus* and *A. perdicis* are common on grey partridge (Clay, 1938, 1940; Price *et al*., 2003; Malcomson, 1960; Modrzejewska and Zlotorzycka, l987). Keler reported that they found *G. dispar*, *G. microthorax*, *C. heterogrammicus* and *A. perdicis* were found on grey partridge. Martinez *et al*. (1981) reported that they found *G. dispar*, *G. colchici*, *M. pallens*, *C. heterographus* ve *C. heterogrammicus* were found on partridges in Spain. In Turkey, Aksin (2003) recorded *G. dispar*, *G. pusillus* and *M. lyali* on wild partridges. Sychra (2005) reported were found *G. colchici*, 90.1%; *L. maculosus*, 50.9%; *G. microthorax*, 100%; *C. heterographus*, 100%, *A. perdicis*, 16.4%; *M. pallidulus*, 32.7% and *M. gallinae*, 0.8% on 120 chukars partridge were examined for lice.

In the present study, out of the 36 wild grey partridge examined, 21 (59%) were infested with 8 (22%) with *G. dispar*, 6 (17%) *G. microthorax*, 5 (14%) *C. heterogrammicus* and 2 (6%) *A. perdicis*. Species of lice recorded on wild grey partridges in this study are consistent with this study.

Table 1: Chewig lice collected from wild grey partridgeg on a host of species distribution (prevalence, abundance, mean intensity)

Chewing lice species collected	No. of host infested/ examined	Prevalence (%)	Abundance	Mean intensity
Goniocotes microthorax	6/36	17	116.67	200.00
Goniodes dispar	8/36	22	105.55	180.95
Cuclotogaster heterogrammicus	5/36	14	86.11	147.62
Amyrsidea perdicis	2/36	6	27.78	47.62
Total	21/36	59	336.11	576.19

Table 2: Species and numbers of chewing lice collected from infested grey partridgeg in acording to the development phase

	Infestation rate			
Louse species	Female/ total (%)	Male/ total (%)	Immature/ total (%)	Total (%)
	n			
G. microthorax	13 (16/121)	15 (18/121)	7 (8/121)	35 (42/121)
G. dispar	12 (14/121)	9 (11/121)	11 (13/121)	31 (38/121)
C. heterogrammicus	7 (9/121)	11 (13/121)	7 (9/121)	26 (31/121)
A. perdicis	5 (6/121)	3 (4/121)	-	8 (10/121)
Total	37 (45/121)	38 (46/121)	25 (30/121)	100 (121)

CONCLUSION

In this study, the evidence of *G. microthorax*, *G. dispar*, *C. heterogrammicus* and *A. perdicis* on wild grey partridges is reported for the 1st time in Turkey.

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