

A preliminary study on the birds of the Istranca Mountains, Turkey

Selcuk YURTSEVER and Cengiz KURTONUR

Received: 25 Feb., 2002

Resubmitted: 7 May, 2002

Accepted for publication: 10 Dec., 2002

YURTSEVER S., KURTONUR C. 2003. A preliminary study on the birds of the Istranca Mountains, Turkey. *Acta zoologica cracoviensia*, **46**(1): 19-28.

Abstract. The bird species in the three different vegetation zones – dry forests, humid forests, and coastal plain – of the Istranca Mountains in north-western Turkey were investigated. A total of 79 days of observations consisting of 17 months were performed on a fifty-one kilometre line, transecting the mountains. One hundred and forty-nine bird species were determined during the weekly periodic observations carried out between early 1989 and late 1990. Of these 55 were resident, 24 were winter visitors, and 62 were summer migrants. Eight species were seen occasionally and were therefore described as accidental. The statistical tests revealed that the frequencies of the resident, winter visitor, and summer migrants were different in the study area in which winter visitors were fewer than the resident and summer migrants. The frequencies of the bird species in the three different zones regarding the pooled data also different that the dry forests had fewer bird species than the coastal plain.

Key words: Avifauna, ecology, biogeography, Istranca Mountains, Turkey.

Selcuk YURTSEVER, Cengiz KURTONUR, Department of Biology, Faculty of the Arts and Science, Trakya University, 22030, Edirne, Turkey.

E-mail: populuscom@hotmail.com

cengizk@trakya.edu.tr

I. INTRODUCTION

Along with its distinctive zoogeography and habitat diversity, Turkey has been known as one of the important ornithological areas for many bird species. This is because the two parts, Anatolia and Trakya regions in the country occupy significant crossroads along the migratory routes of many bird species. There have been several attempts to compile a list of the bird species inhabiting Turkey. One of the first, dealing with the birds of Turkey, was achieved by ERGENE (1945) in which the presence of about 403 different bird species in the country may be mentioned. Although ERGENE's work was a very valuable contribution to the Turkish avifauna, it was mainly based on the literature. Similar review-like books regarding the Turkish avifauna have included BARAN & YILMAZ (1984), KIZIROGLU (1989), and KENCE & BILGIN (1996).

Early studies dealing with Turkish avifauna have consisted of brief field records (WADLEY 1951; KASPARYAN 1956; KUMERLOEVE 1962, 1970; TOPCUOGLU 1967; WIELLIARD 1968). Recent reports have mainly been focused on certain wetlands (AYVAZ 1991, 1993). A few studies have concerned with population studies and behaviour (TURAN 1990; ERDOGAN 1998). Consequently, the total number of the bird species recorded in all those studies concerning Turkey, amounts to around 450.

The extensive maps in numerous field handbooks, including HEINZEL et al. (1987), PERRINS & ATTENBOROUGH (1987), KIZIROGLU (1989), and CRAMP (2000), have shown the bird species and their migratory status covering the Istranca Mountains. The distributions of the majority of bird species throughout the Palearctic in those maps were sometimes be compared accurately. KIZIROGLU (1989) provided a list for Turkish birds indicating endangering levels according to the "Red Data Book" of the IUCN. A few studies have dealt with the birds of Turkish Trakya, but a number of bird species from the Istranca Mountains, nearby Istanbul have been recorded (KUMERLOEVE 1962, 1970). The present paper deals with the bird species recorded on the Istranca Mountains and emphasises the ornithological importance of the area.

A c k n o w l e d g e m e n t s. The authors would like to thank Dimitar NANKINOV, Zbigniew GŁOWACIŃSKI, and Zygmunt BOCHENSKI for kindly reviewing the manuscript.

II. STUDY AREA AND METHODS

The study area is situated on the Istranca Mountains (Fig. 1). A line transecting the mountains was established for the observations. This 51 km line was between the town of Vize (41° 34'N; 27° 45'E) which is located at just nearby the Istranca Mountains, and the Saka Lake which is located on the coastal plain by the Black Sea. The study line included three different vegetation zones (DONMEZ 1968). These zones were as follows;

(1) Dry forests: Located between the town of Vize and about 10 km north of Komurkoy village. This zone is characterised by mixed oak (*Quercus* spp.) forests, having an average annual precipitation of 700 mm, the average altitude in this part of the study area being 250 m. This zone also includes cultivated patches opened in the forests, which are used mainly for wheat, corn, and sunflower agriculture.

(2) Humid forests: Located at between 10 km north of Komurkoy village and about 13 km north of Kizilagac village. This zone is characterised by beech forests (*Fagus orientalis*) and rhododendron (*Rhododendron ponticum*) plants. Average annual precipitation in this zone is 1100 mm while the average altitude in this part of the study area is 600m.

(3) Coastal plain: The remaining 11 km of the observation line is situated on the Black Sea coast of the Istranca Mountains. This zone involves very variable habitats in the coastal plain of the mountains. Several small lakes and marshland resulting from many streams and deltas reaching to the Black Sea are situated in this zone. Average annual precipitation here is more or less as in humid forests.

The data for the present paper were derived from an investigation performed in these zones between March 1989 and July 1990. A total of 79 days of observations consisting of 17 months were performed. The observations were carried out periodically at about 10 days intervals. Two subsequent days were spent in the field for each observation period. A 250-cc. motorbike and a binocular with 7x45 magnification were used for roadside observations. Each observation period was performed between sunrise and dusk. The number of the birds, their particular habitats, songs, nests, and juveniles seen during the observations were recorded. The bird identifications were made with the aid of the field handbooks (HEINZEL et al. 1987; PERRINS & ATTENBOROUGH 1987; KIZIROGLU 1989). The systematic list in this paper follows HEINZEL et al. (1987).

The migratory state of the bird species is categorised into four groups based on the data obtained throughout the study. These categories are as follows: (1) Residents: present throughout the year. (2) Winter visitors: occur in winter, these birds being seen in the area between early autumn and late winter, (3) Summer migrants: present in summer, seen between early spring and late summer, (4) Accidental species: these are seen occasionally.

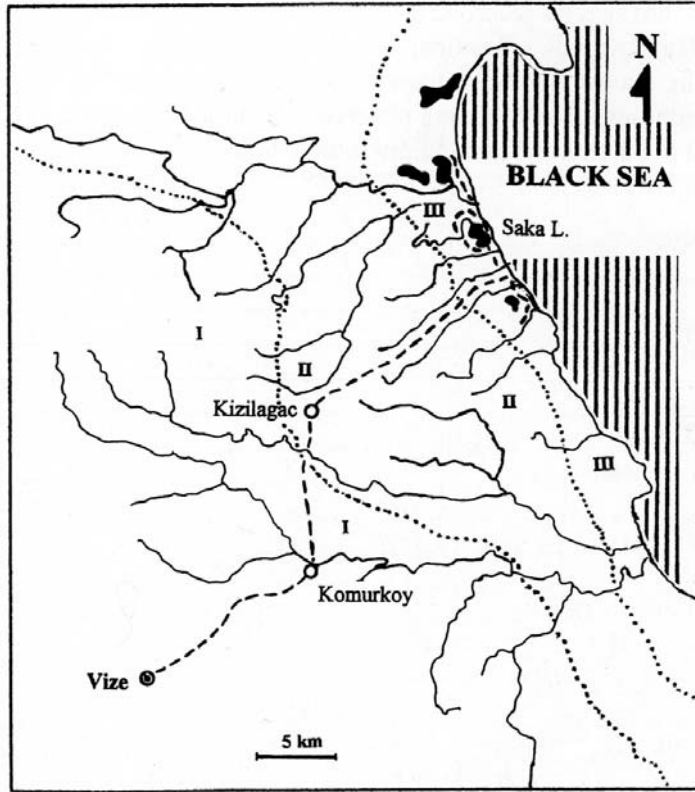


Fig. 1. Map of the study area on the Istranca Mountains showing the streams, lakes (painted in dark) and three towns on the observation line (dashed line). Three vegetation zones (I: dry forests, II: humid forests, III: coastal plain) are separated by the dotted lines.

Statistical analyses: The raw data are given in Table I. Statistical methods were obtained from FOWLER et al. (1998). The *G*-test was used where one-way classification of the bird species frequencies were analysed. Williams' correction factor was applied in the *G*-test – irrespective of the number of degrees of freedom. Yates' correction was applied where there were only two categories regarding the bird species numbers. Accidental species were excluded from the statistical analyses dealing with the migratory status, but were included in the analyses dealing with the research zones where they were recorded.

III. RESULTS

A total of 149 different bird species (Table I) belonging to 90 genera, 48 families, and 18 orders were recorded in the study area. Of the 149 species, 55 were resident, 24 winter visitors, while 62 were summer migrants (Fig. 2). Eight species were seen occasionally and were described as accidental in the area. Seventy-seven bird species were observed to breed in the area, because their nestlings, or immature individuals were traced. However, the breeding bird species number in the area must be much more than 77, since, the majority of the 62 summer migrants visit the area for breeding purposes and there are 55 resident species.

Table I

The list of bird species recorded along the transect crossing three zones on the Istranca Mountains. Key: R – Resident, W – Winter visitor, S – Summer migrant, A – Accidental (the season that the species recorded in winter, summer or both are indicated in parentheses). The breeding observed (B) in a given zone during the study was indicated in parentheses next to migratory status

Species	Zone		
	I	II	III
GAVIIDAE			
<i>Gavia arctica</i> (LINNAEUS, 1758)			R
PODICIPEDIDAE			
<i>Podiceps cristatus</i> (LINNAEUS, 1758)			W
<i>Podiceps griseigena</i> (BODDAERT, 1783)			W
<i>Tachybaptus ruficollis</i> (PALLAS, 1764)			W
PROCELLARIDAE			
<i>Puffinus puffinus</i> (BRUNNICH, 1764)			W
PHALOCROCORACIDAE			
<i>Phalacrocorax aristotelis</i> (LINNAEUS, 1761)			W
<i>Phalacrocorax carbo</i> (LINNAEUS, 1758)			W
<i>Phalacrocorax pygmeus</i> (PALLAS, 1773)			W
ARDEIDAE			
<i>Ardea cinerea</i> LINNAEUS, 1758			R
<i>Ardea purpurea</i> LINNAEUS, 1766			S(B)
<i>Egretta alba</i> (LINNAEUS, 1758)			W
<i>Egretta garzetta</i> (LINNAEUS, 1766)			S
<i>Ardeola ralloides</i> (SCOPOLI, 1769)			S
<i>Nycticorax nycticorax</i> (LINNAEUS, 1758)			S
<i>Botaurus stellaris</i> (LINNAEUS, 1758)			S
THRESKIORNITHIDAE			
<i>Platalea leucorodia</i> LINNAEUS, 1758			S
<i>Plegadis falcinellus</i> (LINNAEUS, 1766)			S
CICONIIDAE			
<i>Ciconia ciconia</i> (LINNAEUS, 1758)	S(B)	S(B)	S
<i>Ciconia nigra</i> (LINNAEUS, 1758)		S	S(B)
ANATIDAE			
<i>Anas platyrhynchos</i> LINNAEUS, 1758			R(B)
<i>Anas querquedula</i> LINNAEUS, 1758			S(B)
<i>Aythya fuligula</i> (LINNAEUS, 1758)			W
<i>Aythya ferina</i> (LINNAEUS, 1758)			W
<i>Mergus serrator</i> (LINNAEUS, 1758)			W
ACCIPITRIDAE			
<i>Heliaeetus albicilla</i> (LINNAEUS, 1758)			W
<i>Accipiter nisus</i> (LINNAEUS, 1758)	R	R	R
<i>Accipiter brevipes</i> (SEVERTZOFF, 1850)			S
<i>Accipiter gentilis</i> (LINNAEUS, 1758)			S
<i>Buteo buteo</i> (LINNAEUS, 1758)	R	R(B)	R(B)
<i>Neophron percnopterus</i> (LINNAEUS, 1758)	S		S

Species	Zone		
	I	II	III
FALCONIDAE			
<i>Falco peregrinus</i> TUNSTALL, 1771			S
<i>Falco subbuteo</i> LINNAEUS, 1758		S	
<i>Falco tinnunculus</i> LINNAEUS, 1758		S	
PHASIANIDAE			
<i>Alectoris chukar</i> (J. A. GRAY, 1830)		A(S)	
<i>Coturnix coturnix</i> (LINNAEUS, 1758)	S(B)	S(B)	
GRUIDAE			
<i>Grus grus</i> (LINNAEUS, 1758)			A(WS)
RALLIDAE			
<i>Rallus aquaticus</i> LINNAEUS, 1758			S(B)
<i>Gallinula chloropus</i> (LINNAEUS, 1758)			S(B)
CHARADRIIDAE			
<i>Charadrius dubius</i> SCOPOLI, 1786			S(B)
SCOLOPACIDAE			
<i>Calidris minuta</i> (LEISLER, 1812)		S	S
<i>Tringa totanus</i> (LINNAEUS, 1758)		R	R(B)
<i>Actitis hypoleucos</i> (LINNAEUS, 1758)			S
<i>Scolopax rusticola</i> LINNAEUS, 1758			W
LARIDAE			
<i>Larus argentatus</i> PONTOPPIDAN, 1763			R(B)
STERNIDAE			
<i>Sterna hirundo</i> (LINNAEUS, 1758)			S
COLUMBIDAE			
<i>Columba livia</i> GMELIN, 1789	R(B)	R(B)	R(B)
<i>Columba oenas</i> LINNAEUS, 1758	R(B)	R(B)	
<i>Columba palumbus</i> LINNAEUS, 1758		R(B)	R(B)
<i>Streptopelia decaocto</i> (FRIVALDSKY, 1838)	R(B)	R(B)	
<i>Streptopelia turtur</i> (LINNAEUS, 1758)	S(B)	S(B)	S(B)
CUCULIDAE			
<i>Cuculus canorus</i> LINNAEUS, 1758	S	S	S
STRIGIDAE			
<i>Asio otus</i> (LINNAEUS, 1758)	A(W)		
<i>Athene noctua</i> (SCOPOLI, 1769)	R(B)	R(B)	
<i>Strix aluco</i> LINNAEUS, 1758			A(S)
CAPRIMULGIDAE			
<i>Caprimulgus europaeus</i> LINNAEUS, 1758		S	
APODIDAE			
<i>Apus apus</i> (LINNAEUS, 1758)		S	
<i>Apus melba</i> (LINNAEUS, 1758)		S	
MEROPIIDAE			
<i>Merops apiaster</i> LINNAEUS, 1758	S(B)	S(B)	S(B)
CORACIDAE			
<i>Coracias garrulus</i> (LINNAEUS, 1758)	S(B)	S(B)	
ALCEDINIDAE			
<i>Alcedo atthis</i> (LINNAEUS, 1758)		R	R(B)

Species	Zone		
	I	II	III
UPUPIDAE			
<i>Upupa epops</i> LINNAEUS, 1758	S(B)	S(B)	S(B)
PICIDAE			
<i>Dryocopus martius</i> (LINNAEUS, 1758)		A(W)	
<i>Picus canus</i> GMELIN, 1788	R(B)	R(B)	R(B)
<i>Picus viridis</i> LINNAEUS, 1758		R(B)	R(B)
<i>Dendrocopos syriacus</i> (EHRENBERG, 1833)	R(B)		
<i>Dendrocopos major</i> (LINNAEUS, 1758)	R(B)	R(B)	R(B)
<i>Dendrocopos medius</i> (LINNAEUS, 1758)		R(B)	R(B)
<i>Dendrocopos minor</i> (LINNAEUS, 1758)		R(B)	R(B)
JYNGIDAE			
<i>Jynx torquilla</i> LINNAEUS, 1758		S	
ALAUDIDAE			
<i>Calandrella brachydactyla</i> (LEISLER, 1814)		S	S
<i>Lullula arborea</i> (LINNAEUS, 1758)	R(B)	R(B)	
<i>Alauda arvensis</i> LINNAEUS, 1758	R(B)	R(B)	R(B)
<i>Galerida cristata</i> (LINNAEUS, 1758)	R(B)	R(B)	
HIRUNDINIDAE			
<i>Hirundo rustica</i> LINNAEUS, 1758	S(B)	S(B)	S(B)
<i>Delichon urbica</i> (LINNAEUS, 1758)	S(B)	S(B)	S(B)
MOTACILLIDAE			
<i>Anthus trivialis</i> (LINNAEUS, 1758)	S	S	S
<i>Anthus spinoletta</i> (LINNAEUS, 1758)			W
<i>Motacilla alba</i> LINNAEUS, 1758	R(B)	R(B)	R(B)
<i>Motacilla cinerea</i> TUNSTALL, 1771	R	R(B)	R(B)
<i>Motacilla flava</i> LINNAEUS, 1758			S
LANIIDAE			
<i>Lanius minor</i> GMELIN, 1788	S	S	S(B)
<i>Lanius nubicus</i> LICHTENSTEIN, 1823			S
<i>Lanius senator</i> LINNAEUS, 1758	S		
<i>Lanius collurio</i> LINNAEUS, 1758	S(B)	S(B)	S(B)
PRUNELLIDAE			
<i>Prunella modularis</i> (LINNAEUS, 1758)	W		
SYLVIIDAE			
<i>Acrocephalus arundinaceus</i> (LINNAEUS, 1766)			S
<i>Hippolais pallida</i> (EHRENBERG, 1833)	S	S(B)	S(B)
<i>Sylvia communis</i> LATHAM, 1787	S	S	S
<i>Sylvia curruca</i> (LINNAEUS, 1758)	S	S	
<i>Sylvia atricapilla</i> (LINNAEUS, 1758)	S(B)	S(B)	S(B)
<i>Sylvia melanocephala</i> (GMELIN, 1789)		SB	
<i>Phylloscopus collybita</i> (VIEILLOT, 1817)	R(B)	R(B)	R(B)
<i>Regulus regulus</i> (LINNAEUS, 1758)		W	W
MUSCICAPIDAE			
<i>Muscicapa striata</i> (PALLAS, 1764)	S(B)	S(B)	S(B)
<i>Ficedula hypoleuca</i> (PALLAS, 1764)			S(B)
<i>Ficedula parva</i> (BECHSTEIN, 1792)		S	S

Species	Zone		
	I	II	III
TURDIDAE			
<i>Saxiola torquata</i> (LINNAEUS, 1766)	S(B)	S(B)	
<i>Saxiola rubetra</i> (LINNAEUS, 1758)	S(B)	S(B)	S(B)
<i>Oenanthe oenanthe</i> (LINNAEUS, 1758)	S(B)	S(B)	
<i>Oenanthe isabellina</i> (TEMMINCK, 1829)	S(B)	S(B)	S(B)
<i>Oenanthe hispanica</i> (LINNAEUS, 1758)	S	S	
<i>Phoenicurus ochruros</i> (GMELIN, 1774)	W	W	W
<i>Phoenicurus phoenicurus</i> (LINNAEUS, 1758)		W	W
<i>Erithacus rubecula</i> (LINNAEUS, 1758)	R(B)	R(B)	R(B)
<i>Luscinia megarhynchos</i> (BREHM, 1831)	S(B)	S(B)	S(B)
<i>Turdus merula</i> LINNAEUS, 1758	R(B)	R(B)	R(B)
<i>Turdus torquatus</i> LINNAEUS, 1758		W	W
<i>Turdus pilaris</i> LINNAEUS, 1758		W	W
<i>Turdus philomelos</i> BREHM, 1831	R	R	R(B)
<i>Turdus viscivorus</i> LINNAEUS, 1758	R(B)	R(B)	R(B)
AEGITHALIDAE			
<i>Aegithalos caudatus</i> (LINNAEUS, 1758)		R	R(B)
PARIDAE			
<i>Parus ater</i> LINNAEUS, 1758			A(W)
<i>Parus major</i> LINNAEUS, 1758	R(B)	R(B)	R(B)
<i>Parus caeruleus</i> LINNAEUS, 1758	R(B)	R(B)	R(B)
<i>Parus palustris</i> LINNAEUS, 1758		R(B)	R(B)
<i>Parus lugubris</i> TEMMINCK, 1820		R	
SITTIDAE			
<i>Sitta europaea</i> LINNAEUS, 1758		R(B)	R(B)
CERTHIIDAE			
<i>Certhia brachydactyla</i> BREHM, 1820		R	R
TROGLODYTIDAE			
<i>Troglodytes troglodytes</i> (LINNAEUS, 1758)	R(B)	R(B)	R(B)
CINCLIDAE			
<i>Cinclus cinclus</i> (LINNAEUS, 1758)		R	
EMBERIZIDAE			
<i>Miliaria calandra</i> (LINNAEUS, 1758)	R(B)	R(B)	R(B)
<i>Emberiza cia</i> (LINNAEUS, 1758)	R	R	
<i>Emberiza citrinella</i> LINNAEUS, 1758	R(B)	R(B)	
<i>Emberiza cirlus</i> LINNAEUS, 1766	R(B)	R(B)	R(B)
<i>Emberiza melanocephala</i> SCOPOLI, 1769	S(B)	S(B)	
<i>Emberiza hortulana</i> LINNAEUS, 1758	S	S	
<i>Emberiza schoeniclus</i> (LINNAEUS, 1758)			W
FRINGILLIDAE			
<i>Fringilla montifringilla</i> LINNAEUS, 1758	W	W	
<i>Fringilla coelebs</i> LINNAEUS, 1758	R(B)	R(B)	R(B)
<i>Carduelis carduelis</i> (LINNAEUS, 1758)	R(B)	R(B)	R(B)
<i>Carduelis spinus</i> (LINNAEUS, 1758)	W	W	W
<i>Carduelis chloris</i> (LINNAEUS, 1758)	R(B)	R(B)	R(B)
<i>Carduelis cannabina</i> (LINNAEUS, 1758)	R(B)	R(B)	

Species	Zone		
	I	II	III
<i>Coccothraustes coccothraustes</i> (LINNAEUS, 1758)	R(B)	R(B)	R(B)
<i>Serinus serinus</i> (LINNAEUS, 1766)		A(S)	
<i>Carpodacus erythrinus</i> (PALLAS, 1770)			S
PASSERIDAE			
<i>Passer hispaniolensis</i> (TEMMINCK, 1830)	S(B)	S(B)	S(B)
<i>Passer montanus</i> (LINNAEUS, 1758)	R(B)	R(B)	
<i>Passer domesticus</i> (LINNAEUS, 1758)	R(B)	R(B)	R(B)
STURNIDAE			
<i>Sturnus vulgaris</i> LINNAEUS, 1758	R(B)	R(B)	R
<i>Sturnus roseus</i> (LINNAEUS, 1758)	S		
ORIOLIDAE			
<i>Oriolus oriolus</i> (LINNAEUS, 1758)	S(B)	S(B)	S(B)
CORVIDAE			
<i>Garrulus glandarius</i> (LINNAEUS, 1758)	R(B)	R(B)	R(B)
<i>Pica pica</i> (LINNAEUS, 1758)	R(B)	R(B)	R(B)
<i>Pyrrhocorax graculus</i> (LINNAEUS, 1766)	A(S)		
<i>Corvus corax</i> LINNAEUS, 1758	R(B)	R(B)	R
<i>Corvus frugilegus</i> LINNAEUS, 1758	W	W	
<i>Corvus corone cornix</i> LINNAEUS, 1758	R(B)	R(B)	R(B)
<i>Corvus monedula</i> LINNAEUS, 1758	R(B)	R(B)	

The statistical analyses showed that the frequencies of the resident, winter visitor, and summer migrant bird species differ in the study area (G -test = 19.285, d.f. = 2, $P < 0.001$). Further analyses showed (Table I) that the number of winter visitors is highly significantly lower than the resident and summer migrant bird species in the area.

Also, the pooled numbers of the bird species in the three different zones of the study area (Fig. 2) differ significantly ($G_{adj} = 6.485$, d.f. = 2, $P < 0.05$). It can be seen from Table II that the number of the bird species found in the dry forests is significantly lower than those found in the coastal plain. However, there is no difference between the dry forests and humid forests, nor between the humid forests and coastal plain regarding the numbers of the bird species.

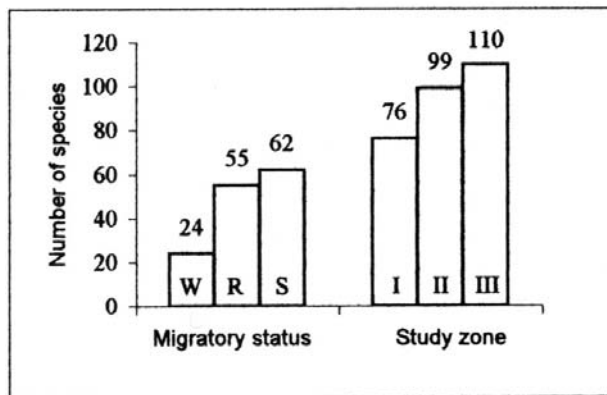


Fig. 2. The diagram of the frequency distributions for the bird species recorded on the Istranca Mountains. From left to right, the first three bars of the diagrams denote winter visitor (W), resident (R), and summer migrant (S) bird species respectively, the latter three bars denote the pooled numbers of the bird species recorded in the dry forests (I), humid forests (II), and coastal plain (III) respectively. The height of the bar indicates the numbers in groups mentioned above. The numbers in each group are given at the top of the bars.

Table II

Pairwise comparisons between the categories of bird species determined in the study area. Three asterisks indicate significance beyond the 0.001 probability level. N.S.; not significant at 0.05 level, (d.f. = 1). (Data derived from Fig. 2)

Comparison	χ^2
Resident v Winter visitor	12.177 (***)
Resident v Summer migrant	0.427 (N.S.)
Winter visitor v Summer migrant	16.802 (***)

Table III

Pairwise comparisons of the pooled numbers of bird species between the three vegetation zones in the study area. The asterisk indicates significance at the 0.05 probability level. N.S.; not significant at 0.05 level, (d.f. = 1). (Data derived from Fig. 2.)

Comparison	χ^2
Dry forests v Humid forests	3.027 (N.S.)
Dry forests v Coastal plain	6.220 (*)
Humid forests v Coastal plain	0.583 (N.S.)

IV. DISCUSSION

Although a total of 149 bird species were recorded in the area, the precise number of the bird species must be much higher than this estimation, because the present work was carried out along the line crossing the mountains. Therefore more detailed studies involving smaller quadrats in the area may reveal interesting results. In conclusion, it seems that the avifauna is highly diverse in the study area, possibly associating with a variety of natural habitats. However, the number of winter visitor birds is low, because the winters are usually very cold and long in the forests and heavy snow often occurs. For this reason, the area may be unattractive to the wintering birds, not sufficiently adapted to the area so well as the resident birds.

The dry forests have fewer bird species than the coastal plain since dry forests have less wetland and other water resources (e.g. streams, lakes) than have the coastal plain that provides more diverse habitats for a variety of bird species.

The records of the night birds, particularly owls, are few in this study, because it was performed daytime. If the study had included the night observations, more night birds and possibly more waterbirds would have been recorded. On the other hand, many birds of prey have already been severely endangered and therefore may have been encountered occasionally during the observations.

Preliminary results from the present study are generally in good agreement with extensive Palearctic bird maps of HEINZEL et al. (1987), PERRINS & ATTENBOROUGH (1987) KIZIROGLU (1989), and CRAMP (2000) which also cover the Istranca Mountains. However in the present work, the migratory state of eight species are not clear, because they were seen only a few times in the area. Five of the eight accidental species, *Grus grus*, *Alectoris chukar*, *Asio otus*, *Strix aluco* and *Dryocopus martius*, are endangered birds and are found in the list of KIZIROGLU (1989). This may be one of the fundamental reasons why they were a few times observed during the investigation. However, the state of the other accidental species, *Serinus serinus*, *Parus ater* and *Pyrrhocorax graculus* is still not clear.

KUMERLOEVE (1962, 1970) recorded *Phasianus colchicus*, *Bombicilla garrulus*, *Pyrrhula pyrrhula*, and *Loxia curvirostra* on the Istranca Mountains near Istanbul. During this study, those four species have never been seen. Three of those species have also been known endangered birds (KIZIROGLU 1989). On the other hand, all of these four species have been reported to occur in Bulgaria (NANKINOV 1992), just near the study area. Hence, these birds would be expected to occur during the observations. Therefore, the gap in the recording dates of KUMERLOEVE (1962, 1970) and NANKINOV (1992) suggest that these birds do not often visit the area. Because the habitats, particularly for the *Phasianus colchicus*, may have been seriously destroyed during the last decades. Also, the presence of any of these birds has not yet been indicated by the authors' progressing work near the Bulgarian border of the area.

In the study area, the most common and abundant resident bird species were *Fringilla coelebs* and *Parus major*, while the most common and abundant migratory ones were *Lanius collurio* and *Streptopelia turtur*. On the other hand, individual numbers of many bird species were very few indeed (data will be published elsewhere).

It seems that the population numbers of many bird species are dramatically decreasing, possibly because of the destruction of natural habitats in several different ways. Many streams that are ultimate sources for numerous deltas where water birds are desperately dependent in the area are getting dryer day after day. Hence, sustained conservation initiatives will benefit not just avifauna, but all wildlife where birds exist, and in this way, at least, the damage to the species diversity of the area will be reduced.

REFERENCES

- AYVAZ Y. 1991. The birds of Cildir Lake, Turkey. *Turkish Journal of Zoology*, **15**: 53-58.
- AYVAZ Y. 1993. The birds of Elazig region, Turkey. *Turkish Journal of Zoology*, **17**: 1-10.
- BARAN I., YILMAZ I. 1984. Ornitoloji dersleri. Ege Univ. Press, Bornova, Izmir, 323 pp. (In Turkish).
- CRAMP S. 2000. The birds of the Western Palearctic, Concise edition. Oxford University Press, 1832 pp.
- DONMEZ Y. 1968. Trakya'nin bitki coğrafyasi. Istanbul Univ. Press, Istanbul, 278 pp. (In Turkish).
- ERDOGAN A. 1998. Recent situations of vulture species (*Neophron percnopterus*, *Gypaetus barbatus*, *Gyps fulvus* and *Aegypius monachus*) live in Turkey. Proceedings of 15th. National Biology Congress, Samsun, Turkey, pp. 272-282.
- ERGENE S. 1945. Turkiye kuşlari. Kenan Matbaasi, Istanbul, 415 pp. (In Turkish).
- FOWLER J., COHEN L., JARVIS P. 1998. Practical statistics for field biology. John Wiley & Sons, Chichester, 259 pp.
- HEINZEL H., FITTER R., PARSLow J. 1987. The birds of Britain and Europe with North Africa and the Middle East. Collins, London, 337 pp.
- KASPARYAN A. 1956. A preliminary list of the birds of Turkey. *Revue de la Faculte des Sciences de l'Universite d'Istanbul*, **21**: 27-28.
- KENCE A., BILGIN C. 1996. The birds (Aves), pp. 27-87. [In:] A. KENCE, C. BILGIN (eds) – The list of the Turkish vertebrate species, Tubitak, Ankara. (In Turkish).
- KIZIROGLU I. 1989. The birds of Turkey. Species list, in red data book. Orman Genel Mudurlugu Press, Ankara, 314 pp. (In Turkish).
- KUMERLOEVE H. 1962. Weitere untersuchungen uber die Turkische vogelwelt. *Revue de la Faculte des Sciences de l'Universite d'Istanbul*, **27**: 165-228.
- KUMERLOEVE H. 1970. Zur kenntnis der avifauna kleinasiens und der europaischen Turkei. *Revue de la Faculte des Sciences de l'Universite d'Istanbul*, **35**: 85-160.
- NANKINOV D. 1992. Check list of bird species and subspecies in Bulgaria. *Avocetta*, **16**: 1-17.
- PERRINS C., ATTENBOROUGH D. 1987. Birds of Britain and Europe. William Collins Sons & Co. Ltd., London, 320 pp.
- TOPCUOGLU S. 1967. A study of some of the birds which can be found in the Taurus Mountains; Their systematic classification. *Revue de la Faculte des Sciences de l'Universite d'Istanbul*, **32**: 67-77.
- TURAN L. 1990. The territorial habit and nest building activities of magpie (*Pica pica* L.) in Beytepe, Ankara. *Turkish Journal of Zoology*, **14**: 329-335.
- WADLEY N. 1951. Notes on the birds of central Anatolia. *Ibis*, **93**: 63-89.
- WIELLIARD J. 1968. Resultats ornithologiques d'une mission a travers la Turquie. *Revue de la Faculte des Sciences de l'Universite d'Istanbul*, **33**: 67-171.