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Avifauna and Important Bird Areas (IBA) of Elazığ Province

Emrah ÇELİK[1,*]

[1]*Igdir University, Vocational School of Technical Sciences, Department of Forestry/Hunting and Wildlife Programme, Igdir, Turkey*
celikemrah822@gmail.com, ORCID: 0000-0003-1274-4122

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Abstract

Along with the present study, the bird species and wetland status of Elazig province were investigated. According to the observation between October 2016 and May 2018, 181 species belonging to 18 orders and 44 families were identified. Of the reported species herein, 61 are resident (33.7%), 81 are summer visitors (44.8%), 20 are winter visitors (11.1%), and 19 are passage migrant (10.5%). Among these species, it has been determined that 10 species are threatened with extinction at national and international (IUCN) scale. 1 species as EN (Endangered) (*Neophron percnopterus*), 7 species as NT (Near Threatened) (*Gypaetus barbatus, Aegypius monachus, Circus macrourus, Vanellus vanellus, Limosa limosa, Larus armenicus, Anthus pratensis*), 2 species as VU (Vulnarable) (*Aythya ferina, Streptopelia turtur*) were reported here. Herewith the study, by drawing attention to the wetlands that shape the richness of the bird species in Elazig Province, the bird species that breed and stay in those areas and the threats to the species and habitats and the precautions to be taken were investigated.

Keywords: Biodiversity; Birds; Wetland; Ornithofauna; GIS.

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Elazığ İli Avifaunası ve Önemli Kuş Alanları (ÖKA)

Öz

Bu çalışmada Elazığ İlinin kuş türleri ve sulak alan varlığı araştırılmıştır. Araştırmada Ekim 2016 - Mayıs 2018 tarihleri arasında gerçekleştirilen arazi gözlem sonuçları değerlendirilmiş, 18 takım ve 44 familyaya ait 181 tür tespit edilmiştir. Bu türlerden 61'i yerli (% 33.7), 81'i yaz ziyaretçisi (% 44.8), 20'si kış ziyaretçisi (% 11.1) ve 19'u transit göçerdir (% 10.5). Bu türler arasında 10 türün ulusal ve uluslararası (IUCN) ölçeğinde yok olma tehdidi altında olduğu belirlenmiştir. 1 tür EN (Endangered-Tehlikede) (*Neophron percnopterus*), 7 tür NT (Near-Threatened-Yakın gelecekte tehlikede) (*Gypaetus barbatus*, *Aegypius monachus, Circus macrourus, Vanellus vanellus, Limosa limosa, Larus armenicus, Anthus pra*tensis), 2 tür VU (Vulnarable-Hassas) (*Aythya ferina, Streptopelia turtur*) olarak verilmiştir.

Bu çalışmada, Elazığ İlinin sahip olduğu kuş türlerinin zenginliğini şekillendiren sulak alanlara dikkat çekilerek, bu alanlarda üreyen ve konaklayan kuş türleri ile türlere ve yaşam alanlarına yönelik tehdit unsurları ve alınması gereken tedbirler araştırılmıştır.

Anahtar Kelimeler: Biyoçeşitlilik; Kuşlar; Sulak alan; Ornitofauna; CBS.

1. Introduction

Wetlands are the most productive ecosystems in the world. [1-3]. In addition to the providing biodiversity, wetlands exhibit significant roles in climate control, maintaining the water cycle [4, 5], water treatment and flood prevention [6]. Furthermore, wetlands provide a wide range of biological communities [7, 8], as well as providing significant support to wildlife [9-11]. Birds, which are among the important animals of wildlife, are indicator livings of a healthy ecosystem [12]. Due to the locating on the upper steps of the food chain, the birds possess significant activities and roles for the functioning of the ecosystem [13]. Birds, which spread in almost all of the aquatic and terrestrial ecosystems in the world, are accepted as bio-indicator livings because they respond to any changes deviating from the optimal conditions occurring in the natural ecosystems [12, 14]. Due to the constituting a part of the Palearctic region, Turkey has an important position with respect to the bird migration routes between Europe, Asia and Africa, accommodating the different climatic conditions and different living environments due to its geographical location. Herein it is worthy to note that two important bird migration routes pass through Turkey. Those transitions generally take place through Cyprus and Hatay. Birds enter Anatolia through Cyprus and Hatay. Then, firstly, they cross over the lakes region to Europeand Russia using the straits and the Eastern Black Sea main migration routes, using the wetlands in

the Mediterranean coastline and the transition points of the Taurus Mountains.

All these major reasons significantly increase the biodiversity wealth of Turkey, attracting many national and international researchers. Subsequently, many species lists from different regions of Turkey have been reported [15-34]

The number of bird species was reported as 460 [35], 468 [36] and 502 [37] with random species.

Along with the study, it was targeted to draw attentions towards wetland richness of the bird in Elazig province, breeding and hosting areas, threats to the species, habitats, and finally plausible precautions with recommendations

2. Materials and Methods

2.1. Characteristics of the study area

Elazig is located in the Upper Euphrates part of the Eastern Anatolia region of Turkey. It is adjacent to the provinces of Tunceli in the north, Bingöl in the east, Diyarbakır in the southeast and Malatya in the west (Fig. 1). Elazig province is located between 38° 14'and 39° 11' north latitudes and 38° 22'and 40° 22' east longitudes.

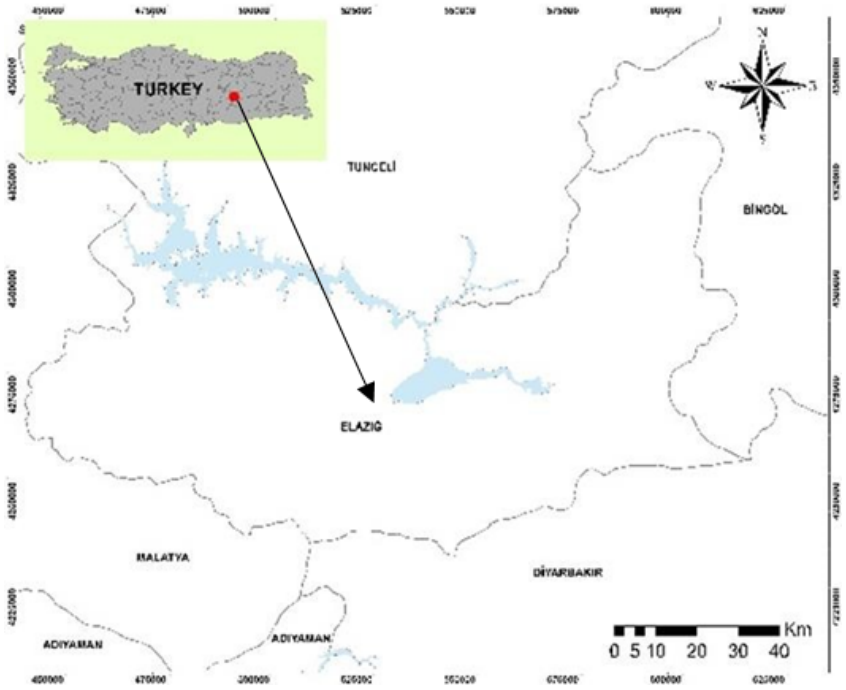

Figure 1: Location map of Elazig province

2.2. Habitat

Regarding the habitat structure of Elazig, there are alpine meadows and small bushes plantations in the higher parts. The dominant vegetation in the high regions is steppe. Forest ecosystems are noticeable in low areas. Some parts have bare vegetation areas and rocky and stony areas (Fig. 2).

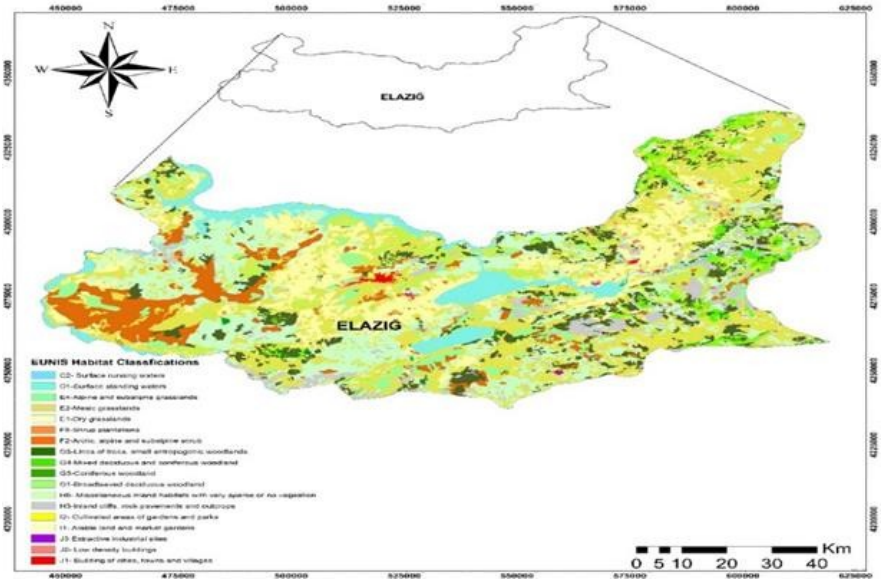

Figure 2: Habitat structure of Elazig province

On the EUNIS habitat types Map formed for Elazig Province, the size and distribution of these habitat types on the areal basis and the number of parts were presented in Table 1 [38].

Table 1: EUNIS habitat types areal sizes and part distributions in Elazig province

EUNIS HABITAT TYPES	Number of Polygons	Area (ha)
C1 Surface stagnant inland waters	9	8065,53
C2 Streams	81	52003,33
E2 Moist meadows	7	18617,14
FB Shrub grove	4	528,144
F5 Lemur, trees and temperate Mediterranean shrubs	3	18,745
G1 Broadleaf deciduous forests	726	128350,1
G3 Conifer forests	253	12592,04
G4 Deciduous and coniferous mixed forests	50	5260,693
H1 Terrestrial underground caves, cave systems	1	0,148
H3 Inner cliffs and rock ledges	3	3010,715
H5 Various indoor habitats with little or no vegetation	683	368241,1
I1 Arable land and gardens	1663	307998,9
J1 City, town and village buildings	329	17112,07
J3 Mine extraction areas	69	1288,275

2.2.1. Criteria used in determining important areas for birds (IBA)

Area and conservation biology are of great importance for living species to form a healthy community and continue their life cycle. The first step is to protect the habitats of living things without damage to the area's natural features. IBAs are determined by scientific criteria accepted all over the world. Sensitivity criterion, one of the two main approaches under the concept of IBA, is used in determining the areas where important populations of bird species, which are in the danger category, are in the world scale. The other criterion is the Uniqueness criterion. This criterion is used to identify areas of importance for narrow-spread species, single biome-dependent species and condensed species [39].

In this study, above-mentioned issues were taken into consideration while determining the areas that can be considered as important for birds.

2.3. Data collection

For the present study, in order to determine the ornithofauna of Elazig province, a 51-day observation study was carried out between October 2016 and May 2018. Detailed information with respect to the observations was presented in Table 2.

Table 2: Information regarding three consecutive year observation in Elazig province

	Jan.	**Feb.**	**March**	**April**	**May**	**June**	**July**	**Aug.**	**Sept.**	**Oct.**	**Nov.**	**Dec.**	**Total**
2016	-	-	-	-	-	-	-	-	3	3	3	-	9
2017	-	-	3	3	4	-	3	3	2	3	3	3	27
2018	3	3	3	3	3	-	-	-	-	-	-	-	15
Total	**3**	**3**	**6**	**6**	**7**	**-**	**3**	**3**	**5**	**6**	**6**	**3**	**51**

Field studies were carried out in accordance with the monthly working schedule. Field observations started early in the morning when the species were active and continued until sunset, when the optical instruments did not get enough images. For birds, the population densities, arrival and departure times, distribution in the study area, status, and locations in the red list were determined.

In order to determine population density and the number of individuals, the line transects and point counts method were used [40].

In determining the species inventory and population density studies, dominant points and habitats where birds are concentrated were taken into consideration, and field scanning was done

with telescope and binoculars.

During observations, camera (Canon-650D), optical zoom lens (Canon 400mm), binoculars, GPS, 1/25000 topographic map, telescope (Konuspot 100mm) and diagnostic books were used as equipment.

3. Results

The results of the study revealed that 181 species belonging to 18 orders and 44 families were identified. Of the reported species herein, 61 are resident (33.7%), 81 are summer visitors (44.8%), 20 are winter visitors (11.1%), and 19 are passage migrant (10.5%) according to the observation between October 2016 and May 2018 (Table 3). Of those identified species, it has been determined that 10 species are threatened with extinction at national and international (IUCN) scale. 1 species as EN (Endangered) (*Neophron percnopterus*), 7 species as NT (Near Threatened) (*Gypaetus barbatus, Aegypius monachus, Circus macrourus, Vanellus vanellus*, *Limosa limosa, Larus armenicus, Anthus pratensis*), 2 species as VU (Vulnarable) (*Aythya ferina, Streptopelia turtur*) were reported herein.

According to the species identified by order, Podicipediformes 3, Pelecaniformes 9, Suliformes 2, Ciconiiformes 2, Anseriformes 10, Accipiteriformes 18, Falconiformes 3, Galliformes 3, Gruiformes 2, Charadriiformes 23, Columbiformes 5, Cuculiformes 1, Strigiformes 3, Caprimulgiformes 3, Coraciiformes 1, Strigiformes 3, Caprimulgiformes 3, Coraciiformes 1, and Passeriformes are represented by 88 species. The province is mostly represented with Passeriformes and Cuculiformes and Cuculiformes orders are least represented in the province (Fig. 3).

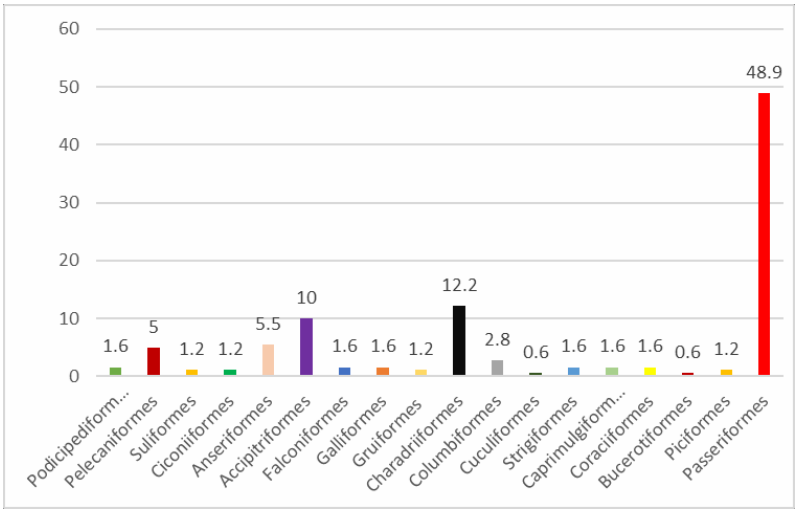

Figure 3: Percentage of the bird species in the area by ordo

Table 3: Bird species and their status determined in Elazig Province

		O.N.S			
Species list	**R.S**	**Min.**	**Max.**	**IUCN**	**E.P.S**
Tachybaptus ruficollis	R	2	41	LC	LC
Podiceps cristatus	R	2	29	LC	LC
Podiceps grisegena	SV	1	6	LC	LC
Botaurus stellaris	R	1	2	LC	Depleted
Ixobrychus minutus	SV	1	2	LC	Depleted
Nycticorax nycticorax	R	3	27	LC	Declining
Ardeola ralloides	S	1	5	LC	Depleted
Bubulcus ibis	SV	1	9	LC	LC
Egretta garzetta	R	4	11	LC	LC
Ardea alba	R	2	8	LC	LC
Ardea cinerea	R	3	9	LC	LC
Ardea purpurea	PM	1	2	LC	Declining
Phalacrocorax carbo	R	4	57	LC	LC
Plegadis falcinellus	SV	1	7	LC	LC
Ciconia nigra	PM	1	1	LC	LC
Ciconia ciconia	SV	3	17	LC	LC
Tadorna ferruginea	R	4	518	LC	Depleted
Tadorna tadorna	WV	4	46	LC	LC
Anas crecca	R	2	24	LC	LC
Anas platyrhynchos	R	2	186	LC	LC
Anas acuta	WV	2	87	LC	Declining
Spatula querquedula	WV	4	54	LC	Declining
Spatula clypeata	R	3	19	LC	LC
Netta rufina	SV	1	8	LC	LC
Aythya ferina	WV	4	97	VU	VU
Aythya fuligula	WV	4	27	LC	Declining
Milvus migrans	R	2	19	LC	Depleted
Gypaetus barbatus	R	1	1	NT	VU
Neophron percnopterus	R	1	7	EN	EN
Gyps fulvus	R	1	1	LC	LC
Aegypius monachus	R	1	1	NT	Rare
Circaetus gallicus	SV	1	4	LC	LC
Circus aeruginosus	R	2	5	LC	LC
Circus cyaneus	WV	1	1	LC	LC
Circus macrourus	PM	1	1	NT	NT
Circus pygargus	PM	1	1	LC	LC
Accipiter gentilis	SV	1	1	LC	LC
Accipiter nisus	SV	1	1	LC	LC
Buteo buteo	R	1	5	LC	LC
Buteo rufinus	R	2	7	LC	LC
Clanga pomarina	PM	1	1	LC	LC
Aquila chrysaetos	R	1	1	LC	LC
Hieraaetus pennatus	SV	1	1	LC	LC
Pandion haliaetus	PM	1	1	LC	LC
Falco naumanni	SV	1	3	LC	Depleted
Falco tinnunculus	SV	1	4	LC	Declining
Falco subbuteo	SV	1	2	LC	LC
Alectoris chukar	R	2	7	LC	NT
Perdix perdix	R	1	4	LC	Declining
Coturnix coturnix	SV	1	1	LC	Depleted
Gallinula chloropus	SV	1	1	LC	LC
Fulica atra	R	12	1524	LC	NT
Himantopus himantopus	SV	2	14	LC	LC
Charadrius dubius	SV	2	11	LC	LC

Table 3: (cont.)

Species list	R.S	O.N.S		IUCN	E.P.S
		Min.	Max.		
Charadrius hiaticula	PM	1	2	LC	LC
Vanellus vanellus	SV	2	11	NT	VU
Calidris minuta	WV	1	3	LC	LC
Calidris alpina	PM	2	7	LC	Declining
Calidris pugnax	PM	4	15	LC	LC
Gallinago gallinago	WV	1	2	LC	Declining
Scolopax rusticola	WV	1	5	LC	LC
Limosa limosa	WV	2	3	NT	VU
Tringa erythropus	PM	2	4	LC	LC
Tringa totanus	SV	2	17	LC	Declining
Tringa nebularia	WV	3	7	LC	LC
Tringa ochropus	SV	2	4	LC	LC
Tringa glareola	PM	1	3	LC	LC
Actitis hypoleucos	R	2	9	LC	Declining
Chroicocephalus ridibundus	WV	2	11	LC	LC
Larus armenicus	R	7	1427	NT	NT
Larus argentatus	SV	5	17	LC	LC
Gelochelidon nilotica	SV	2	19	LC	Depleted
Sterna hirundo	SV	3	11	LC	LC
Sternula albifrons	SV	4	7	LC	Depleted
Chlidonias leucopterus	SV	3	16	LC	LC
Columba livia	R	2	18	LC	LC
Columba palumbus	SV	2	7	LC	LC
Streptopelia decaocto	R	2	16	LC	LC
Streptopelia turtur	SV	1	5	VU	VU
Spilopelia senegalensis	R	2	14	LC	LC
Cuculus canorus	SV	1	9	LC	LC
Bubo bubo	R	1	1	LC	Depleted
Athene noctua	R	1	4	LC	Depleted
Asio otus	R	1	1	LC	LC
Caprimulgus europaeus	PM	1	1	LC	Depleted
Apus apus	SV	2	57	LC	Declining
Tachymarptis melba	PM	2	152	LC	LC
Alcedo atthis	R	1	4	LC	VU
Merops apiaster	SV	2	19	LC	LC
Coracias garrulus	SV	1	2	LC	Declining
Upupa epops	SV	1	3	LC	LC
Picus viridis	SV	1	1	LC	LC
Dendrocopos syriacus	R	1	1	LC	LC
Melanocorypha calandra	SV	2	11	LC	Declining
Calandrella brachydactyla	SV	2	5	LC	Depleted
Galerida cristata	R	2	19	LC	Declining
Lullula arborea	SV	2	8	LC	Depleted
Alauda arvensis	WV	4	19	LC	Declining
Eremophila alpestris	R	2	7	LC	LC
Riparia riparia	SV	2	34	LC	Depleted
Ptyonoprogne rupestris	R	2	7	LC	LC
Hirundo rustica	SV	5	124	LC	Declining
Delichon urbicum	SV	2	17	LC	Declining
Anthus campestris	SV	1	4	LC	Depleted
Anthus trivialis	SV	1	3	LC	Declining
Anthus spinoletta	SV	1	1	LC	LC
Anthus pratensis	SV	1	2	NT	NT
Motacilla flava	SV	1	7	LC	Declining

Table 3: (cont.)

		O.N.S			
Species list	**R.S**	**Min.**	**Max.**	**IUCN**	**E.P.S**
Motacilla citreola	SV	1	3	LC	LC
Motacilla cinerea	SV	1	2	LC	LC
Motacilla alba	R	2	8	LC	LC
Cinclus cinclus	SV	1	1	LC	LC
Troglodytes troglodytes	SV	1	1	LC	LC
Muscicapa striata	SV	1	4	LC	Depleted
Ficedula hypoleuca	PM	2	3	LC	LC
Ficedula semitorquata	PM	1	3	LC	Depleted
Cercotrichas galactotes	SV	1	4	LC	Declining
Erithacus rubecula	WV	1	8	LC	LC
Luscinia megarhynchos	SV	1	5	LC	LC
Cyanecula svecica	R	1	4	LC	LC
Irania gutturalis	R	1	4	LC	LC
Phoenicurus ochruros	WV	1	1	LC	LC
Phoenicurus phoenicurus	SV	1	4	LC	LC
Saxicola rubetra	SV	2	4	LC	Declining
Saxicola rubicola	SV	2	7	LC	LC
Oenanthe isabellina	SV	2	7	LC	LC
Oenanthe oenanthe	SV	2	13	LC	Depleted
Oenanthe pleschanka	SV	2	16	LC	LC
Oenanthe hispanica	SV	2	7	LC	LC
Monticola saxatilis	SV	1	2	LC	Declining
Monticola solitarius	SV	1	1	LC	LC
Turdus torquatus	SV	2	7	LC	LC
Turdus merula	R	1	1	LC	LC
Turdus pilaris	WV	1	1	LC	LC
Turdus philomelos	WV	1	1	LC	LC
Turdus viscivorus	R	1	2	LC	LC
Acrocephalus schoenobaenus	SV	1	2	LC	LC
Acrocephalus scirpaceus	SV	1	2	LC	LC
Acrocephalus arundinaceus	SV	1	1	LC	LC
Iduna pallida	SV	1	1	LC	LC
Sylvia nisoria	SV	1	2	LC	LC
Sylvia curruca	SV	1	3	LC	LC
Sylvia communis	PM	1	5	LC	LC
Sylvia atricapilla	SV	1	4	LC	LC
Phylloscopus collybita	R	1	8	LC	LC
Phylloscopus trochilus	SV	1	4	LC	LC
Aegithalos caudatus	PM	1	1	LC	LC
Poecile lugubris	PM	1	2	LC	LC
Cyanistes caeruleus	SV	1	3	LC	LC
Parus major	R	1	6	LC	LC
Sitta neumayer	R	1	3	LC	LC
Oriolus oriolus	SV	1	1	LC	LC
Lanius collurio	SV	1	5	LC	Depleted
Lanius minor	SV	1	4	LC	Declining
Lanius excubitor	WV	1	1	LC	LC
Lanius senator	SV	1	2	LC	Declining
Garrulus glandarius	R	1	5	LC	LC
Pica pica	R	2	34	LC	LC
Pyrrhocorax pyrrhocorax	R	1	1	LC	Declining
Corvus monedula	R	2	47	LC	LC
Corvus frugilegus	R	5	86	LC	LC

Table 3: (cont.)

Species list	R.S	O.N.S		IUCN	E.P.S
		Min.	Max.		
Corvus cornix	R	4	54	LC	LC
Corvus corax	R	1	2	LC	LC
Sturnus vulgaris	SV	4	283	LC	Declining
Pastor roseus	SV	2	32	LC	LC
Passer domesticus	R	4	478	LC	Declining
Passer hispaniolensis	R	2	13	LC	LC
Passer montanus	R	2	11	LC	Depleted
Petronia petronia	R	1	1	LC	LC
Montifringilla nivalis	R	1	1	LC	LC
Fringilla coelebs	R	2	15	LC	LC
Fringilla montifringilla	WV	1	11	LC	LC
Chloris chloris	R	1	3	LC	LC
Carduelis carduelis	R	2	19	LC	LC
Spinus spinus	WV	1	2	LC	LC
Linaria cannabina	R	2	27	LC	Declining
Emberiza citrinella	PM	1	3	LC	Declining
Emberiza cia	SV	1	2	LC	LC
Emberiza hortulana	SV	2	31	LC	Declining
Emberiza melanocephala	SV	2	27	LC	LC
Emberiza calandra	SV	3	41	LC	Depleted

R.S.: Regional Status; **P.M.:** Passage migrant, **W.V.:** Winter visitor, **R.:** Resident, **S.V.:** Summer visitor **O.N.S.:** Observed number of species, **Min. :** Minumum, **Max.:** Maximum, **E.P.S.:** European Population Status

3.1. Important Bird Areas (IBA) proposed

During the study, 4 areas that may be important for birds have been identified. These areas are Karakaya Dam, Hazar Lake, South Keban and Keban Islands. The importance of the areas has been evaluated according to their different habitat structures, species richness and bird mobility. The areas were sorted and determined according to the areas where birds are mostly concentrated in accordance with observations and reproduction activities of the birds in the area.

3.1.1. Karakaya Dam

Karakaya Dam is located between Elazığ and Malatya. The area, where the lake mirror is the widest, is located between Battalgazi-Kale-Baskil districts. The southern part of the lake shore is covered with reed areas. There are fine reed areas around the small streams flowing into the lake. The eastern parts of the dam lake are slightly higher and are surrounded by steppe vegetation and other parts are lower and surrounded by orchards (Fig. 4).

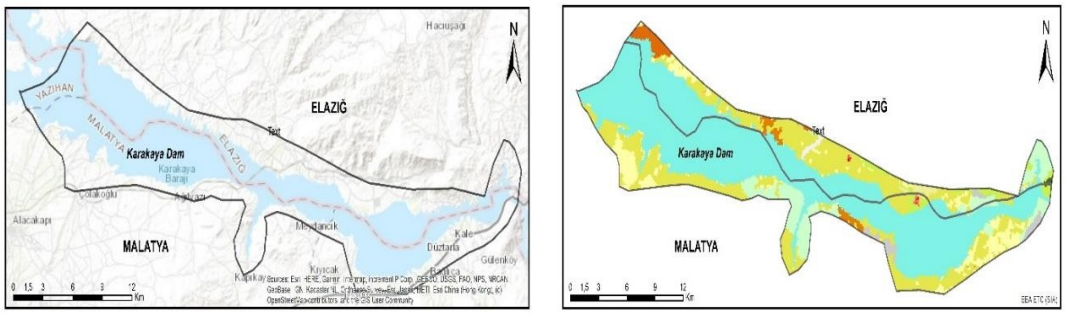

Figure 4: Karakaya Dam Important Bird Area (IBA) topography map and habitat map

With respect to the ornithological importance of Karakaya Dam, it has been determined that various bird species are housed and fed in areas with dense reeds. The bird diversity of the area in the spring period is quite rich. Agricultural lands and orchards around the dam lake positively affect the diversity of birds.

Passerin groups, especially fed with fruit, are very common. In the bays in the dam lake, high numbers of *Podiceps cristatus, Fulica atra* and *Tadorna ferruginea* species were observed as colonies during the winter months. It is also an important habitat for the *Larus armenicus* species, which is endangered on a global scale**.**

3.1.2. Hazar Lake

Hazar Lake is located at the, 25 km southeast of Elazig. There is an island called “Kilise” in the lake and several various sized islets. There are slopes of high sloping steppe character around the lake. On the northern slopes of the lake, there are mixed forests covered with oak and almond trees. There are conifer forests on the southern slopes (Fig. 5).

Two important sources feed the lake water. These sources are “Kürk” and “Zıkkım” creeks. There are reed habitats in places where the streams mix with the lake. These habitats located on the eastern and western coasts of the lake are important breeding and feeding areas for many coasts and waterfowl.

In the area, *Vanellus vanellus, Larus armenicus* and *Fulica atra* species breed. Hazar Lake is an important wintering area for winter visitor species. *Aythya ferina* and *Aythya fuligula* species are seen in herds in the area. Fig. 5 shows the areas where birds breed in the Hazar Lake and its vicinity.

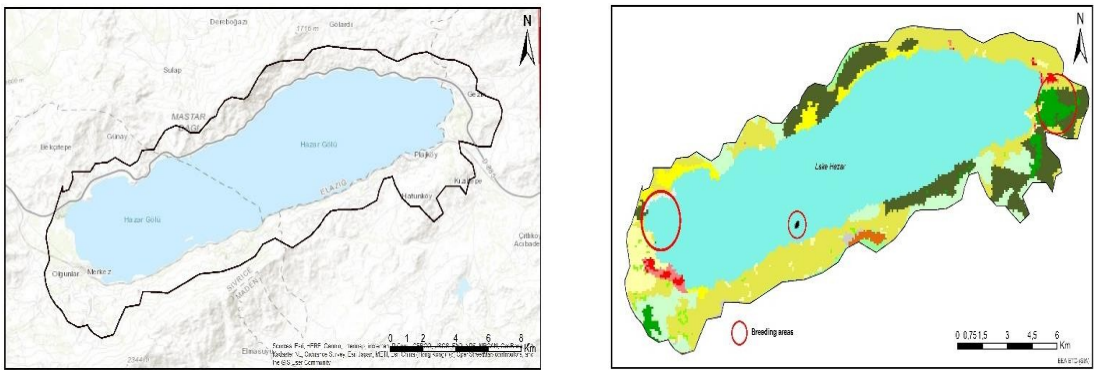

Figure 5: Hazar Lake Important Bird Area (IBA) topography map and habitat map

3.1.3. South Keban Dam

The South Keban Dam, which is the first of the series of dams built on the Euphrates River basin, it forms the southern branch of the Keban Dam system. The southern and western shores of the reservoir are shallower and rich in nutrients compared to other places. In some parts, dune areas were formed as a result of water fluctuations. There are some forest-like habitats on the southern shores of the dam (Fig. 6).

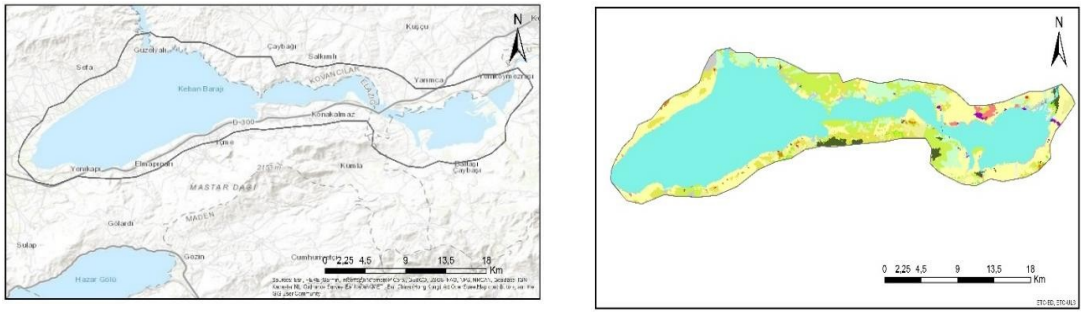

Figure 6: South Keban Dam Important Bird Area (IBA) topography map and habitat map

There is very little data on the bird's presence in the area. Ornithological data related to the area mostly consist of records obtained from mid-winter water bird counts. However, in the periodic observations made within the present study, the presence and importance of the bird was revealed. Due to its different habitat structures (reeds, swamps, wetland meadows, etc.), many different bird species can be found in the region. The lake is used as a feeding and sheltering area by many coasts and waterfowl in the spring period.

During the observations, *Tadorna ferruginea, Anas platyrhynchos, Podiceps cristatus, Fulica atra* and *Tachybaptus ruficollis* species were found in herds along the western and southern shores of the lake. The area is an important habitat for *Larus armenicus,* whose generation is in the NT (Near threatened) category on a global scale. The species is incubated in small islets within the dam lake. *Aythya ferina*, another species in the danger category, is an important winter visitor

for the region.

3.1.4. Keban Islands

Keban Dam is located on the Elazig - Tunceli province border. Large and small islands and peninsulas in the northern part of the dam together with the bays formed by the water are important areas for birds. There are more than 20 large and small islands in the north of the dam. When the habitat structure of the area is examined, it is seen that a large part of the area consists of steppes and very few parts are bushy plantations (Fig. 7).

Keban islands are suitable breeding grounds for *Larus armenicus* and *Nycticorax nycticorax.* In addition, *Aythya ferina* species, which are winter visitors, are frequently seen in the region.

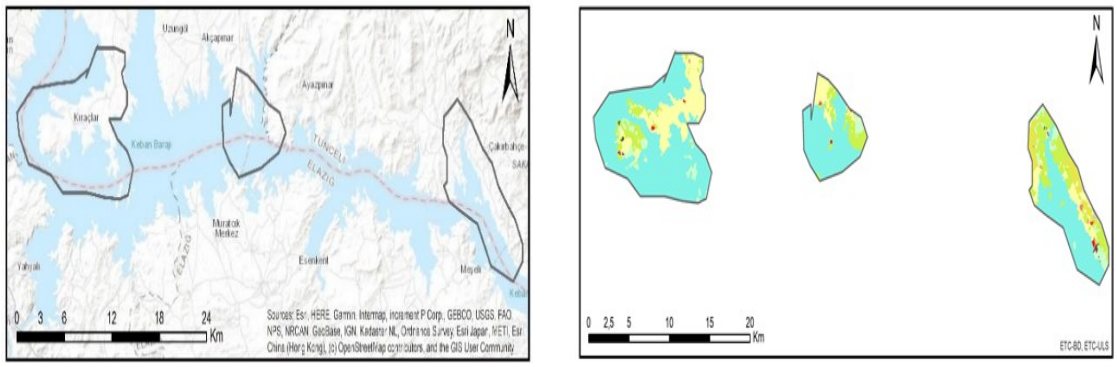

Figure 7: Keban Islands Important Bird Area (IBA) topography map and habitat map

4. Discussion

Wetlands are the most important ecosystems of the earth with their natural functions and economic values [3]. After tropical forests, the ecosystems that produce the highest organic matter from the unit area are wetlands [41]. Wetlands exhibit significant functions in especially forest poor areas [42, 43]. Wetlands make important contributions to biodiversity. It contains many wild livings, especially birds [7, 8]. For that reason, to protect and sustain those natural ecosystems are of the great interest [44].

There are some reports regarding avifauna of Elazig [19, 20, 45-47]. The studies are mostly concentrated in local regions. Ornithological data obtained from previous studies were compared with the present study and the results were discussed.

Distribution area and migration status of 181 bird species in the area are similar with [19, 28, 37].

Almost all the bird species reported in Hazar Lake [19] were observed in the present study. In addition, previously not reported species such as *Accipiter gentilis, Botaurus stellaris, Bubulcus ibis, Calidris minuta, Charadrius hiaticula, Chloris chloris, Cyanecula svecica, Cyanistes caeruleus, Gypaetus barbatus, Iduna pallida, Limosa limosa, Motacilla citreola, Poecile lugubris, Podiceps grisegena, Ptyonoprogne rupestris, Spatula clypeata, Spatula querquedula* were reported herewith the present study.

However, previously reported bird species such as *Columba oenas, Hirundo rupestris, Pyrrhula pyrrhula* [19], *Mareca strepera, Pterocles orientalis, Mareca penelope, Anser albifrons, Larus ichthyaetus, Burhinus oedicnemus, Clamator glandarius*, [45]. *Falco columbarius, Falco vespertinus, Sitta europaea* [46] species were not detected in this study.

According to [19], *Oenanthe pleschanka* species was given as a transit nomad for Elazig. With this study, it was determined that the species is a summer visitor for the region.

Ayvaz (1988) reported information about the reproduction of *Larus argentatus* species in the Hazar Lake and Islands [20]. Herein, it was observed that the species formed a breeding colony on the islands in the Hazar Lake.

The present findings of the study were found to be largely similar to the records [46]. However, *Grus grus* and *Otis tarda* species recorded in the region were not detected during this study.

Kılıç and Eken (2004) drew attention to important wetlands within the borders of Elazig Province, and gave ornithological records about the areas [48]. Ornithological data were compared with the results of the present study and it was observed that they were largely similar. However, *Burchinus oedicnemus, Dendrocopos medius* and *Emberiza cineracea* species, which were previously recorded in the region, were not observed along with the present study.

Kılıç and Eken (2004) reported information about the breeding of the *Nycticorax nycticorax* species in the Keban Islands [48]. These results are consistent with the results of this study. Herein, it was observed that the species formed a breeding colony in Keban Islands.

5. Conclusion and Suggestions

The most important reasons for the richness of Elazig ornithofauna are the wetland potential of the province, the presence of different climatic conditions, the ecosystem diversity and being located near the important bird migration routes. Especially during the migration periods, the birds visit the region intensely. However, there are some threats to birds and their

habitats. It is possible to gather threats against birds in the region under two main headings. These are threats to migratory and domestic birds. Hunting, mining activities, pollution and animal grazing are among these threats. Located in the provincial borders, Hazar Lake is an ornithological rich region for four seasons. However, the environmental pressure on the lake is quite high.

The reed areas in the western part of the lake are breeding and feeding areas suitable for many water and terrestrial bird species that are in the category of danger on a global scale. It was determined that poaching was carried out in breeding areas in April-May, which is the incubation period of birds. It was found that the nests of *Vanellus vanellus* and *Tringa totanus* species, which made their nests on low ground, were damaged and their eggs were broken.

It is obvious that this will affect the reproductive success of the species. Almost all the surroundings of the lake are used for picnic purposes. Domestic wastes left after the picnic or thrown into the lake pollute the lake and its surroundings and subsequently might cause adverse effects on living things.

Another major threat is poaching. Some migratory birds use the region and its immediate vicinity as a transit route. Species such as *Ciconia ciconia, Buteo buteo*, *Apus apus* migrate in herds. Poachers use this situation irresponsibly during migration or in areas where species are accommodated.

There is poaching for domestic species. Duck species are hunted, especially during breeding and migration. Although hunting species are hunted, rifle explosion sound scares other species and causes them to leave the area. It should be ensured that hunting and grazing are not carried out in the incubation period of April-May and the migration period in October-November. Furthermore, the environmental pollution should be prevented by leaving recycling bins in all private or unattended picnic areas around the lake.

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