Avifauna and Important Bird Areas (IBA) of Elazığ Province

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Abstract

Along with the present study, the bird species and wetland status of Elazığ 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 (Vulnerable) (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 Elazığ 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.
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 ziyareçisi (% 44.8), 20’si kış ziyareçisi (% 11.1) ve 19’u transit göçerdir (% 10.5). Bu türler arasında 10 türün ulusal ve uluslararası (IUCN) ölçeğinde yok olma tehhdidi altında belirlenmiştir. 1 tür EN (Endangered - Tehlikede) (Neophron percnopterus), 7 tür NT (Near-Threatened-Yakın geleekte tehlike) (Gypaetus barbatus, Aegypius monachus, Circus macrourus, Vanellus vanellus, Limosa limosa, Larus armenicus, Anthus pratensis), 2 tür VU (Vulnerable-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 türler 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 Europe and 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 (Vulnerable) (*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](image-url)
Table 3: Bird species and their status determined in Elazig Province

| 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 grisegea                  | SV  | 1    | 6    | LC         | LC    |
| Botaurus stellaris                 | R   | 1    | 2    | Depleted   |       |
| Ixobrychus minutus                 | SV  | 1    | 2    | Depleted   |       |
| Nycticorax nycticorax              | R   | 3    | 27   | Declining  |       |
| Ardea ralloides                    | S   | 1    | 5    | Depleted   |       |
| Babylus 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    | Declining  |       |
| Phalacrocorax carbo                | R   | 4    | 57   | LC         | LC    |
| Plegadis falcinellus               | SV  | 1    | 7    | LC         | LC    |
| Ciconia nigra                      | PM  | 1    | 1    | LC         | LC    |
| Ciconia ciconia                    | SY  | 3    | 17   | LC         | LC    |
| Tadorna ferruginea                 | R   | 4    | 518  | 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   | Declining  |       |
| Spatula querquedula                | WV  | 4    | 54   | Declining  |       |
| Spathula 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   | Declining  |       |
| Milvus migrans                     | R   | 2    | 19   | Depleted   |       |
| Gypaetus barbatas                  | 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  |
| Circetus 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    |
| Hieraetum pennatus                 | SV  | 1    | 1    | LC         | LC    |
| Pandion haliaetus                  | PM  | 1    | 1    | LC         | LC    |
| Falco naumanni                     | SV  | 1    | 3    | Depleted   |       |
| Falco tinnunculus                  | SV  | 1    | 4    | Declining  |       |
| Falco/subbuteo                     | SV  | 1    | 2    | LC         | LC    |
| Alectoris chukar                   | R   | 2    | 7    | NT         |       |
| Perdix perdix                      | R   | 1    | 4    | Declining  |       |
| Coturnix coturnix                  | SV  | 1    | 1    | LC         | Depleted |
| Gallinula chloropus                | SV  | 1    | 1    | LC         | LC    |
| Fulica atra                        | R   | 12   | 1524 | NT         |       |
| Himantopus himantopus              | SV  | 2    | 14   | LC         | LC    |
| Charadrius dubius                  | SV  | 2    | 11   | LC         | LC    |
| Species list                          | O.N.S | R.S | Min. | Max. | IUCN | E.P.S |
|--------------------------------------|-------|-----|------|------|------|-------|
| 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 argentatus                    | SV    | 5   | 17   |      | LC   | LC    |
| Gelochelidon nilotica               | SV    | 2   | 19   |      | LC   | Declining |
| Sterna hirundo                      | SV    | 3   | 11   |      | LC   | LC    |
| Sterna albisrons                    | SV    | 4   | 7    |      |LC   | Declining |
| Childonias leucopterus              | SV    | 3   | 16   |      | LC   | LC    |
| Columba livia                       | R     | 2   | 18   |      | LC   | LC    |
| Columba palumbus                    | SV    | 2   | 7    |      | LC   | LC    |
| Streptopelia decaucocto             | 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   | Declined |
| Athene noctua                       | R     | 1   | 4    |      | LC   | Declining |
| Asio otus                           | R     | 1   | 1    |      | LC   | LC    |
| Caprimulgus europaeus               | PM    | 1   | 1    |      | LC   | Declining |
| 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 eops                          | SV    | 1   | 3    |      | LC   | LC    |
| Picus viridis                       | SV    | 1   | 1    |      | LC   | LC    |
| Dendrocoptes syriacus               | R     | 1   | 1    |      | LC   | LC    |
| Melanocorypha calandra              | SV    | 2   | 11   |      | LC   | Declining |
| Calandrella brachydactyla           | SV    | 2   | 5    |      | LC   | Declined |
| Galerida cristata                   | R     | 2   | 19   |      | LC   | Declining |
| Lullula arborea                     | SV    | 2   | 8    |      | LC   | Declined |
| Alauda arvensis                     | WV    | 4   | 19   |      | LC   | Declining |
| Eremophila alpestris                | R     | 2   | 7    |      | LC   | LC    |
| Riparia riparia                     | SV    | 2   | 34   |      | LC   | Declined |
| Ptolemyomedus 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   | Declined |
| Anthus trivialis                    | SV    | 1   | 3    |      | LC   | Declining |
| Anthus spinola                      | SV    | 1   | 1    |      | LC   | LC    |
| Anthus pratensis                    | SV    | 1   | 2    |      | NT   | NT    |
| Motacilla flava                     | SV    | 1   | 7    |      | LC   | Declining |
Table 3: (cont.)

| Species list                  | O.N.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    |
| Cinculus cinculus            | 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    |
| Cinclus cinclus              | SV    | 1    | 1    | LC   | LC    |
| Cygnus cygnus                | 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   | Declined |
| 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 cumbricula            | 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 | Min. | Max. | IUCN | E.P.S |
|----------------------|-----|-------|------|------|------|-------|
| 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 hispanioliensis | 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 hortulana   | SV  | 1     | 2    | LC   | LC   |
| Emberiza melanocephala | SV | 2   | 31   | LC   | Declining |
| 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.: Minimum, 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 “Zikkim” 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.
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).

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 coastal 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](image)

**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
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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