



Dams and Birds: Tekirdağ Yazır Dam

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ABSTRACT

Wetlands, important habitats to bird species, have suitable conditions for breeding activities as well as constitute stopover sites at least to feeding or resting during migration activity of birds. The diversity of birds in an area indicates that the environment is healthy in ecological terms, and the greatest need of such areas is to remove negative effects from human based activities. Yazır Dam, the place where the study was carried out; has a 360 ha pond within the borders of Süleymanpaşa District of Tekirdağ Province. It is located at North latitude 40° 55' 7"N and East longitude 27° 24' 40"E. The study was carried out from September 2017 to January 2022 disclosing that a total of 84 species belonging to 12 different orders approached the study site and 30 species of them were waterbird. When the birds are evaluated according to their status in the area, it can be determined that 50 are resident species and 34 are migratory or transit species. Also, it can be concluded that Yazır Dam is an area where the population densities of its species can increase rapidly with the reduction of anthropogenic effects.

1. Introduction

The wetlands are areas with high ecological and economic value that allow rich and diverse plant and animal species to live [1]. Many rare and threatened plant and animal species live in wetlands and need wetland resources to survive. It is known that such areas have a special importance for bird species. Thousands of individuals of different species use wetlands during breeding, wintering, or migration. The healthy existence of birds in a wetland is the most important indicator of healthy ecological relations in the area. The protection of wetlands is also essential for the continuity of the yield obtained from economically important species such as fish, crustaceans, and another aquatic biota [2].

Global climate changes that have emerged in recent years cause changes in precipitation regimes, and wetlands are also highly affected by these changes, as in many ecosystems. Turkey has many wetland ecosystems with different characteristics and some of these wetlands have international protection status in terms of their biological diversity. Although wetlands have protection status, as a result of the increasing human population and the accompanying needs, deterioration in the ecological structure of these wetlands and a decrease in their biological diversity are observed. For this reason, dams have been built in our country to meet the needs of agricultural activities or drinking water for many years. Although dams are man-made ecosystems, they can become preferred habitats for different species over time. The rapid loss of characteristics or disappearance of natural wetlands in recent times increases the

importance of artificial wetlands such as dams for the species that prefer such areas. Birds are one of the livings being that exist in these kinds of wetlands. The richness of birds in a wetland can be considered as an indicator of the biodiversity of the relevant area, and therefore, generating studies on bird fauna emerge as a necessity.

Thrace, which is the region of our country located on the European continent, is an area where bird migration is intense, as well as has many wetlands. Studies on the birds of the wetlands of the Thrace Region started about 50 years ago with Kumerloeve [3], subsequent studies were carried out especially to detect all the birds in a particular area [4-11].

There are studies investigating the bird diversity of some dams in Anatolia [12-18]. Although there are approximately 75 dams, lakes, and ponds in operation and 23 under construction in the Thrace region [19], the number of studies on the biological diversity of these areas is very few [4-6, 8]. Although there are nearly 30 dams, lakes, and ponds within the borders of Tekirdağ province, no study has been found on these wetlands. Birds in dams can be used as indicator species in terms of monitoring changes in wetlands on a global scale, and in this respect, the change in biodiversity in the area can be examined. Yazır Dam, which is the third largest watering pond of Tekirdağ province, is suitable to work for this aim. In this context, this study was carried out to determine the bird richness of Yazır Dam and to evaluate the importance of the area in terms of biological diversity.

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2. Materials and Methods

Yazır Dam, which was established in 1986 (40.918499 N, 27.4112 E), is one of the most important ponds of Tekirdağ province with a lake volume of 5 450 000 cubic meters and a watering area of 360 ha [19]. The study site is an artificial wetland, water supplied by 19 different streams and located within the borders of Yayabaşı, Aşağı Kılıçlı, Yukarı Kılıçlı and Karahisarlı villages [19]. Since 2017, it has also been used to provide drinking water to the Barbaros and Kumbağ neighbourhoods of Tekirdağ [19].

Fields observations were carried out using point count and transect line methods at 4 substations (Fig. 1). Nikon Monarch 5 10x42 binoculars, Konus Konuspot 80 inch 20-60x80 zoom telescope, and Nikon D7200 body + 70-300 mm lens were used for observations. For species identification, several literatures were used [20-22]. The species list was prepared by evaluating the data of 58 observations made between September 2017 and January 2022. In addition, the international conservation (BERN, IUCN) and local status (Residence, Migrant, etc.) of the species were evaluated and reflected in the graphics.

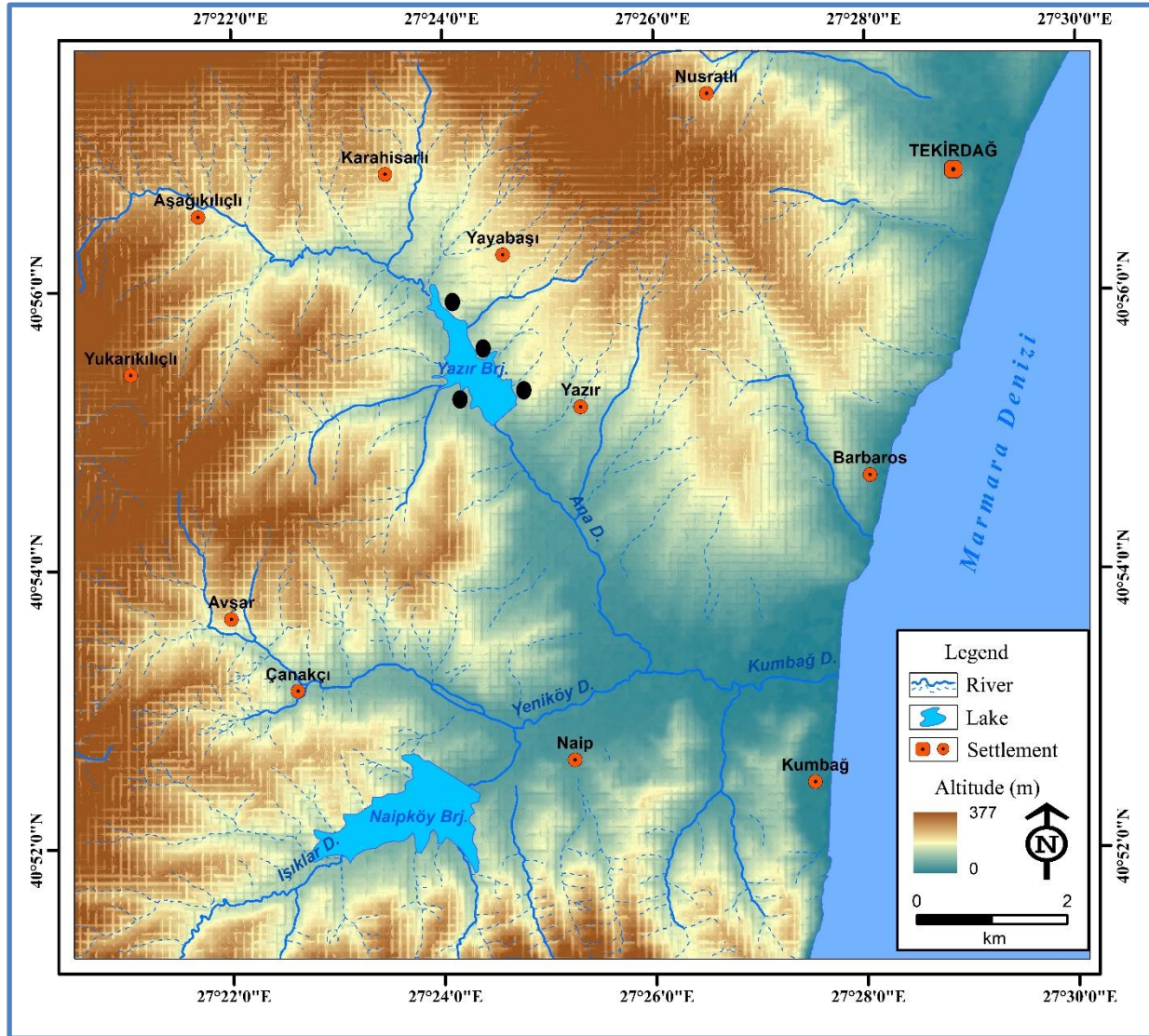


Fig. 1 Yazır Dam Pond location and observation points.

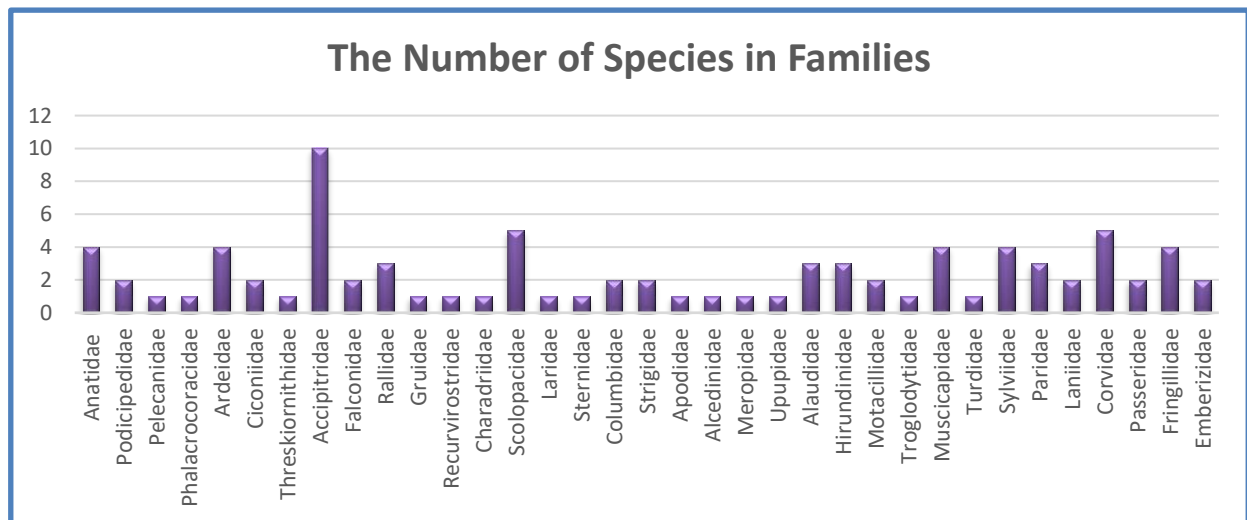
3. Results

A total of 84 species (Table 1) belonging to 12 orders and 35 families were determined and thirty of them were classified as waterbirds. Comparing species richness by families showed that the Accipitridae is the richest with 10 species (Fig. 2), and the resident species is consisted of more than half of the recorded species in the area (Fig. 3).

According to the IUCN conservation categories, most of the species are in the LC (Least Concern) category and only a few of them are in the endangered category (Fig. 4). Looking at the population trends at the global and European levels, it was determined that 37% of the species were in the DEC (declining) category (Fig. 5). When evaluated within the scope of the BERN convention, it was seen that more than half of the species were included in Annex-II (Fig. 6).

Table 1. The list of birds in the study area (Sp-1: Supplement Data-1 and Sp-2: Supplement Data-2).

Species name	Turkish name	Species name	Turkish name	Species name	Turkish name
<i>Circus cyaneus</i>	Gökçe delice	<i>Anas crecca</i>	Çamurcun	<i>Motacilla alba</i> (Sp-2-F)	Akkuyruksallayan
<i>Clanga clanga</i>	Büyük orman kartalı	<i>Anas platyrhynchos</i> (Sp-1-D)	Yeşilbaş	<i>Troglodytes troglodytes</i>	Çitkuşu
<i>Lymnocyptes minimus</i>	Küçük su çulluğu	<i>Spatula querquedula</i>	Çıkrıkçın	<i>Saxicola rubicola</i>	Taşkuşu
<i>Gallinago gallinago</i>	Su çulluğu (Bekasin)	<i>Tachybaptus ruficollis</i>	Küçük batağan	<i>Turdus merula</i>	Karatavuk
<i>Tringa totanus</i>	Kızılbackak	<i>Podiceps cristatus</i> (Sp-1-E)	Bahri	<i>Phylloscopus collybita</i>	Çıvgın
<i>Tringa ochropus</i>	Yeşil düdükçün	<i>Pelecanus onocrotalus</i> (Sp-1-A)	Pelikan	<i>Parus caeruleus</i>	Mavi baştankara
<i>Lullula arborea</i>	Orman toygarı	<i>Phalacrocorax carbo</i>	Karabatak	<i>Parus major</i>	Büyük baştankara
<i>Nycticorax nycticorax</i>	Gece balıkçılı	<i>Egretta garzetta</i> (Sp-1-C)	Küçük ak balıkçıl	<i>Aegithalos caudatus</i>	Uzun kuyruklu baştankara
<i>Ciconia nigra</i>	Kara leylek	<i>Casmerodius albus</i>	Büyük ak balıkçıl	<i>Lanius senator</i>	Kızılbaşlı örümcekkuşu
<i>Milvus migrans</i>	Kara çaylak	<i>Ardea cinerea</i>	Gri balıkçıl	<i>Corvus cornix</i>	Kara leş kargası
<i>Circus pygargus</i>	Çayır delicesi	<i>Plegadis falcinellus</i>	Çeltikçi	<i>Corvus corax</i>	Kuzgun
<i>Clanga pomarina</i>	Küçük orman kartalı	<i>Circus aeruginosus</i> (Sp-2-C)	Saz delicesi	<i>Corvus monedula</i>	Küçük karga
<i>Falco vespertinus</i>	Aladoğan	<i>Pernis apivorus</i>	Arı şahini	<i>Garrulus glandarius</i>	Alakarga
<i>Grus grus</i>	Turna	<i>Accipiter nisus</i> (Sp-2-A)	Atmaca	<i>Pica pica</i>	Saksağan
<i>Sterna hirundo</i>	Sumru	<i>Buteo buteo</i>	Şahin	<i>Passer domesticus</i>	Serçe
<i>Apus apus</i>	Ebabil	<i>Falco tinnunculus</i>	Kerkenez	<i>Passer hispaniolensis</i>	Söğüt serçesi
<i>Merops apiaster</i>	Arıkuşu	<i>Fulica atra</i>	Sakarmeke	<i>Fringilla coelebs</i> (Sp-2-E)	İspinoz
<i>Hirundo rustica</i>	Kırlangıç	<i>Rallus aquaticus</i>	Su kılavuzu	<i>Carduelis carduelis</i>	Saka
<i>Delichon urbicum</i>	Ev kırlangıcı	<i>Gallinula chloropus</i>	Saz tavuğu	<i>Chloris chloris</i>	Florya
<i>Cecropis daurica</i>	Kızıl kırlangıç	<i>Himantopus himantopus</i>	Uzun bacak	<i>Serinus serinus</i>	Küçük iskete
<i>Oenanthe oenanthe</i>	Kuyrukkakan	<i>Charadrius alexandrinus</i>	Akça cılıbit	<i>Emberiza calandra</i>	Tarla kirazkuşu
<i>Saxicola maurus</i>	Sibirya karagerdanı	<i>Larus michahellis</i>	Gümüş martı	<i>Ciconia ciconia</i> (Sp-1-B)	Leylek
<i>Sylvia atricapilla</i>	Karabaşlı ötleğen	<i>Columba livia</i>	Kaya güvercini	<i>Circaetus gallicus</i> (Sp-2-D)	Yılan kartalı
<i>Sylvia borin</i>	Boz ötleğen	<i>Athene noctua</i> (Sp-2-B)	Kukumav	<i>Actitis hypoleucos</i>	Dere düdükçünü
<i>Sylvia communis</i>	Akgerdanlı ötleğen	<i>Aegolius funereus</i>	Paçalı baykuş	<i>Streptopelia turtur</i>	Üveyik
<i>Lanius nubicus</i>	Maskeli örümcekkuşu	<i>Alcedo atthis</i>	Yalıçapkını	<i>Upupa epops</i> (Sp-1-F)	İbibik
<i>Emberiza melanocephala</i>	Karabaşlı kirazkuşu	<i>Alauda arvensis</i>	Tarlakuşu	<i>Motacilla flava</i>	Sarı kuyruksallayan
<i>Tadorna ferruginea</i>	Angit	<i>Galerida cristata</i>	Tepeli toygar	<i>Oenanthe hispanica</i>	Karakulahlı kuyrukkakan

**Fig. 2** The number of species in families.

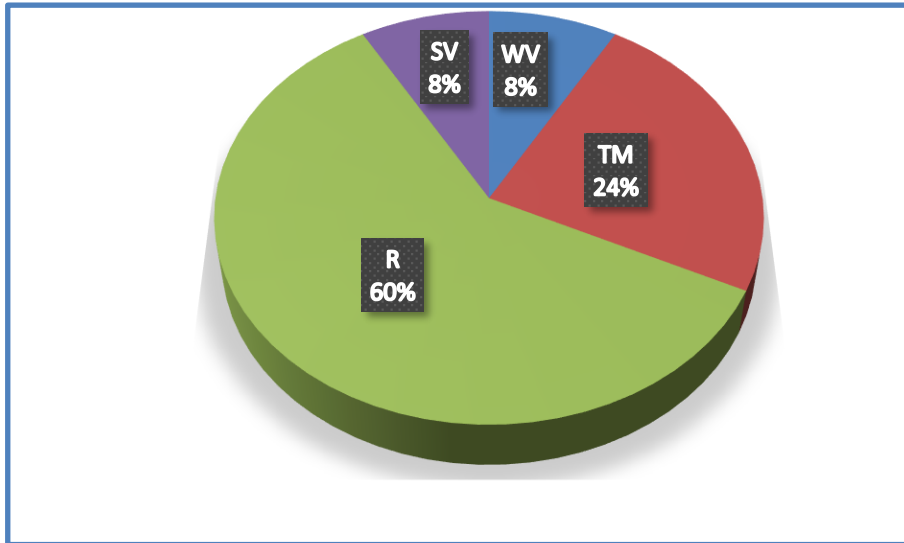


Fig. 3 The distribution of species according to their use (%) of the region (SV: Summer visitor, WV: Winter visitor, TM: Transit migratory, R: Resident).

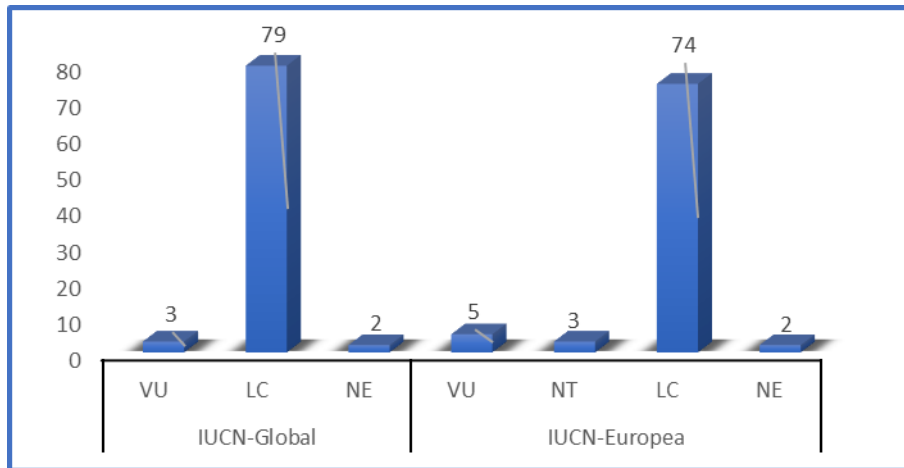


Fig. 4 The distribution of species by IUCN (Global and European) conservation status (VU (Vulnerable): Species considered to be facing a high risk of extinction in the wild, NT (Near Threatened): Species close to qualifying for or is likely to qualify for a threatened category in the near future, LC (Least Concern): Widespread and abundant species and NE (Not Evaluated): Species that has not yet been evaluated against the criteria).

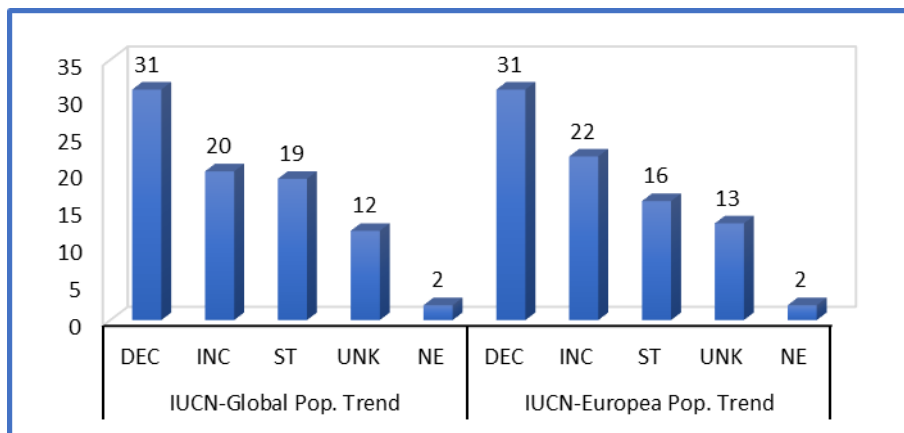


Fig. 5 The distribution of population trends of species by IUCN (Global and European), (DEC: Decreasing, INC: Increasing, ST: Stable, UNK: Unknown, NE: Not Evaluated).

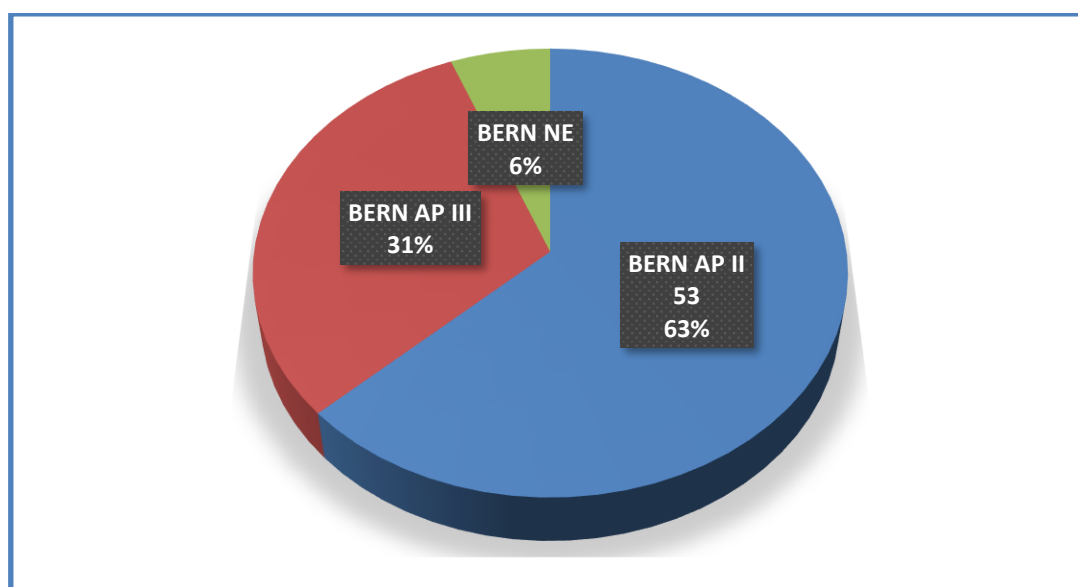


Fig. 6 The distribution of species by BERN convention conservation categories (Appendix - II: Strictly Protected Fauna Species and Appendix - III: Protected Fauna Species and NE: Not evaluated).

4. Discussion

The bird fauna of Turkey is well known and the species number is given between 490-502 [20-24]. The number of bird species identified in the study area is approximately one fifth of the number of species in Turkey. The results of this study indicates that even a small wetland is an important habitat for birds, and watering ponds, like other wetlands, are important habitats for the survival of bird species [6, 12, 14, 16, 17, etc.]. There is only one study in the literature on artificial wetlands like Yazır Dam in Thrace. In the related study, Kaya [5] determined the birds of Edirne Süloğlu Dam and its surroundings and determined a total of 101 species, 25 of which were waterbirds. In addition, a similar study in natural wetlands in Thrace is only three [4, 6, 8]. Among these studies, 170 species, 76 of which are waterbird, were recorded within the scope of the master's thesis to determine the bird fauna of Istanbul Büyükdere Lake [4]. In the research conducted on the bird fauna of the İğneada Longoz Forests and its surroundings, located on the Bulgarian border in the north of Thrace, 227 species, 80 of which are waterbird, were recorded [6]. Another study was carried out to determine the avian fauna of Gala Lake and its surroundings, which is an important area for migratory birds, and 134 species, 58 of which are waterbirds, were recorded [8].

Of the 84 species identified in Yazır Pond and its surroundings, 50 (about 60%) are resident species. Of the 101 species identified in the study conducted in Edirne's Süloğlu Dam and its surroundings, 47 (47%) were identified as resident species [5], of the 227 species detected in the study on the bird fauna of İğneada Longoz Forests and its surroundings, 75 (33%) were identified as resident species [6], in the study they carried out to determine the bird fauna of Gala Lake and its surroundings, 29 (22%) of the 134 species detected were resident species [8]. It was determined that the rate of native species among all species detected in Yazır Pond and its surroundings was higher than in other areas. Among these areas, the closest ratio to Yazır pond is Süloğlu Dam, which is

also an artificial wetland. The high rate of native species in the Yazır pond can be associated with the habitat types existing in the area and its location close to the Ganos Mountain forests and the Marmara Sea. The fact that both artificial wetlands have a higher rate of resident species than the other two natural wetlands indicates that these artificial wetlands are also important areas where birds can perform their vital activities.

When the species seen in the area are evaluated according to IUCN criteria, the population trend of *Clanga clanga* (Greater Spotted Eagle), which is one of the species in the VU category at the global and European levels, is decreasing for both scales. *Falco vespertinus* (Red-footed Falcon) is also in the VU category and its population is declining both globally and in Europe. *Gallinago gallinago* (Common Snipe) and *Tringa totanus* (Common Redshank) are also in the VU category at the European scale and their populations are in declining condition. On the other hand, *Fulica atra* (Eurasian Coot) and *Lanius senator* (Red-headed shrike) are in the NT category in the European level (not currently endangered but the candidate for VU, EN, and CR category in the near future) and their populations are in a declining trend. Conservation of species in extinction categories in the region necessitates the protection of habitats of these species. One of the results of this study is that the Yazır Dam and its surroundings should be evaluated in this respect and the conservation priority of the area should be determined. According to the BERN convention categories, more than half of the species are in the Annex II category (species under strict protection), which is important in terms of showing the protection priority of the area and therefore the birds.

The richness in bird diversity of an area allows inferring that the biodiversity of the area is generally rich. Biodiversity in wetlands, like other habitat types, is negatively affected by anthropogenic polluting activities. The most intense anthropogenic effects around the Yazır Dam are the grazing of small cattle and poaching activities. These activities also put pressure on the ecosystem and cause the accumulation of

polluting factors in the area. On the other hand, drawing water from the pond both for watering purposes and as drinking water for certain neighborhoods (since 2017) [12] has caused the water level of the pond to vary greatly in the last four years. This situation causes the water connection to be broken especially from the reed areas and divides the habitats of some species. In addition, agricultural activities are carried out at some points in the immediate vicinity of the area. Both the pesticides coming from the agricultural areas by various routes and the empty boxes of the pesticides used are thrown around the pond, causing pesticides to mix into the water of the lake.

It is known that natural wetlands are ecosystems with the highest biodiversity. This study indicates that artificial wetlands such as dams have become important habitats for bird species over time. It has also shown that the anthropogenic effects on wetlands are common, without distinction between natural and artificial wetlands. Considering the global climate change and the drought that comes with it, it is obvious that wetlands should be protected together with their biological richness.

Declaration

Author Contribution: Conceive-A.A., D.Ş.; Design-A.A., D.Ş., D.H.A.; Supervision- A.A., D.Ş.; Experimental Performance, Data Collection and/or Processing A.A., D.Ş., D.H.A.; Analysis and/or Interpretation A.A., D.H.A.; Literature Review- A.A., D.Ş., D.H.A.; Writer- A.A., D.Ş., D.H.A.; Critical Reviews - A.A., D.Ş., D.H.A.

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