EURASIAN JOURNAL OF ZOOLOGY

http://eurasianzoology.com

Eurasian J Zool

(2025) 2(2): 27-37

Original Research Article

Received: 14.12.2025 Accepted: 25.12.2025 Published: 31.12.2025

A Study on Ornithofauna of the Saray Kaz Lake (Van)

Çetin YILDIZ[1], Atilla DURMUŞ[2,*]

[1,2]Van Yuzuncu Yil University, Science Faculty, Biology Department, 65080, Van, Türkiye
[1]https://orcid.org/0009-0007-0050-9359, [2,*]https://orcid.org/0000-0002-5116-9581
*Correspondence: atilla@yyu.edu.tr

Abstract

In the present study the bird species living in the Saray Kaz Lake were investigated. Dobinson's point and line transect methods were used for counting of birds. 116 species belonging to 33 families were identified during about a year of observation period. These species were classified as follows 32.76 % (38) resident, 49.14 % (57) migratory, 8.62 % (16) winter visitor and 9.48 % (11) transit migratory species. According to the Red Data Book, 11 species are in A.1.2, 23 species were in A.2, 26 species were in A.3, 17 species were in A.3.1, 12 species were in A.4, 20 species were in A.5, 1 species were in B.2, 2 species were in B.3.1,2 species were in B3,2 species were in B4 status. According to the IUCN criteria, 2 species were determined to be in EN, 6 species in NT, 3 species in VU and 105 species in LC status.

Keywords: Kaz Lake, Birds, Ornithofauna, Saray, Wetland, Van.

1. Introduction

It is observed in history that the first civilizations were established near rivers, lakes, and wetlands where access to water was possible. Over time, humanity's desire to dominate nature and the resulting destruction brought about by fulfilling this desire first manifested itself in wetlands (Atkinson, 1968; Durmuş et al., 2011; Keddy, 2000). These regions, long referred to as wild areas that did not allow human activities, began to be seen as places that needed to be reclaimed. Without considering the wildlife within these areas, swamps, lakes, and wetlands were drained and converted into residential or agricultural areas. Many rivers, lakes, and swamps are being put at risk by being used as sites for chemical waste disposal (Kiziroğlu, 2008; Fuller et al., Çelik and Durmus, 2017; Nergiz et al., 2016). Not only in our country, but all over the world, these important ecosystem areas have been rapidly diminishing. Experts claim that half of the wetlands, which once covered significant portions of the earth, have been destroyed. The greatest losses are seen in economically developing countries that are unable to conduct proper environmental planning (Sallabank et al., 2000).

Wetlands are described as "natural or artificial; permanent or seasonal, fresh, brackish, or salty; bodies of

stagnant or flowing water, marshes, peatlands, and tidal waters of the sea with a depth not exceeding six meters at low tide." Our country lies on bird migration routes and has a great abundance of wetlands. The book Important Bird Areas of Turkey, prepared by the Society for the Conservation of Nature, mentions the existence of 76 internationally significant wetlands covering a total area of 1,240,000 hectares (Yarar, 2002). A significant portion of these areas are located in the Eastern Anatolia Region. Water birds are dependent on wetland components that fall within this definition—such as freshwater and salt lakes, coastal and inland deltas, river floodplains, dam lakes and ponds, reed beds, streams, marine environments, and saltwater and freshwater marshes—for their survival and the continuation of their species. To better protect these areas and the birds that inhabit them, it is important to determine the population sizes of the species and their habitats in these areas.

Kaz Lake, one of the Important Bird and Wetland Areas in the Van Lake Basin of Turkey, is located in the southeast of The Saray district and covers an area of 71 hectares. The Van–Iran highway passes to the east of the lake. The area forms a closed basin surrounded by hills. The area where the lake lies is predominantly covered with reed beds, and the lakebed itself is made up of clay. Due to this feature of vegetation, it acts as a barrier preventing humans and other carnivorous mammals from entering the immediate vicinity of the lake. This creates a resting and sheltering area for birds. The highway passing very close to the lake makes access easier and leads to increased hunting activities. Tourists from Iran picnicking by the lake and operations at nearby quarries increase the pressure on the birds at the lake.

The aim of this study is to identify the bird species in Kaz Lake and its surroundings, which are ornithologically important, and to describe the features of the research area, the population sizes of the identified species, their presence periods in the area, their diets, breeding status, distributions within the area, their status, and places in the Red Data Book (Anonymous, 2025). For this purpose, it is aimed to identify the positive and negative factors affecting the lives of the species, to determine the measures necessary for ensuring the continuity of the species in the area, and to monitor and record population densities over the years.

It is believed that the data obtained within this research will contribute to future studies, area management planning, and species conservation efforts.

2. Materials and methods

The research area, Kaz Lake wetland, is located at y(4270484), x(430847), and the buffer zone at y (435931), x (4264445) (UTM) geographic coordinates (Figure 2.1). Situated in the south-southeast of the Saray district of Van province, the Kaz Lake Wetland is at an elevation of 2,348 meters and covers an area of 71.385 hectares (0.714 km²) (Anonymous 2016). It is located 77 km, 16 km, and 10 km away from the Van, Özalp, and Saray settlements, respectively. In addition, Kaz Lake is approximately 7 km from the Kapıköy Customs Gate, which is on the Turkey-Iran border.

Figure 2.1. Satellite image of Kaz Lake (Google Earth image- 2025 GeoEye).

The material of this research consists of the bird species living in Kaz Lake and its surrounding area, located in the Saray district of Van. The population sizes, arrival and departure times, distributions, statuses, and positions on the red list of the bird species present in the area were determined. The research was conducted over one year, between April 2015 and April 2016. Field studies were carried out at approximately 15-day intervals, with each fieldwork lasting about 2 days. The number of field studies was especially increased during the breeding season. Observations began in the early hours of the day and continued until sunset in the afternoon. The birds in the area were identified using Dobinson's (1976) "Grid (Raster Mapping)" method. For this purpose, a 1/25000 scale map of the study area was divided into 300 m² squares (Figure 2.2).

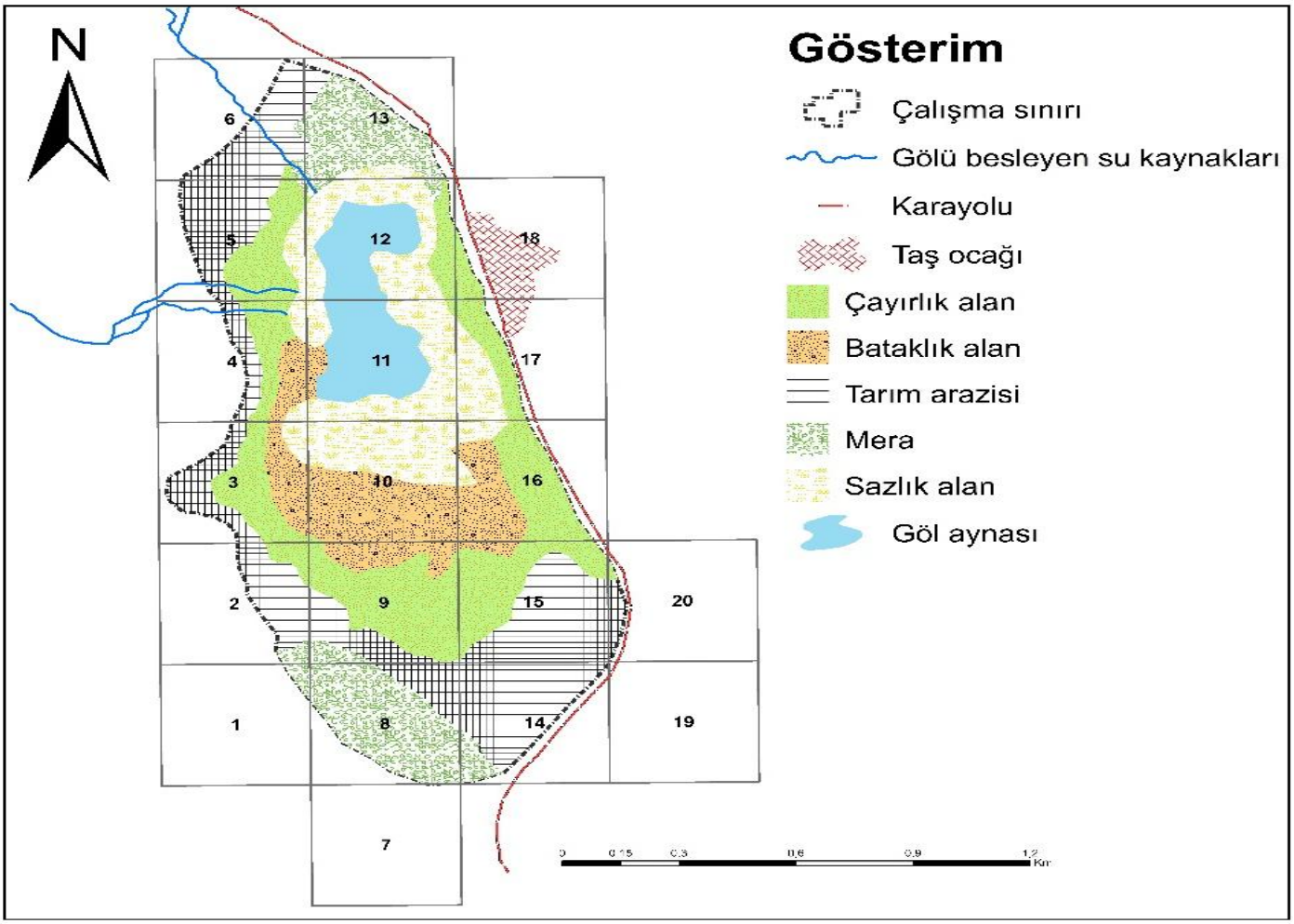

Figure 2.2. Habitat distribution map of the Bulanık Plain (1/25000).

During the studies, 1/25000 map of the area, field observation cards, binoculars (Nikon 10 x25), a telescope (Konuspot 100 mm), numerator, camera (Canon 650 D and 500 mm lens), marsh clothes and identification books (Kiziroğlu 2008; Heinzel at all., 1992) were used.

3. Results

As a result of year-long observations at Saray Kaz Lake (Van) and its surroundings, 116 species belonging to 33 families were recorded. The observation results for the identified 116 species are presented in Table 3.1. For each species, its status in the area, its place in the Red Lists, and its IUCN criteria are provided. Additionally, the findings section includes information on each species' arrival and departure times to the area, population size, number of individuals, and breeding status. According to the study results, 32.76% (38) of the detected species were resident, 49.14% (57) migratory, 8.62% (10) winter visitors, and 9.48% (11) transit migrants. Based on Red Data Book statuses, 11 species were in category A.1.2, 23 in A.2, 26 in A.3, 17 in A.3.1, 12 in A.4, 20 in A.5, 1 in B.2, 2 in B.3, 2 in B.3.1, and 2 in B.4. According to IUCN criteria, 105 species were classified as LC, 6 as NT, 2 as EN, and 3 as VU.

Table 3.1. Ornithofauna of Kaz lake.

No	Fam. / *Species Name*	Turkish Name	English Name	RDB	IUCN	Area Statue
Fam: Podicipedidae						
1	*Podiceps Auritus*	Kulaklı Batağan	Horned Grebe	B.3	VU	R
2	*Tachybaptus Ruficollis*	Küçük Batağan	Little Grebe	A.3.1	LC	R
3	*Podiceps Nigricollis*	Kara Boyunlu Batağan	Black-Necked Grebe	A.4	LC	R
4	*Podiceps Grisegena*	Kızıl Boyunlu Batağan	Red-Necked Grebe	A.3	LC	R
Fam: Ardeidae						
5	*Botaurus Stellaris*	Balaban	Great Bittern	A.2	LC	M
6	*Ixobrychus Minutus*	Küçük Balaban	Little Bittern	A.2	LC	M
7	*Egretta Garzetta*	Küçük Akbalıkçıl	Little Egret	A.3.1	LC	WV
8	*Ardea Cinerea*	Gri Balıkçıl	Grey Heron	A.3.1	LC	M
9	*Ardea Purpurea*	Erguvani Balıkçıl	Purple Heron	A.2	LC	M
Fam: Ciconiidae						
10	*Ciconia Ciconia*	Ak Leylek	White Stork	A.3.1	LC	M
Fam: Anatidae						
11	*Anser Anser*	Boz Kaz	Greylag Goose	A.4	LC	WV
12	*Tadorna Ferruginea*	Angıt	Ruddy Shelduck	A.4	LC	R
13	*Tadorna Tadorna*	Suna	Common Shelduck	A.3.1	LC	R
14	*Anas Crecca*	Çamurcun	Common Teal	A.5	LC	M
15	*Anas Platyrhynchos*	Yeşilbaş	Mallard	A.5	LC	R
16	*Spatula Querquedula*	Çıkrıkçın	Garganey	A.4	LC	M
17	*Spatula Clypeata*	Kaşıkgaga	Northern Shoveler	A.4	LC	R
18	*Aythya ferina*	Elmabaş pakta	Common Pochard	A.5	VU	R
19	*Oxyura leucocephala*	Dikkuyruk	White-headed Duck	A.2	EN	M
Fam: Accipitridae						
20	*Milvus milvus*	Kızıl çaylak	Red Kite	A.1.2	NT	M
21	*Neophron percnopterus*	Küçük akbaba	Egyptian Vulture	A.3	EN	M
22	*Gyps fulvus*	Kızıl akbaba	Griffon Vulture	A.2	LC	M
23	*Circus aeruginosus*	Saz delicesi	Western Marsh-harrier	A.3	LC	R
24	*Circus pygargus*	Çayır delicesi	Montagu's Harrier	A.1.2	LC	TM
25	*Accipiter nisus*	Atmaca	Eurasian Sparrowhawk	A.3	LC	R
26	*Buteo buteo*	Şahin	Common Buzzard	A.3	LC	M
27	*Buteo rufinus*	Kızıl şahin	Long-legged Buzzard	A.3	LC	M
28	*Aquila chrysaetos*	Kaya kartalı	Golden Eagle	A.1.2	LC	M
Fam: Falconidae						
29	*Falco naumanni*	Küçük kerkenez	Lesser Kestrel	A.2	LC	TM
30	*Falco tinnunculus*	Kerkenez	Common Kestrel	A.2	LC	R
31	*Falco subbuteo*	Delice doğan	Eurasian Hobby	A.3.1	LC	M

Table 3.1. Ornithofauna of Kaz lake (continued)

No	Fam. / *Species Name*	Turkish Name	English Name	RDB	IUCN	Area Statue
Fam: Phasianidae						Statue
32	*Tetraogallus caspius*	Urkeklik	Caspian Snowcock	A.1.2	LC	R
33	*Alectoris chukar*	Kınalı keklik	Chukar	A.2	LC	R
34	*Perdix perdix*	Çil keklik	Grey Partridge	A.2	LC	R
35	*Coturnix coturnix*	Bıldırcın	Common Quail	A.3	LC	TM
Fam: Rallidae						
36	*Rallus aquaticus*	Su kılavuzu	Water Rail	A.3	LC	R
37	*Gallinula chloropus*	Saz tavuğu	Common Moorhen	A.3.1	LC	R
38	*Fulica atra*	Sakarmeke	Common Coot	A.5	LC	R
Fam: Recurvirostridae						
39	*Himantopus himantopus*	Uzun bacak	Black-winged Stilt	A.3	LC	M
Fam: Charadriidae						
40	*Charadrius dubius*	Küçük halkalı cılıbıt	Little Ringed Plover	A.3	LC	TM
41	*Vanellus vanellus*	Kız kuşu	Northern Lapwing	A.5	NT	M
Fam: Scolopacidae						
42	*Philomachus pugnax*	Döğüşken kuş	Ruff	B.4	LC	M
43	*Gallinago gallinago*	Su çulluğu (Bekasin)	Common Snipe	B.3.1	LC	WV
44	*Scolopax rusticola*	Çulluk	Eurasian Woodcock	B.3	LC	WV
45	*Limosa limosa*	Çamur çulluğu	Black-tailed Godwit	B.4	NT	WV
46	*Tringa totanus*	Kızıl bacak	Common Redshank	A.4	LC	M
47	*Tringa nebularia*	Yeşil bacak	Common Greenshank	B.3.1	LC	M
48	*Tringa ochropus*	Yeşil düdükçün	Green Sandpiper	B.2	LC	WV
Fam: Laridae						
49	*Larus ridibundus*	Karabaş martı	Black-headed Gull	A.5	LC	M
50	*Larus armenicus*	Vangölü martısı	Armenian Gull	A.4	NT	R
51	*Sterna hirundo*	Sumru	Common Tern	A.3	LC	TM
52	*Chlidonias leucopterus*	Akkanatlı sumru	White-winged Tern	A.4	LC	M
Fam: Columbidae						
53	*Columba livia*	Kaya güvercini	Rock Pigeon	A.5	LC	R
54	*Streptopelia decaocto*	Kumru	Eurasian Collared-dove	A.5	LC	R
55	*Streptopelia turtur*	Üveyik	European Turtle-dove	A.3.1	VU	M
56	*Spilopelia senegalensis*	Küçük kumru	Laughing Dove	A.4	LC	R
Fam: Cuculidae						
57	*Cuculus canorus*	Guguk kuşu	Common Cuckoo	A.2	LC	M
Fam: Strigidae						
58	*Bubo bubo*	Puhu	Eurasian Eagle-owl	A.1.2	LC	R
59	*Athene noctua*	Kukumav	Little Owl	A.2	LC	R

Table 3.1. Ornithofauna of Kaz lake (continued)

No	Fam. / *Species Name*	Turkish Name	English Name	RDB	IUCN	Area Statue
Fam: Caprimulgidae						Statue
60	*Caprimulgus europaeus*	Çobanaldatan	Eurasian Nightjar	A.1.2	LC	TM
Fam: Apodidae						
61	*Apus apus*	Ebabil	Common Swift	A.3.1	LC	M
62	*Tachymarptis melba*	Ak karınlı ebabil	Alpine Swift	A.3.1	LC	M
Fam: Meropidae						
63	*Merops apiaster*	Arıkuşu	European Bee-eater	A.3.1	LC	M
Fam: Coraciidae						
64	*Coracias garrulus*	Gök Kuzgun	European Roller	A.2	NT	M
Fam: Upupidae						
65	*Upupa epops*	İbibik	Eurasian Hoopoe	A.2	LC	M
Fam: Alaudidae						
66	*Melanocorypha calandra*	Boğmaklı toygar	Calandra Lark	A.5	LC	R
67	*Melanocorypha bimaculata*	Küçük Boğmaklı toygar	Bimaculated Lark	A.3	LC	R
68	*Galerida cristata*	Tepeli toygar	Crested Lark	A.3	LC	R
69	*Alauda arvensis*	Tarlakuşu	Eurasian Skylark	A.4	LC	WV
70	*Eremophila alpestris*	Kulaklı Toygar	Horned Lark	A.3.1	LC	M
Fam: Hirundinidae						
71	*Riparia riparia*	Kum kırlangıcı	Sand Martin	A.5	LC	M
72	*Hirundo rustica*	Kır kırlangıcı	Barn Swallow	A.5	LC	M
73	*Delichon urbicum*	Ev kırlangıcı	Northern House-martin	A.3	LC	M
Fam: Motacillidae						
74	*Anthus pratensis*	Çayır incirkuşu	Meadow Pipit	A.3	NT	WV
75	*Motacilla flava*	Sarı kuyruksallayan	Yellow Wagtail	A.3.1	LC	M
76	*Motacilla citreola*	Sarı başlı Kuyruksallayan	Citrine Wagtail	A.2	LC	M
77	*Motacilla cinerea*	Dağ kuyruksallayanı	Grey Wagtail	A.2	LC	M
78	*Motacilla alba*	Ak kuyruksallayan	White Wagtail	A.3.1	LC	M
Fam: Muscicapidae						
79	*Erithacus rubecula*	Kızıl gerdan	European Robin	A.3	LC	WV
80	*Luscinia svecica*	Buğdaycıl	Bluethroat	A.2	LC	M
81	*Irania gutturalis*	Taş bülbülü	White-throated Robin	A.1.2	LC	M
82	*Phoenicurus ochruros*	Kara kızılkuyruk	Black Redstart	A.2	LC	WV
83	*Phoenicurus phoenicurus*	Kızılkuyruk	Common Redstart	A.3	LC	M
84	*Saxicola rubetra*	Çayır taşkuşu	Whinchat	A.3	LC	TM
85	*Saxicola torquatus*	Taş kuşu	Common Stonechat	A.3	LC	M
86	*Oenanthe isabellina*	Boz kuyrukkakan	Isabelline Wheatear	A.3	LC	M
87	*Oenanthe oenanthe*	Kuyrukkakan	Northern Wheatear	A.3	LC	TM
88	*Oenanthe pleschanka*	Alaca kuyrukkakan	Pied Wheatear	A.1.2	LC	M

Table 3.1. Ornithofauna of Kaz lake (continued)

No	Fam. / *Species Name*	Turkish Name	English Name	RDB	IUCN	Area Statue Statue
89	*Oenanthe hispanica*	Kara kulaklı kuyrukkakan	Black-eared Wheatear	A.2	LC	M
90	*Monticola saxatilis*	Taş kızılı	Rufous-tailed Rock-thrush	A.1.2	LC	M
Fam: Sylviidae						
91	*Cettia cetti*	Kamış bülbülü	Cetti's Warbler	A.2	LC	R
92	*Acrocephalus agricola*	Doğu kamışçını	Paddyfield Warbler	A.2	LC	M
93	*Phylloscopus orientalis*	Doğu çıvgını	Eastern Warbler	A.5	LC	M
94	*Phylloscopus collybita*	Çıvgın	Chiffchaff	A.3.1	LC	M
Fam: Paridae						
95	*Parus major*	Büyük baştankara	Great Tit	A.3.1	LC	M
Fam: Sittidae						
96	*Sitta neumayer*	Kaya sıvacısı	Western Rock-nuthatch	A.2	LC	M
Fam: Laniidae						
97	*Lanius collurio*	Kızıl sırtlı örümcek kuşu	Red-backed Shrike	A.3	LC	M
98	*Lanius minor*	Kara alınlı örümcek kuşu	Lesser Grey Shrike	A.3	LC	TM
99	*Lanius excubitor*	Büyük örümcek kuşu	Great Grey Shrike	A.1.2	LC	M
100	*Lanius senator*	Kızıl başlı örümcek kuşu	Woodchat Shrike	A.2	LC	TM
Fam: Corvidae						
101	*Pica pica*	Saksağan	Black-billed Magpie	A.5	LC	R
102	*Corvus monedula*	Küçük karga	Eurasian Jackdaw	A.5	LC	R
103	*Corvus frugilegus*	Ekin kargası	Rook	A.5	LC	R
104	*Corvus cornix*	Leş kargası	Carrion Crow	A.5	LC	R
105	*Corvus corone*	Sis kargası	Hooded crow	A.5	LC	R
106	*Corvus corax*	Kuzgun	Common Raven	A.5	LC	R
Fam: Sturnidae						
107	*Sturnus vulgaris*	Sığırcık	Common Starling	A.5	LC	M
Fam: Passeridae						
108	*Passer domesticus*	Ev serçesi	House Sparrow	A.5	LC	R
109	*Passer montanus*	Ağaç serçesi	Eurasian Tree Sparrow	A.3	LC	R
110	*Petronia petronia*	Kaya serçesi	Rock Sparrow	A.3	LC	R
Fam: Fringillidae						
111	*Carduelis carduelis*	Saka	European Goldfinch	A.3.1	LC	M
Fam: Emberizidae						
112	*Emberiza citrinella*	Sarı kirazkuşu	Yellowhammer	A.2	LC	M
113	*Emberiza hortulana*	Kirazkuşu	Ortolan Bunting	A.3	LC	M
114	*Emberiza buchanani*	Doğu kirazkuşu	Grey-necked Bunting	A.1.2	LC	M
115	*Emberiza melanocephala*	Karabaşlı kirazkuşu	Black-headed Bunting	A.4	LC	M
116	*Miliaria calandra*	Tarla kirazkuşu	Corn Bunting	A.4	LC	R

IUCN: The International Union for Conservation of Nature; **EN**: Endangered; **NT**: Near Threatened; **VU**: Vulnerable; **LC**: Low Critically; **R**: Residant; **SM**: Summer Migrant; **WV**: Winter visitor; **TM**: Transit migrant.

In light of the information provided in Table 3.1 above, photographs of some of the species identified in the field are presented below (Figures 3.1–3.6).

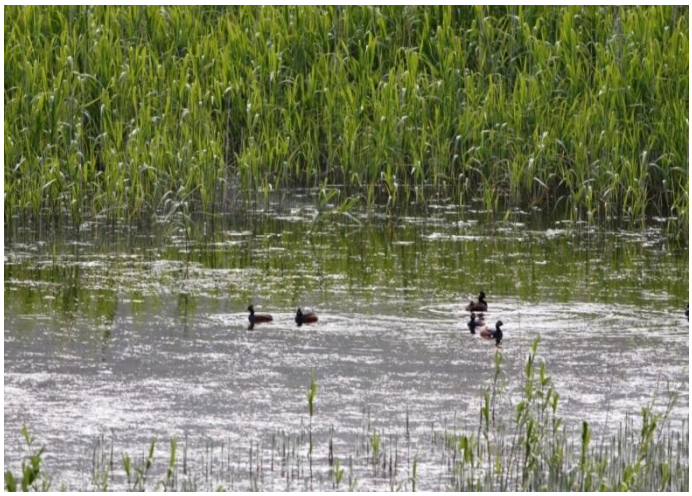

Figure 3.1 *Podiceps auritus*

Figure 3.2 *Tachybaptus ruficollis*

Figure 3.3 *Tadorna ferruginea*

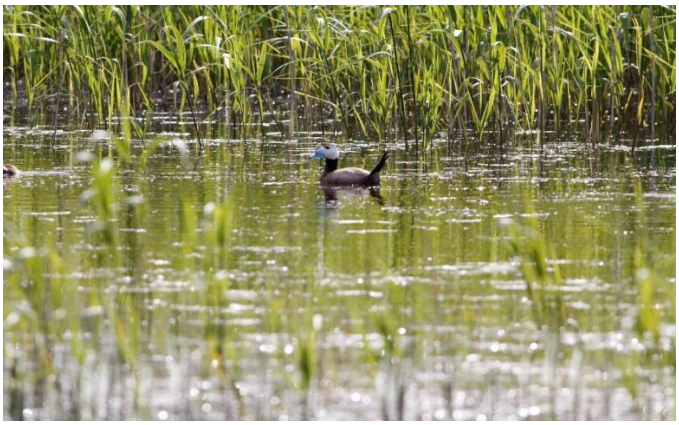

Figure 3.4 *Oxyura leucocephala*

Figure 3.5 *Circus aeruginosus*

Figure 3.6 *Sturnus vulgaris*

It was determined that 116 of the species in the area are confirmed to breed, while 45 do not breed. It was found that the habitats where bird species are most active are the reed beds and grassland habitats. In addition, since the agricultural lands surrounding the area are left to lie fallow for a certain period for haymaking, they

provide significant benefits during the birds' breeding season. The steppe vegetation that dominates the elevations forming the outer boundaries of the area is important for terrestrial birds and raptor species. The presence of different habitat types within the area allows for the existence of a large number of different species.

4. Discussion

Kaz Lake, located within the boundaries of Saray district, was designated as a Local Wetland by the Local Wetland Commission according to the Ministry of Forestry and Water Affairs 14th Regional Directorate's 2016 Study and Inventory of Van Province Wetlands (Anonymous 2016). Surrounded by mountains, the freshwater lake is of vital importance for living creatures. As a result of this year-long study in and around Saray Kaz Lake, a total of 116 species belonging to 33 families, with a total population size of 8,933, were identified. Information was collected on the observation dates of these species in the area, their population sizes, their status on red lists, how they use the area, and their breeding status. Of the species identified in the study area, 32.76% (38) were Resident, 49.14% (57) Migrant, 8.62% (10) Winter Visitors, and 9.48% (11) Passage Migrants. According to Red Data Book Statuses, 11 species were classified as A.1.2, 23 species as A.2, 26 species as A.3, 17 species as A.3.1, 12 species as A.4, 20 species as A.5, 1 species as B.2, 2 species as B.3.1, 2 species as B.3, and 2 species as B.4. According to IUCN criteria, 105 species were categorized as LC (Least Concern), 6 as NT (Near Threatened), 2 as EN (Endangered), and 3 as VU (Vulnerable). Of the species in the area, 36 were confirmed to breed there, while 80 were found not to breed. Six habitat types important for species in the area were identified and included in a mapped plan. The presence of different habitat types in the area allows for the existence of a large number of different species. Saray Kaz Lake is one of the last nearest wetlands on our country's eastern border with Iran. This research is the first directly conducted detailed scientific ornithological study of this internationally important site. Maps showing bird migration routes indicate a secondary migration path follows the direction from Van Province to Saray district. This secondary route also passes through Saray Kaz Lake. Especially during spring, the passage of summer visitor species through here can be distinctly observed.

The wetlands closest to Saray Kaz Lake are Çaçan Pond, Değirmi Pond, and the Salty Lakes, collectively known as the Çimenova Lakes. The next nearest wetlands after these are Akgöl, Erçek Lake, and Iran's Lake Urmia. Due to the short distances between these wetlands, visits for feeding purposes may occur. During the winter months, especially goose and duck species from the north come to the area to overwinter. However, intense hunting pressure and habitat destruction are forcing the arriving birds to move to other areas.

The fact that the area used to support far more living creatures in the past than today is evident from the increase in agricultural activities around it. The density of the area's vegetation and the presence of different habitat types allow for the existence of many different species.

The factors negatively affecting Saray Kaz Lake originate from human activity, the most significant being overgrazing. The international D300 highway, which passes just east of the lake, poses a significant threat to

the area. The outer parts of the lake are used as agricultural land, while the more central parts serve as pasture, putting additional pressure on the birds living there. Due to these factors, nearly half of the area has been degraded and has lost its wetland characteristics.

Due to the region's climate, the long winter necessitates obtaining animal feed, leading to the mowing of the meadows surrounding the reed beds. To prevent this, encouraging the cultivation of forage crops and developing their production in the region will have a positive impact on the meadows, reed beds, and natural vegetation. The fertile pastures around the lake are used by the local people for summer grazing and animal grazing. Grazing, especially during the breeding season of birds in April-May, has a negative impact on the birds living in the area.

It would be appropriate to take the necessary measures now to prevent hunting pressure and the use of the area as a picnic area in the future. The fact that the area is far from residential areas and that a significant part of it consists of marshes and swamps provides the opportunity to isolate breeding areas. The area should be included in wetland planning and implemented as soon as possible, given its suitability as a breeding and nesting area for species with declining populations, such as the white-headed duck (*Oxyura leucocephala*).

This study aims to reveal the ornithological value of the wetland, obtain the scientific data needed to determine the appropriate official protection status, and contribute to conservation efforts.

This study has revealed the ornithological value of the wetland, identified the bird species and conservation statuses required by the relevant authorities, and contributed to the ornithological literature. The results of this study will also be shared with the relevant institutions and stakeholders with an interest in the area.

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