



Wetland of Local Importance in Sivas Province (Turkey): Kaz Lake

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ABSTRACT

Wetlands are very complex natural systems that serve the local people and the country, and they have important values that cannot be compared with any other ecosystem on Earth. This study aims to emphasize the importance of Kaz Lake, which is a locally important wetland in Sivas province, and to reveal the current situation. Kaz Lake is located in the Central Anatolia Region and is one of the 22 locally important wetlands of Turkey. Kaz Lake is a typical shallow lake and is the only wetland of local importance within the borders of Sivas province. Kaz Lake and its surrounding wetlands of 315 hectares were registered as locally important wetlands in 2019. The protected area national classification code of Kaz Lake is 06.02.03.0012. Kaz Lake is a wetland ecosystem that meets the criteria of "Wetland of Local Importance" with its features such as the animal and plant species it hosts in and around, the diversity in their habitats, and the fact that it provides feeding, accommodation, and breeding opportunities to very crowded bird groups due to its location on migration routes. Kaz Lake Wetland should be protected above all for the wildlife whose life depends on the habitat here. Management plan studies for Kaz Lake Wetland are still in progress. For this reason, the locally important Kaz Lake Wetland in Sivas province should be managed intelligently and its sustainable use should be ensured. Kaz Lake Wetland should be protected and managed in such a way as to protect its landscape integrity, natural and historical values, the wild animals and plant species it contains, and to ensure that local people benefit.

Keywords: Kaz Lake, Wetland of local importance, Turkey, Ecosystem, Sivas

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INTRODUCTION

Water is an essential substance for all living things to survive. No living thing can survive without water. Water is the basic building block of life. Wetlands are ecosystems with very complex structures that have many functions on earth. Wetlands as transition ecosystems between soil and water; they constitute the richest and most productive ecosystems on earth (Kahraman & Kaya, 2022). Wetlands according to the Ramsar Convention; It is defined as "all waters, marsh, reeds, turbid areas, natural or artificial, permanent or temporary, with stagnant or flowing waters, fresh, brackish or salty, covering depths not exceeding six meters during the low tide of the seas". Wetlands are among the world's most productive ecosystems. The features of the system can be grouped by components, functions, and attributes. The components of the system are biotic and non-biotic features that include soil, water, plants, and animals. Interactions between components express themselves as functions such as nutrient cycling and water exchange between surface and groundwater and surface and atmosphere. The system also has features such as the diversity of species (Barbier *et al.*, 1997; Birler, 2019; Devi *et al.*, 2023). Turkey is very productive in terms of wetlands and diversity. Turkey is located in the middle belt, in the center of the old world lands, consists of two peninsulas surrounded by seas on three sides, and as a result, being a country with a wide variety

of geomorphological landforms, the diversifications caused by the macro and micro climate zones have contributed to the formation and development of wetlands (Ilgar, 2021). Accordingly, being on the world bird migration routes and its location makes Turkey one of the important countries in its geography in terms of wetlands. According to the "Regulation on the Protection of Wetlands", wetlands of local importance: include wetlands of national importance and wetlands that are not in the Ramsar Area list (Official Gazette, 2014; Yousaf *et al.*, 2021). With this regulation, wetlands are divided into two. If it is decided that the wetland is not a "national" but a "local" wetland, the local administration will be able to determine the boundaries of the wetland and determine the principles of protection and use of the wetland. One of the 22 locally important wetlands in Turkey is Kaz Lake, which is the subject of this study. This study aims to emphasize the importance of Kaz Lake, which is a locally important wetland in Sivas province, and to reveal the current situation.

MATERIALS AND METHODS

Sivas, where Kaz Lake is located; is an important Anatolian city with its history, nature, cultural richness, and all the values it has, and it constitutes the second largest province of Turkey with a surface area of 28.488 square kilometers. Sivas province has 17 districts and 1233 villages. Sivas province, one of the oldest cities of the Central Anatolia Region, is located at a transition point connecting the Black Sea region to the Mediterranean region. Sivas province was established in a high

and mountainous area in general due to its geographical structure. The average elevation of the province is over 1000 meters. It generally has a land structure consisting of high plains, mountains, and deep valleys. There are about 20 large and small natural wetlands (lakes and reeds-swamps) within the provincial borders of Sivas. Kaz, Tödürge, Hafik, Ulaş, Gökpinar, Doğanşar Dipsiz, Çimenyenice, and Lota lakes are lakes that contain water continuously throughout the year. Others (Çetme, Kemiş, Sarıgöl, Kızılçam, Karagöl, Ağgöl, Mağara, Kurugöl, Karayün, Balıkkaya, Tecer, Seyfe-Göydün, Kanlı, Bingöl, Tuzlu, Çoraklık, Gavur lakes) are lakes that can dry up (Kavak, 2020). Kaz Lake, which forms the main material of this study, is approximately 15 kilometers away from the Zara district of Sivas province.

While determining the method in this study, the situation in Sivas province of the locally important wetlands protected by the Republic of Turkey, Ministry of Agriculture and Forestry, General Directorate of Nature Conservation and National Parks was evaluated. In this study, firstly, previous studies on the subject were investigated. Then, the locations of the locally important wetlands protected by the Provincial Directorate of Agriculture and Forestry in Sivas province, the date of the announcement, the surface areas they cover, and other information about these areas were collected and evaluated. It is deemed necessary to increase competitiveness by ensuring the increase in production through domestic natural resources that will decrease foreign dependence and by increasing the benefit of the products without depreciating the national currency (Irhan & Oran, 2022).

RESULTS AND DISCUSSION

There is only one wetland of local importance in Sivas province. Some basic features of Kaz Lake Wetland, which is of local importance in Sivas province, are presented in **Table 1**. Kaz Lake was declared as a wetland of local importance on 19 November 2019 with the code 06.02.03.0012 and was taken under protection (**Table 1**).

Table 1. Some basic features of Kaz Lake Wetland

N	Wetland Name	National Classification Code of National Area	Proclamation Date	Wetland Area
1	Kaz Lake	06.02.03.0012	19.11.2019	315 ha

Kaz Lake is a locally important wetland located in the Central Anatolia Region of Turkey (**Figure 1**). It is located within the borders of the Zara district of Sivas province. Kaz Lake is a very small-scale terrestrial lake. Almost all the shores of Kaz Lake are covered with reeds and aquatic plants. The biodiversity and being on one of the bird migration routes in Turkey, as well as being a host, feeding, and breeding area for migratory birds, makes Kaz Lake important (SEP, 2021). For this reason, every year bird watchers and nature lovers come and stay here to observe.



Figure 1. A view from the Kaz Lake Wetland.

The Kaz Lake Wetland of Local Importance is located near the settlement area of Ütük village in the Zara district and has an area of 315 hectares (**Table 1**). Kaz Lake is located at an altitude of about 1430 meters above sea level. Located in the Kızılırmak River Basin, Kaz Lake is fed by precipitation waters. Kaz Lake is a typical shallow lake with an average depth of 2.5 meters. In dry times, a decrease is observed in Kaz Lake water level due to permeability (SEP, 2021). While Kaz Lake Wetland constitutes a very important habitat for aquatic flora and fauna, wild animals also meet their water needs from the lake.

Kaz Lake offers different species for bird watching every season. Especially the spring seasons are the most productive times to visit with the accommodation of migratory bird species (SEP, 2021). Kaz Lake is one of the limited number of wetlands in Turkey where the crane (*Grus grus* L., 1758) incubate, as well as many bird species such as the shelduck (Karaceylan, 2015), the white scavenger vulture (*Neophron percnopterus* L., 1758), the red-crested pochard (*Netta rufina* Pallas, 1773), the black stork (*Ciconia nigra* L., 1758). Kaz Lake is a nesting and breeding ground for most migratory bird species, and migratory birds raise their young in this wetland.

Neophron percnopterus (L., 1758), the only species of the genus *Neophron*, is the smallest vulture in Turkey and Europe. *Neophron percnopterus*, the little vulture is a summer migratory and transiting species in Turkey. It is estimated to be between 1000 and 2000 couples in Turkey, and its population tends to decrease (Yavuz *et al.*, 2021). *Neophron percnopterus* (L., 1758) has been given the status of "Endangered (EN)" by the IUCN - World Union for Conservation of Nature.

The crane, *Grus grus* (L., 1758) is a long-legged, long-necked, large, and elegant bird. They are usually seen in flocks. They form straight or V-shaped rows as they fly. Cranes breed in wetlands in the northern parts of Europe and Asia. After breeding, they become flightless at molt and prefer shallow wetlands covered with high reeds to hide during these unprotected periods (Can, 2016). *Grus grus* (L., 1758) is in the Least Concern (LC) category on the IUCN red list.

The shelduck, *Tadorna ferruginea* (Karaceylan, 2015) is a nocturnal feeding species. With its rusty orange plumage, this species has a different appearance from almost all other waterfowl. The habitat of this species is from southeastern Europe to Central Asia to southeastern China. They generally live in fresh, brackish, and brackish water lakes. This species nests around small lakes and streams, on rocky lands, and often away from the water's edge (Karaceylan, 2015). *Tadorna ferruginea* (Karaceylan, 2015) is in the Least Concern (LC) category on the IUCN red list.

The red-crested pochard, *Netta rufina* (Pallas, 1773) is a large and stocky diving duck. It floats without submerging too much. This species breeds in the Central Anatolian Region, Eastern Anatolian Region, Mediterranean Region, and Black Sea Region of Turkey in wetlands. *Netta rufina* (Pallas, 1773) is in the Least Concern (LC) category on the IUCN red list.

The black stork, *Ciconia nigra* (L., 1758) is seen in Turkey and Europe. The black stork species is a migrant and has the status of transit and summer migrant for Turkey. They fly by gliding without flapping their wings to travel long distances with the least energy expenditure (Bozyurt & Bahadır, 2013). *Ciconia nigra* (L., 1758) is in the Least Concern (LC) category on the IUCN red list.

Hunting of *Neophron percnopterus* (L., 1758), *Grus grus* (L., 1758), *Tadorna ferruginea* (Karaceylan, 2015), *Netta rufina* (Pallas, 1773) and *Ciconia nigra* (L., 1758) species are prohibited as they are included in the list of "Wild Animals under Protection" created according to the Land Hunting Law No. 4915 in Turkey.

Birds have both ecological and economic value. The extinction of birds also destroys habitats. The destruction of a habitat means the destruction of all living things and resources living in that area. Apart from the ecological services of birds, their economic value is also quite large. Birds provide supply service by influencing the supply of necessary materials such as food, hunting products, clothes, feathers, and fertilizer. It provides regulation services by cleaning carcasses and residues, controlling vertebrate and invertebrate pest populations, pollination of plants, and dispersal of seeds. Similarly, it provides a supportive service by contributing to the conversion of nutrients and soil formation. In addition, billions of dollars spent on bird watching are an important example of cultural and scientific services (Kardaş & Cebe, 2021). Turkey has a very rich biological diversity and very different ecosystem features due to its wide variety of geographical landforms, climate, and vegetation. Wetlands in Turkey are home to many native and migratory bird species.

Many migratory bird species, which move between the West Palearctic and Africa every year, pass over Turkey. Since Turkey is predominantly semi-arid, wetlands in Turkey are of vital importance for many of these migratory birds (Kiriş & Akcan, 2013). According to the data of the Republic of Turkey, Ministry of Agriculture and Forestry in 2021, there are 22 locally important wetlands in Turkey, the size of which has reached an area of 29 266 hectares. There is one wetland of local importance in Sivas province. On the other hand, while there are three locally important wetlands in Muş and Sakarya provinces, there are two locally important wetlands in Balıkesir, Hatay, and Konya provinces. As in the province of Sivas, there is one wetland of local importance in the provinces of Antalya, Çankırı, Erzurum, Kocaeli, Ordu, Osmaniye, Sinop, Van and Yalova. Considering that the total number of provinces in Turkey is eighty-one, there are no locally important wetlands in the remaining sixty-seven provinces. These locally important wetland ecosystems are; change or disappear with the interruption of their natural processes as a result of interfering with the ecological and hydrological system due to reasons such as urbanization, environmental pollution, and agricultural activities. If the properties of wetlands are changed without taking into account the values they provide, negative results will emerge. Many countries today have destroyed or lost most of

their wetlands (Altundağ & Canlı, 2019). In addition, the existence of wetlands is very important for the continuity of the natural balance and the integrity of nature. These sensitive areas are the most important elements in the functioning of the ecological system. For this reason, interventions in wetlands will certainly cause many environmental problems. The activities, that have been increasing in the wetlands and their surroundings in recent years, affect these areas negatively.

Wetlands, which have an indispensable function in the continuation of the natural balance, are among the habitats that need to be protected. Due to the important natural values they offer, they need to be protected and managed sustainably. In this context, wetlands of global importance need conservation policies to ensure their sustainable development in the future (Ozdemir, 2005). Wetlands have a very important place in protecting biological diversity and ensuring species continuity (Sülük *et al.*, 2013; Birler, 2019; Kardaş & Cebe, 2021). According to the regulation on the protection of wetlands, the sensitive protection zone is defined as a wetland ecosystem with self-repair potential, open water surfaces, lagoons, estuaries, salt flats, swamps, wet meadows, reeds, and peatlands and habitats supporting these ecosystems such as dunes, beaches, bushes, woodlands, flooded forests are defined as areas that should be protected without deterioration (Official Gazette, 2014). Accordingly, Kaz Lake is a locally important wetland that must be carefully protected. The management plan studies for Kaz Lake Wetland, whose conservation zones have been determined, are still in progress. Management plan studies continue for Kaz Lake Wetland, whose conservation zones have been determined. In other words, there is no management plan for the Kaz Lake Wetland yet, which is of local importance.

Although Kaz Lake is a small and shallow lake, it has a very rich ecosystem structure for its region. The existence and continuity of the wetland ecosystem, which develops due to shallow lakes, is controlled by the hydrological processes that are effective in this system. While the water level change is the most important of the mentioned hydrological processes, precipitation, temperature, and evaporation control the water level change. Depending on these processes, great changes can be observed in Kaz Lake, which has a shallow lake ecosystem, depending on global warming and climate change. To protect wildlife values and ecological relations, especially in the shallow wetland area of Kaz Lake, the natural water regime should not be interfered with.

Kaz Lake is a locally important wetland where daily activities such as bird watching and nature photography can be done to increase awareness of the environment and nature conservation. Bird watching and nature photography is a hobby open to anyone interested in birds and nature. Bird watching and nature photography, which is a common occupation in many countries of the world, has started to develop considerably in Turkey, especially in recent years. The number of bird watchers and bird-watching societies is increasing day by day. These types of activities are important in terms of the promotion of Kaz Lake Wetland, and visits of local and foreign people, and it is an area that should be evaluated with the potential to provide an economic contribution to the local people. However, it is important to prepare guides that will introduce the locally important Kaz Lake Wetland to the observers and answer their questions. Any kind of work that can be done like this will allow the recognition of Kaz Lake and

increase interest in it. It will be easier to protect and develop the natural richness of Kaz Lake Wetland if both the society and the competent authorities are aware of it. Raising awareness on this issue is very important for Kaz Lake.

CONCLUSION

As a result, Kaz Lake is a protected wetland located within the borders of Sivas province in Turkey and included in wetlands of local importance. The basis of conservation is to protect living things and promote them. It is an ecologically important wetland on a global and regional scale. Kaz Lake is a locally important wetland, one of the rare areas with biological and ecological values in and around it. Especially during the spring season, many native and migratory bird species use the Kaz Lake Wetland intensively. Kaz Lake Wetland should be protected above all for the wildlife whose life depends on the habitat here. Sustainable use of the lake is essential for the continuation of the living life of the Kaz Lake Wetland. Kaz Lake Wetland should be purposefully planned and managed with the participation of all stakeholders. To protect the wetland of Kaz Lake, not only the efforts of high-level institutions but also the awareness of the people as individuals should be raised. Every individual should feel responsible for the continuation of sustainability and act with this sense of duty.

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REFERENCES

- Altundağ, M. U., & Canlı, M. (2019). The effects of wetland destruction and Lake Amik case. *Voice of Nature*, 2(4), 49-66.
- Barbier, E., Acreman, M. C., & Knowler, D. (1997). Economic valuation of wetlands: A guide for policy makers and planners. Ramsar Convention Bureau, Switzerland, 127.
- Birler, L., (2019). Wetlands, valuation and determination methods for Turkey and implementation for Balıkdamı Wetland. Ankara University Graduate School of Applied Sciences Department of Biology, PhD Thesis, Ankara, Turkey, 189.
- Bozyurt, O., & Bahadır, M. (2013). Statistical analyses of relations among seasonal migration of storks and climatic parameters. *Turkish Journal of Geographical Sciences*, 11(1), 1-11.
- Can, T. (2016). The oldest migratory birds of wetlands: Cranes. Teacher's Booklet, International Crane Foundation, 86.
- Devi, P. B., Asthana, Y., Sumitha, A., & Sagayaraj, I. R. (2023). Molecular docking and the pharmacokinetic properties of the anti-viral compounds towards SARS-CoV- An In-silico approach. *International Journal of Pharmaceutical Research and Allied Sciences*, 12(1), 1-9.
- Ilgar, R. (2021). Wetlands of the Çanakkale province. *Journal of Strategic and Social Research*, 5(3), 613-629. doi:10.30692/sisad.937951
- Irhan, H. B., & Oran, I. B. (2022). Value changes in national currency in foreign-dependent economies & turkey example in the context of crises. *Journal of Organizational Behavior Research*, 7(2), 82-94. doi:10.51847/CXqknESb9C
- Kahraman, E., & Kaya, L.G. (2022). An unusual approach to site selection criteria in artificial wetland applications: The case of Antalya Çandır Stream and its environs. *Düzce University Faculty of Forestry Journal of Forestry*, 18(1), 88-103.
- Karaceylan, I. B. (2015). Sex determination by the CHD gene in molted feathers of ruddy shelduck (*Tadorna ferruginea* PALLAS, 1764). Süleyman Demirel University Graduate School of Applied and Natural Sciences Department of Biology, MSc Thesis, 46.
- Kardaş, F., & Cebe, M. (2021). Wetlands and the place of migratory birds in the ecosystem. *Menba Journal of Fisheries Faculty*, 7(1), 1-5.
- Kavak, K. S. (2020). Atlas of Sivas. Bilnet Press and Publishing Inc., Printing Certificate No: 42716, SVS Publications, (1), 486.
- Kiriş, S., & Akcan, C. (2013). Hunting and wildlife in Turkey. Republic of Turkey ministry of forestry and water affairs, General directorate of nature conservation and national parks, 36.
- Official Gazette. (2014). Regulation on the protection of wetlands. Official Gazette, No: 28962, 4 April 2014, Ankara, Turkey, 1-13.
- Ozdemir, F. Y. (2005). A research on the importance of wetland conservation within the framework of environmental planning: Sample of Turkey. Protected Natural Areas Symposium, 8-10 September 2005, Süleyman Demirel University, Isparta, Turkey, 227-233.
- SEP, (2021). Sivas province 2020 environmental report. Republic of Turkey Sivas Governorship Provincial Directorate of Environment, Urbanization and Climate Change, Branch Directorate of Environmental Impact Assessment and Environmental Permits, Sivas, Turkey, 188.
- Sülük, K., Nural, S., & Tosun, I. (2013). Evaluation of the people's environmental awareness in wetlands: A case study of Işıklı Lake. *European Journal of Science and Technology*, 1(1), 7-11.
- Yavuz, N., Erciyas-Yavuz, K., & Karataş, A. (2021). Globally threatened bird species of Turkey. *Voice of Nature*, 4(7), 19-39.