

Current Status of Nationally Important Wetlands in Sivas Province, Turkey

Seher Dirican*

Associate Professor, Department of Crop and Animal Production, Sivas Technical Sciences Vocational School, Sivas Cumhuriyet University, Sivas, Turkey. Corresponding Author (Seher Dirican) - sdirican48@gmail.com*



DOI: <https://doi.org/10.46431/MEJAST.2023.6108>

Copyright © 2023 Seher Dirican. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Article Received: 17 January 2023

Article Accepted: 26 February 2023

Article Published: 23 March 2023

ABSTRACT

This study is about the current status of nationally important wetlands in Sivas province. As a result of the study, it was determined that there are two nationally important wetlands in Sivas province. These are Tödürge Lake and Ulaş Lake are nationally important wetlands. Tödürge Lake and Ulaş Lake wetlands in Sivas are usually covered with a thick snow cover in winter. An intense bird activity begins in the spring. Many bird species prefer Tödürge Lake and Ulaş Lake wetlands to perform their breeding, resting, feeding and daily displacement activities. The wetland area of national importance in Sivas is 12334 hectares. Wetlands of national importance constitute 0.45 percent of Sivas province's surface area. Considering that the nationally important wetlands in Turkey are 1.12% of the total surface area, it has been determined that the size of the nationally important wetlands throughout the province of Sivas is insufficient. Wetlands are habitats at the lowest point of the basin in which they are located. Therefore, it is affected by all activities in the basin. In order to minimize these effects, rational and efficient use of Tödürge Lake and Ulaş Lake nationally important wetlands in Sivas province should be ensured.

Keywords: Nationally important wetlands; Sivas; Turkey.

1. Introduction

Humans need water directly or indirectly at every stage of life. The rapidly increasing world population since the first ages and the developments in civilization have increased the need for water of humanity a little more every day. Wetlands are the most important genetic reservoirs of the earth, which have been formed as a result of natural processes of hundreds of thousands of years, with rich plant and animal species and dense organism collection. Wetlands balance the climate by regulating the water regime of the region where they are located. In addition, wetlands have been a point of attraction for all civilizations for years, as they have a high economic value due to the opportunities they provide for fishing, agriculture, animal husbandry, reed cutting and recreational activities. Wetlands are ecosystems that make great contributions to the local and national economy, as well as being of great importance in maintaining ecological balance and preserving biological diversity. Wetlands are estimated to cover 6.4-9 million square kilometers of the earth. This value corresponds to 4-6% of the world [1].

Wetlands are suitable areas for ecological-based tourism activities such as bird watching, flora tourism, nature photography, trekking. In recent years, nature-based tourism, ecotourism and alternative tourism are important areas where tourism types with similar contents can be made [2]. Wetlands connecting natural and cultural landscapes to each other and overcoming the borders between the countries constitute the "Immune System of Earth" with their geographical locations and functions [3].

One of the most distinctive features of wetlands is that the soil and the layer underneath are covered with water throughout the year or at certain times or the soil is saturated with water. This water saturation feature of wetlands has an impact on soil development, plant species and animal communities. Another distinctive feature observed in wetlands in general is that wetlands have water inlet and outlet systems based on a certain flow regime. Depending on the frequency of flooding in the region, the location of the wetland, water resources and climatic conditions,

there are four sources feeding a wetland in general. These sources are water obtained by direct rain and snow water precipitation, river and stream water obtained by surface runoff from the wetland basin, groundwater and tidal waters. The outflow of water from wetlands is in the form of evaporation and transpiration, underground infiltration, outflow from rivers and streams, and withdrawal of water in tidal events. However, wetlands are ecosystems that have very valuable functions and values in a watershed system and must be protected [4]. The biodiversity and natural life are extremely rich in these areas, where the density of life is very high [5]. Food web ecology, which focuses on the transfer of energy from primary producers to higher trophic levels is fundamental for the understanding of the trophic dynamics of aquatic ecosystems [6].

Wetlands provide an important and continuous source of income for the people living around them. Despite this importance of wetlands in natural life and human life, in the recent past and today, important wetlands in the world have been destroyed by human beings and opened for agricultural, urban and industrial use. As a result of these practices, important animal and plant species have disappeared around the world, and some species have faced the danger of extinction. Although Turkey was in a very important place in terms of wetlands at the beginning of the twentieth century, it lost a significant part of this wealth, especially in the second half of this century, due to the opening of wetlands to agriculture and the drying up of these areas within the scope of the fight against malaria [7]. Rapidly changing technological developments in the world bring environmental problems. The re-establishment of the deteriorated ecological balance brings irreparable difficulties. It should be possible to ensure that wetlands are not polluted, that their natural structures are protected, that dehydrated wetlands can be regained even if their ecological character is deteriorated and dried in all kinds of land and water use plans. The management of the ecological environment should be ensured within the framework of the balance of protection and use. Within the framework of the understanding of maintaining environmental awareness in wetlands, water intake, sand intake, rubble, garbage, excavation, collection of plant and animal species, wastewater discharge, cutting of reeds, poaching, etc. activities should not be allowed and all kinds of legal sanctions should be applied in activities related to this [8]. In this study, current status of nationally important wetlands in Sivas province of Turkey were investigated.

2. Materials and Methods

The study area is Sivas which is situated in 39° 31' 11" North - 37° 17' 42" East in the eastern part of the central Anatolian region of Turkey (Figure 1). Sivas is located in rural areas of Anatolian. According to the results of the census on the address based population system in Sivas province, a total of 636 thousand 121 people lived in 2021. The number of districts in Siva province is 17. The surface area of Sivas is 2720279 hectares. There are about 23 people per square kilometer in Sivas province. Accordingly, the population density of Sivas province is 23/km². Average height of Sivas province is 1275 meters from sea level. There is not the sea coast of Sivas. Sivas has quite rich inland waters resources [9]. The rivers within the provincial borders of Sivas; Kızılırmak River, Yeşilirmak River, Yıldız Stream, Kalın Stream, Mısmıl Stream, Fadlum Stream, Tecer Stream, Acı Stream, Acısu Stream, Kelkit Stream, Tozanlı Stream, Çaltı Stream, Yılanlı Stream, Balıklıtohma Stream, Tohma Stream and Hurman Stream. The most important natural lakes in Sivas province; Lota-1 Lake, Lota-2 Lake, Hafik Lake, Tödürge Lake, Çetme Lake, Kemis Lake, Cave Lake, Dry Lake, Kaz Lake, Karayün Lake, Ulaş Lake and Balıkkaya Lake. The

surface areas of these lakes; Tödürge Lake 350 ha, Hafik Lake 80 ha, Lota-1 Lake 3 ha, Lota-2 Lake 4 ha, Çetme Lake 12 ha, Kemiş Lake 40 ha, Mağara Lake 21 ha, Kuru Lake 125 ha, Kaz Lake 12 ha, Karayün Lake 22 ha, Ulaş Lake 220 ha and Balıkkaya Lake 150 ha. The average depth of Tödürge Lake, which is the largest lake, is around 4 meters. There are 15 dams built by the State Hydraulic Works in Sivas province, which have been put into operation for irrigation, energy and drinking water purposes. In addition, there are 46 ponds built by the State Hydraulic Works and used for irrigation [10].

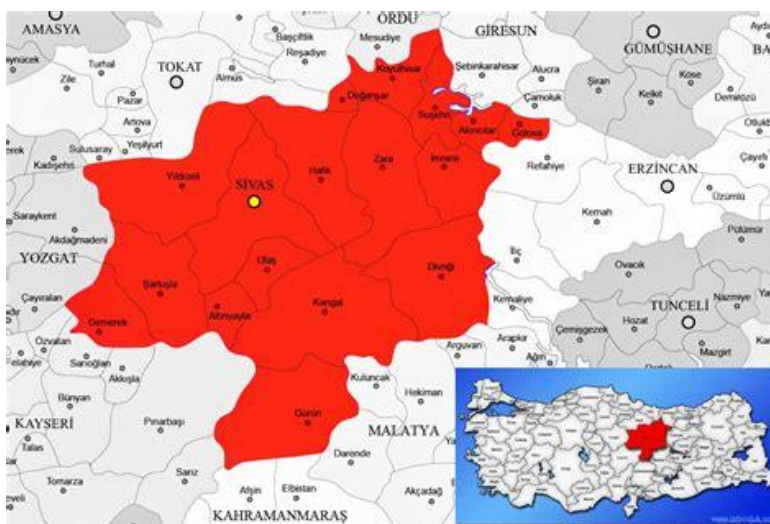


Figure 1. Study area - Sivas province

The sample of this study consists of the province of Sivas, which is located between the coordinates 39° 31' 11" North and 37° 17' 42" East. The climate of Sivas is characterized by hot and dry summers and cold and snowy winters [11]. This study is limited to cover the nationally important wetlands in Sivas province. While determining the method, the situation of the nationally important wetlands protected by the Republic of Turkey, Ministry of Agriculture and Forestry, General Directorate of Nature Conservation and National Parks in Sivas province was taken into consideration. In this study, firstly, previous studies on the subject were investigated. Then, the names of the nationally important wetlands protected by the Provincial Directorate of Agriculture and Forestry in Sivas, their locations, the date of announcement and the surface areas they cover, and other information about these areas were collected. In addition, the surface areas of the protected areas were determined and their ratio to the surface area of Sivas province was examined. Afterwards, as a result of various comparisons, comments were made on the status of the protected nationally important wetlands in the province.

3. Results and Discussion

Sivas province has an important potential in terms of wetlands. However, there is no wetland in the list of the Ramsar Convention within the provincial borders of Sivas. However, there are two the nationally important wetlands in Sivas province. The nationally important wetlands in Sivas and some characteristics are given in Table 1. According to the data of the Republic of Turkey, Ministry of Agriculture and Forestry in 2021, there are a total of 59 nationally important wetlands in Turkey, the size of which reaches 869697 hectares. Two of these 59 nationally important wetlands in Turkey are Tödürge Lake and Ulaş Lake, located within the borders of Sivas province. Tödürge Lake and Ulaş Lake wetlands are usually covered with a thick snow cover in winter.

Table 1. Some basic characteristics of nationally important wetlands in Sivas province

S.No.	Wetland Name	National Classification Code of National Areas	Coordinates	Proclamation Date	Wetlands Area (ha)
1	Tödürge Lake	06.02.02.0035	39° 53' N – 37° 36' E	10.06.2016	4340
2	Ulaş Lake	06.02.02.0036	39° 26' N – 37° 02' E	10.06.2016	7994

Tödürge Lake was registered as a wetland of national importance on 10.06.2016 with the code number 06.02.02.0035 in Sivas province (Table 1). It is one of the nationally important wetlands located in the Upper Kızılırmak Section, east of the central Anatolian region of Turkey. Tödürge Lake, located within the borders of Sivas province, is located between Hafik and Zara districts. It is located in the north of Sivas-Erzincan highway. It is Turkey's largest gypsum karst lake [12]. The old name of Tödürge Lake is Demiryurt Lake.

Tödürge Lake, whose coordinates are 39° 53' North and 37° 36' East (Table 1), is approximately 55 km from Sivas province center. It is fed by spring waters. The waters of Tödürge Lake are very slightly salty. It empties its waters into the Kızılırmak River. Tödürge Lake is a tectonic and karstic depression lake [13]. The largest island of the lake (Keşan Island) is located in the northeast of Tödürge Lake. The southwestern shore of the lake, which is approximately 1.5 km from the Kızılırmak River, is bordered by the old alluvium of the Kızılırmak River. This shallow section is covered with extensive marshes and reeds.

Tödürge Lake is an open lake when evaluated limnologically. Acısu Stream, located in the southeastern part of the lake, is an important water source feeding the lake. There is a drying channel at the northwest end of the lake. Tödürge Lake joins with Kızılırmak River around Yarhisar Village via this channel. The feeding of Tödürge Lake is largely under the control of karst groundwater, outside Acısu Stream [14]. Tödürge Lake has first class water quality and the annual average nitrate value is 7.6 mg/L [10]. According to TWPCR [15], the water of Tödürge Lake, which has first class water quality, can be disinfected and used not only for drinking purposes, but also for recreational purposes, rainbow trout farming, animal production and other purposes. For this reason, Tödürge Lake and its region support a very rich ecosystem structure.

The surface area of the Tödürge Lake wetland, which is 1295 m above sea level, is 4340 hectares (Table 1). Tödürge Lake, which is located in a karstic melting pit, is located on a flat and wide land. It is surrounded by meadows and barren areas and dry agricultural areas. The most common macrophytes in the lake are *Phragmites sp.* and *Tupha sp.* In addition, various halophyte plants are found especially on the southern edges of the lake [16].

A total of 8 fish species live in Tödürge Lake, including 6 species (*Cyprinus carpio*, *Squalis cephalus*, *Chalcalburnus chalcoides*, *Capoeta capoeta*, *Capoeta tinca*, *Chondrostoma nasus*) belonging to the Cyprinidae family, 1 species (*Orthrias angorae*) belonging to the Cobitidae family and 1 species (*Silurus glanis*) belonging to the Siluridae family [14]. Among these fish species, the most abundant and therefore economically important fish species is carp (*Cyprinus carpio* L., 1758). According to the European Council's conservation criteria, *Cyprinus carpio* and *Chalcalburnus chalcoides* are endangered and susceptible, while *Silurus glanis* and *Orthrias angorae* are among the vulnerable and rare species in Tödürge Lake.

The 17 bird species belonging to 9 orders and 11 families are breeding in and around Tödürge Lake. The vast majority of these species have a high degree of protection status according to the European Convention for the Conservation of Wildlife and Habitats. In Tödürge Lake, there are bird species such as *Netta rufina*, *Podiceps cristatus*, *Anas strepera*, *Phalacrocorax carbo*, *Ciconia ciconia*, *Ciconia nigra*, *Grus grus*, *Fulica atra*, *Larus ridibundus*, *Plegadis falcinellus*, *Himantopus himantopus*, *Ardea alba*, *Ardea cinerea*, *Ardea purpurea*, *Egretta garzetta*, *Aquila chrysaetos*, *Buteo rufinus*, *Accipiter nisus* and *Carduelis carduelis*. In addition, Tödürge Lake has gained the Status of Important Bird Areas due to the population of approximately 40 pairs of the *Netta rufina* that brood and breed here. Tödürge Lake also has an important position in terms of reptile fauna [10]. Nature walks, sport fishing and small boat trips can be made in Tödürge Lake, and there is also a tower for bird watching.

Ulaş Lake was registered as a wetland of national importance on 10.06.2016 with the code number 06.02.02.0036 in Sivas province (Table 1). It is a wetland of national importance, located in the southeast of Sivas province, at the southern end of Tecer Stream, a branch of Kızılırmak River. Ulaş Lake, whose coordinates are 39° 26' North and 37° 02' East (Table 1), is approximately 35 km away from Sivas province center. Ulaş Lake is a small and shallow lake located next to the Ulaş district center. The main source of Ulaş Lake is surface waters, and it is fed by water taken from the Tecer Stream through a channel. Especially in the summer months, the water level of Ulaş Lake decreases, and water is supplied from the Tecer Stream. Ulaş Lake has first class water quality and the annual average nitrate value is 1.5 mg/L [10]. According to TWPCR [15], the water of Ulaş Lake, which has first class water quality, can be disinfected and used not only for drinking purposes, but also for recreational purposes, rainbow trout farming, animal production and other purposes. For this reason, Lake Ulaş and the region where it is located have a very rich ecosystem structure.

The surface area of the Ulaş Lake Wetland, which is 1370 m above sea level, is 7994 hectares (Table 1). The Nationally Important Ulaş Lake Wetland consists of shallow lakes, gypsum steppes and agricultural areas. There are reeds in a thin line on the shores of the lake. Along the stream that divides the area into two, there are poplar trees, willow trees and reeds in places. The Ulaş Lake Wetland is important in terms of endemic and endangered plants. The wetland, which meets the criteria for important natural areas for six plant species, is the only known distribution area of plant species named *Physioptychis purpurescens* and *Astragalus ulaschensis* in the world. This wetland of national importance in the central Anatolia region also provides a shelter, feeding and breeding environment for native and migratory bird species. *Aythya nyroca*, *Oxyura leucocephala*, *Burchinus oedicephalus* and *Himantopus himantopus* are among the birds that breed in the Ulaş Lake Wetland and meet the criteria for important natural areas [17]. The local people living in the vicinity of Ulaş Lake are generally engaged in agricultural activities. In addition, cattle and small cattle breeding are also carried out in around Ulaş Lake. Tödürge Lake is surrounded by flat and wide meadows, barren areas and fields. Agriculture and animal husbandry are also important sources of income around Tödürge Lake. Nitrogen and phosphate fertilizers are used to increase productivity in agricultural areas around both Tödürge Lake and Ulaş Lake. Nitrogenous and phosphate fertilizer wastes used in these agricultural areas can be transported to both Tödürge Lake and Ulaş Lake with rain water.

According to the Regulation on the Protection of Wetlands, management plans for both Tödürge and Ulaş lakes were made in 2012. It is important to consider the protected wetlands of national importance not only numerically,

but also in terms of quality. It is not enough to declare Tödürge and Ulaş lakes as nationally important wetlands, and it is also necessary to strictly implement the management plans for these wetlands. For a successful management planning in wetland ecosystems, the hydrological behavior of wetlands should be presented in a way that represents the physical structure of the system. The use of water in wetland ecosystems should be allowed without disturbing the hydrological structure of the system, that is, at a level where the system is not damaged. In addition, it should not be forgotten that a good promotion of Tödürge and Ulaş lakes is also very important in conservation.

Turkey is a country with different natural riches due to its ecological and topographic features. There are 59 nationally important wetlands throughout Turkey, and their total area is 869697 hectares [18]. Accordingly, 869697 hectares of Turkey's surface area, that is, approximately 1.12 percent, consists of nationally important wetlands. In this study, it was determined that there are two nationally important wetlands throughout the province of Sivas. The total size of the nationally important wetlands of Tödürge Lake and Ulaş Lake in Sivas is 12334 hectares (Table 1). Since Sivas province has a surface area of 2720279 hectares, 12334 hectares of this are nationally important wetlands. Accordingly, 0.45% of Sivas province's surface area consists of nationally important wetlands. Considering these figures, it is evaluated that the percentage of wetlands of national importance in Sivas province is below the average of both Turkey and the world.

Today, there are two nationally important wetlands in Sivas, Tödürge Lake and Ulaş Lake. These two the nationally important wetlands in Sivas province are located in the Kızılırmak Basin, which is the longest river in Turkey. On the other hand, there are no nationally important wetlands in the Yeşilırmak Basin and the Euphrates Basin, where the lands of Sivas province are located.

Wetland Management Plans are plans that define all activities and measures such as protection, use, research, monitoring and control with a holistic approach in order to ensure the rational use of wetlands. These management plans, which are desired to be of sustainable quality, include the principle of managing all the elements (water resources, flora, fauna, etc.) within the scope of the ecosystem in the environments they are connected to, without creating changes that will affect the functioning of the system, but with a principle that will meet the needs of today and the future [19]. In Tödürge Lake, which is in the nationally important wetlands in Sivas province, more bird species find feeding, breeding and shelter opportunities compared to Ulaş Lake. For this reason, Tödürge Lake is a candidate to be one of the Ramsar sites, which is an international convention. It is expected that the number of visitors will increase as Tödürge Lake enters the Ramsar area. In this context, wetlands are very sensitive ecosystems. For this reason, attention should be paid to the utilization capacity in both Tödürge Lake and Ulaş Lake, and the rules to be followed by visitors should be determined and applied clearly.

As a result of industrialization, the rapid increase in the world population and the intense use of natural resources have led to the destruction of ecosystems and the gradual decrease of natural areas. As a result, unexpected rapid changes began to occur in the world ecosystem. With this rapid change threatening all living things, human beings have turned to new approaches to protect the environment [20, 21]. Conservation and sustainability of biological diversity is of vital importance for future generations. One of the most effective ways to achieve this is through protected areas that can be effectively managed [22]. Wetlands are vulnerable to degradation from climate change and are among the most endangered ecosystems worldwide [23]. The existence and continuity of wetland

ecosystems are controlled by the hydrological processes that are effective in these systems. While the water level change is the most important of the mentioned hydrological processes, precipitation, temperature and evaporation are the most important natural hydrological processes that control the water level change. Tödürge and Ulaş lakes are also affected by climate change, and significant decreases are observed in water levels, especially in summer and autumn, due to drought. For this reason, good management of Tödürge and Ulaş lakes, which are nationally important wetlands in Sivas province, is of great importance. It is recommended to be very careful in this regard.

4. Conclusion

Wetlands are ecosystems that have important functions in maintaining ecological balance. Humans, one of the biological elements of ecosystems, affect all ecological and hydrological processes with their various activities. Tödürge and Ulaş lakes, which contain the rich and productive ecosystems of Sivas province, serve the people of the region and our country. For this reason, the conservation and sustainable use of Tödürge and Ulaş lakes, which are among the important values and nationally important wetlands of Turkey and Sivas province, should be ensured. Negative activities such as poaching, reed cutting, animal grazing, unconscious travel, water intake, waste water discharge, collection of plant and animal species and possible habitat pollution should be prevented in Tödürge and Ulaş lakes, which are nationally important wetlands. Negative activities such as these should not be allowed in these wetlands and all kinds of legal sanctions should be applied to those who engage in activities related to them. Preventing all kinds of activities that may damage Tödürge and Ulaş lakes is of great importance for the protection and sustainability of existing biodiversity. In addition, the promotion and protection of the nationally important Tödürge Lake and Ulaş Lake wetlands will help contribute to the regional economy.

Declarations

Source of Funding

This study did not receive any grant from funding agencies in the public or not-for-profit sectors.

Competing Interests Statement

Author has declared no competing interests.

Consent for Publication

The author declares that he/she consented to the publication of this research work.

Acknowledgements

The author would like to thank the Ministry of Agriculture and Forestry in Turkey for their help in information sharing and data access.

References

- [1] Ilgar, R. (2021). Wetlands of the Çanakkale province. *Journal of Strategic and Social Research*, 5(3): 613-629. doi: 10.30692/sisad.937951.
- [2] Kerstetter, D.L, Hou, J.S., Lin, C.H. (2004). Profiling Taiwanese ecotourists using a behavioral approach. *Tourism Management*, 25(4): 491-498.

- [3] Kaplan, A., (2002). Approach to wetland management in the context of landscape: the example of İzmir Bird Sanctuary and its environment. Coastal and Marine Areas of Turkey, IV. Proceedings of the National Conference, Pages 239-249.
- [4] Korkanc, S.Y. (2004). The role of wetlands in watershed system. Journal of Bartın Faculty of Forestry, 6(6): 117-126.
- [5] Cirik, S. (1993). Wetlands. Ecology Journal, 7: 50-51.
- [6] Leon, J.R., Fujibayashi, M., Petilla, F.M., Yumul, B.I., Mendoza-Pascual, M.U., Papa, R.D., Okuda, N. (2022). Identification of aquatic consumer trophic pathways in four volcanic tropical lakes using fatty acid biomarkers. Journal of Limnology, 81: 2070. doi: 10.4081/jlimnol.2021.2070.
- [7] Güngör, S. (2013). A lost wetland: the story of Kahramanmaraş Gavur Lake. Turkish Journal of Administration, 477: 303-320.
- [8] Sezen, J. (2017). The importance of environmental awareness towards areas protected in the World and Turkey. Journal of International Scientific Researches, 2(2): 165-177. doi: 10.21733/ibad.2116.
- [9] Dirican, S. (2017). Future aquaculture trends of Sivas in the Central Anatolia of Turkey. International Journal of Innovative Studies in Aquatic Biology and Fisheries, 3(2): 1-4. doi: 10.20431/2454-7670.0302001.
- [10] SPEP (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, Pages 188.
- [11] Karabulut, M. (2020). Drought analysis for Sivas province using standardized precipitation index. Journal of International Social Research, 13(71): 216-230.
- [12] Türkeş M., Altan, G. (2011). Investigation of the Lake Tödürge wetland (Sivas) district in terms of hydroclimatology and climate variations. II. Turkey Wetlands Congress, Kırşehir, Turkey, Pages 86-95.
- [13] Ergün, A. (2008). Environmental problems related to urbanization and industrialization in the city of Sivas. Selçuk University Social Sciences Institute Secondary Education Social Field Education Department Geography Teacher Department, Master Thesis, Konya, Turkey, Pages 89.
- [14] Yıldırım, M. (2006). Seasonal variation of ecto and endo parasites in population of Chalcalburnus chalcoides from Lake Tödürge (Zara-Sivas). Cumhuriyet University Graduate School of Natural and Applied Science, Department of Biolog, Master Thesis, Sivas, Turkey, Pages 87.
- [15] TWPCR, (2008). Turkish water pollution control regulation. Ministry of Environment and Forest, The Republic of Turkey Official Journal No: 26786, Pages 1-76.
- [16] Yazıcı, H., Şahin, İ.F. (1999). Geographical observations in Demiryurt (Tödürge-Sivas) wetland and its surroundings. Turkish Journal of Geography, 34: 19-30.
- [17] Eken, G., Bozdoğan, M., İsfendiyoğlu, S., Kılıç, D.T., Lise Y. (2006). Important natural areas of Turkey. Nature Association, Ankara, Turkey, Pages 126-127.

- [18] URL-1 (2022). Wetlands, <https://www.tarimorman.gov.tr/DKMP/Menu/31/Sulak-Aanlar>, Republic of Turkey Ministry of Agriculture and Forestry, General Directorate of Nature Conservation and National Parks (Access Date: 10.10.2022).
- [19] Semiz, G.D., Polat, H.E., Anlı, A.S. (2011). Wetlands under the effect of rural area activities: scientific and technical measures envisioned to be taken. II. Turkey Wetlands Congress, 22-24 June 2011, Kırşehir, Turkey, Pages 238-246.
- [20] Arı, Y. (2006). A critical view of the nature conservation approach of the Ramsar Convention. *Journal of Eastern Geography*, 11(15): 275-302.
- [21] Kuvetli, E., Kadioğlu, Y. (2022). An evaluation of local people's perception of protected areas: sample of Samsun. *International Journal of Management Academy*, 5(2): 352-364. doi: 10.33712/mana.1120544.
- [22] Polat, Z., Deniz, B., Kılıçarslan, Ç., Kara, B. (2011). A recreational perspective on wetlands in Aydın province. II. Turkey Wetlands Congress, Kırşehir, Turkey, Pages 149-155.
- [23] Sülük, K., Nural, S., Tosun, İ. (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.