NAKKAS – BASARSEHIR MOTORWAY PROJECT



REPORT ON FAUNA STUDIES

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1. FAUNA

1.1 Terrestrial fauna

Aim of the study: Studies determining biological characteristics of an area, in general, include the identification of principle habitat types, species represented within the area, key species (e.g. rare or endemic) and the conservation status of identified species, to make an assessment on how to manage the area while protecting and conserving biodiversity. The aim of this study is to determine and evaluate terrestrial fauna at the proposed Project site. The Project site is located in Turkish Thrace between Başakşehir and Nakkaş in Istanbul Province (Figure1). The vegetation and habitat types of the area were described in flora part of the report.

1.1.1 Methodology

The terrestrial fauna and flora studies along the Motorway line between Başakşehir and Nakkaş were carried out to outline the most fundamental terrestrial fauna and flora characteristics of the Project site. The terrestrial fauna and flora studies were conducted at the same time by Prof. Dr. Hayri Duman and Prof. Dr. Mustafa Sözen.

A fauna inventory of the Project site was developed based on a field study and a literature review. Field studies were carried out between September 13 and 17 2021 by Prof. Mustafa Sözen from Biology Department at Zonguldak Bülent Ecevit University Faculty of Arts and Science, in order to determine the fauna species within the Project site.

An initial desk study was carried out to determine the locations of appropriate study points. A total of 6 study points were determined on Google Earth and desktop study by Prof. Dr. Hayri Duman and Prof. Dr. Mustafa Sözen. The Project is approximately 31 km in length and the surveys were carried out to cover all habitat types along the proposed route. Study points were identified based on accessibility by car and habitat type of the area, and especially natural and semi natural areas were visited. When a study point was reached, an area of about 500 meter diameter around the point was surveyed. Since this survey was the third one, six survey points (Fig. 1) determined before the first survey were visited again.

At each study point, the area was surveyed at least 60 minutes to determine fauna groups in the area. Since Station 1 has large natural habitat patches, survey in this areas was lasted about two hours. Suitable and different parts of the study point was walked and fauna groups were determined based of direct observations, animal tracks, burrows, animal calls, droppings, food remains, animal sings etc. Our previous experiences in Turkish Thrace and literature records were also used to prepare as complete as possible fauna inventory tables.

Autumn bird migration time in Turkey happens mostly during August, October and September. Since field survey time was in autumn bird migration season, some migratory birds were seen.

The fauna list was prepared by combining the fauna species that are distributed within the sample areas as well as the findings of the field survey. An evaluation of the threat status and endemism for each species using criteria from International Union for Conservation of Nature (IUCN), Bern Convention (BERN), Central Game Commission (MAK 2020-2021) Decrees, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and Habitats Directive are presented.



Figure 1. Satellite image of the Project line between Nakkaş and Başakşehir (white line), and study points: pink drops are Quarries (T01-T04), Light blue drops are study points along motorway (01-06). ……

1.1.1.1 Study points

A total of 6 study points (01-06) along the motorway, three study points for concrete plants, and three points for quarries (and asphalt plants in the same areas) were determined. When a study point reached, an area of about 500 meter diameter around the point was surveyed.

The coordinates of study points are as follows (Figure 1):

Study points along motorway line

Study point 01	35 T 650584 E – 4553260 N
Study point 02	35 T 645291 E – 4551965 N
Study point 03	35 T 643879 E – 4551800 N
Study point 04	35 T 641123 E – 4552654 N
Study point 05	35 T 633467 E – 4557550 N
Study point 06	35 T 631846 E – 4553584 N

1.1.2 Legislative Framework

In conducting biological studies within the Project site and evaluating the terrestrial fauna survey results, both national and international legislation, as well as standards and guidelines were taken into consideration. Turkey is a party to a number of conventions on different aspects of biological diversity, which are listed below. Although, not all of the listed conventions are relevant within the scope of this project, it is worth putting forth the binding framework for any project undertaken in Turkey.

- Paris Convention on the Protection of the World Cultural and Natural Heritage (acceded by Law no. 2658 published in the Official Gazette dated 4 February 1983 and no. 17959);
- Bern Convention on Protection of Europe's Wild Life and Living Environment (acceded by the Decision of the Council of Ministers dated 9 January 1984 and published in the Turkish Official Gazette dated 20 February 1984 and no. 18318);
- Barcelona Convention on the Protection of the Mediterranean Sea Against Pollution
- International Convention for the Prevention of Pollution From Ships (MARPOL) (published in the Turkish Official Gazette dated 16 May 1998 and no. 23344
- Convention to Combat Desertification (acceded by the Decision of the Council of Ministers dated 3 May 1990 and published in the Turkish Official Gazette dated 24 June 1990 and no. 20558)
- Ramsar Convention on Wetlands of International Importance Especially as Wildfowl Habitat (acceded by the Decision of the Council of Ministers dated 15 March 1994 and published in the Official Gazette dated 17 May 1994 and no. 21937)
- Convention on International Trade in Endangered Species of Wild Flora and Fauna (acceded by Law no. 4041 and published in the Official Gazette dated 20 June 1996 and no. 22672)
- UN (Rio) Convention on Biological Diversity (ratified by Law no. 4177 published in the Official Gazette dated 27 December 1996 and no. 22860)

International Finance Corporation (IFC) Performance Standard 6 "Biodiversity Conservation and Sustainable Management of Living Natural Resources" is also considered during the assessment.

In addition to the provisions of the IFC Performance Standard 6, the High Conservation Value (HCV) concept was utilized as a tool to identify presence of natural habitats with significance or critical importance due to the environmental, socioeconomic, biodiversity or landscape values that it carries. The HCV approach was initially developed by the Forest Stewardship Council (FSC) in the context of forest management. It is now widely utilized for a wide range of fields including palm oil, soy, sugar, bio-fuels and carbon, as well as landscape mapping and natural resource mapping. Today, HCV Resource Network, a charter-based organization that is governed by environmental and social NGOs, private sector representatives and multilateral organizations. HCV Resource Network promotes the use of the HCV approach, achieve the consistent application of the approach and bring HCV stakeholders together (HCV Resource Network, 2013).

HCV approach allows for sustainable management when such areas are identified in accordance with the six main types of HCVs outlined below:

- **HCV1:** Areas containing globally, regionally or nationally significant concentrations of biodiversity values (e.g. endemism, endangered species, refugia)
  - HCV1.1. Protected areas
  - HCV1.2. Threatened and endangered species
  - HCV1.3. Endemic species
  - HCV1.4. Critical temporal use

- **HCV2.** Globally, regionally or nationally significant large landscape-level areas where viable populations of most, if not all, naturally occurring species exist in natural patterns of distribution and abundance
- **HCV3.** Areas that are in or contain rare, threatened or endangered ecosystems
- **HCV4.** Areas that provide basic ecosystem services in critical situations (e.g. watershed protection, erosion control)
    - HCV4.1 Forests critical to water catchments
    - HCV4.2 Forests critical to erosion control
    - HCV4.3 Forests providing barriers to destructive fire
- **HCV5.** Areas fundamental to meeting basic needs of local communities (e.g. subsistence, health)
- **HCV6.** Areas critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities)

IFC also recognizes HCV as a tool used by certain sectors, such as agriculture and forestry, in determining conservation value of a land area or management unit. However, there are differences in the way HCV types are set by the HCV Resource Network and the way IFC defines biodiversity and ecosystem services within its Performance Standard 6 (IFC, 2012, 2019). Consequently, IFC provides a correspondence between each HCV type and performance standards, which fit in the most.

Table 1. High Conservation Value Types and Performance Standard 6

HCV Type	Performance Standards
HCV 1: Areas containing globally, regionally or nationally significant concentrations of biodiversity values	Critical habitat in most cases. See paragraphs GN55–GN112 for further guidance.
HCV 1.1: Protected areas	
HCV 1.2: Rare, threatened or endangered species	
HCV 1.3: Endemic species	
HCV 1.4: Seasonal concentrations of species	
HCV 2: Globally, regionally or nationally significant large landscape-level areas where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance.	Natural habitat, and may be critical habitat if areas contain high biodiversity values as identified in paragraph 16 of Performance Standard 6.
HCV 3: Areas that are in or contain rare threatened or endangered ecosystems	Critical habitat
HCV 4: Areas that provide basic ecosystem services in critical situations	Priority ecosystem services as defined by paragraph 24 of Performance Standard 6. See paragraphs GN126–GN142 for further guidance.
HCV 4.1: Areas critical to water catchments	
HCV 4.2: Areas critical to erosion control	
HCV 4.3: Areas providing critical barriers to destructive fire	
HCV 5: Areas fundamental to meeting basic needs of local communities	Priority ecosystem services as defined by paragraph 24 of Performance Standard 6. Client requirements defined in Performance Standard 5 are also applicable. See paragraphs GN126–GN142 for further guidance.
HCV 6: Areas critical to local communities' traditional cultural identify (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities.	Priority ecosystem services as defined by paragraph 24 of Performance Standard 6. Client requirements defined in Performance Standard 8 are also applicable. See paragraphs GN126–GN142 for further guidance.

Source: IFC, 2012: 12 and Guidance Note 6 (2019)

In evaluating the threat/protection status of species; CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora), Bern Convention, and Turkish Red Data Book (TRDB), which is based on IUCN (International Union for Conservation of Nature) Red List classifications, are used.

Species covered in CITES are given under three different appendices according to their conservation status. Appendix I cover the species, which are under the threat of extinction. Trade in the specimens of these species is not allowed except extraordinary circumstances. Appendix II includes species, which are not threatened with extinction, but trade in specimens is restricted in order to prevent utilization incompatible with their survival. Appendix III includes species, for which other parties of CITES is applied for assistance in controlling trade and which are conserved at least in one country.

The aims of this Convention are to conserve wild flora and fauna and their natural habitats, especially those species and habitats whose conservation requires the co-operation of several States, and to promote such co-operation. The objective of the Bern Convention is to conserve wild flora and fauna and their natural habitats, especially those requiring the co-operation of several States. The Convention places a particular importance on the need to protect endangered natural habitats and endangered vulnerable species, including migratory species. The Bern Convention currently has 45 Contracting Parties, including members and non-members of the Council of Europe and beyond (as well as Turkey) with the aim of conserving the wild life in Europe. Species that are protected under the Bern Convention are classified according to the following categories:

- Appendix I: Strictly protected flora species
- Appendix II: Strictly protected fauna species
- Appendix III: Protected fauna species

All of the nations, which are party to the BERN Convention, have signed the Convention on Biological Diversity as well. Parties of this convention are responsible from ensuring sustainable use of resources in line with their national development trends and conserving the threatened species.

Table 2. IUCN Red List Categories and Criteria

IUCN Red List Categories and Criteria 1994 (ver. 2.3)		**IUCN Red List Categories and Criteria 2012 (ver. 4.0)**	
EX	Extinct	EX	Extinct
EW	Extinct in the Wild	EW	Extinct in the Wild
CR	Critically Endangered	CR	Critically Endangered
EN	Endangered	EN	Endangered
VU	Vulnerable	VU	Vulnerable
LR	Lower Risk		
	cd : conservation dependent	NT	Near Threatened
	nt : near threatened	LC	Least Concern
	lc : least concern		
DD	Data Deficient	DD	Data Deficient
NE	Not Evaluated	NE	Not Evaluated

The IUCN Red List intends to draw attention to species whose populations are at risk or under threat. The IUCN places a species on the Red List only after studying its population and the reasons for its decline. Some countries pay greater attention to IUCN-listed species than Bern-listed species, since the Red List relies on more research. The 2016 (ver.3.1) categories and criteria of the IUCN Red List are presented in Table 2.

European Bank for Reconstruction and Development EBRD PR6 and Guidance Note

1. Performance Standard 6 recognizes that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development. The requirements set out in this Performance Standard have been guided by the Convention on Biological Diversity, which defines biodiversity as "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems."

2. Ecosystem services are the benefits that people, including businesses, derive from ecosystems. Ecosystem services are organized into four types:

(i) provisioning services, which are the products people obtain from ecosystems;
(ii) regulating services, which are the benefits people obtain from the regulation of ecosystem processes;
(iii) cultural services, which are the nonmaterial benefits people obtain from ecosystems;
(iv) supporting services, which are the natural processes that maintain the other services.

3. Ecosystem services valued by humans are often underpinned by biodiversity. Impacts on biodiversity can therefore often adversely affect the delivery of ecosystem services. This Performance Standard addresses how clients can sustainably manage and mitigate impacts on biodiversity and ecosystem services throughout the project's lifecycle.

Objectives of PR 6 area:

- To protect and conserve biodiversity.
- To maintain the benefits from ecosystem services.
- To promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities.

European Bank for Reconstruction and Development EBRD PR6 (2019) and Guidance Note (2014) define critical habitats as the most sensitive biodiversity features, which comprise one of the following:

- highly threatened or unique ecosystems
- habitats of significant importance to critically endangered (CR) or endangered (EN) species
- habitats of significant importance to endemic or geographically restricted species
- habitats supporting globally significant migratory or congregatory species
- areas associated with key evolutionary processes

2020-2021 Central Game Commission (MAK) Decrees

The Central Game Commission listed animals as protected by MAK or protected by The Ministry of Forestry and Water Affairs. Also determine the animals whose hunting is allowed for certain periods. MAK has Appendices for these animals as follows.

- **Appendix-I:** List of game animals protected by MAK.
- **Appendix-II:** List of game animals whose hunting is allowed for certain periods for 2020-2021 season.

Species under the Habitats Directive

In order to ensure the survival of Europe's most endangered and vulnerable species, EU governments adopted the Habitats Directive in 1992 (Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora). Together with the Birds Directive, it sets the standard for nature conservation across the EU and enables all 27 Member States to work together within the same strong legislative framework in order to protect the most vulnerable species and habitat types across their entire natural range within the EU.

The Habitats Directive protects around 1200 European species other than birds which are considered to be endangered, vulnerable, rare and/or endemic. Included in the Directive are mammals, reptiles, fish, crustaceans, insects, molluscs, bivalves and plants. The protection provisions for these species are similar to those in the Birds Directive. They are designed to ensure that the species listed in the Habitats Directive reach a favorable conservation status within the EU.

The Annexes of the directive are as follows:

Annex I: Natural habitat types of community interest whose conservation requires the designation of special areas of conservation.

Annex II: Animal and plant species of community interest whose conservation requıres the designation of special areas of conservation

Annex III: Criteria for selecting sites eligible for identification as sites of community importance and designation as special areas of conservation

Annex IV: Animal and plant species of community interest in need of strict protection

Annex V: Animal and plant species of community interest whose taking in the wild and exploitation may be subject to management measures

Annex VI: Prohibited methods and means of capture and killing and modes of transport

Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the Conservation of Wild Birds: Acts adopted before 1 December 2009 under the EC Treaty, the EU Treaty and the Euratom Treaty)

The birds in the scope of EU list are listed as Annex I, Annex II (Part A, Part B); the birds in Annex I are the ones that requires strict protection; while the others are listed in Annex II. The birds of the Project site are evaluated as App.-I and App-IIA, App-IIB in the respective table.

Annex I: The species mentioned in Annex I shall be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution.

Annex II: The species referred to in Annex II, Part A may be hunted in the geographical sea and land area where this Directive applies. The species referred to in Annex II, Part B may be hunted only in the Member States in respect of which they are indicated.

Annex III: The activities referred to in paragraph 1 shall not be prohibited in respect of the species referred to in Annex III, Part A, provided that the birds have been legally killed or captured or otherwise legally acquired.

1.2 Baseline Conditions and Fauna Studies

No work has yet been done on the planned highway route. Most of the highway is planned to pass through settlements and agricultural areas. In some regions, there are semi-natural and natural areas with meadows, steppes, bushes and woods. The construction of new Motorway has not been started yet.

The third fauna study was conducted on September 13 and 17th 2021 by Prof. Mustafa Sözen from Biology Department at Zonguldak Bülent Ecevit University Faculty of Arts and Science. In the survey days the weather was partly cloudy or cloudy. The temperature was about 20 – 30 ^{o}C during field studies.

Study point 1

The operating point is 1.5 km west of the end of the motorway that will connect to Başakşehir (Figure 2). The area is a semi-natural area with bushes, steppes and meadows. Since the area is surrounded by settlements, the area is under intense human pressure and influence. Nevertheless, despite the human pressure, it looks like a place where wildlife can be sheltered to some extent.

Mole (*Talpa europea*) and Vole (*Microtus* sp.) nests were seen in the field study. Though the area seem to be suitable for European Ground Squirrel (*Spermophilus citellus*) any primary data such as animals, burrows, faces etc. could not be obtained about the presence of this species in the area during the during the third survey.

During the third survey, some gulls, Alpine swift, Red-backed shrike, Western Jackdaw, Hooded Crow, Common Kestrel, Common Buzzard, Short-toed Snake Eagle, Domestic Rock Dove were observed.

A small spring and a small pond in front of the spring was observed. Some *Pelophylax ridibundus* samples were observed in and around the pond.

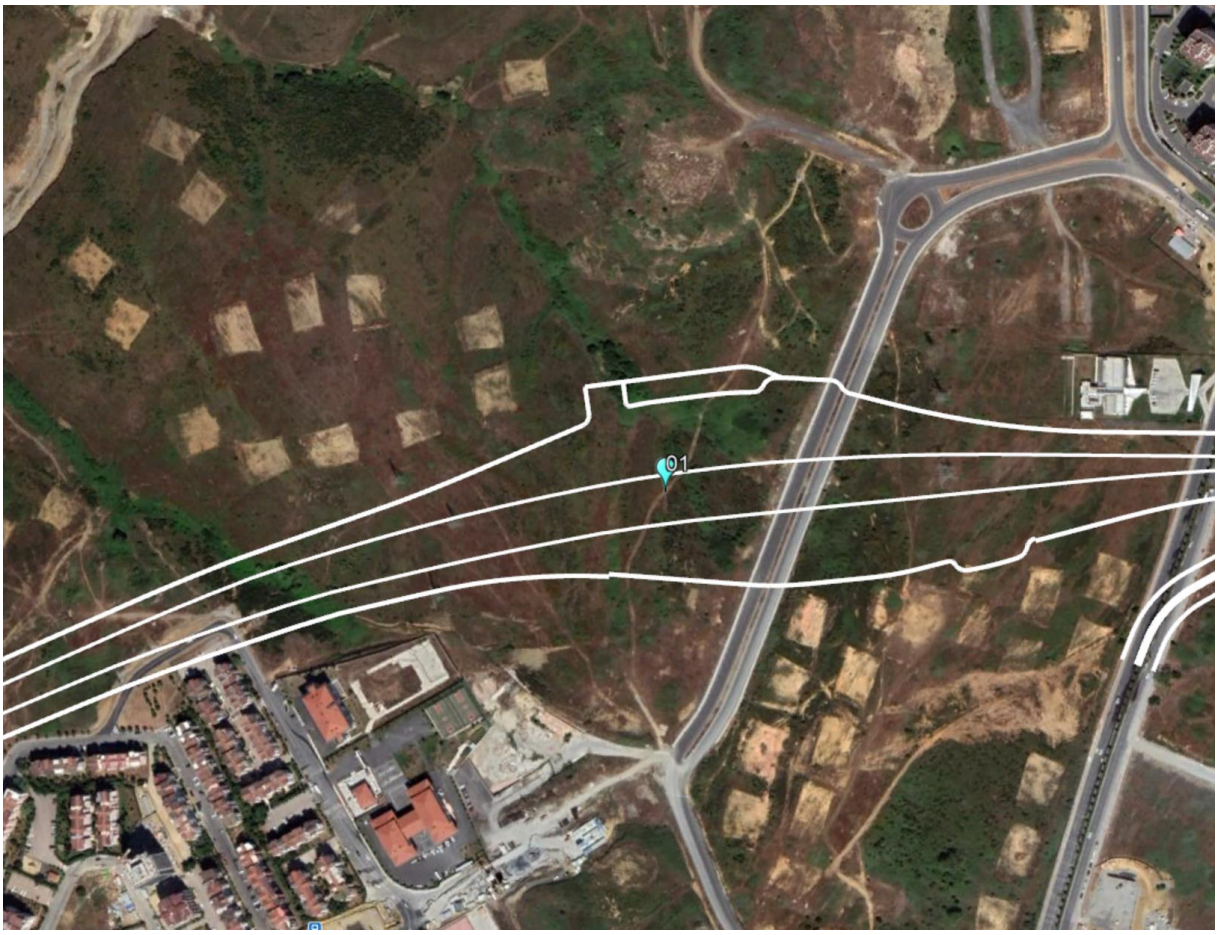


Figure 2. Satellite image of the study point 1. White line is the Motorway line.

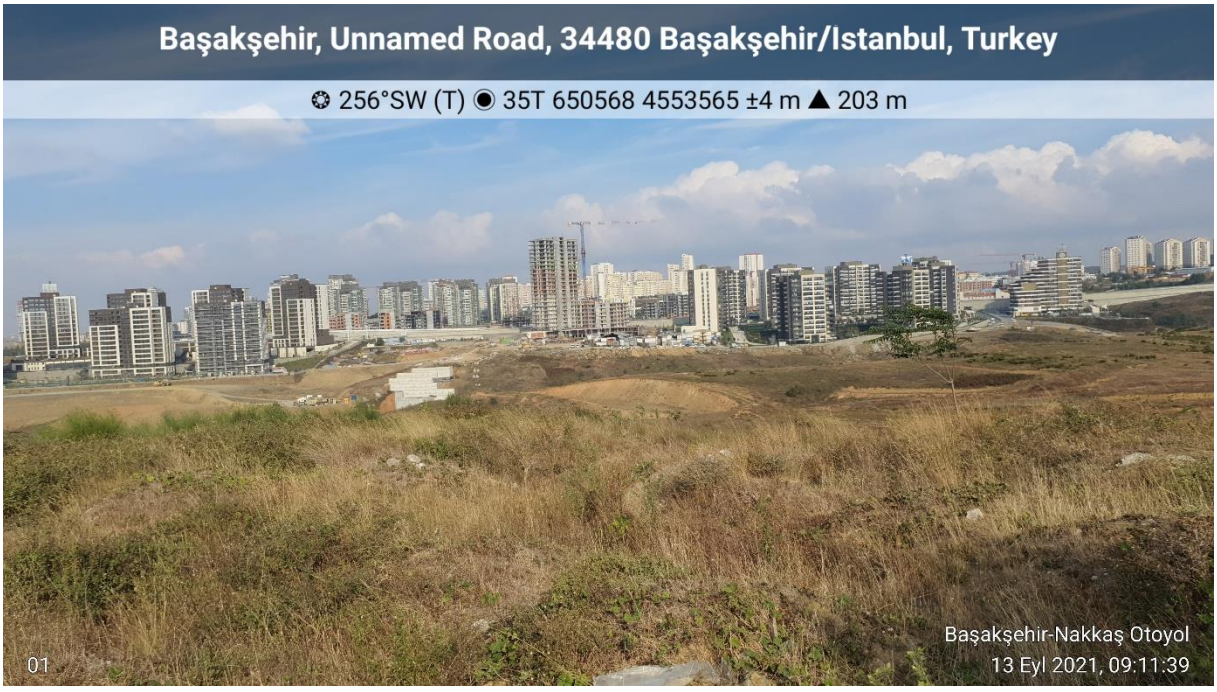


Figure 3. General overview the study point 1.



Figure 3. A small pond in the study point 1 area.



Figure 4. A Mole (*Talpa* sp.) burrow in the study point 1 area.

Study point 2

The point was in the south east corner of Sazlıdere Dam Lake (Fig. 5). The area is a mainly open steppic area and has some trees, *Spartium* bushes, and agricultural fields (Fig. 6). Since the area is very close to the lake, a lot of water bird like gulls, terns and cormorants were seen. Some Blind mole rat (*Nannospalax leucodon*) mounds (Fig. 7), and some Vole (*Microtus* sp.) burrows were seen. European Ground Squirrel (*Spermophilus citellus*) could not be determined during this survey.

It was seen that, some excavation studies was performed for ground preparation for the motorway was performed in the area (Fig. 6).

On the other hand, some birds such as Comon buzzard, Magpie, Sand Martin, European Bee-eater (Fig. 8), Eurasian Magpie, Alpine Swift, Spanish Sparrow, Domestic Rock Doves, some crows and some gulls were also seen.

Additionally, some Snake-eyed Lizard (*Ophisops elegans*) samples were observed in the area.



Figure 5. Satellite image of the study point 2. White line is the Motorway line.



Figure 6. General overview the study point 2.

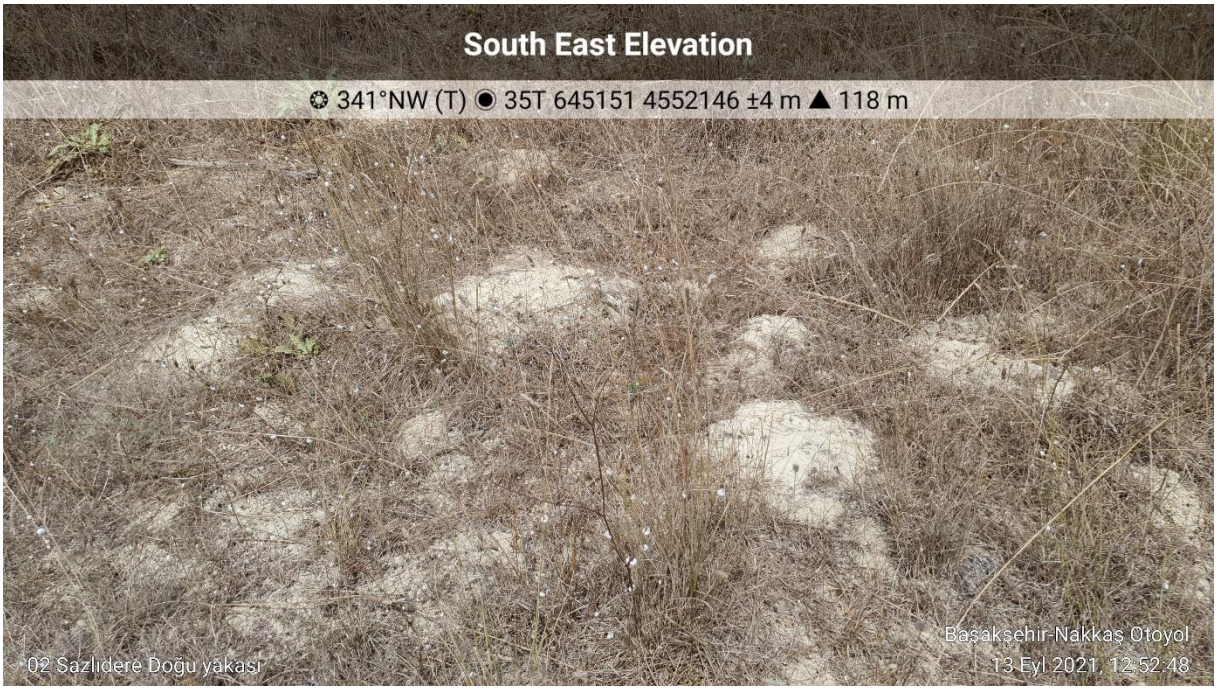


Figure 7. Blind mole rat (*Nannospalax leucodon*) burrows.

Study point 3

The point was in the south west corner of Sazlıdere Dam Lake (Fig. 10). The area has open steppic area, some trees, pine plantation, bushes, and rocky areas (Fig. 11). Since the area is very close to the lake, some water bird like gulls, terns, cormorants, herons were seen. Any mammal sample could not be observed directly. Some birds such as Short-toed Snake Eagle (Fig. 12), Alpine Swift, Magpie, European Bee-eater (Fig. 10), Western Jackdaw and Common Kestrel were also observed. Additionally, a Mediterranean Spur-thighed Tortoise (*Testudo graeca*) (Fig. 13) were observed in the area.



Figure 8. Satellite image of the study point 3. White line is the Motorway line.

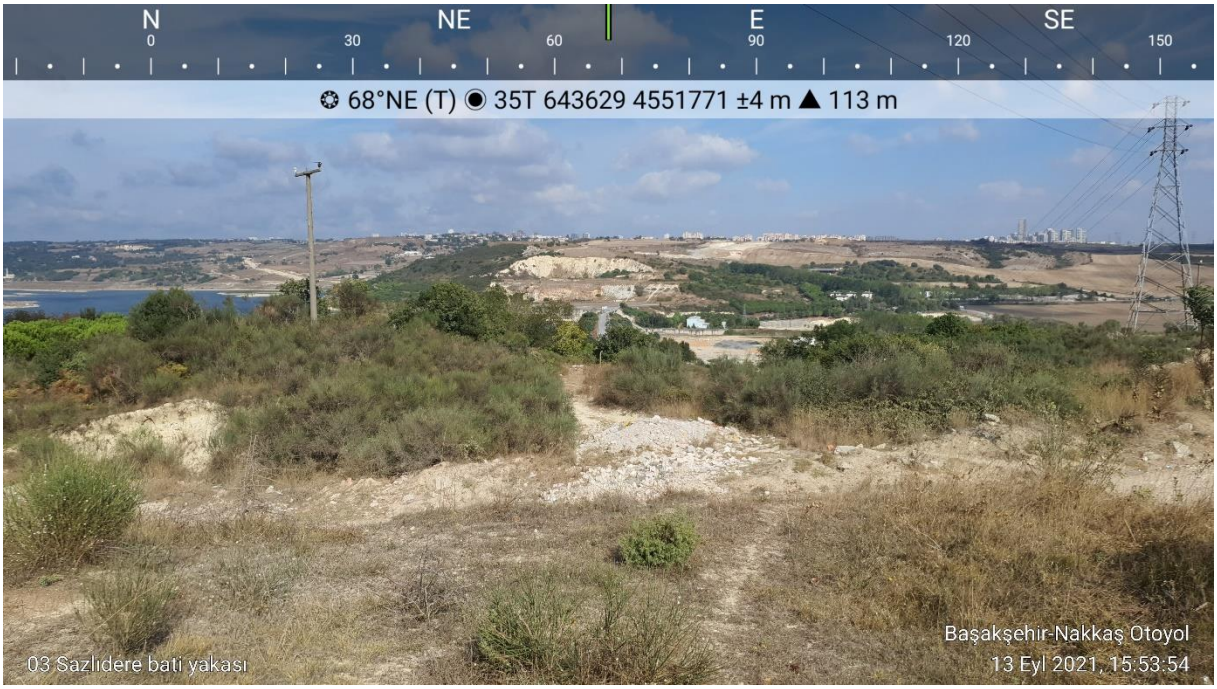


Figure 9. General overview of a steppic area and bushy/forestry area at study point 3.



Figure 10. Mediterranean Spur-thighed Tortoise (*Testudo graeca*) seen at study point 3.



Figure 10. European Bee-eater (*Merops apiaster*) seen at study point 3.

Study point 4

The point was in the south west side of Sazlıdere Dam Lake (Fig. 11). The area is generally agricultural fields (Fig. 12). There is also some bushy parts and some trees along the fields (Fig. 15). Some Mole (*Talpa* sp.) and Vole (*Microtus* sp.) burrows, Common Kestrel, Alpine Swift, Magpie, Yellow-legged Gull, European Bee-eater, Common Swift, Common Chiffchaff, Spotted Flycatcher, Eurasian Blackcap, Short-toed Snake Eagle (Fig. 13), Hooded Crow, Tree Pipit and some Corn Bunting were seen during the field trip. There was a fountain at study area and some *Pelophylax ridibundus* samples were observed in and around the fountain (Fig. 14).



Figure 11. Satellite image of the study point 4. White line is the Motorway route planned.



Figure 12. General overview of study points 4.



Figure 13. Short-toed Snake Eagle (*Circaetus gallicus*) and Hooded Crow (*Corvus cornix*) observed at study point 4.



Figure 14. A fountain which was established for domestic animals such as sheep and cows at study point 3. Some Mars Frog (*Pelophylax ridibundus*) samples were observed here.

Study point 5

The point is located close to the Nakkas end of the motorway and generally agricultural area. There is also some semi-natural bushy areas around the fields (Fig. 15, 16). Some Blind Mole Rat (*Nannospalax leucodon*) mounds and some Vole (*Microtus* sp.) burrows were seen during the field trip. Additionally, because of the autumn bird migration time, about 50 Lesser Spotted Eagle (*Clanga pomarina*) (Fig. 17), 1 Short-toed Snake Eagle (*Circaetus gallicus*), 3 Common Kestrel (*Falco tinnunculus*) (Fig. 18), 50 European Bee-eater (*Merops apiaster*) and 3 Barn Swallow (*Hirundo rustica*) were observed.

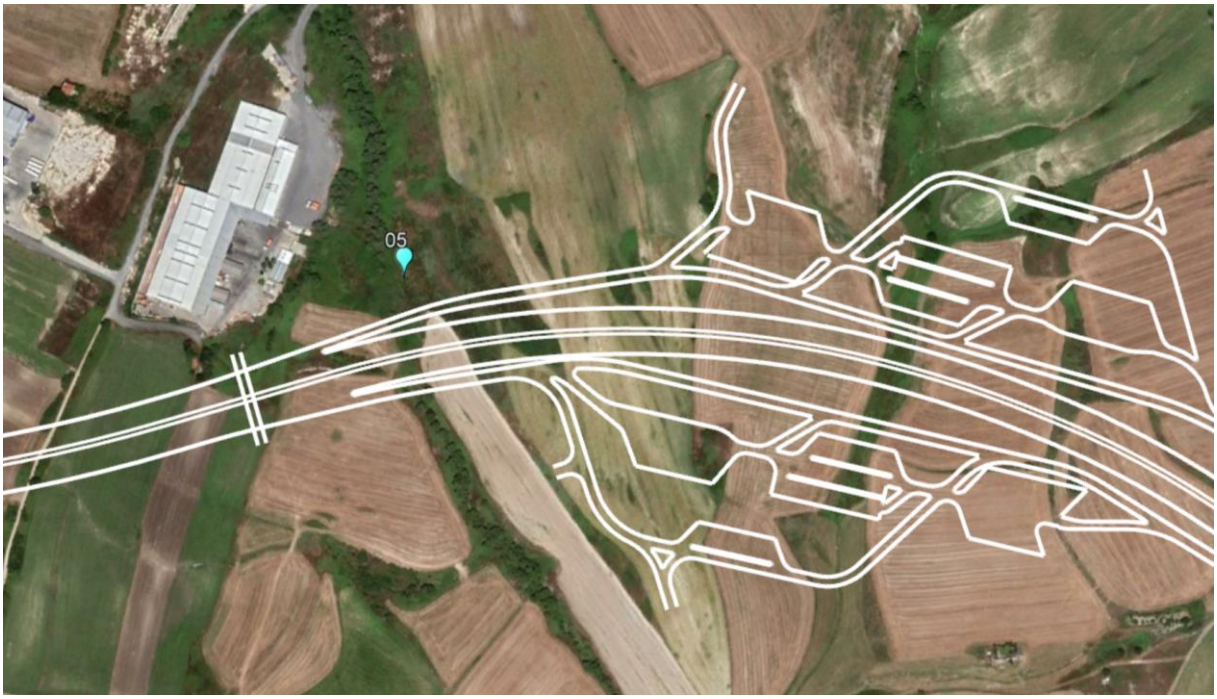


Figure 15. Satellite image of the study point 5. White line is the Motorway route planned.



Figure 16. General overview of agricultural fields and bushy area at study point 5.



Figure 17. Lesser Spotted Eagle (*Clanga pomarina*) observed at study point 5.



Figure 18. Common Kestrel (*Falco tinnunculus*) observed at study point 5.

Study point 6

The point was mostly covered by agricultural fields, few bushy areas, and has some trees around fields (Fig. 19, 20). There is also a small water channel with reeds, which connect to Büyükçekmece Lake. A lot of Mole (*Talpa* sp.) burrows were seen in the area.

Additionally, because of the autumn bird migration time, about 3 Lesser Spotted Eagle (*Clanga pomarina*) (Fig. 17), 3 Short-toed Snake Eagle (*Circaetus gallicus*), 2 Booted Eagle (*Hieraaetus pennatus*), about 15 Levant Sparrowhawk (*Accipiter brevipes*) (Fig. 21), 1 Spaorrowhak (*Accipiter nisus*), 1 Eurasian Hoby (*Falco subbuteo*), 5 Common Kestrel (*Falco tinnunculus*) (Fig. 18), about 40 European Bee-eater (*Merops apiaster*) and about 30 Barn Swallow (*Hirundo rustica*) were observed.



Figure 19. Satellite image of the study point 6. White line is the Motorway line.



Figure 20. General overview of meadow area at study point 6.



Figure 21. Levant Sparrowhawk (*Accipiter brevipes*) observed at study point 6.

1.3 Results

The following sections provide the species lists of amphibians, reptiles, birds and mammals likely to occur at the Project site.

1.3.1 Amphibians

There are some permanent water bodies along Motorway line such as Sazlıdere Dam Lake, Water channel from Sazlıdere to Küçükçekmece, and water channel in study point 6. Marsh Frog (*Pelophylax ridibundus*) samples were seen directly in Station 1, 4 (Fig. 4) and 6 areas.

Probable nine Amphibian species at the Project site were listed in Table 3. These species are not endemic and not listed in threatened categories of IUCN.

Motorway crossing two water channels that has water suitable for amphibians. One is the channel that connect Sazlıdere dam Lake to Küçükçekmece Lake, the other is the channel that flows from study point 6 toward Büyükçekmece Lake.

According to BERN Convention Appendices, 5 amphibian species at the Project site are listed in Ann-II (Strictly protected fauna species), and remaining 4 species are in Ann-III (Protected fauna species).

Additionally, according to Habitat Directive, 1 species is listed in Ann II, 6 species in Annex IV and 1 species in Annex V.

There is not any endemic and/or threatened amphibian species at project site.



Figure 22. A small pond and fountin that contain Marsh Frog at study point 4.

Table 3. The list of probable amphibian species at the Project site

ORDER, Family, *Species*		Turkish	English	IUCN	BERN	CITES	Habitat Directive	Stations where the species possibly found
	ANURA							
	Bufonidae							
1.	*Bufotes viridis*	Gece Kurbağası	Green Toad	LC	App-III	-	Ann-IV	All
2.	*Bufo bufo*	Siğilli kurbağa	Common toad	LC	App-III	-	-	All
	Discoglossidae							
3.	*Bombina bombina*	Kırmızılı Kurbağa	European fire-bellied toad	LC	App-II	-	Ann-II, IV	1, 3, 5, 6
	Hylidae							
4.	*Hyla orientalis*	Ağaç kurbağası	Green Frog	LC	App-II	-	Ann-IV	1, 3, 5, 6
	Pelobatidae							
5.	*Pelobates syriacus*	Toprak kurbağası	Syrian spadefoot	LC	App-II	-	Ann-IV	1, 3, 5, 6
	Ranidae							
6.	*Pelophylax ridibundus**	Ova kurbağası	Marsh frog	LC	App-III	-	Ann-V	1, 3, 4, 5, 6
7.	*Rana dalmatina*	Çevik kurbağa	Agile Frog	LC	App-II	-	Ann-III, IV	5
	URODELA							
	Salamandridae							
8.	*Triturus ivanbureschi*	Balkan-Anadolu Pürtüklü semenderi	Balkan-Anatolian Crested Newt	LC	App-II		Ann-IV	between 2 and 3, 6
9.	*Lissotriton schmidtleri*	Cüce semender	Smoot Newt	LC	App-III	-	-	between 2 and 3, 6

* Species that directly seen during field survey

1.3.2 Reptiles

Table 4. The list of probable reptile species at the Project site

	ORDER, Family, *Species*	Turkish	English	IUCN	BERN	CITES	Habitat Directive	Stations where the species possibly found
	TESTUDINES	**Kaplumbağalar**						
	Testudinidae							
1.	*Testudo graeca**	Tosbağa	Mediterranean Spur-thighed Tortoise	**VU**	App-II	-	Ann-II, IV	All
	Emydidae							
2.	*Emys orbicularis*	Benekli kaplumbağa	European pond turtle	**NT**	App-II	-	Ann-II, IV	between 2 and 3, 6
	Geoemydidae							
3.	*Muaremys rivulata*	Balkan çizgili kaplumbağası	Western caspian turtle	**-**	App-III	-	-	between 2 and 3, 6
	SQUAMATA	**Pullu sürüngenler**						
	SAURIA	**Kertenkeleler**	**Lizards**					
	Gekkonidae							
4.	*Mediodactylus kotschyi*	İnce parmaklı keler	Kotschy's gecko	LC	App-II	-	Ann-IV	1 – 5
	Anguidae							
5.	*Anguis fragilis*	Yılan kertenkele	Slow worm	LC	App-III	-	-	3,4, 5
6.	*Pseudopus apodus*	Oluklu kertenkele	European glass lizard	LC	App-II	-	Ann-IV	All
	Scincidae					-		
7.	*Ablepharus kitaibelii**	İnce kertenkele	Snake-eyed skink	LC	App-II	-	-	All
	Lacertidae							
8.	*Lacerta trilineata**	İri yeşil kertenkele	Balkan green lizard	LC	App-II	-	Ann-IV	All
9.	*Lacerta viridis**	Yeşil kertenkele	European green lizard	LC	App-II	-	Ann-IV	All
10.	*Ophisops elegans**	Tarla Kertenkelesi	Snake-eyed lizard	LC	App-II	-	Ann-IV	All
11.	*Podarcis sicula**	İstanbul kertenkelesi	Italian wall lizard	LC	App-II	-	Ann-IV	2, 3, 4
12.	*Podarcis taurica**	Trakya kertenkelesi	Balkan wall lizard	LC	App-II	-	Ann-IV	1 – 4
13.	*Podarcis muralis*	Duvar kertenkelesi	Common wall lizard	LC	App-II	-	Ann-IV	1 – 4
	SQUAMATA	**Pullu sürüngenler**						
	SERPENTES	**Yılanlar**	**Snakes**					
	Boidae							
14.	*Eryx jaculus*	Mahmuzlu Yılan	Sand Boa	LC	App-III	-	Ann-IV	1 – 5
	Colubridae							
15.	*Dolichophis caspius**	Hazer yılanı	Caspian whip snake	LC	App-III	-	Ann-IV	All
16.	*Eirenis modestus*	Uysal yılan	Ring-headed dwarf snake	LC	App-III	-	-	1 – 5
17.	*Elaphe sauromates*	Sarı yılan	Blotched snake	LC	App-III	-	-	All
18.	*Malpolon insignitus*	Çukurbaşlı Yılan	Eastern montpellier snake	LC	App-III	-	-	1 – 5
19.	*Platyceps najadum*	İnce Yılan	Dahl's whip snake	LC	App-II	-	Ann-IV	1 – 5
20.	*Platyceps collaris*	Toros yılanı	Red whip snake	LC	App-III	-	-	1 – 5

21.	*Coronella austriaca*	Avusturya yılanı	Smooth snake	LC	App-II	-	Ann-IV	1 – 5
22.	*Telescopus fallax*	Kedi Gözlü Yılan	Soosan snake	LC	App-II	-	-	1 – 5
23.	*Zamenis situla*	Ev yılanı	European ratsnake	LC	App-II	-	Ann-IV	All
24.	*Zamenis longissimus*	Eskülap yılanı	Aesculapian snake	LC	App-II	-	Ann-IV	All
25.	*Natrix natrix**	Yarı sucul yılan	Grass snake	LC	App-III	-	-	All
26.	*Natrix tessellata*	Su yılanı	Dice snake	LC	App-II	-	Ann-IV	Between 2 and 3, 6
	Typhlopidae							
27.	*Typhlops vermicularis*	Kör Yılan	Worm snake	LC	-	-	-	All
	Viperidae							
28.	*Vipera ammodytes*	Boynuzlu engerek	Nose-horned viper	LC	App-II	-	Ann-IV	1 – 4

* Species that directly seen during field survey

Probable reptile species at the Project site were listed in Table 4. None of the species are endemic, on the other hand, *Testudo graeca* (Mediterranean Spur-thighed Tortoise) is listed in threatened categories of IUCN as Vulnerable (**VU**). Most parts of project site seem to be suitable for this species, however, any sample could not be seen during field survey. The species will be checked again in September survey.

According to BERN Convention Appendices, 18 reptile species at the Project site are listed in Ann-II (Strictly protected fauna species), and 9 species in Ann-III (Protected fauna species).

Additionally, according to the Habitats Directive, 18 species are listed in Annex IV (Animal and plant species of community interest in need of strict protection), and two species are listed in Annex II (Animal and plant species of community interest whose taking in the wild and exploitation may be subject to management measures).

1.3.3 Birds

Table 5. The list of probable bird species at the Project site

ORDER, -idae: Family, *Species*	Turkish	English	IUCN	BERN	MAK	CITES	EU Bird Directive	Status	Stations where the species possibly found
PODICIPEDIFORMES									
Podicipedidae									
1. *Tachybaptus ruficollis**	Küçük Batağan	Little Grebe	LC	Ann-II				Y	Sazlıdere Dam lake
2. *Podiceps cristatus*	Bahri	Great Crested Grebe	LC	Ann-III				Y	Sazlıdere Dam lake
3. *Podiceps nigricollis*	Kara Boyunlu Batağan	Black-Necked Grebe	LC	Ann-II				Y	Sazlıdere Dam lake
SULIFORMES									
Phalacrocoracidae									
4. *Phalacrocorax carbo**	Karabatak	Great Cormorant	LC	Ann-III	Ann-I			Y	Sazlıdere Dam lake
5. *Microcarbo pygmaeus**	Küçük Karabatak	Pygmy Cormorant	LC	Ann-II				Y	Sazlıdere Dam lake
PELECANIFORMES									
Pelecanidae									
6. *Pelecanus onocrotalus*	Ak Pelikan	White Pelican	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
7. *Pelecanus crispus*	Tepeli Pelikan	Dalmatian Pelican	NT	Ann-II		Ann-I	Ann-I	Y	Sazlıdere Dam lake
Ardeidae									
8. *Botaurus stellaris*	Balaban	Eurasian Bittern	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
9. *Ixobrychus minutus*	Küçük Balaban	Little Bittern	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
10. *Nycticorax Nycticorax*	Gece Balıkçılı	Black-crowned Night Heron	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
11. *Ardeola ralloides*	Alaca Balıkçıl	Squacco Heron	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
12. *Bubulcus ibis*	Sığır Balıkçılı	Cattle Egret	LC	Ann-II				Y	Sazlıdere Dam lake
13. *Egretta garzetta**	Küçük Ak Balıkçıl	Little Egret	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
14. *Ardea alba**	Büyük Ak Balıkçıl	Great White Egret	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
15. *Ardea cinerea**	Gri Balıkçıl	Grey Heron	LC	Ann-III	Ann-I			Y	Sazlıdere Dam lake
16. *Ardea purpurea**	Erguvani Balıkçıl	Purple Heron	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
Threskiornithidae									
17. *Plegadis falcinellus*	Çeltikçi	Glossy Ibis	LC	Ann-II			Ann-I	Y	1, 2, 6
18. *Platalea leucorodia*	Kaşıkçı	Eurasian Spoonbill	LC	Ann-II		Ann-II	Ann-I	Y	Sazlıdere Dam lake
CICONIIFORMES									
Ciconiidae									
19. *Ciconia nigra*	Kara Leylek	Black Stork	LC	Ann-II		Ann-II	Ann-I	GY	All
20. *Ciconia ciconia**	Leylek	White Stork	LC	Ann-II			Ann-I	GY	All
PHOENICOPTERIFORMES									
Phoenicopteridae									
21. *Phoenicopterus roseus*	Flamingo	Greater Flamingo	LC	Ann-II		_		Y	Sazlıdere Dam lake
ANSERIFORMES									
Anatidae									

22. *Cygnus olor*	Kuğu	Mute Swan	LC	Ann-III			Ann-II-B	Y	Sazlıdere Dam lake
23. *Cygnus columbianus*	Küçük Kuğu	Bewick's Swan	LC	Ann-II				Y	Sazlıdere Dam lake
24. *Cygnus cygnus*	Ötücü Kuğu	Whooper Swan	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
25. *Anser albifrons*	Sakarca	White-Fronted Goose	LC	Ann-III	Ann-II		Ann-II-B, Ann-III-B	K	6
26. *Anser anser*	Boz Kaz	Greylang Goose	LC	Ann-III	Ann-II		Ann-II-A, Ann-III-B	Y	6
27. *Branta ruficollis*	Sibirya Kazı	Red-Breasted Goose	VU	Ann-II		Ann-II	Ann-I	K	6
28. *Tadorna ferruginea*	Angıt	Ruddy Shelduck	LC	Ann-II			Ann-I	Y	Sazlıdere lake, 6
29. *Tadorna tadorna*	Suna	Shelduck	LC	Ann-II				Y	Sazlıdere Dam lake
30. *Mareca penelope*	Fiyu	Wigeon	LC	Ann-III	Ann-II		Ann-II-A, Ann-III-B	Y	Sazlıdere Dam lake
31. *Mareca strepera*	Boz Ördek	Gadwall	LC	Ann-III	Ann-II		Ann-II-A	Y	Sazlıdere Dam lake
32. *Anas crecca*	Çamurcun	Teal	LC	Ann-III	Ann-II		Ann-II-A, Ann-III-B	Y	Sazlıdere Dam lake
33. *Anas platyrhynchos**	Yeşilbaş	Mallard	LC	Ann-III	Ann-II		Ann-II-A, Ann-III-A	Y	Sazlıdere Dam lake
34. *Spatula querquedula*	Çıkrıkçın	Garganey	LC	Ann-III	Ann-II		Ann-II-A	Y	Sazlıdere Dam lake
35. *Spatula clypeata*	Kaşıkgaga	Shoveler	LC	Ann-III	Ann-I		Ann-II-A, Ann-III-B	Y	Sazlıdere Dam lake
36. *Netta rufina*	Macar Ördeği	Red-Crested Pochard	LC	Ann-III	Ann-II		Ann-II-B	Y	Sazlıdere Dam lake
37. *Aythya ferina*	Elmabaş Patka	Pochard	VU	Ann-III	Ann-II		Ann-II-A, Ann-III-B	Y	Sazlıdere Dam lake
38. *Aythya nyroca*	Pasbaş Patka	Ferruginous Duck	NT	Ann-III			Ann-I	Y	Sazlıdere Dam lake
39. *Aythya fuligula*	Tepeli Patka	Tufted Duck	LC	Ann-III	Ann-II		Ann-II-A, Ann-III-B	Y	Sazlıdere Dam lake
40. *Aythya marila*	Karabaş Patka	Scaup	LC	Ann-III	Ann-I		Ann-II-B, Ann-III-B	K	Sazlıdere Dam lake
41. *Bucephala clangula*	Altıngöz	Goldeneye	LC	Ann-III	Ann-I		Ann-II-B	K	Sazlıdere Dam lake
42. *Mergus albellus*	Sütlabi	Smew	LC	Ann-II			Ann-I	K	Sazlıdere Dam lake
43. *Oxyura leucocephala*	Dikkuyruk	White-Headed Duck	EN	Ann-II		Ann-II	Ann-I	Y	Sazlıdere Dam lake
ACCIPITRIFORMES									
Accipitridae									
44. *Pernis apivorus*	Arı Şahini	Honey Buzzard	LC	Ann-II		_	Ann-I	Y	All
45. *Milvus migrans*	Kara Çaylak	Black Kite	LC	Ann-II		_	Ann-I	Y	All
46. *Neophron percnopterus*	Küçük Akbaba	Egyptian Vulture	EN	Ann-II		_	Ann-I	Y	All
47. *Gyps fulvus*	Kızıl Akbaba	Griffon Vulture	LC	Ann-II		_	Ann-I	Y	All
48. *Aegypius monachus*	Kara Akbaba	Black Vulture	NT	Ann-II		_	Ann-I	Y	All
49. *Circaetus gallicus**	Yılan Kartalı	Short-Toed Eagle	LC	Ann-II		_	Ann-I	Y	All
50. *Circus aeruginosus**	Saz Delicesi	Marsh Harrier	LC	Ann-II		_	Ann-I	Y	All
51. *Circus cyaneus**	Gökçe Delice	Hen Harrier	LC	Ann-II		_	Ann-I	Y	All
52. *Circus macrourus*	Bozkır Delicesi	Pallid Harrier	NT	Ann-II		_	Ann-I	Y	All
53. *Circus pygargus*	Çayır Delicesi	Montagu's Harrier	LC	Ann-II		_	Ann-I	G	All

54. *Accipiter gentilis*	Çakırkuşu	Goshawk	LC	Ann-II		_	Ann-I	Y	All
55. *Accipiter nisus**	Atmaca	Sparrowhawk	LC	Ann-II		_	Ann-I	Y	All
56. *Accipiter brevipes**	Yoz Atmaca	Levant Sparrowhawk	LC	Ann-II		_	Ann-I	Y	All
57. *Buteo buteo**	Şahin	Buzzard	LC	Ann-II		_		Y	All
58. *Buteo rufinus**	Kızıl Şahin	Long-Legged Buzzard	LC	Ann-II		_	Ann-I	Y	All
59. *Buteo lagopus*	Paçalı Şahin	Rough-Legged Buzzard	LC	Ann-II		_		Y	All
60. *Clanga pomarina**	Küçük Orman Kartalı	Lesser Spotted Eagle	LC	Ann-II		_	Ann-I	G,T	All
61. *Clanga clanga*	Büyük Orman Kartalı	Greater Spotted Eagle	VU	Ann-II		_	Ann-I	K	All
62. *Aquila nipalensis*	Bozkır Kartalı	Steppe Eagle	EN	Ann-II		_		Y	All
63. *Aquila heliaca*	Şah Kartal	Imperial Eagle	VU	Ann-II		Ann-I	Ann-I	Y	All
64. *Hieraaetus pennatus**	Küçük Kartal	Booted Eagle	LC	Ann-II		_	Ann-I	Y	All
65. *Pandion haliaetus*	Balık Kartalı	Osprey	LC	Ann-II		_	Ann-I	Y	All
FALCONIFORMES									
Falconidae									
66. *Falco naumanni*	Küçük Kerkenez	Lesser Kestrel	LC	Ann-II		_	Ann-I	Y	All
67. *Falco tinnunculus**	Kerkenez	Kestrel	LC	Ann-II		_		Y	All
68. *Falco vespertinus*	Ala Doğan	Red-Footed Falcon	NT	Ann-II		_	Ann-I	T	All
69. *Falco columbarius*	Boz Doğan	Merlin	LC	Ann-II		_	Ann-I	K	All
70. *Falco subbuteo**	Delice Doğan	Hobby	LC	Ann-II		_		Y	All
71. *Falco peregrinus*	Gök Doğan	Peregrine	LC	Ann-II		Ann-I	Ann-I	Y	All
GALLIFORMES									
Phasianidae									
72. *Alectoris chukar*	Kınalı Keklik	Chukar	LC	Ann-III	Ann-II		Ann-II-B	Y	3, 4
73. *Coturnix coturnix*	Bıldırcın	Quail	LC	Ann-III	Ann-II		Ann-II-B	Y	All
GRUIFORMES									
Rallidae									
74. *Rallus aquaticus*	Su Kılavuzu	Water Rail	LC	Ann-III	Ann-I		Ann-II-B	Y	Sazlıdere Dam lake
75. *Porzana porzana*	Benekli Suyelvesi	Spotted Crake	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
76. *Zapornia parva*	Bataklık Suyelvesi	Little Crake	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
77. *Crex crex*	Bıldırcınkılavuzu	Corncrake	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
78. *Gallinula chloropus**	Sutavuğu	Moorhen	LC	Ann-III	Ann-I		Ann-II-B	Y	Sazlıdere Dam lake
79. *Fulica atra**	Sakarmeke	Coot	LC	Ann-III	Ann-II		Ann-II-A, Ann-III-B	Y	Sazlıdere Dam lake
80. *Grus grus*	Turna	Crane	LC	Ann-II		_	Ann-I	Y,T	6
CHARADIIFORMES									
Haematopodidae									
81. *Haematopus ostralegus*	Poyrazkuşu	Eurisan Oystercatcher	NT	Ann-III	Ann-I		Ann-II-B	G,T	Sazlıdere lake, 6
Recurvirostridae									
82. *Himantopus himantopus*	Uzunbacak	Black-Winged Stilt	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
83. *Recurvirostra avosetta*	Kılıçgaga	Avocet	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
Burhinidae									
84. *Burhinus oedicnemus*	Kocagöz	Stone Curlew	LC	Ann-II			Ann-I	G,Y	2, 4
Glareolidae									

85. *Glareola pratincola*	Bataklıkkırlangıcı	Collared Pranticole	LC	Ann-II		Ann-I	G,Y	3, 6
Charadriidae								
86. *Charadrius dubius*	Halkalı Küçük Cılıbıt	Little Ringed Plover	LC	Ann-II			Y	Sazlıdere Dam lake
87. *Charadrius hiaticula*	Halkalı Cılıbıt	Ringed Plover	LC	Ann-II			T,K	Sazlıdere Dam lake
88. *Charadrius alexandrinus*	Akça Cılıbıt	Kentish Plover	LC	Ann-II		Ann-I	Y	Sazlıdere Dam lake
89. *Charadrius morinellus*	Dağ Cılıbıtı	Dotterel	LC	Ann-II		Ann-I	T	Sazlıdere Dam lake
90. *Pluvialis apricaria*	Altın Yağmurcun	Golden Plover	LC	Ann-III	Ann-I	Ann-II-B, Ann-III-B	K	Sazlıdere Dam lake
91. *Pluvialis squatarola*	Gümüş Yağmurcun	Grey Plover	LC	Ann-III	**Ann-I**	Ann-II-B	K	Sazlıdere Dam lake
92. *Vanellus vanellus**	Kızkuşu	Lapwing	**NT**	Ann-III	Ann-I	Ann-II-B	Y	Sazlıdere lake, 6
Scolopacidae								
93. *Calidris minuta*	Küçük Kumkuşu	Little Stint	LC	Ann-II			K	Sazlıdere Dam lake
94. *Calidris ferruginea*	Kızıl Kumkuşu	Curlew Sandpiper	**NT**	Ann-II			K	Sazlıdere Dam lake
95. *Calidris alpina*	Kara Karınlı Kumkuşu	Dunlin	LC	Ann-II		Ann-I	K	Sazlıdere Dam lake
96. *Calidris falcinellus*	Sürmeli Kumkuşu	Broad-Billed Sandpiper	LC	Ann-II			K	Sazlıdere Dam lake
97. *Calidris pugnax*	Döğüşkenkuş	Ruff	LC	Ann-III	Ann-I	Ann-II-B	T,K	Sazlıdere lake, 6
98. *Lymnocryptes minimus*	Küçük Su Çulluğu	Jack Snipe	LC	Ann-III	Ann-I	Ann-II-A, Ann-III-B	K	Sazlıdere Dam lake
99. *Gallinago gallinago*	Su Çulluğu	Snipe	LC	Ann-III	Ann-II	Ann-II-A, Ann-III-B	K	Sazlıdere Dam lake
100. *Scolopax rusticola*	Çulluk	Woodcock	LC	Ann-III	Ann-II	Ann-II-A, Ann-III-B	K	Sazlıdere Dam lake
101. *Limosa limosa*	Çamurçulluğu	Black-Tailed Godwit	**NT**	Ann-III	Ann-I	Ann-II-B	K	Sazlıdere Dam lake
102. *Numenius phaeopus*	Sürmeli Kervançulluğu	Whimbrel	LC	Ann-III	Ann-I	Ann-II-B	T	Sazlıdere lake, 6
103. *Numenius arquata*	Kervançulluğu	Curlew	**NT**	Ann-III	Ann-I	Ann-II-B	K	Sazlıdere lake, 6
104. *Tringa erythropus*	Kara Kızılbacak	Spotted Redshank	LC	Ann-III	Ann-I		K	Sazlıdere lake, 6
105. *Tringa totanus*	Kızılbacak	Redshank	LC	Ann-III	Ann-I	Ann-II-B	Y	Sazlıdere lake, 6
106. *Tringa stagnatilis*	Bataklık Düdükçünü	Marsh Sandpiper	LC	Ann-II			K,T	Sazlıdere lake, 6
107. *Tringa nebularia*	Yeşilbacak	Greenshank	LC	Ann-III	Ann-I	Ann-II-B	K,T	Sazlıdere lake, 6
108. *Tringa ochropus*	Yeşil Düdükçün	Green Sandpiper	LC	Ann-II			K,T	Sazlıdere lake, 6
109. *Tringa glareola*	Orman Düdükçünü	Wood Sandpiper	LC	Ann-II		Ann-I	T	Sazlıdere lake, 6
110. *Actitis hypoleucos*	Dere Düdükçünü	Common Sandpiper	LC	Ann-III			G	Sazlıdere lake, 6
Laridae								
111. *Larus ichthyaetus*	Büyük Karabaş Martı	Great Black-Headed Gull	LC	Ann-III	Ann-I		K	Sazlıdere Dam lake
112. *Larus melanocephalus*	Akdeniz Martısı	Mediterranean Gull	LC	Ann-II		Ann-I	Y	Sazlıdere Dam lake
113. *Hydrocoloeus minutus*	Küçük Martı	Little Gull	LC	Ann-II		Ann-I	K	Sazlıdere Dam lake
114. *Larus ridibundus**	Karabaş Martı	Black-Headed Gull	LC	Ann-III	Ann-I	Ann-II-B	Y	All
115. *Larus genei*	İnce Gagalı Martı	Slender-Billed Gull	LC	Ann-II		Ann-I	K	Sazlıdere Dam lake
116. *Larus canus*	Küçük Gümüş Martı	Common Gull	LC	Ann-III	Ann-I	Ann-II-B	K	Sazlıdere Dam lake
117. *Larus fuscus*	Kara Sırtlı Martı	Lesser Black-Backed Gull	LC	-	Ann-I	Ann-II-B	K	Sazlıdere Dam lake
118. *Larus armenicus*	Van Gölü Martısı	Armenian Gull	**NT**	Ann-III	Ann-I		Y	Sazlıdere Dam lake
119. *Larus michahellis**	Gümüş Martı	Yellow-legged Gull	LC	Ann-III	Ann-I		Y	All
120. *Larus cachinnans*	Hazar Martısı	Caspian Gull	LC	Ann-III	Ann-I	Ann-II-B	Y	Sazlıdere Dam lake

121. Rissa tridactyla	Kara Ayaklı Martı	Kittiwake	LC	Ann-III	Ann-I			K	Sazlıdere Dam lake
122. Gelochelidon nilotica	Gülen Sumru	Gull-Billed Tern	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
123. Hydroprogne caspia	Hazar Sumrusu	Caspian Tern	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
124. Thalasseus sandvicensis	Kara Gagalı Sumru	Sandwich Tern	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
*125. Sterna hirundo**	Sumru	Common Tern	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
126. Sterna albifrons	Küçük Sumru	Little Tern	LC	Ann-II			Ann-I	G	Sazlıdere Dam lake
127. Chlidonias hybridus	Bıyıklı Sumru	Whiskered Tern	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
128. Chlidonias niger	Kara Sumru	Black Tern	LC	Ann-II			Ann-I	Y	Sazlıdere Dam lake
*129. Chlidonias leucopterus**	Ak Kanatlı Sumru	White-Winged Black Tern	LC	Ann-II				Y	Sazlıdere Dam lake
COLUMBIFORMES									
Columbidae									
*130. Columba livia**	Kaya Güvercini	Rock Dove	LC	Ann-III	Ann-II		Ann-II-A	Y	All
131. Columba oenas	Gökçe Güvercin	Stock Dove	LC	Ann-III	Ann-I		Ann-II-B	Y	All
132. Columba palumbus	Tahtalı	Woodpigeon	LC	-	Ann-II		Ann-II-A, Ann-III-A	Y	
*133. Streptopelia decaocto**	Kumru	Collared Dove	LC	Ann-III	Ann-I		Ann-II-B	Y	All
134. Streptopelia turtur	Üveyik	Turtle Dove	**VU**	Ann-III	Ann-II		Ann-II-B	G	All
135. Spilopelia senegalensis	Küçük Kumru	Laughing Dove	LC	Ann-III	Ann-I			Y	All
CUCULIFORMES									
Cuculidae									
136. Clamator glandarius	Tepeli Guguk	Great Spotted Cuckoo	LC	Ann-II				G	All
137. Cuculus canorus	Guguk	Cuckoo	LC	Ann-III				G	All
STRIGIFORMES									
Tytonidae									
138. Tyto alba	Peçeli Baykuş	Barn Owl	LC	Ann-II		_		Y	All
Strigidae									
139. Otus scops	İshakkuşu	Scops Owl	LC	Ann-II		_		Y	1-4
140. Athene noctua	Kukumav	Little Owl	LC	Ann-II		_		Y	All
141. Strix aluco	Alaca Baykuş	Tawny Owl	LC	Ann-II		_		Y	3
142. Asio otus	Kulaklı Orman Baykuşu	Long-Eared Owl	LC	Ann-II		_		Y	2, 3
143. Asio flammeus	Kır Baykuşu	Short-Eared Owl	LC	Ann-II		_	Ann-I	Y	4, 6
CAPRIMULGIFORMES									
Caprimulgidae									
144. Caprimulgus europaeus	Çobanaldatan	Nightjar	LC	Ann-II			Ann-I	G	All
Apodidae									
*145. Apus apus**	Ebabil	Swift	LC	Ann-III				G	All
146. Apus pallidus	Boz Ebabil	Pallid Swift	LC	Ann-II				G	All
*147. Tachymarptis melba**	Ak Karınlı Ebabil	Alpine Swift	LC	Ann-II				G	All
CORACIIFORMES									
Alcedinidae									
*148. Alcedo atthis**	Yalıçapkını	Kingfisher	LC	Ann-II			Ann-I	Y	Sazlıdere lake, 6
Meropidae									
*149. Merops apiaster**	Arıkuşu	Bee-Eater	LC	Ann-II				G	All

Coraciidae								
150. Coracias garrulus	Gökkuzgun	Roller	LC	Ann-II		Ann-I	G	All
BUCEROTIFORMES								
Upupidae								
*151. Upupa epops**	İbibik	Eurasian Hoopoe	LC	Ann-II			G	All
PICIFORMES								
Picidae								
152. Jynx torquilla	Boyunçeviren	Wryneck	LC	Ann-II			G	All
153. Picus canus	Küçük Yeşil Ağaçkakan	Grey-Headed Woodpecker	LC	Ann-II		Ann-I	Y	All
154. Picus viridis	Yeşil Ağaçkakan	Green Woodpecker	LC	Ann-II			Y	All
155. Dendrocopos major	Orman Ağaçkakanı	Great-Spotted Woodpecker	LC	Ann-II		Ann-I	Y	All
156. Dendrocopos syriacus	Alaca Ağaçkakan	Syrian Woodpecker	LC	Ann-II		Ann-I	Y	All
157. Dendrocopos medius	Ortanca Ağaçkakan	Middle Spotted Woodpecker	LC	Ann-II		Ann-I	Y	All
158. Dendrocopos minor	Küçük Ağaçkakan	Lesser Spotted Woodpecker	LC	Ann-II			Y	All
PASSERIFORMES								
Alaudidae								
*159. Melanocorypha calandra**	Boğmaklı Toygar	Calandra Lark	LC	Ann-II		Ann-I	Y	All
160. Calandrella brachydactyla	Bozkır Toygarı	Short-Toed Lark	LC	Ann-II		Ann-I	Y	All
161. Galerida cristata	Tepeli Toygar	Crested Lark	LC	Ann-III	Ann-I		Y	All
162. Lullula arborea	Orman Toygarı	Woodlark	LC	Ann-III	Ann-I	Ann-I	Y	All
*163. Alauda arvensis**	Tarlakuşu	Skylark	LC	Ann-III	Ann-I	Ann-II-B	Y	All
Hirundinidae								
*164. Riparia riparia**	Kum Kırlangıcı	Sand Martin	LC	Ann-II			G	All
*165. Hirundo rustica**	Kır Kırlangıcı	Swallow	LC	Ann-II			G	All
166. Hirundo daurica	Kızıl Kırlangıç	Red-Rumped Swallow	LC	Ann-II			G	All
*167. Delichon urbicum**	Ev Kırlangıcı	House Martin	LC	Ann-II			G	All
Motacillidae								
168. Anthus campestris	Kır İncirkuşu	Tawny Pipit	LC	Ann-II		Ann-I	G	All
*169. Anthus trivialis**	Ağaç İncirkuşu	Tree Pipit	LC	Ann-II			G	All
170. Anthus pratensis	Çayır İncirkuşu	Meadow Pipit	**NT**	Ann-II			G	All
171. Anthus cervinus	Kızıl Gerdanlı İncirkuş	Red-Thorated Pipit	LC	Ann-II			G	All
172. Motacilla flava	Sarı Kuyruksallayan	Yellow Wagtail	LC	Ann-II			G	All
173. Motacilla citreola	Sarı Başlı Kuyruksallayan	Citrine Wagtail	LC	Ann-II			G,Y	All
174. Motacilla cinerea	Dağ Kuyruksallayanı	Grey Wagtail	LC	Ann-II			Y	All
*175. Motacilla alba**	Ak Kuyruksallayan	Pied Wagtail	LC	Ann-II			Y	All
Troglodytidae								
176. Troglodytes troglodytes	Çıtkuşu	Wren, Winter Wren	LC	Ann-II		Ann-I	Y	All
Prunellidae								
177. Prunella modularis	Dağbülbülü	Dunnock	LC	Ann-II			Y	All
Muscicapidae								
178. Erithacus rubecula	Kızılgerdan	Robin	LC	Ann-II			Y	All
179. Luscinia luscinia	Benekli Bübül	Thrush Nightingale	LC	Ann-II			G,T	All
180. Luscinia megarhynchos	Bülbül	Nightingale	LC	Ann-II			G	All

181. Luscinia svecica	Mavigerdan	Bluethroat	LC	Ann-II		Ann-I	G,Y	All
182. Phoenicurus ochruros	Kara Kızılkuyruk	Black Redstart	LC	Ann-II			R	All
183. Phoenicurus phoenicurus	Kızılkuyruk	Redstart	LC	Ann-II			Y	All
184. Saxicola rubetra	Çayır Taşkuşu	Whinchat	LC	Ann-II			Y	All
185. Saxicola torquata	Taşkuşu	Stonechat	LC	Ann-II			Y	All
186. Saxicola maura	Sibirya Taşkuşu	Siberian Stonechat	LC	Ann-III			N	All
187. Oenanthe isabellina	Boz Kuyrukkakan	Isabellina Wheatear	LC	Ann-II	Ann-I		Y	All
*188. Oenanthe oenanthe**	Kuyrukkakan	Northern Wheatear	LC	Ann-II	Ann-I		G	All
*189. Muscicapa striata**	Benekli Sinekkapan	Spotted flycatcher	LC	Ann-II			G	All
190. Ficedula parva	Küçük Sinekkapan	Red-breasted flycatcher	LC	Ann-II		Ann-I	T	All
191. Ficedula semitorquata	Alaca Sinekkapan	Semi-collared flycatcher	LC	Ann-II		Ann-I	G	All
192. Ficedula albicollis	Halkalı Sinekkapan	Collared flycatcher	LC	Ann-II		Ann-I	G	All
193. Ficedula hypoleuca	Kara Sinekkapan	Pied flycatcher	LC	Ann-II			G	All
Turdidae								
194. Turdus torquatus	Boğmaklı Ardıç	Ring Ouzel	LC	Ann-II			Y	All
*195. Turdus merula**	Karatavuk	Blackbird	LC	Ann-III	Ann-II	Ann-II-B	Y	All
196. Turdus pilaris	Tarla Ardıcı	Fieldfare	LC	Ann-III	Ann-I	Ann-II-B	K	All
197. Turdus philomelos	Öter Ardıç	Song Thrush	LC	Ann-III	Ann-II	Ann-II-B	Y	All
198. Turdus iliacus	Kızıl Ardıç	Redwing	**NT**	Ann-III	Ann-I	Ann-II-B	K	All
199. Turdus viscivorus	Ökse Ardıcı	Mistle Thursh	LC	Ann-III	Ann-I	Ann-II-B	Y	All
Sylviidae								
200. Cettia cetti	Kamış Bülbülü	Cetti's Warbler	LC	Ann-III			Y	2, 6
201. Locustella lusciniodies	Bataklık Kamışçını	Savi's Warbler	LC	Ann-III			G	2, 6
202. Acrocephalus palustris	Çalı Kamışçını	Marsh Warbler	LC	Ann-III			G	1-3, 6
203. Acrocephalus scirpaceus	Saz Kamışçını	Reed Warbler	LC	Ann-III			G	2, 3, 6
204. Acrocephalus arundinaceus	Büyük Kamışçın	Great Reed Warbler	LC	Ann-III			G	2, 3, 6
*205. Sylvia melanocephala**	Maskeli Ötleğen	Sardinian Warbler	LC	Ann-II			Y	All
206. Sylvia hortensis	Ak Gözlü Ötleğen	Orphean Warbler	LC	Ann-II			G	All
207. Sylvia nisoria	Çizgili Ötleğen	Barred Warbler	LC	Ann-II		Ann-I	G	All
208. Sylvia curruca	Küçük Ak Gerdanlı Ötleğen	Lesser Whitethroat	LC	Ann-II			G	All
*209. Sylvia communis**	Ak Gerdanlı Ötleğen	Whitethroat	LC	Ann-II			G	All
210. Sylvia borin	Boz Ötleğen	Garden Warbler	LC	Ann-II			T	All
*211. Sylvia atricapilla**	Kara Başlı Ötleğen	Blackcap	LC	Ann-II			G	All
212. Phylloscopus sibilatrix	Orman Çıvgın	Wood Warbler	LC	Ann-II			G	All
*213. Phylloscopus collybita**	Çıvgın	Chiffchaff	LC	Ann-II			Y	All
214. Phylloscopus trochilus	Söğütbülbülü	Willow Warbler	LC	Ann-II			G	All
Reguliidae								
215. Regulus regulus	Çalıkuşu	Goldcrest	LC	Ann-II			Y	All
216. Regulus ignicapillus	Sürmeli Çalıkuşu	Firecrest	LC	Ann-II			Y	All
Aegithalidae								
217. Aegithalos caudatus	Uzun Kuyruklu Baştankara	Long-Tailed Tit	LC	Ann-III	Ann-I		Y	All
Paridae								

218. Parus palustris	Kayın Baştankarası	Marsh Tit	LC	Ann-II			Y	5
*219. Parus caeruleus**	Mavi Baştankara	Blue Tit	LC	Ann-II			Y	All
*220. Parus major**	Büyük Baştankara	Great Tit	LC	Ann-II			Y	All
Sittidae								
221. Sitta europaea	Sıvacı	Nuthatch	LC	Ann-II			Y	1-5
Certhiidae								
222. Certhia familiaris	Orman Tırmaşıkkuşu	Tree Creeper	LC	Ann-II			Y	1-5
223. Certhia brachydactyla	Bahçe Tırmaşıkkuşu	Short-Toed Tree Creeper	LC	Ann-II		Ann-I	Y	1-5
Remizidae								
224. Remiz pendulinus	Çulhakuşu	Penduline Tit	LC	Ann-III	Ann-I		Y	2, 3, 6
Oriolidae								
225. Oriolus oriolus	Sarıasma	Golden Oriole	LC	Ann-II			G	All
Laniidae								
*226. Lanius collurio**	Kızıl Sırtlı Örümcekkuşu	Red-Backed Shrike	LC	Ann-II	Ann-I	Ann-I	G	All
227. Lanius minor	Kara Alınlı Örümekkuşu	Lesser Grey Shrike	LC	Ann-II		Ann-I	G	All
228. Lanius excubitor	Büyük Örümcekkuşu	Great Grey Shrike	LC	Ann-II			G,K	All
229. Lanius senator	Kızıl Başlı Örümcekkuşu	Woodchat Shrike	LC	Ann-II			Y	All
*230. Lanius nubicus**	Maskeli Örümcekkuşu	Masked Shrike	LC	Ann-II		Ann-I	G	All
Corvidae								
231. Garrulus glandarius	Alakarga	Jay, Eurasian Jay	LC	–	Ann-II	Ann-II-B	Y	1, 2, 3, 5
*232. Pica pica**	Saksağan	Magpie, Black-billed Magpie	LC	-	Ann-II	Ann-II-B	Y	All
*233. Corvus monedula**	Küçük Karga	Jackdaw, Eurasian Jackdaw	LC	-	Ann-II	Ann-II-B	Y	All
*234. Corvus frugilegus**	Ekin Kargası	Rook	LC	-	Ann-II	Ann-II-B	Y	All
*235. Corvus cornix**	Leş Kargası	Hooded Crow	LC	-	Ann-II	Ann-II-B	Y	All
*236. Corvus corax**	Kuzgun	Raven	LC	Ann-III	Ann-I		Y	All
Sturnidae								
*237. Sturnus vulgaris**	Sığırcık	Starling	LC	-	Ann-I	Ann-II-B	Y	All
Passeridae								
*238. Passer domesticus**	Serçe	House Sparrow	LC	-	Ann-II		Y	All
*239. Passer hispaniolensis**	Söğüt Serçesi	Spanish Sparrow	LC	Ann-III	Ann-I		Y	All
240. Passer montanus	Ağaç Serçesi	Tree Sparrow	LC	Ann-III	Ann-I		Y	All
241. Petronia petronia	Kaya Serçesi	Rock Sparrow	LC	Ann-II			Y	2, 4
Fringillidae								
*242. Fringilla coelebs**	İspinoz	Chaffinch	LC	Ann-III	Ann-I	Ann-I	Y	All
243. Fringilla montifringilla	Dağ İspinozu	Brambling	LC	Ann-III	Ann-I		Y	All
244. Serinus serinus	Küçük İskete	Serin	LC	Ann-II			Y	All
*245. Carduelis chloris**	Florya	Greenfinch	LC	Ann-II			Y	All
*246. Carduelis carduelis**	Saka	Goldfinch	LC	Ann-II			Y	All
247. Carduelis spinus	Karabaşlı İskete	Siskin	LC	Ann-II			Y	All
248. Carduelis cannabina	Ketenkuşu	Linnet	LC	Ann-II			Y	All
249. Coccothraustes coccothraustes	Kocabaş	Hawfinch	LC	Ann-II			Y	All
Emberizidae								
250. Emberiza citrinella	Sarı Kirazkuşu	Yellowhammer	LC	Ann-II			Y,G	All

251. Emberiza cirlus	Bahçe Kirazkuşu	Cirl Bunting	LC	Ann-II			Y	All
252. Emberiza cia	Kaya Kirazkuşu	Rock Bunting	LC	Ann-II			Y	All
253. Emberiza hortulana	Kirazkuşu	Ortolan	LC	Ann-III	Ann-I	Ann-I	G	All
254. Emberiza schoeniclus	Bataklık Kirazkuşu	Reed Bunting	LC	Ann-II			Y	All
255. Emberiza melanocephala	Karabaşlı Kirazkuşu	Black-Headed Bunting	LC	Ann-II			G	All
*256. Miliaria calandra**	Tarla Kirazkuşu	Corn Bunting	LC	Ann-III	Ann-I		Y	All

* Species that directly seen during field survey

During the field survey, 64 bird species were directly observed at the Project site which are listed in Table 5. Additionally, a total of 256 bird species were listed for project area. İstanbul is located on the most important bird migration route in Turkey, so a lot of migratory birds were also included in the list. It does not mean that all these birds stay at project area during the year.

None of the bird species is endemic, however, eight of them are listed in threatened categories of IUCN as four are Vulnerable, and three area Endangered. Additionally 12 bird species are listed as Near Threatened by IUCN. All other bird species observed and probable bird species indicated here are listed as LC (Least Concern) by IUCN.

According to BERN Convention Appendices, 172 out of 256 bird species at the Project site are listed in Ann-II (Strictly protected fauna species), and 75 species in Ann-III (Protected fauna species).

According to MAK decisions, 49 species are listed in Ann-I (List of game animals protected by MAK), and 26 species in Ann-II (List of game animals whose hunting is allowed for certain periods for 2020-2021 season).

3 species are listed in Ann-I (species that are which are under the threat of extinction), and 4 species are listed in Ann-II (species that are not necessarily now threatened with extinction but that may become so unless trade is closely controlled) by CITES.

Additionally, according to EU Bird Directive, 88 species are listed in App I (The species mentioned in Annex I shall be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution.), 15 species is listed in App-IIA (Part A may be hunted in the geographical sea and land area where this Directive applies), 38 species in App-IIB (Part B may be hunted only in the Member States in respect of which they are indicated), 2 species is listed in App-IIIA (The activities referred to in paragraph 1 shall not be prohibited in respect of the species referred to in Annex III, Part A, provided that the birds have been legally killed or captured or otherwise legally acquired), 13 species in App-IIIB (Member States may, for the species listed in Annex III, Part B, allow within their territory the activities referred to in paragraph 1, making provision for certain restrictions, provided that the birds have been legally killed or captured or otherwise legally acquired).

Dr. Mustafa Sözen has performed a special study in 2020 winter in Büyükçekmece and Küçükçekmece lakes areas to determine and evaluate the wintering birds in these areas and their behaviors around newly planned railway. The results of this study were also included in this study to prepare bird list. Additionally all e-bird records and literature data were also evaluated and used.

Though Istanbul is on a main route of migratory birds, the main route is located in the north of project area. Some migratory bird species were observed during the survey in mid-September 2021 (Fig. 10, 13, 17, 21).

On the other hand, a special bird study has already been performed by Kerem Ali Boyla, so the effects of the projects on birds and mitigation precautions are not detailed here.



Figure 22. Main migration route for migratory birds around Istanbul (big greenish arrow, no: 1), and the locality of the motorway (white line indicates motorway route).

1.3.4 Mammals

Table 6. The list of probable mammal species at the project site

ORDER, -idae: Family, Species	Turkish	English	IUCN	BERN	CITES	MAK	EU Habitat Directive	Stations where the species possibly found
EULIPOTYPHLA								
Erinaceidae								
1. *Erinaceus roumanicus*	Doğu Avrupa kirpisi	Northern white-breasted hedgehog	LC					All
Soricidae								
2. *Crocidura leucodon*	Kır sivri faresi	Bicolored shrew	LC					All
3. *Crocidura suaveolens*	Bahçe sivri faresi	lesser white-toothed shrew	LC					All
4. *Neomys anomalus*	Bataklık böcekçili	Southern water shrew	LC					Between 2 and 3, 6
Talpidae								
5. *Talpa europaea**	Avrupa köstebeği	European mole	LC					All
CHIROPTERA								
Miniopteridae								
6. *Miniopterus schreibersii*	Uzunkanatlı Yarasa	Common bent-wing bat	**NT**	Ann-II			Ann-II	All
Rhinolophidae								
7. *Rhinolophus blasii*	Blasius Nalburunlu Yarasası	Blasius's horseshoe bat	LC	Ann-II			Ann-II	All
8. *Rhinolophus euryale*	Akdeniz nalburunlu yarasası	Mediterranean horseshoe bat	**NT**	Ann-II			Ann-II	All
9. *Rhinolophus ferrumequinum*	Büyük nalburunlu yarasa	Greater horseshoe bat	LC	Ann-II			Ann-II	All
10. *Rhinolophus hipposideros*	Küçük nalburunlu yarasa	Lesser horseshoe bat	LC	Ann-II			Ann-II	All
Vespertilionidae								
11. *Eptesicus serotinus*	Geniş Kanatlı Yarasa	Serotine bat	LC	Ann-II			Ann-IV	All
12. *Hypsugo savii*	Savi'nin Cüce Yarasası	Savi's pipistrelle	LC	Ann-II			Ann-IV	All
13. *Myotis alcathoe*	Balkan Bıyıklı Yarasası	Alcathoe bat	DD	Ann-II			Ann-IV	All
14. *Myotis blythii*	Küçük Farekulaklı Yarasa	Lesser mouse-eared bat	LC	Ann-II			Ann-II	All
15. *Myotis brandtii*	Sakallı Yarasa	Brandt's bat	LC	Ann-II			Ann-IV	All
16. *Myotis capaccinii*	Uzunayaklı Yarasa	Long-fingered bat	**VU**	Ann-II			Ann-II	All
17. *Myotis daubentonii*	Fare Kulaklı Su Yarasası	Daubenton's bat	LC	Ann-II			Ann-IV	All
18. *Myotis emarginatus*	Kirpikli Yarasa	Geoffroy's bat	LC	Ann-II			Ann-II	All
19. *Myotis myotis*	Farekulak yarasa	Greater mouse-eared bat	LC	Ann-II			Ann-II	All
20. *Myotis nattereri*	Saçaklı yarasa	Natterer's bat	LC	Ann-II			Ann-IV	All
21. *Pipistrellus kuhlii*	Beyazşeritli Yarasa	Kuhl's pipistrelle	LC	Ann-II			Ann-IV	All
22. *Pipistrellus nathusii*	Sertderili Yarasa	Nathusius's pipistrelle	LC	Ann-II			Ann-IV	All
23. *Pipistrellus pipistrellus*	Bayağı cüce yarasa	Common pipistrelle	LC	Ann-III			Ann-IV	All
24. *Pipistrellus pygmaeus*	Akdeniz Cüce Yarasası	Soprano pipistrelle	LC	-			Ann-IV	All
25. *Vespertilio murinus*	Çiftrenkli Yarasa	Parti-coloured bat	LC	Ann-II			Ann-IV	All
LAGOMORPHA								

Leporidae								
26. Lepus europaeus	Yabani Tavşan	European hare	LC			Ann-II		All
Cricetidae								
27. Cricetulus migratorius	Cüce Avurtlak	Grey dwarf hamster	LC					All
*28. Microtus hartingi**	Harting'in tarla faresi	Harting's vole	LC					All
29. Microtus mystacinus	Tarlafaresi	Southern vole	LC					All
Gliridae								
30. Dryomys nitedula	Orman Yediuyuru	Forest Dormouse	LC				Ann-IV	All
Muridae								
31. Apodemus flavicollis	Sarıboyunlu Ormanfaresi	Yellow-necked Mouse	LC					All
32. Apodemus sylvaticus	Dağ Faresi	Wood mouse	LC					All
33. Mus domesticus	Ev faresi	House Mouse	LC					All
34. Mus macedonicus	Sarı ev faresi	Macedonian mouse	LC					All
*35. Rattus norvegicus**	Kahverengi Sıçan	Brown rat	LC					All
36. Rattus rattus	Sıçan	Black rat	LC					All
Sciuridae								
37. Sciurus vulgaris	Kızıl sincap	Red squirrel	LC				Ann-IV	1, 3, 5, 6
Spalacidae								
*38. Nannospalax leucodon**	Beyazdişli körfare	Lesser mole rat	DD					2, 4, 5
CARNIVORA								
Canidae								
39. Canis aureus	Çakal	Golden jackal	LC			Ann-II	Ann-V	3-6
40. Vulpes vulpes	Kızıl Tilki	Red wolf	LC			Ann-II		All
Mustelidae								
41. Lutra lutra	Su samuru	Eurasian otter	**NT**	Ann-II	App-I		Ann-II, IV	3, 6
42. Martes foina	Kaya sansarı	Beech marten	LC	Ann-III		Ann-II		All
43. Meles meles	Porsuk	European badger	LC	Ann-III		Ann-I		3, 4, 5
44. Mustela nivalis	Gelincik	Least weasel	LC	Ann-III		Ann-I		All
45. Vormela peregusna	Alaca sansar	Marbled polecat	**VU**	Ann-II				1, 2, 4, 5, 6
CETARTIODACTYLA								
Suidae								
46. Sus scrofa	Yaban domuzu	Wild boar	LC	Ann-III				3-6

* Species that directly seen during field survey

Only one Brown Rat was observed directly during the field survey. However the burrows and foot prints of some mammals were determined. According to the location of the Project site and general habitat type, 46 probable mammal species were listed for the Project site (Table 6). None of the mammal species are endemic, however, two of the species are listed in threatened categories of IUCN as Vulnerable (Table 6).

The presence of European Ground Squirrel (*Spermophilus citellus*) could not be supported during three surveys and that is why this threatened species was removed from the table 6.

According to BERN Convention Appendices, 20 out of 46 mammal species at the Project site are listed in Ann-II (Strictly protected fauna species), and 5 species in Ann-III (Protected fauna species). 28 species in the area have not been listed by BERN convention.

According to MAK decisions, 2 mammal species is listed in App-I (List of game animals protected by MAK), and 4 species in Ann-II (List of game animals whose hunting is allowed for certain periods for 2021-2022 season).

One species are listed in Ann-I (species that are which are under the threat of extinction) by CITES.

Additionally, according to Habitats Directive, 10 species in Annex II (Animal and plant species of community interest whose taking in the wild and exploitation may be subject to management measures), 15 species are listed in Annex IV (Animal and plant species of community interest in need of strict protection).

1.3.5 Threat Status and Endemism of Fauna Species

The total number of probable terrestrial fauna species presented here is 339. Among these, there are 9 species of amphibians, 28 species of reptiles, 256 species of birds and 46 species of mammals (Tables 3-6). None of them are endemic, 11 species are listed in threatened categories of IUCN.

Four of them are listed as EN (*Oxyura leucocephala, Neophron percnopterus* and *Aquila nipalensis*), nine of them as VU (*Testudo graeca*, *Branta ruficollis, Aythya ferina, Clanga clanga, Aquila heliacal, Streptopelia turtur, Myotis capaccinii, Vormela peregusna*).

Additionally, as outlined in Table 1, correspondence between the HCV types and IFC Performance Standards suggests that the proposed Project site is considered as a “critical habitat”. Critical habitats are areas of high biodiversity value that may include at least one or more of the five values specified in IFC Performance Standard 6. Critical habitat criteria are as follows and should form the basis of any critical habitat assessment (IFC, 2012a: 19):

Criterion 1: Critically Endangered (CR) and/or Endangered (EN) species
Criterion 2: Endemic and/or restricted-range species
Criterion 3: Migratory and/or congregatory species
Criterion 4: Highly threatened and/or unique ecosystems
Criterion 5: Key evolutionary processes

In terms of HCVs and IFC performance standards, the Project site suits some of HCV criteria given in Table 1. The area contains four endangered (CR and/or EN) vertebrate species. Two of these species (*Neophron percnopterus* and *Aquila nipalensis*) are migratory bird species and possibly using the area during spring and autumn bird migration times. *Oxyura leucocephala* is a Duck species and was recorded from Küçükçekmece Lake. None of these species were observed along the project site directly, and the habitat of these birds do not related directly with the project site. *Neophron percnopterus* and *Aquila nipalensis* may be observed while migrating over the project site. The details of bird data will be submitted by bird observation study prepared by Kerem Ali Boyla.

These species seem to meet criterion 1. However, as explained here, the project site possibly does not support these species and the project site is not critical for these species to survive.

European Bank for Reconstruction and Development EBRD PR6 (2019) and Guidance Note (2014b) define critical habitats as the most sensitive biodiversity features, which comprise one of the following:

- highly threatened or unique ecosystems
- habitats of significant importance to critically endangered (CR) or endangered (EN) species
- habitats of significant importance to endemic or geographically restricted species
- habitats supporting globally significant migratory or congregatory species
- areas associated with key evolutionary processes
- ecological functions that are vital to maintaining the viability of biodiversity features described above.

1.4 Protected Sites and Other Sites in the Vicinity of the Project Site

The project route passes through three protected areas. These areas are Key Biodiversity Areas (KBA): MAR018 Küçükçekmece Lake IBA, and MAR019 Büyükçekmece Lake IBA, and MAR 021 Western Istanbul Pastures KBA (Fig. 21).

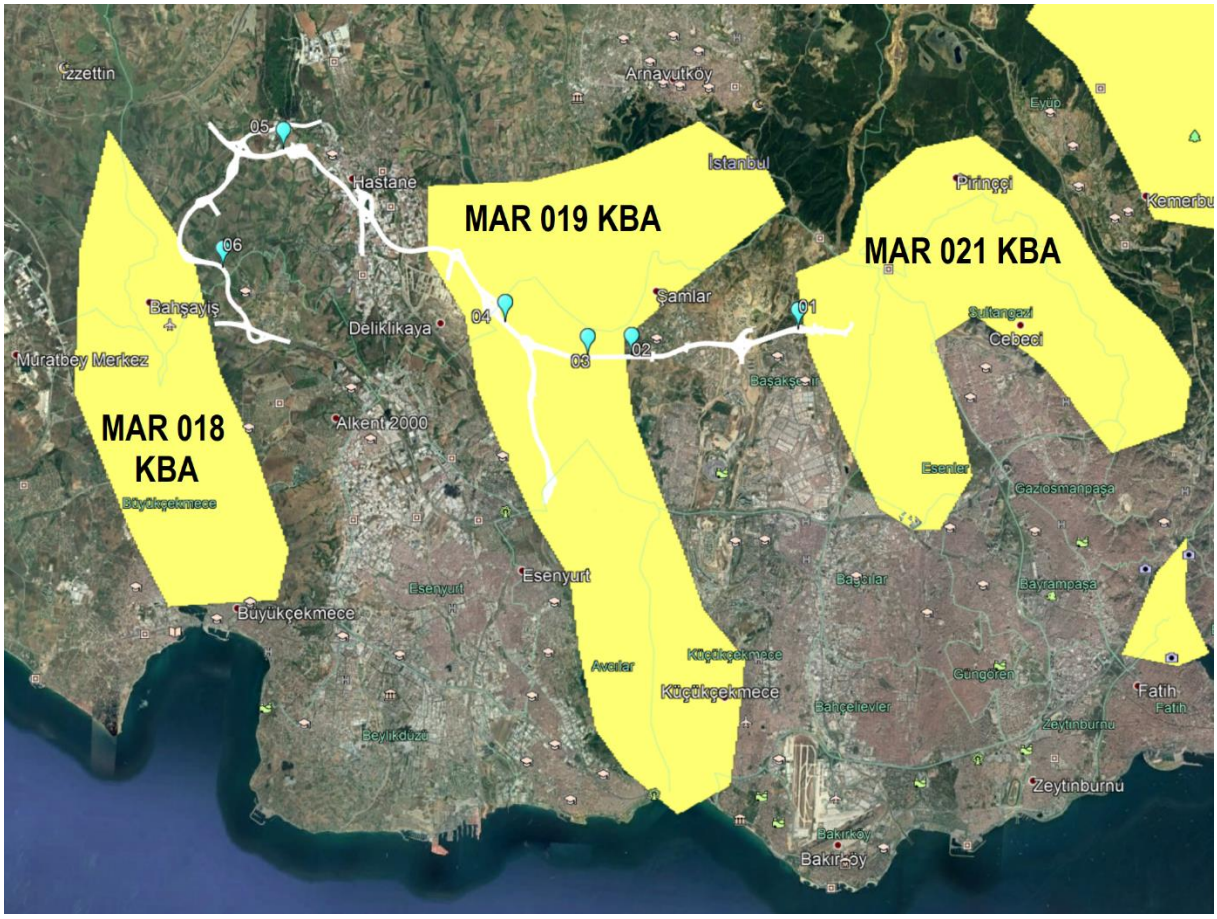


Figure 21. Protected areas (KBA) along the Project site. KBA: Key Biodiversity Areas,

1.5 Potential Impacts and Mitigation Measures

The project area studied is a Motorway line between Başakşehir and Nakkaş in Istanbul Province, and more than 35 kilometers. Along this distance, the Motorway passes through some settlements, agricultural areas, wetland edge, steppes, and small bush areas. Therefore, its environmental impact will be different by region. Inevitably, habitat loss will occur in areas where a new way will be built. Access roads will be constructed for some points, areas to be filled or emptied to adjust the level of Motorway constructed. Some areas also will be used to store excavated soil.

During these processes, many measures will be necessary to avoid damaging the fauna.

The possible effects of project on amphibians

There is not any endangered amphibian species at the project site. All kinds of fresh water sources such as small ponds, small springs, streams and creeks are very important for Amphibians to breed in and to find food. Opening access roads and preparing Motorway areas will affect some possible water resources along the route and cause habitat loss for

amphibians. On the other hand, tree cutting, plant cleaning, soil stripping, road construction and ground preparing activities may cause some amphibians losses. The new Motorway established may cut some routes for amphibians to reach feeding and/or breeding areas.

Mitigation measures for amphibians

To protect amphibians and reduce negative impacts, all freshwater resources such as small ponds, small springs, small creeks, etc. should be protected as much as possible during construction phase. Any contamination of water resources should be avoided. During the construction and operation phases, no water should be used from the natural water resources within the project site. If any water source is affected during the construction phase, the water should be prevented from being covered and disappeared and it should be ensured that it will continue to exist as a water source coming to the surface. The main water sources within project site are Sazlıdere Dam Lake and its water channel that flow to Küçükçekmece Lake. The motorway will cross this water cannel. A suitable underpass such as a large culvert should be established over the channel that allow amphibians to survive inside the channel. The other water channel is located in study point 6 and flows toward Büyükçekmece Lake. The motorway will cross this water cannel. A suitable underpass such as a large culvert should be established over the channel that allow amphibians to survive inside the channel. Culverts or underpass structures should be large enough to keep soil ground stripes along both side of the channel so that amphibians in water and some other animals such as reptiles and mammals can cross the motorway by using these land stripes along the channel. For such a purposes, viaduct like structures would be better than culverts.

If any water source is to be affected or relocated during the construction phase, amphibian samples from this water source should be collected and transported to a suitable nearby habitat.

Before stripping the surface soil in construction sites, all trees and shrubs should be cut and the floor cleaned. After cleaning the ground and transporting the amphibians encountered, surface soils should be striped carefully. While striping, some amphibians may be seen again in excavated soil. All these animals should be collected and transported again to a suitable nearby habitat.

During surface clearing and stripping activities, two biologists must accompany the construction team. This team of biologists should collect all animals encountered at the construction site and be affected by the construction and transfer them to appropriate habitats around the project site.

Not to restrict the movements of amphibians among feeding and/or breeding areas, enough crossing structures such as special channels and/or culverts suitable for amphibians crossing must be planned during planning and established during construction phase.

The possible effects of project on reptiles

According to IUCN criteria, a species of reptile species (*Testudo graeca*) in the area is threatened and listed as VU. One reptile species (*Emys orbicularis*) are listed as near threatened (NT) (Table 4).

Opening access roads and preparing Motorway areas will affect some possible water resources along the route and cause habitat loss for amphibians. On the other hand, tree cutting, plant cleaning, soil stripping, road construction and ground preparing activities may cause some reptile losses.

The new Motorway established may cut some routes for reptiles to reach feeding and/or breeding areas.

Mitigation measures for reptiles

In order to protect and to reduce negative impacts on aquatic reptiles such as turtles, water snakes etc., all freshwater resources such as small springs, fountains, small ponds, creeks etc. should be protected as much as possible during the construction and operation phases. Any contamination of water resources should be avoided. During the construction and operation phases, no water should be used from the natural water resources within the project site. If any water source is affected during the construction phase, the water should be prevented from being covered and disappeared and it should be ensured that it will continue to exist as a water source coming to the surface.

Before stripping the surface soil in construction sites, all trees and shrubs should be cut and the floor de cleaned. During this process, all reptiles encountered must be transported to the close appropriate habitats at the project site.

After cleaning the ground and transporting the amphibians encountered, surface soils should be striped carefully. While striping, some reptiles may be seen again in excavated soil. All these animals should be collected and transported again to a suitable nearby habitat.

During stripping, two biologists must accompany the construction team. This biologists team should collect all reptiles encountered that will be affected by the construction at the construction site and transfer them to the appropriate habitats around the project site.

During implementation of all these measures particular attention should especially be paid to vulnerable *Testudo graeca* and near threatened species of *Emys orbicularis* to prevent loss of individuals due to activities. These species should be screened before the construction activities are started in the construction areas, and if they are determined in the area, they should be transported to the safe areas by the pre-construction relocation work. During the construction activities, relocation works should be continued.

Emys orbicularis may be seen in water channel in front of the Sazlıdere Dam Lake and water channel in study point 6 area that flow Büyükçekmece Lake.

Not to restrict reptile movements among feeding and/or breeding areas, enough crossing structures such as special channels and/or culverts suitable for reptiles crossing must be planned during planning and established during construction phase.

The possible effects of project on birds

A special study for has already been prepared by another team.

The possible effects of project on mammals

According to IUCN criteria, two of the mammal species listed for the site are threatened as VU (*Myotis capaccinii,* and *Vormela peregusna*) (Table 4).

Myotis capaccinii is a bat species and use mainly caves to rest and for hibernation. Thrace is very rich for caves that contain bats. If the railroad crosses the caves at close range, there is a risk of noise and vibration reaching the cave and making bats uncomfortable.

Opening access roads and preparing Motorway areas will affect some habitats that suitable for mammals. On the other hand, tree cutting, plant cleaning, soil stripping, road construction and ground preparing activities may cause some mammal losses.

Additionally, the new Motorway established may cut some routes for mammals to reach feeding and/or breeding areas.

Many mammal species listed for the project area use fresh water resources in the project area to meet their water needs. The fact that some water resources may be affected during the construction of the project may adversely affect some mammals who have settled in this area. In addition, some mammal species will leave the vicinity of construction sites due to noise and human pressure caused by the Project construction activities.

Vehicle-mammal encounters may occur from time to time due to vehicle traffic during construction activities at the project site.

Since many mammal species such as Blind Mole Rats, Mole and Field mice are nested in the soil, soil stripping activities during construction activities may harm some individuals of these species.

Mitigation measures for mammals

All freshwater resources such as small ponds, water channels, creeks, etc. should be protected as much as possible during construction and operation so that mammals in the area can continue to meet their water needs from existing water resources. Any contamination of water resources should be avoided. During the construction and operation phases, no water should be used from the natural water resources within the project site. If any water source is affected during the construction phase, the water should be prevented from being covered and disappeared and it should be ensured that it will continue to exist as a water source coming to the surface.

Before stripping the surface soil in construction sites, all trees and shrubs should be cut and the floor be cleaned. Particular attention should be paid to the protection of old trees with cavities in the tree felling areas to be identified during this process. The regions where there are not old trees should be tried to be selected.

All mammals encountered during tree cutting and surface soil stripping activities should be transported to the appropriate habitats at the project site. Two biologists must accompany the construction team during tree cutting, vegetation cleaning and soil stripping. This team of biologists should collect all mammal specimens encountered at the construction site and which will be affected by the construction and transfer them to appropriate habitats around the project site.

Not to restrict mammal movements among feeding and/or breeding areas, enough crossing structures such as special channels, culverts, ecosystem bridges, underpasses that suitable

for mammals crossing must be planned during planning and established during construction phase.

During these measures, particular attention should be paid to the endangered species of *Spermophilus citellus,* and *Vormela peregusna* and prevent loss of individuals due to activities. *Spermophilus citellus* especially use steppic areas. During the activities along steppic habitats, two biologist must accompany the construction team and evaluate all activities here for *Spermophilus citellus* in the area. Nesting areas of *Spermophilus citellus* must be protected seriously during the construction activities. Any additional activities out of main Motorway settings on line, using breeding and/or nesting areas must be avoided. These areas should be fenced and all human and vehicle movement on these areas should be restricted during construction activities. If some nests need to be destroyed in compulsory situations, the animals here must be caught carefully and appropriate neighboring areas transported. All nests in the area to be destroyed must be carefully excavated and if there are adult individuals or pups in the nest, they must be rescued without damage. During this relocation, artificial gallery entrances with a horizontal position, which may be up to 1 m long, should be excavated in order to hide the animals left in the transported area

Vormela peregusna prefers especially open areas with sparsely vegetation. The route where construction activities may be performed the ground should be checked by biologist team for possible *Vormela peregusna* burrows. In possible cases, all burrows should be protected against any damage because of construction activities. In cases where it is necessary to use the nest area, the animal should be allowed to move away safely or the animal should be caught by digging the nest and transported to the nearest suitable habitat.

In general, before stripping the surface soil in construction sites, all trees and shrubs should be cut and the floor de cleaned. During this process, all mammal encountered must be transported to the close appropriate habitats at the project site.

After cleaning the ground and transporting the mammals encountered, surface soils should be striped carefully. While striping, some mammal samples may be seen again in excavated soil. All these animals should be collected and transported again to a suitable nearby habitat.

During stripping, two biologists must accompany the construction team. This biologists team should collect all mammals encountered that will be affected by the construction at the construction site and transfer them to the appropriate habitats around the project site.

General mitigation measures for all fauna elements

Biodiversity education should be given to all field workers. Important biodiversity species, important areas should be given. Additionally all necessary behavior patterns about what they should do, and what they should not do in the field should be given. A wildlife expert (ecologist) can give training about wildlife and critical species to workers at project site. About four hours of training should be enough for each group of workers.

Necessary wildlife warning and information signs should be placed on the construction sites.

The driving speed should be limited to 30 km / h and the steal should not be allowed to prevent wild animals from being crushed and disturbed by wildlife in all vehicle driving at the construction site.

Motorway planned will have barrier effect and restrict animal movement between both sides of railway. To mitigate barrier effect, suitable crossing structures such as tunnels, culverts, ecosystem bridges just for wildlife must be planned in enough number.

All of these measures will significantly reduce mammal loss due to the project.

1.6. Impacts of Project on Ecosystem Services

Some sheep and goat herds were observed in study point 1 area, and some cattle herds were observed in study point 6 areas. Additionally few people were collecting some wild fruits such as blackberries, wild plums and hawthorn in study points 1 area. The realization of the project will probably reduce these ecosystem services to some extent.

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