

# Information Sheet on Ramsar Wetlands (RIS) – 2006-2008 version

Available for download from [http://www.ramsar.org/ris/key\\_ris\\_index.htm](http://www.ramsar.org/ris/key_ris_index.htm).

*Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8<sup>th</sup> Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX.22 of the 9<sup>th</sup> Conference of the Contracting Parties (2005).*

## Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2<sup>nd</sup> edition, as amended by COP9 Resolution IX.1 Annex B). A 3<sup>rd</sup> edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

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### 1. Name and address of the compiler of this form:

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Designation date

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Site Reference Number

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### 2. Date this sheet was completed/updated:

December 2007

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### 3. Country:

TURKEY

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### 4. Name of the Ramsar site:

The precise name of the designated site in one of the three official languages (English, French or Spanish) of the Convention. Alternative names, including in local language(s), should be given in parentheses after the precise name.

Lake Kus (Manyas)

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### 5. Designation of new Ramsar site or update of existing site:

This RIS is for (tick one box only):

- a) Designation of a new Ramsar site ; or  
b) Updated information on an existing Ramsar site

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### 6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area

The Ramsar site boundary and site area are unchanged:

or

**If the site boundary has changed:**

- i) the boundary has been delineated more accurately ; or
- ii) the boundary has been extended ; or
- iii) the boundary has been restricted\*\*

and/or

**If the site area has changed:**

- i) the area has been measured more accurately ; or
- ii) the area has been extended ; or
- iii) the area has been reduced\*\*

**\*\* Important note:** If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

**b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:**

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**7. Map of site:**

Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

**a) A map of the site, with clearly delineated boundaries, is included as:**

- i) a hard copy (required for inclusion of site in the Ramsar List): ;
- ii) an electronic format (e.g. a JPEG or ArcView image) ;
- iii) a GIS file providing geo-referenced site boundary vectors and attribute tables .

**b) Describe briefly the type of boundary delineation applied:**

e.g. the boundary is the same as an existing protected area (nature reserve, national park, etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

Lake Kus (*formerly Lake Manyas*) is located at latitude of 40°12\_ N and longitude of 28°00\_ E in the province of Balıkesir, Turkey. Lake Kus is within the borders of Bandırma and Manyas counties of Balıkesir province from the standpoint of administration. In 1952 a secondary Hydrobiological Research Station of Istanbul University was built here, and the staff of this station was also entrusted with the wardening of Kuscenneti.

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**8. Geographical coordinates** (latitude/longitude, in degrees and minutes):

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

Lake Kus (Manyas) is located at 40°12' N 28°00' E

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**9. General location:**

Include in which part of the country and which large administrative region(s) the site lies and the location of the nearest large town.

Lake Kus lies in the Marmara region in northwestern Turkey. The Lake is within the provincial boundaries of Balikesir and in the sub-province Bandirma. A three kilometre secondary tarmac surfaced road links the lake with the Bandirma-Balikesir highway, 15 km. from Bandirma.

**10. Elevation:** (in metres: average and/or maximum & minimum)

Lake Kus, is one of the four lakes of the Marmara region. It is 162 sq. km. and 15 m. above sea level, and its deepest point is 4 m and average depth is to 1 to 2 meters.

**11. Area:** (in hectares)

The lake covers 20,400 ha of the basin. The water level of the lake changes depending on the seasons. The water of the lake, covers the edge by rising in spring, and withdraws in summer.

**12. General overview of the site:**

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

- Lake Kus is one of the most important wetlands of our country having the richest wild life, mainly for birds with its suitable climate conditions, rich food existence, and habitats having different characteristics. There are plenty of marshy lands around the located on wide plain and surrounded by arable land. Lake Kus (Manyas) is shallow lake with fresh water. Its water is always turbid because of their colloidal clay content. Water level of the lake changes depending on seasons. From a limnological standpoint, Kusgolu is an argilotrophe type of lake and from the aspect of biological productivity it is an eutrophic lake. Its shallowness allows wave motion to reach the bottom. Aside from this it contains plenty of plankton. Thus the water always appears cloudy. The mild climate of the Marmara region is very suitable for birds in almost every season. Also this region is on the migration route between the continents of Asia and Europe. Thus many species of birds stop over at Bird Paradise, which provides food shelter and breeding grounds for them. Lake Kus regularly supports an appreciable assemblage of rare vulnerable and endangered plants and animal species and substantial numbers of individuals from particular groups of waterfowl (about 20.000) indicative of wetland values, productivity or diversity. A wetland should be considered internationally important if it is particularly a good example of a specific type of wetland characteristic of it's region.

**13. Ramsar Criteria:**

Tick the box under each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11). All Criteria which apply should be ticked.

1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9

**14. Justification for the application of each Criterion listed in 13 above:**

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

**General criteria based on plants and animals (Criterion 2):** The Lake and its surround are also quite rich from the standpoint of reptiles and amphibians. There are 4 species Salamanders, 4 species of frogs, 3 species of snakes, 2 species of lizard an 2 species of turtles. Among these, Warty Salamander (*Triturus cristatus*), Green Toad (*Bufo viridis*), Tree frog (*Hyla arborea*), Thin lizard (*Ablepharus kitaibelii*), Spotted turtle (*Emys orbicularis*), and Tortoise (*Testudo graeca*), are the species taken under protection by Bern Convention.

and EU habitats Directive 92/43/EEC (Annexes II and VI). The Hedgehog (*Erinaceus concolor*), European Mole (*Talpa europea*), Snow Rat (*Microtus nivalis*), Long-foot Bat (*Myotis capaccini*) and Fox (*Vulpes vulpes*), are the principle mammals living around the lake. Among them *Microtus nivalis* has been taken under protection by the Bern Convention. Nine fish species has been taken under protection by Bern Convention. These species are *Chalcaburnus chalcoides*, *Barbus plebejus escherichi*, *Cobitis taenia*, *Silurus glanis*, *Gobius fluvialitis*, *Proterorhinus marmoratus*, *Promatoshistus microps leopardinus*, *Aspius aspius*, *Rhodeus sericeus*. (for birds see also criterion 4 below)

**Criterion 3:** The site supports a variety of species important for maintaining the biodiversity in the Mediterranean region. There are 34 familia and 92 plant species in this area. As a result of the observations carried out up to now, 266 bird species have been recorded in the lake region.

**Specific criteria based on waterfowl (Criterion 4):** As a result of the observations carried out up to now, 266 bird species have been recorded in the lake area. 22 of them breed in the site from time to time, but 66 of them breed regularly every year and the other 178 species only visit the lake the during migration period. The lake is an important breeding habitat of our country for the threatened Dalmatian Pelican (*Pelecanus crispus*) and cormorant (*Phalacrocorax pygmeus*). Among the other bird species are cormorant (*Phalacrocorax carbo*), night heron (*Nycticorax nycticorax*), squacco heron (*Ardeola ralloides*), little egret (*Egretta garzetta*), grey heron (*Ardeola cinerea*), gloosy ibis (*Plegadis falcinellus*), and spoonbill (*Platalea leucorodia*) which are breeding in the area.

**Criterion 5:** It's observed that thousands of shore birds are staying during spring migration over the area. Nearly 3 millions of birds visit the lake which is on one of the ways of the bird migration between Europe, Asia, and Africa continents, during migration each year.

**Specific criteria based on fish (Criterion 8):** Lake Kus is one of the eutrophic (Nutrient-rich) lake of our lakes. The richness of planktons and benthic organisms, have made possible the development and sheltering of a wild life. The presence of 23 different fish species is the best indicator of this such as carp (*Cyprinus carpio*), catfish (*Silurus glanis*), pike (*Esox lucius*), grey mullet (*Leuciscus cephalus*),. The soil, fertilized with the droppings o thousands o birds, makes the dense growth o plants possible, and this in turn provides a habitat for millions of invertabrates. During the period of high water these organisms live in the water and are a source of food for fish. Thus Lake Manyas not only attracts birds but also fish which spawn in this area.

**15. Biogeography** (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

**a) biogeographic region:**

Mediterranean

This region covering the Inner part of Thrace, The southern Marmara Geographical Region and NW of Central Anatolia is the transitional region extending between the Mediterranean and Black Sea regions. For this reason contains both the plants of Mediterranean and Black Sea Region.

**b) biogeographic regionalisation scheme** (include reference citation):

EEA – EU Habitats Directive

**16. Physical features of the site:**

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

**Geology:** Different comments have been made about the formation of the lake. A. Philipson and E. Lahn informs that a big fresh water lake has formed in Bursa-Gönen depression subsidence area in Neocene; at end of the Neocene or as a result of the movements occurred in Quaternary, 4 small sinks formed in this lake area, and the two of the sinks (Bursa and Gönen) filled with alluvion and, Lake Uluabat and Lake Kus remained. Around the lake are formations belonging to the Tertiary and even earlier periods that is another comment. The formation of the lake dates from the Quaternary Pleistocene period. Before this the Marmara lake system was a set of gulfs belonging to the Black Sea. This is of significance from the standpoint of the lake's fish, in that some salt water fish have adapted themselves to freshwater conditions, such as the freshwater sardine (*Caspialosa meotica*). Kocaçay Inlet has an average depth of 2 m and it does not stratify throughout the year. Paleozoic old-schist rocks are the main ground units of the area. There are several geological formations in the area. These formations are characterized by limestone, crumbled rocks, pebbles, metacarbone and metasandstone. Siğirci and Kocaçay streams have meandering beds. Siğirci Stream carries material made of quartz, calcite and plagioclase. Kocaçay Stream carries thin-granulated sandy material.

- **Geomorphology:** Just like her twin sister Lake Uluabat, Lake Kus was formed as a tectonical depression at the beginning of the Quaternary age. That's why it has shallow lake geomorphological characteristics. The lake covers approximately 16400 ha of the basin. Recharge elements are Siğirci, Mürüvetler and Kocaçay Rivers, and precipitation. Discharge is realized by Karadere River and evaporation. Maximum depth is 4 meters, and the mean one is 2 meters. The water level of the lake changes according to seasons. The water of the lake, covers the edge by rising in spring, and withdraws in summer. The length of the lake extending from east to west is 20 km and from north to south is 14 km.
- **Sediment characteristics:** The concept of erosion – sedimentation balance and denudation rate are key instruments to describe the geological – geomorphological development of the region. Obtaining an age on the formation of a landform is an aim rarely achieved. Trace elements may become keys to link parent rocks and sediments derived from them. The late Holocene erosion of this region has been interpreted based on sedimentation rates and modern sediment loads into lakes Kus and Uluabat and into the shelf of the Marmara Sea. Moreover, pollen assemblages within the sediment sequences of the same lakes have reconstructed the palaeo-botany and climatology of the area. The mineralogy of the sediment is relatively similar to that of the modern lake bottom mud. According to Loss-on-Ignition analyses results indicated that the sediment samples contain 4–17% total organic matter and 5–14% carbonates. Organic matter increases at depths of 6–5.5, 3–2.25 and 1–0.25 m; however, the reasons for these increases remain unclear. In contrast, the carbonate content increases when organic matter decreases and both are independent from grain size. The results of chemical analyses together with heavy metal composition of the lacustrine mud show a heterogeneous distribution. NW Anatolia, including the Susurluk drainage basin, is still seismically active and, what is more, many valleys correspond to active fault lines. This may imply a link between erosion, lacustrine sedimentation and active tectonism.
- **Soil type and chemistry range:** Reddish-yellowish podzolic soils are common on the metamorphic schists occurring on both sides of Bosphorus and Southern part of Marmara Sea. Redzina soils are widespread on the marly neogene deposits in the depression region.
- **Origins:** Natural
- **Hydrology:** Due to its ecological and limnological importance, various studies have been conducted on the lake. The lake is a shallow hypertrophic freshwater lake and is usually turbid due to wind–induced turbulence throughout the year. Recharge elements are Siğirci, Mürüvetler

and Kocaçay Rivers, and precipitation. Discharge is realized by Karadere River and evaporation. Dutlu and Akıntı brooks, two intermittent small streams, also feed the lake. The natural outlet of the lake is Karadere Stream. Stream supplies an average of  $450 \times 106 \text{ m}^3$  water and Sigirci Stream supplies  $65 \times 106 \text{ m}^3$  water annually. The total volume of annual mean evaporated water is  $156.8 \text{ hm}^3$  in the lake. The annual mean precipitation is between 700-735 mm. The lake has a surface area of  $159 \text{ km}^2$ . The average depth is 2 m and the maximum depth is 4 m.

- **Water quality:** Due to its ecological and limnological importance, various studies have been conducted on the lake in response to interest in this national resource. Lake Manyas is a shallow hypertrophic freshwater lake (the mean annual chlorophyll concentration is  $90 \mu\text{gL}^{-1}$  and Secchi depth is 17 cm) according to OECD (1982) eutrophication criteria. The lake is turbid throughout the year due to wind-induced turbulence. Sigirci and Kocaçay streams are two main tributaries of Lake Manyas. Kocaçay Sigirci Stream receives waste from numerous factories, farms, and households located alongside the stream. Thus, it has higher nutrient and chlorophyll concentrations (the annual mean of  $\text{NO}_3\text{-N}$  is  $5.17 \text{ mg L}^{-1}$ ,  $\text{PO}_4\text{-P}$  is  $0.47 \text{ mg L}^{-1}$  and chlorophyll is  $89 \mu\text{gL}^{-1}$ , respectively). Based on the annual mean chlorophyll content, Sigirci Stream can be classified as hypertrophic (OECD, 1982). Sigirci Inlet has an average depth of 1m and it does not stratify throughout the year. Kocaçay Stream has relatively low nutrient and chlorophyll concentrations (the annual mean of  $\text{NO}_3\text{-N}$  is  $1.98 \text{ mg L}^{-1}$ ,  $\text{PO}_4\text{-P}$  is  $0.12 \text{ mg L}^{-1}$ , and chlorophyll is  $7.2 \mu\text{gL}^{-1}$ , respectively). Based on the annual mean chlorophyll content, Kocaçay Stream can be classified as oligotrophic (OECD, 1982).
- **Depth, fluctuations and permanence of water:** It is 159 sq. km. and 15 m. above sea level. Maximum depth is 4 meters, and the mean one is 1.5 meters. The water level of the lake changes depending on seasons. The water of the lake, covers the edge by rising in spring, and withdraws in summer. This rhythmical process regularly recurs every year. The length of the lake extending from east to west is 20 km and from north to south is 14 km.
- **Tidal range and variations:** No information.
- **Downstream area:** The natural outlet of the lake is Karadere Stream which is located in southeast of area and then drains to northeast direction. It flows into the another creek that is known as Kocasu. The total length of river is 45.35 km. The between lake basin and Ergili regulator which is used for irrigation is 6.5 km and water level of lake is regulated to provide convenient natural conditions by regulator. The mean annual velocity of downstream is  $655.5 \text{ hm}^3$ . Total irrigating area that increases yearly is 16,683 ha. South of lake edges, about 22 km, was surrounded by seawall to prevent from overflowing.
- **Climate:** The climate of this region resembles Mediterranean climate. The climate of the Marmara Region is a transitional type amongst the Black Sea, Mediterranean and continental Inner Anatolian climate. The climate of the lake is generally continental Inner Anatolian type of Marmara Climate. For this reason summer temperature is higher than Black Sea and lower than Mediterranean climate. Summer period is rainy than the Mediterranean Region. The mean annual temperature changes between  $12 \text{ }^\circ\text{C}$  and  $14 \text{ }^\circ\text{C}$  on the lowlands. On some winter days temperature drops as low as the higher part of the mountains due to the temperature inversions. Generally, temperature is lower than the Mediterranean region and is higher than the Black Sea region. The mean annual precipitation ranges between 400 mm and 1500 mm and annual mean precipitation is between 700-735 mm. The mean relative humidity is 70 %.

#### 17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).

- **Surface Area:**
- **General geology and geomorphology:** It was formed as a tectonic depression at the beginning of the Quaternary age.

- **General soil types:** Reddish-yellowish podzolic soils are common on the metamorphic schists occurring on both sides of Bosphorus and Southern part of Marmara Sea. Redzina soils are widespread on the marly neogene deposits in the depression region.
- **Climate:** The climate of the lake is generally continental Inner Anatolian type of Marmara Climate.

### 18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

The lake is being fed by Kocaçay coming from south and Sığircı creek coming from north, and surface waters flowing within lake's drainage area as well as rainfall. Discharge is through evaporation, drawing water for irrigation purposes, and waters carried from the outlet of the lake to Susurluk brook by the stream called Karadere.

### 19. Wetland Types

#### a) presence:

Circle or underline the applicable codes for the wetland types of the Ramsar "Classification System for Wetland Type" present in the Ramsar site. Descriptions of each wetland type code are provided in Annex I of the *Explanatory Notes & Guidelines*.

**Marine/coastal:** A • B • C • D • E • F • G • H • I • J • K • Zk(a)

**Inland:** L • M • N • O • P • Q • R • Sp • Ss • Tp • Ts • U • Va •  
Vt • W • Xf • Xp • Y • Zg • Zk(b)

**Human-made:** 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)

#### b) dominance:

List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar site, starting with the wetland type with the largest area.

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### 20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

The natural relationship between living creatures and inanimate things has an extraordinary quality in Lake Manyas. The water, soil, climate, grasses, reeds, trees and fish exist in a harmonious unity. Undoubtedly it is the warm waters of the lake which unite the different elements of this ecosystem and support the dynamic equilibrium. The rhythmical fluctuation of the water not only affects birds and plant life but also provides a good habitat for many other creatures. As a lake with mild climate conditions which make possible sheltering of the birds in all seasons, the presence of the habitats suitable for feeding, sheltering and brooding in confidence of the bird species, being of the lake rich from the standpoint of insects, worms, frogs, fish and other foods which are necessary for feeding the birds, have formed an ideal environment for the birds. The soil, fertilized with the droppings of thousands of birds, makes the dense growth of plants possible, and this in turn provides a habitat for millions of invertebrates. During the period of high water these organisms live in the water and are a source of food for fish. Thus Lake Manyas not only attracts birds but also fish which spawn in this area.

Mediterranean vegetation communities are widespread along the deep valley and tectonic corridors near the Marmara Sea and southern part of the region. The dominating tree species is white willow (*Salix alba*). The plant cover formed by maqui groups at the edges of Aegean, dominate around the lake, and valonia oak, oak and olive groves cover wide areas. The big part of the thickly wooded area consist of red pine (*Pinus brutia*), Austrian pine (*Pinus nigra*) and oak (*Quercus sp.*) and other part of consist of beech (*Fagus sp.*), chestnut (*Castanea sativa*), hornbeam (*Carpinus sp.*), oriental plane (*Platanus sp.*) linden (*Tilia sp.*) and common alder (*Alnus sp.*).

**21. Noteworthy flora:**

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

The lake shores and areas that are seasonally flooded are covered with very rich vegetation. The most luxuriant vegetation lies along the shores in Lake Manyas. Shores of the lake particularly areas which emerge after withdrawal of water during the summer season have rich flora. The dominant tree is the willow (*Salix sp.*) Tamerisks (*Tamerix sp.*), are found along the south and east shores. Reeds (*Phragmites sp.*), cattail (*Typha sp.*), rushes (*Juncus sp.*), sedge (*Carex sp.*) are all found along the shores. Hundreds of species of herbs occur on the marshlands around the lake.

**22. Noteworthy fauna:**

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

The richness of planktons and benthic organisms, have made possible the development and sheltering of a wild life which is at very high level from the standpoints of diversity and intensity. The presence of 23 different fish species is the best indicator of this. Although the considerable amount of these species have no commercial value, they are very important from the standpoint of the ecological equilibrium of the lake. The lake and around of it are also quite rich from the standpoint of reptiles and amphibians. There are 4 species of salamanders, 4 species of frogs, 3 species of snakes, 2 species of lizards and 2 species of turtles. Among these, *Triturus cristatus*, *Pelobates syriacus*, *Bufo viridis*, *Hyla arborea*, *Ablepharus kitaibeli*, *Emys orbicularis*, *Testuda greaca*, *Natrix tessellata* are the species taken under protection by Bern Convention. The *Erinaceus concolor*, *Talpa europea*, *Microtus nivalis*, *Myotis capaccini*, *Vulpes vulpes*, *Martes martes*, *Lepus europaeus*, *Mustela nivalis*, *Canis mesomelas* and *Felis spp.*, are the principle mammals living around the lake. Among them *Microtus nivalis*, *Martes martes*, *Mustela nivalis* has been taken under protection by Bern Convention.

There are twenty three species of fish in the lake, such as carp (*Cyprinus carpio*), catfish (*Silurus glanis*), pike (*Esox lucius*), grey mullet (*Lenciscus cephalus*), which are all caught for food. Frogs are also residents of the lake. Five fish species has been taken under protection by Bern Convention.

There are 266 bird species in the area where in 3000-4000 pairs of birds breeds regularly. The lake is an important breeding habitat of our country for the threatened Dalmatian Pelican (*Pelecanus crispus*) and cormorant (*Phalacrocorax pygmeus*). Among the other bird species are cormorant (*Phalacrocorax carbo*), night heron (*Nycticorax nycticorax*), squacco heron (*Ardeola ralloides*), little egret (*Egretta garzetta*), grey heron (*Ardeola cinerea*), gloosy ibis (*Plegadis falcinellus*), and spoonbill (*Platalea leucorodia*).

**23. Social and cultural values:**

**a)** Describe if the site has any general social and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

The region is one of the oldest settlement places of the world. Although the exact information about the Settlement of men dates back to 1200 BC, it is estimated that the first settlements date back to 4000 BC. Findings belonging to the first Bronze Age have been obtained in the excavations carried out in the region. The region which has become a scene for various civilizations, remained under the sovereignties of Bithynians, Lydians, Persians, Romans, Byzantines and Ottomans, until the establishment of Republic of Turkey. The lake has played important role in the economic, cultural and social life of the people living



around it, along the history. The living groups at the edges of the lake had utilized the sources of the lake for covering their needs of for selling, in the past as for today.

The region, with its suitable climate conditions and lands having quality, is one of the most productive areas of our country. Main use of the land in the site is agriculture. The main products are sugar-beet, weath, sun flower, corn and leguminous. Lake Kus is located in The Marmara transitional regions which is the main production area of sunflower, wheat, corn, rice, fruit and vegetables. Fertile agriculture lands are found in the Ergene Basin in Thrace, and the plains lying on the tectonic corridors. Rice field are found along the Lake's boundaries. Lake Kus are very important for fishing since the environment is very suitable for fishing.

**b)** Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning?

If Yes, tick the box  and describe this importance under one or more of the following categories:

- i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:
- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

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#### **24. Land tenure/ownership:**

a) within the Ramsar site: The site is public property.

b) in the surrounding area: The surrounding area consists of lands by state, private persons, village legal entities. There is a The National Park with a total area of 24047 hectares owned by the Ministry of Environment and Forestry.

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#### **25. Current land (including water) use:**

a) within the Ramsar site: A water products cooperative founded by a couple of villages in Bandırma county is carrying out regular fishing activities.

b) in the surroundings/catchment: There is an intensive agriculture activity in the vicinity of the lake which has an adverse effect on nitrogen-phosphorus equilibrium of the lake. Manyas dam on Kocaçay creek was constructed and effects on Lake Ecosystem are not known. But we expect that there will be a decline in the total quantity of sediments accompanied by a change in water level which was very low in 2007 when compared with that late years ( more than about 1,5-2 m) as a result of global warming.

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#### **26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:**

a) within the Ramsar site: The regular rise and fall of the water level at Lake Kus is the main reason of the formation of bird breeding and feeding habitats and its ecosystem. As a result of climate change that water level is lower than late years when compared with 2007. This condition is responsible that number of breeding birds decrease in the area. In addition to this, finished construction of Manyas dam will cause to the decline water level with the global warming and also to change lake's ecosystem.

b) in the surrounding area: Lake Kus is threatened by excessive pollution from numerous factories, farms, and households located around the lake. The majority of the pollution is carried to the lake by Sığırçı Stream.

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**27. Conservation measures taken:**

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

It is an important bird sanctuary and a 64 ha land at the northeastern edge of the lake has been protected as Kucenneti National Park (meaning Bird Paradise in Turkish) since 1959. Owing to the efficient conservation measures taken after this date, considerable increases in the bird colonies have been recorded. In 1977, the entire lake was declared as a Permanent Wildlife Reserve, under the protection of the Cultural and Natural Assets Law. In 1994 the eastern part of the lake, covering 10,200 ha, was listed in the Ramsar Convention and this status extended to the whole lake in 1998.

Lake Kus is: Wildlife Protection Area, Natural Site of 1st Degree, Ramsar Site since 1994. Lake Manyas was awarded with the A class wetland diploma by the European council in 1976 and the diploma has been renewed for every five years since then. In 2005, the entire lake was declared as a **National Park** and then the surface area of National Park was extended to 24047 ha.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

Ia ; Ib ; II ; III ; IV ; V ; VI

c) Does an officially approved management plan exist; and is it being implemented?:

d) Describe any other current management practices:

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**28. Conservation measures proposed but not yet implemented:**

e.g. management plan in preparation; official proposal as a legally protected area, etc.

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**29. Current scientific research and facilities:**

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

- Bird ringing studies (National Bird Ringing Programme) have been realized in this area.
- Balikesir University used to realize some hydrochemical – biological researches on the lake.
- Scientific data collected until 200 had been evaluated and published in the context of Lake Management Plan. After this, no scientific publication made by the Government. However there are several publications made by the academicians of the Balikesir and also other Universities in Turkey.

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**30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:**

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

A well equipped, fully working visitor centre is accomplished. Interactive real time video cameras (3 camera) are installed. A promotion desk, a museum and practical pathways are established. A wooden, comfortable watching tower is constructed. Posters presenting Turkish Ramsar Sites, wetland and their values, stickers, brochures about the Lake Kus, education materials have been produced and are being distributed from the desk situated in the Bird Paradise Visitor's Centre. An effective education programme (for kids) has been launched. This programme has been applied to primary school students.

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**31. Current recreation and tourism:**

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

The Bird Paradise National Park (Sığircı Delta) is an unique open air laboratory exhibiting the complex relations in wetland ecosystem and the creative power of the nature, skilfully. The Park is visited by ten thousands of naturalists, bird-watchers, scientist and researchers every year.

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### 32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept of Agriculture/Dept. of Environment, etc.

Balikesir Provincial Organization of the Ministry of Environment and Forestry,

General Directorate of the State Hydraulic Works (DSI) Regional Organization, Directorate of 25 th Region.

DSİ XXV. Bölge Müdürlüğü Ataturk Mah. Inonu Bul. No:81 Balikesir – Türkiye [dsi25@dsi.gov.tr](mailto:dsi25@dsi.gov.tr)

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### 33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

The Ministry of Environment and Forestry, General Directorate of Nature Conservation and National Parks, Department of Nature Conservation, Wetland Division.

Sogutozu Cad. 14/E Bestepe-Ankara Türkiye. [dkmpgm-sasb@cevreorman.gov.tr](mailto:dkmpgm-sasb@cevreorman.gov.tr)

The Ministry of Culture and Tourism

General Directorate of Cultural Properties and Museums

Ataturk Bulvarı No: 29

06050 Opera / Ankara <http://www.kulturturizm.gov.tr>

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### 34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

Atalay, Ibrahim., 2002, Ecoregions of Turkey. Publication of Ministry of Forestry. No:163. 266 p.

Balik S., 1989, The determination of the Situation of Bird Lake and Bird Paradise National Park and Investigation of Development Remedies, Aegean University, The Faculty of Science, Biology Department, Izmir.

Çelik, K., 2006, Spatial and Seasonal Variation in Chlorophyll-Nutrient Relationships in the Shallow Hypertrophic Lake Manyas, Turkey. *Environmental Monitoring and Assessment* **117**: 261–269

Erdem, O., 1995, Bird Paradises of Turkey, Ministry of Environment, General Directorate of Environmental Protection, Ankara.

Erk'akan, F., 1997, Manyas Lake Wetlands Administration Plan Project, Republic of Turkey, Ministry of Environment, General Directorate of Environmental Protection, Ankara.

OECD. (1982). Eutrophication of waters. Monitoring, assessment and control. Paris: OECD.

Ozturk, M. Oguz., 2000, Helminth fauna of Manyas (Kus) Lake' Fishes. Uludag University. Phd thesis. (In Turkish)