

# Information Sheet on Ramsar Wetlands (RIS) – 2006 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 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:

30 May 2006

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### 3. Country:

Hungary

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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.

Pusztaszer

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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  
i) 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:**

No major change since the previous RIS for the site.

**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): X;

ii) an electronic format (e.g. a JPEG or ArcView image) X;

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.

Within the Pusztaszeri Landscape Protection Area, the Lake Fehér fishponds at Szeged, the strictly protected flood plain of the river Tisza at Labodár and Sasér, Lake Csaj fishponds with the pasture of Baks, and the strictly protected area of the Búdösszék salt lake at Pusztaszer.

**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.

46°26'N 020°08'E

**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.

The site is located in middle part of Hungary in the lower Hungarian reach of the River-Tisza basin. Belongs to the Csongrád county of Hungary, close to the villages of Pusztaszer, Tömörkény, Csanytelek, Baks and Szeged settlements territories. The nearest large town is the capital of county Bács-Kiskun, Szeged.

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

average 80 m above Baltic sea level

**11. Area:** (in hectares) 5000 ha

The area size on the RIS follows the officially (nationally) designated site size (which is based on the land registration data). Unfortunately the map submitted previously was rather sketchy and the outlines did not

follow precisely the land parcel boundaries. So only the map was improved and the officially designated area size did not change.

### 12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland. The site is composed of 4 separate sectors within Pusztaszer Landscape Protection Area. They are (a) Szeged-Fehértó artificial fishponds; (b) Csaj Lake artificial fishponds, the pasture of Baks and permanently flooded marshlands of Pusztaszer-Büdösszék, and the seasonally flooded sodic pan Büdös-Szék; (c) Labodár flooded woodland on the west bank of the River Tisza; and (d) Sasér oxbow lake and flooded woodland, on the west bank of the Tisza. The fishponds were formed from natural sodic-alkaline pans, and are permanently filled with water gained from canal systems. The oxbow lakes of Labodár and Sasér are lined by gallery forests.

The site is a very important area for waterbirds during both breeding and migration season. The Pusztaszer-Büdösszék part of the site comprises natural characteristic shallow open water sodic-alkaline pan Büdös-szék, many other intermittent sodic-alkaline reedbeds, pools, marshlands and meadows, which give a good special example of continental sodic ecosystems and characteristic of the Pannonic biogeographic region. It hosts several noteworthy plant species and communities, including e.g. the regionally endemic *Aster tripolium* ssp. *pannonicum*. The River Tisza flooded area is also a good example of natural and seminatural permanent river habitat in Hungary.

### 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
<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

### 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).

1. It contains a representative and unique example of natural sodic-alkaline, permanent river, freshwater oxbow lakes, and tree dominated flooding types of wetlands within the Pannonic biogeographic region.

Habitat types listed on Annex I of the Habitats Directive:

3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition type

3270 Rivers with muddy banks with *Chenopodium rubri* p.p. and *Bidention* p. p.

6440 Alluvial meadows of river valleys of the *Cnidion dubii*

91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)

1530 Pannonic salt steppes and salt marshes

6250 Pannonic loess steppic grasslands

2. It supports vulnerable, endangered species and threatened ecological communities.

*Cirsium brachycephalum* – including in 92/43/EGK directive Annex II

*Colchicum arenarium* – including in 92/43/EGK directive Annex II

*Trapa natans* Appendix I Bern Convention

*Sternbergia colchiciflora* EU-CITES BII;

*Orchis morio* EU-CITES BII;

*Orchis laxiflora* ssp. *palustris* EU-CITES BII;

*Ophiogomphus cecilia* Appendix II Bern Convention + Annex II and IV Habitats Directive

*Zerynthia polyxena* Appendix II Bern Convention + Annex IV Habitats Directive  
*Lycanea dispar* Appendix II Bern Convention + Annex II and IV Habitats Directive  
*Acipenser nudiiventris* EU – CITES B (II) Appendix II Bonn Convention, Annex V Habitats Directive  
*Acipenser gueldenstaedti* EU – CITES B (II) Appendix II Bonn Convention, Annex V Habitats Directive  
*Proterorhinus marmoratus* Appendix III Bern Convention  
*Leucaspis delineatus* Appendix III Bern Convention  
*Cobitis taenia* Appendix III Bern Convention + Annex II Habitats Directive  
*Gymnocephalus baloni* Appendix III Bern Convention + Annex II and IV Habitats Directive  
*Gymnocephalus schraetzeri* Appendix III Bern Convention + Annex II and V Habitats Directive  
*Misgurnus fossilis* Appendix III Bern Convention + Annex II Habitats Directive  
*Pelecus cultratus* Annex II Habitats Directive  
*Rhodeus sericeus amarus* Appendix III Bern Convention + Annex II Habitats Directive  
*Zingel zingel* Appendix III Bern Convention + Annex II and V Habitats Directive  
*Triturus dobrogicus* NT IUCN Red list + Annex II Habitats Directive  
*Pelobates fuscus* Appendix II Bern Convention + Annex IV Habitats Directive  
*Bufo bufo* Appendix III Bern Convention  
*Bufo viridis* Appendix II Bern Convention  
*Bombina bombina* Appendix II Bern Convention + Annex II and IV Habitats Directive  
*Rana dalmatina* Appendix II Bern Convention + Annex IV Habitats Directive  
*Rana ridibunda* Appendix III Bern Convention + Annex V Habitats Directive  
*Rana esculenta* Appendix III Bern Convention + Annex V Habitats Directive  
*Rana arvalis* Appendix II Bern Convention + Annex IV Habitats Directive  
*Hyla arborea* Appendix II Bern Convention + Annex IV Habitats Directive  
*Emys orbicularis* Appendix II Bern Convention + Annex II and IV Habitats Directive  
*Sorex minutus* Appendix III Bern Convention  
*Sorex araneus* Appendix III Bern Convention  
*Neomys fodiens* Appendix III Bern Convention  
*Crocidura suaveolens* Appendix III Bern Convention  
*Myotis dasycneme* Appendix II Bern Conv. and App. II Bonn Conv. + Annex II and IV Habitats Directive  
*Lutra lutra* EU – CITES A (I), Appendix II Bern Convention, Annex II and IV Habitats Directive  
*Mustela eversmannii* Appendix II Bern Convention + Annex II and IV Habitats Directive  
*Spermophilus citellus* Appendix II Bern Convention + Annex II and IV Habitats Directive  
*Alcedo atthis* LC IUCN Red list + Annex I Birds Directive  
*Acrocephalus melanopogon* LC IUCN Red list + Annex I Birds Directive  
*Anser erythropus* LC IUCN Red list + Annex I Birds Directive  
*Anthus campestris* LC IUCN Red list + Annex I Birds Directive  
*Ardea purpurea* LC IUCN Red list + Annex I Birds Directive  
*Ardeola ralloides* LC IUCN Red list + Annex I Birds Directive  
*Asio flammeus* LC IUCN Red list + Annex I Birds Directive  
*Aythya nyroca* NT IUCN Red list + Annex I Birds Directive  
*Botaurus stellaris* LC IUCN Red list + Annex I Birds Directive  
*Branta ruficollis* LC IUCN Red list + Annex I Birds Directive  
*Burhinus oedicephalus* LC IUCN Red list + Annex I Birds Directive  
*Caprimulgus europaeus* LC IUCN Red list + Annex I Birds Directive  
*Charadrius alexandrinus* LC IUCN Red list  
*Chlidonias hybridus* LC IUCN Red list + Annex I Birds Directive  
*Chlidonias niger* LC IUCN Red list + Annex I Birds Directive  
*Ciconia ciconia* LC IUCN Red list + Annex I Birds Directive  
*Ciconia nigra* LC IUCN Red list + Annex I Birds Directive  
*Circus aeruginosus* LC IUCN Red list + Annex I Birds Directive  
*Circus cyaneus* LC IUCN Red list + Annex I Birds Directive  
*Circus pygargus* LC IUCN Red list + Annex I Birds Directive  
*Coracias garrulus* LC IUCN Red list + Annex I Birds Directive  
*Crex crex* NT IUCN Red list + Annex I Birds Directive

*Dendrocopos syriacus* LC IUCN Red list + Annex I Birds Directive  
*Dryocopus martius* LC IUCN Red list + Annex I Birds Directive  
*Egretta alba* Annex I Birds Directive  
*Egretta garzetta* LC IUCN Red list + Annex I Birds Directive  
*Falco cherrug* EN IUCN Red list  
*Falco columbarius* LC IUCN Red list + Annex I Birds Directive  
*Falco peregrinus* LC IUCN Red list + Annex I Birds Directive  
*Falco vespertinus* LC IUCN Red list  
*Grus grus* LC IUCN Red list + Annex I Birds Directive  
*Haliaeetus albicilla* NT IUCN Red list + Annex I Birds Directive  
*Himantopus himantopus* LC IUCN Red list + Annex I Birds Directive  
*Ixobrychus minutus* LC IUCN Red list + Annex I Birds Directive  
*Lanius collurio* LC IUCN Red list + Annex I Birds Directive  
*Lanius minor* LC IUCN Red list + Annex I Birds Directive  
*Larus melanocephalus* LC IUCN Red list + Annex I Birds Directive  
*Larus minutus* LC IUCN Red list  
*Luscinia svecica* LC IUCN Red list + Annex I Birds Directive  
*Mergus albellus* LC IUCN Red list + Annex I Birds Directive  
*Milvus migrans* LC IUCN Red list + Annex I Birds Directive  
*Nycticorax nycticorax* LC IUCN Red list + Annex I Birds Directive  
*Pandion haliaetus* LC IUCN Red list + Annex I Birds Directive  
*Pernis apivorus* LC IUCN Red list + Annex I Birds Directive  
*Phalacrocorax pygmeus* NT IUCN Red list + Annex I Birds Directive  
*Phalaropus lobatus* LC IUCN Red list + Annex I Birds Directive  
*Philomachus pugnax* LC IUCN Red list + Annex I Birds Directive  
*Platalea leucorodia* LC IUCN Red list + Annex I Birds Directive  
*Plegadis falcinellus* LC IUCN Red list + Annex I Birds Directive  
*Pluvialis apricaria* LC IUCN Red list + Annex I Birds Directive  
*Porzana parva* LC IUCN Red list + Annex I Birds Directive  
*Porzana porzana* LC IUCN Red list + Annex I Birds Directive  
*Recurvirostra avosetta* LC IUCN Red list + Annex I Birds Directive  
*Sterna caspia* LC IUCN Red list + Annex I Birds Directive  
*Sterna hirundo* LC IUCN Red list + Annex I Birds Directive  
*Tringa glareola* LC IUCN Red list + Annex I Birds Directive

3. It supports populations of plant and animal species important for maintaining the biological diversity of Pannonic biogeographic region. (see also section 19 and 20 below and point 2 above)

4. Spawning site of the fish and amphibian species listed under point 2 above Notable breeding, migrating, wintering and resident birds including in 79/409/EGK Annex I..

*Alcedo atthis*, *Acrocephalus melanopogon*, *Anser erythropus*, *Anthus campestris*, *Ardea purpurea*, *Ardeola ralloides*, *Asio flammeus*, *Aythya nyroca*, *Botaurus stellaris*, *Branta ruficollis*, *Burhinus oedienemus*, *Caprimulgus europaeus*, *Charadrius alexandrinus*, *Chlidonias hybridus*, *Chlidonias niger*, *Ciconia ciconia*, *Ciconia nigra*, *Circus aeruginosus*, *Circus cyaneus*, *Circus pygargus*, *Coracias garrulus*, *Crex crex*, *Dendrocopos syriacus*, *Dryocopus martius*, *Egretta alba*, *Egretta garzetta*, *Falco cherrug*, *Falco columbarius*, *Falco peregrinus*, *Falco vespertinus*, *Grus grus*, *Haliaeetus albicilla*, *Himantopus himantopus*, *Ixobrychus minutus*, *Lanius collurio*, *Lanius minor*, *Larus melanocephalus*, *Larus minutus*, *Luscinia svecica*, *Mergus albellus*, *Milvus migrans*, *Nycticorax nycticorax*, *Pandion haliaetus*, *Pernis apivorus*, *Phalacrocorax pygmeus*, *Phalaropus lobatus*, *Philomachus pugnax*, *Platalea leucorodia*, *Plegadis falcinellus*, *Pluvialis apricaria*, *Porzana parva*, *Porzana porzana*, *Recurvirostra avosetta*, *Sterna caspia*, *Sterna hirundo*, *Tringa glareola*

5. The sodic-alkaline wetlands are considered internationally important because they regularly support more than 20,000 waterbirds.  
See Annex I for the results of recent bird censuses.

**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:** Pannonic

b) **biogeographic regionalisation scheme** (include reference citation): European Commission DG

Environment webpage

Bern Convention/ EU Habitats Directive

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**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, hydrogeology,*

Three big rivers (Danube, Tisza, Maros) played a key role in the formation of the present landscape of this area. From the rivers silting up the one-time Pannon Lake, approximately 2.5-3 million years ago the ancient Danube appeared in the area, and running through the present Danube-Tisza Mid-Region, at first it flowed into the Tisza valley at Szolnok, later at Csongrád. The ancient Tisza and its tributaries arrived from the direction of the Körös basin at that time. The ancient Danube left the Danube-Tisza Mid-Region and took up its north to south direction of flow. The huge ridges of alluvial Danube sediments (which are of sandy origin in this reach) became free of the river and were gradually covered partly by wind-blown loessy sediments and and partly by 'moving sand'. These wind-blown sediments (moving sand and loess) are characteristic near the surface up to the present day. About 18-20 thousand years ago the ancient Tisza took up its direction of flow as well. It was then that the bends of Tisza developed (which can still be traced on the surface) mainly as a result of 4-6 times bigger water output 12-16 thousand years ago. This surface continued to change due to the floods and unique lower and higher (free of flood) inundation area levels developed along the River Tisza.

*Climate*

The climate variations are limited in the region of the Carpathian Basin. The macroclimate can be considered a homogenous basic feature in terms of surface and fauna evolution, as well. The region has a temperate continental climate. Its unique features are limited cloudiness, a relatively high number of sunshine hours, high daily and annual temperature variation, relative dryness and very low humidity values.

This region is the area with the least cloudiness in Hungary. The annual average cloudiness is 52-57%. The annual average number of sunshine hours is approx. 2050. At the same time this is one of the warmest areas in the country. No significant variations exist in this region. The annual average temperature is between 10-11°C. The mean temperature of the coldest month (January) is between minus 1.5 and minus 2°C, while that of the warmest month (July) is 21-22°C. Characteristically of areas with a continental climate, the annual average temperature variance is quite significant (23-24°C). The region can be classified within Hungary as one with a short winter and a long summer. The number of winter days is only 26-31, however, major frosts are common. Spring comes early, and the average temperature rises above 10°C in the whole region between 7-12 March. The number of summer days is 81-84. In the fall the daily average temperature falls below 10°C again generally between 17-21 October.

The region is one of the parts of the country having the least precipitation. Under normal conditions the annual precipitation is between 500-600 mm in the region. The rainfall of the summer semester (April-September), the so-called breeding period, is around 300-350 mm. The winter precipitation occurs mainly in the form of snow. The number of snow-cover days is 30-40. The precipitation conditions therefore are relatively disadvantageous. This is further intensified by low humidity values, with an annual average of many years at 71-74%. Based on this data we may declare that the balance of precipitation and evaporation is negative in the region. The wetlands that have developed and exist can thank their subsistence to supplementary water influences (e.g. ground water).

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

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type). The site belongs to River Tisza catchment area. The living Tisza-valley has a huge catchment area (157.000 km<sup>2</sup>) which also comprises Carpathian mountain region and the major part of Great Hungarian Plain. The outside of embankment is the local catchment area of the site on the former ancient floodplain. The local wetland catchment area has two main part, on the eastern part is the lowland River Tisza basin, and on the western part is the plain sandy ridge plateau.

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**18. Hydrological values:**

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

River control and surface drainage from the middle of the nineteenth century radically changed the water conditions of the region. The comprehensive control of the River Tisza began in 1846 and started at the reach of Csongrád in 1856. The biggest bends were cut through and the river was forced between dykes. As a result, half of the county was freed from recurrent floods.

As a result of the embankments along the river and narrow floodplain the level of the floods are very high so the deep water (3-4 m) completely covered the total floodplain area. As a consequence of the inappropriate water management the water goes away very quickly from the entire floodplain, even from the wetland areas. Gallery forests are among the most endangered biotops in Hungary. The forest biotope chains in the Tisza inundation area are at present considered indispensable natural treasures in the lowland environment. During the preparations for the work titled „Improving the Vásárhelyi Plan”, which can be regarded as Hungary’s new flood control strategy, it became evident how few and how vulnerable the valuable flood plain forests are, which provide a habitat for the remained assemblages of the one-time flood areas. Several factors endanger these forests. The biggest damage can be caused by intense silviculture with tree-felling and cutting purposes. Another problem that cannot be neglected is the extreme hydrological conditions of the flood plains, which can hardly be regarded as natural. High floods, water- and groundwater level changing with high amplitude, create competitive drawbacks for autochthonous tree and shrub species fit for the original habitat.

The sodic-alkaline alkaline pan is a special type of continental salt waters, which is a typical Pannonic wetland type in Hungary. These pans have primarily groundwater and rainfall supplied water bodies. These are seasonal intermittent shallow waters (max. depth = 0.4-0.5 m), because there is notable seasonal water level fluctuation and frequently dries out entirely to middle of summer or autumn. The salinity varies between hypo- (3-20 g.l<sup>-1</sup>) mesosaline (20-50 g.l<sup>-1</sup>) ranges corresponding with water level. The total dissolved solids is dominated in sodium (Na<sup>+</sup>), calcium (Ca<sup>2+</sup>), carbonate (CO<sub>3</sub><sup>2-</sup>) ions, and high grey-brown coloured holomictic turbidity being permanently by colloidal suspended ion complex. The very high turbidity is in opened pans attributed to the daily re-suspension of the sediments by the winds coupled with its shallowness.

The susceptibility to re-suspension of sediments is different for each lake as it depends on the sediment type and on the shape and depth profile of a lake. Hypothetically, wave re-suspension occurs depends on the critical fetch ( $F_{crit}$ ) at which the wavelength exceeds twice the depth, relative to the total length of the lake measured in the direction of the wind. It causes that generally at lower wind velocity there can be found a lower turbidity less re-suspended belt ( $F_{crit}$ ) around the shoreline below a critical water depth. The lowest turbidity can be found every time among emergent marshland vegetation. The non-turbid transparent sodic-alkaline waters have brown colour.

The fishponds were created on the ancient floodplain territory of the River-Tisza especially in former sodic-alkaline beds and pools, and are supplied artificially by water from River-Tisza.

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**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.

1 = 2450 ha

R, Ss = 1716 ha

4 (Agricultural lands) = 600 ha

Xf = 224

M

O = 10

**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 one of main natural ecological part of the site is sodic-alkaline affected wetland around Pusztaszer region. The sodic alkaline wetland habitat structures have strength depending on water levels and seasonal fluctuation, which may be very variable year to year.

Lepidio-Puccinellietum and Astero-Agrostetum albae sodic marshes: The feature of this habitat is that it has only temporary or ephemeral saline water-flooding zone (0-10 cm), usually from later autumn to later spring. After it has dried out saline crystals often occur high density on the bare surface, this reason is that the plants growing are strength hampered here. The characteristic vegetation, which can thrive in these extreme condition mainly terrestrial halophyte and succulent plants as: *Lepidio crassifolium*, *Puccinellia limosa*, *Camporosma annua*, which occur sporadically on the surface. This habitat is one of the most important shorebird feeding zone because it has seasonal shallow (0-10 cm) water coverage and bare surface, often only the surface is wet and the muddy ground is soft. This feeding habitat exists mainly in spring and autumn for the waterbirds, when there is higher water level on the site.

Puccinellietum limosae sodic marshes: This habitat is similar as Lepidio marshes, but it has longer and a bit deeper saline water-flooding (0-20 cm), usually from early autumn to beginning of summer, due to more vegetation biomass can be found here, especially high dominant of halophyte *Puccinellia limosa*. The sodium crystal accumulation is not so expressed on the surface only in the deeper level of the soil. The vegetation coverage abundance may be very variable.

Bolboschoenus-Phragmitetum sodic marshes: This habitat regularly is covered with shallow water (0-30 cm) or wet all over the year. Due to here can overgrow more abundant halophyte vegetation as on saline marshes 2. zone. The characteristic dominant plants are *Bolboschoenus maritimus* and saline ecotype of *Phragmites communis*, these may occurrence in very different coverage proportion.

Open bed of pans: This habitat regularly is covered with deeper saline shallow water (10-50 cm) all over the year. According to there is not important emergent vegetation only few sporadic saline submerged water plants as *Potamogeton pectinatus*. This habitat is the major importance for waterbirds. In hot summer, when the water level may be dropped seriously, so pool-bed surfaces can be become only wet or dried out.

Other wetlands types can be also found such as *Alopecuretum pratensis* meadow.

Continental Pannonic sodic affected steppes are extensively scattered around the wetlands such as *Artemisio-Festucetum pseudovinae danubiale*, and *Achilleo-Festucetum pseudovinae*. Fragmented Pannonic loess steppic grasslands are also such as *Sabio-Festucetum rupicolae*.

The smaller part of this Ramsar-site is the living floodplain area of River-Tisza, which is divided two separated parts, on North is Labodár, and on South is Sasér. The tree dominated floodplain parts are covered by *Saliceto-Populetum* wood with *Salix alba*, *Salix trianda*, *Salix fragilis*, *Populus niger*, *Populus albus* tree species. Some allochthonous and invasive plant species can take advantage of these unnatural conditions and invade the place of certain species in forest communities such as *Amorpha fruticosa*, *Echinocystis lobata*, *Acer negundo*, *Vitis riparia*, *Fraxinus pennsylvanica*. The most important spreading factor of the seed of the alien species is the floods. Usually general forestry management is also unfavourable in the floodplain region because of intensive planting of adventives *Populus x euramericana* and other artificial hybrid poplar and willow races, exploitation natural forests in young age and executing large clear-cuttings so providing in this way good opportunity for adventives invasive plants to spread intensively. Artificial hybrid poplar races made serious genetic pollution - by pollination - in the natural *Populus nigra* populations, so genetically unpolluted *Populus nigra* populations are close to extinction. The one of the main human-made ecological part of the site are extensive fishponds systems, such as Lake-Fehér at Szeged, and Lake-Csaj at Tömörkény. The artificial fishponds were created from original sodic affected wetlands, and ponds are supplied by the water of River Tisza by now. The average water depth of ponds 0,6-1 meter, the submerged water vegetation is poor due to cutting, but the edge and the islets of the ponds are generally covered by reedbed and somewhere by trees such as *Salix* species.

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### 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.*

*Aster tripolium ssp. pannonicum* - Pannonic subendemic  
*Centaurea sadleriana* - Pannonic endemic, biogeographically important  
*Cirsium brachycephalum* – including in 92/43/EGK directive Annex II  
*Colchicum arenarium*– including in 92/43/EGK directive Annex II  
*Lepidium crassifolium* - Pannonic endemic, biogeographically important  
*Limonium gmelini ssp. hungaricum* – Pannonic endemic, biogeographically important  
*Plantago schwarzenbergiana* – Pannonic endemic, biogeographically important and protected in Hungary  
*Puccinellia limosa* - Pannonic subendemic, biogeographically important  
*Suaeda pannonica* – Pannonic endemic, biogeographically important

For a full list of plant species under international protection, see section 12, point 2.

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### 22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12, 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.*

*Lycanea dispar*– including in 92/43/EGK directive Annex II  
*Saragossa porosa kenderiensis* – Pannonic endemic  
*Cobitis taenia* – including in 92/43/EGK directive Annex II  
*Misgurnus fossilis* – including in 92/43/EGK directive Annex II  
*Bombina bombina* – including in 92/43/EGK directive Annex II  
*Triturus dobrogicus* – including in 92/43/EGK directive Annex II  
*Emys orbicularis* – including in 92/43/EGK directive Annex II  
*Lutra lutra* – including in 92/43/EGK directive Annex II  
*Mustela eversmannii* – including in 92/43/EGK directive Annex II  
*Spermophilus citellus* – threatened and including in 92/43/EGK directive Annex II

Notable breeding, migrating, wintering and resident birds including in 79/409/EGK Annex I:

*Alcedo atthis*, *Acrocephalus melanopogon*, *Anser erythropus*, *Anthus campestris*, *Ardea purpurea*, *Ardeola ralloides*, *Asio flammeus*, *Aythya nyroca*, *Botaurus stellaris*, *Branta ruficollis*, *Burbinus oedicnemus*, *Caprimulgus europaeus*, *Charadrius alexandrinus*, *Chlidonias hybridus*, *Chlidonias niger*, *Ciconia ciconia*, *Ciconia nigra*, *Circus aeruginosus*, *Circus cyaneus*, *Circus pygargus*, *Coracias garrulus*, *Crex crex*, *Dendrocopos syriacus*, *Dryocopus martius*, *Egretta alba*, *Egretta garzetta*, *Falco*

*cherrug, Falco columbarius, Falco peregrinus, Falco vespertinus, Grus grus, Haliaeetus albicilla, Himantopus himantopus, Ixobrychus minutus, Lanius collurio, Lanius minor, Larus melanocephalus, Larus minutus, Luscinia svecica, Mergus albellus, Milvus migrans, Nycticorax nycticorax, Pandion haliaetus, Pernis apivorus, Phalacrocorax pygmeus, Phalaropus lobatus, Philomachus pugnax, Platalea leucorodia, Plegadis falcinellus, Pluvialis apricaria, Porzana parva, Porzana porzana, Recurvirostra avosetta, Sterna caspia, Sterna hirundo, Tringa glareola*

For a full list of animal species under international protection, see section 12, point 2.

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### 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:

Traditional fisheries production can be found around the floodplain of River Tisza. Certain religious importance, ancient burial-ground, and archaeological sites also found around the wetlands, but not inside the Ramsar site. Social relations with existing wetlands can be understood by traditional Hungarian extensive farmland lifestyle especially regard to domestic semi-nomadic animals grazing.

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? No.

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: 42 % of the site is state owned by Kiskunság National Park Directorate, others are privately owned

b) in the surrounding area: mostly privately owned

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

a) within the Ramsar site: The most important land using are involved extensive grassland, agricultural lands, forests and fishpond using.

b) in the surroundings/catchment: mainly the extensive agricultural, grassland and planted forest using are involved.

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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: groundwater decreasing, water and river regulation, extensive agricultural pollution and disturbing factors, water pollution disaster, intensive fishpond management, drying out, eutrophication, low grazing pressure, invasion by alien species (e.g. *Eleagnus angustifolia*), waterfowl hunting, increasing of natural mammalian (fox) and avian (corvid) predators, burning of reedbeds in order to renew them.

b) in the surrounding area: groundwater decreasing, water and river regulation, intensive agricultural pollution and disturbing factors, artificial forest planting, drying out, eutrophication, low or high grazing pressure, invasion by a alien species (e.g. *Eleagnus angustifolia*), waterfowl hunting, increasing of natural mammalian (fox) and avian (crows) predators, burning.

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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.

The whole site is protected by Hungarian nature conservation law (Pusztaszer Landscape Protection Area) and Natura 2000 Special Protection Area (SPA), furthermore 50 % part of the site is proposed for Site of Community Importance (pSCI) with regard to Pannonic sodic (salt steppes and marshes) and floodplain habitats within the site. There are 1162 ha strictly protected area within the site in the national park territory.

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?: No officially approved management plan exists as yet.

d) Describe any other current management practices: A few small-scale habitat restorations programmes were also carried out on the site.

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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.

Site specific management plan is need to be improved and implemented. 50 % part of the site is planned for Site of Community Importance (pSCI). There are planned more habitat restoration programmes.

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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.

General Hungarian biodiversity and bird monitoring program is running on the site. Other bird research programmes are also running especially on fishponds.

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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.

Local visitor centre with special guide, observation hides, nature educational trails, information tables, booklets, summer environmental educational camp for local schools are available on the site.

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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.

Generally negligible, only a little ecotourism and bird watching tourism are involved.

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**32. Jurisdiction:**

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

The Alsó- Tisza-vidéki Authority for Environmental Protection, Nature Conservation and Water Management is the first instant authority of the Ministry for Environment and Water.

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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.

Kiskunsági Nemzeti Park Directorate  
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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.

Bankovics A.: Data on the comparative ecology of the scrub Warbler *Hippolais pallida elaeica* (LINDL. ) and its spreading along the Tisza is the Tears 1973 to 1974. Tiscia, 1974. 10. köt. 81-83. p.

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Sterbetz, I. 1981. Protected wetlands of international importance in Hungary. IWRB XVII. International Conference in Debrecen 1981.

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