



# Ramsar Information Sheet

Published on 25 November 2015

Update version, previously published on 1 January 2006

## Hungary

### Csongrád-Bokrosi Sóstó sodic-alkaline pans



Designation date	4 December 2004
Site number	1409
Coordinates	46°44'28"N 19°58'2"E
Area	865,00 ha

## Color codes

Fields back-shaded in light blue relate to data and information required only for RIS updates.

Note that some fields concerning aspects of Part 3, the Ecological Character Description of the RIS (tinted in purple), are not expected to be completed as part of a standard RIS, but are included for completeness so as to provide the requested consistency between the RIS and the format of a 'full' Ecological Character Description, as adopted in Resolution X.15 (2008). If a Contracting Party does have information available that is relevant to these fields (for example from a national format Ecological Character Description) it may, if it wishes to, include information in these additional fields.

## 1 - Summary

### Summary

In limnological terms these very shallow intermittent waters are not lakes but rather a characteristic type of wetlands with physical and ecological features similar to coastal pan ecosystems. The sodic-alkaline pans, marshes, and meadows of the Danube-Tisza Interfluvium area give a good special example of continental saline ecosystems and are characteristic of the Pannonic biogeographic region. It hosts several noteworthy plant species and communities, including e.g. the regionally endemic *Aster tripolium* ssp. *pannonicus*. The site is a very important area for waterbirds during both breeding and migration season. The site includes two isolated major pools, the bigger one's name is Nagy-Sóstó, the smaller one's name is Kis-Sóstó.

## 2 - Data & location

### 2.1 - Formal data

#### 2.1.1 - Name and address of the compiler of this RIS

Compiler 1

Name	Zoltan Vajda
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#### 2.1.2 - Period of collection of data and information used to compile the RIS

From year	2013
To year	2015

#### 2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)	Csongrád-Bokrosi Sóstó sodic-alkaline pans
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#### 2.1.4 - Changes to the boundaries and area of the Site since its designation or earlier update

(Update) A. Changes to Site boundary Yes  No

(Update) B. Changes to Site area No change to area

#### 2.1.5 - Changes to the ecological character of the Site

(Update) 6b i. Has the ecological character of the Ramsar Site (including applicable Criteria) changed since the previous RIS? No

## 2.2 - Site location

### 2.2.1 - Defining the Site boundaries

b) Digital map/image

<1 file(s) uploaded>

Boundaries description (optional)

The site boundary was delineated more accurately in 2007 and the new boundary was submitted then. The boundary follows the land parcel boundaries that contain the wetland and the surrounding natural habitats.

### 2.2.2 - General location

a) In which large administrative region does the site lie? Bács-Kiskun County (southern part belongs to Csongrád County)

b) What is the nearest town or population centre? Csongrád-Bokros. The nearest large town is the capital of county Kecskemét.

### 2.2.3 - For wetlands on national boundaries only

a) Does the wetland extend onto the territory of one or more other countries? Yes  No

b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party? Yes  No

### 2.2.4 - Area of the Site

Official area, in hectares (ha): 865

Area, in hectares (ha) as calculated from  
GIS boundaries

865.08

## 2.2.5 - Biogeography

Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
EU biogeographic regionalization	Pannonic

### 3 - Why is the Site important?

#### 3.1 - Ramsar Criteria and their justification

- ☑ Criterion 1: Representative, rare or unique natural or near-natural wetland types

Other ecosystem services provided

The wetland comprises a wide range of unique types of Pannonic calcareous-sodic saline lake habitat types (Habitats Directive Annex I: Pannonic salt steppes and salt marshes), furthermore, specific saline aquatic ecosystems living in these habitats. Besides these, there are many typical species that characterize the saline grasslands (“puszta”). Such saline lakes and grasslands with the representative saline communities are fairly rare in Central Europe. This also underpins the international importance of the wetland. The grasslands around the lake also support the different stages of vegetation from salt berms till closed saline swards and reedbeds along the water edges. Reedbeds form contiguous units as well.

- ☑ Criterion 2 : Rare species and threatened ecological communities







- ☑ Criterion 3 : Biological diversity

Justification

































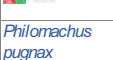


Moreover, due to its uniqueness, the site has an outstanding role in conservation of genetic and ecological diversity in the Pannonic region. Due to the specialities of the site (chemistry, water coverage, depth of water, location) the biodiversity is high, and there are numerous rare species. At national level the site hosts priority animal and plant species. Characteristic species of the site include *Aster tripolium* ssp. *pannonicus* and *Puccinellia limosa*.














- ☑ Criterion 4 : Support during critical life cycle stage or in adverse conditions

#### 3.2 - Plant species whose presence relates to the international importance of the site

Scientific name	Common name	Criterion 2	Criterion 3	Criterion 4	IUCN Red List	CITES Appendix I	Other status	Justification
<i>Centaurea scabiosa sadleriana</i> 	Pannonian knapweed	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		Pannonic endemic, biogeographically important
<i>Lepidium cartilagineum</i> 		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		Pannonic endemic, biogeographically important
<i>Limonium gmelinii</i> 		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		<i>Limonium gmelinii</i> ssp. <i>hungaricum</i> – Pannonic endemic, biogeographically important
<i>Puccinellia distans</i> 		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		Pannonic subendemic, biogeographically important
<i>Suaeda pannonica</i> 		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		Pannonic endemic, biogeographically important
<i>Tripolium pannonicum</i> 	Sea Aster	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		Pannonic subendemic

#### 3.3 - Animal species whose presence relates to the international importance of the site

Phylum	Scientific name	Common name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7	8								
CHORDATA / AVES	 <i>Acrocephalus melanopogon</i>	Moustached Warbler	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.
CHORDATA / AVES	 <i>Ardea alba</i>	Great Egret	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.
CHORDATA / AVES	 <i>Ardea purpurea</i>	Purple Heron	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.
CHORDATA / AVES	 <i>Aythya nyroca</i>	Ferruginous Duck	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.
CHORDATA / AMPHIBIA	 <i>Bombina bombina</i>	European Fire-bellied Toad	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Annex II and IV of the EU Habitats Directive	
CHORDATA / AVES	 <i>Botaurus stellaris</i>	Eurasian Bittern	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.
CHORDATA / AVES	 <i>Chlidonias hybrida</i>	Whiskered Tern	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.
CHORDATA / AVES	 <i>Chlidonias niger</i>	Black Tern	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.
CHORDATA / AVES	 <i>Ciconia nigra</i>	Black Stork	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.
CHORDATA / AVES	 <i>Circus aeruginosus</i>	Western Marsh Harrier	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.
CHORDATA / AVES	 <i>Circus cyaneus</i>	Northern Harrier	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.
CHORDATA / AVES	 <i>Coracias garrulus</i>	European Roller	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT 	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.
CHORDATA / AVES	 <i>Falco cherrug</i>	Saker Falcon	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				EN 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.
CHORDATA / AVES	 <i>Haliaeetus albicilla</i>	White-tailed Eagle	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.
CHORDATA / AVES	 <i>Himantopus himantopus</i>	Black-winged Stilt	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.
CHORDATA / AVES	 <i>Ixobrychus minutus</i>	Little Bittern	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of the EU Birds Directive	The site is a natural and characteristic nesting site. See text box below.
CHORDATA / AVES	 <i>Lanius minor</i>	Lesser Grey Shrike	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.
CHORDATA / AVES	 <i>Philomachus pugnax</i>	Ruff	<input checked="" type="checkbox"/>	<input checked="" 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"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.

Phylum	Scientific name	Common name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7	8								
CHORDATA / AVES	<i>Platalea leucorodia</i> 	Eurasian Spoonbill	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.
CHORDATA / AVES	<i>Porzana parva</i> 	Little Crane	<input checked="" type="checkbox"/>	<input checked="" 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"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.
CHORDATA / AVES	<i>Porzana porzana</i> 	Spotted Crane	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.
CHORDATA / AVES	<i>Recurvirostra avocetta</i> 	Pied Avocet	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of the EU Birds Directive	The site is a natural and characteristic nesting site. See text box below.
CHORDATA / MAMMALIA	<i>Spermophilus citellus</i> 	European Ground Squirrel; European Souslik	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU 	<input type="checkbox"/>	<input type="checkbox"/>	Annex II and IV of the EU Habitats Directive	
CHORDATA / AVES	<i>Tringa glareola</i> 	Wood Sandpiper	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of the EU Birds Directive	Notable breeding, migrating, wintering and resident birds. See text box below.
CHORDATA / AMPHIBIA	<i>Triturus dobrogicus</i> 	Danube crested newt	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT 	<input type="checkbox"/>	<input type="checkbox"/>	Annex II of the EU Habitats Directive	

Criterion 4: The site is part of the migration route along the valley river Tisza and plays an important role as a resting, feeding and breeding site for waterfowl. The site is a natural and characteristic nesting site for significant populations of several threatened bird species (Avocet, Black-winged Stilt) in the region. Notable breeding, migrating, wintering and resident birds including in 79/409/EGK Annex I.

### 3.4 - Ecological communities whose presence relates to the international importance of the site

Name of ecological community	Community qualifies under Criterion 2?	Description	Justification
Lepidio-Puccinellietum and Astero-Agrostetum albae sodic marshes	<input type="checkbox"/>	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. For more information please refer to Section 6.1.2 vi. other published literature.	
Puccinellietum limosae sodic marshes	<input type="checkbox"/>	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. For more information please refer to Section 6.1.2 vi. other published literature.	
Bolboschoenus-Phragmitetum sodic marshes	<input type="checkbox"/>	This habitat regularly is covered with shallow water (0-30 cm) or wet all over the year. For more information please refer to Section 6.1.2 vi. other published literature.	
Open bed of pans	<input type="checkbox"/>	This habitat regularly is covered with deeper saline shallow water (10-50 cm) all over the year. For more information please refer to Section 6.1.2 vi. other published literature.	
Alopecuretum pratensis meadow	<input type="checkbox"/>		
Caricetum acutiformis ripariae marshes	<input type="checkbox"/>		
Continental Pannonic sodic affected steppes	<input type="checkbox"/>	Extensively scattered around the wetlands such as Artemisio-Festucetum pseudovinae danubiale, and Achilleo-Festucetum pseudovinae. Fragmented Pannonic loess steppic grasslands are also such as Salvia-Festucetum rupicolae.	



## 4 - What is the Site like? (Ecological character description)

### 4.1 - Ecological character

The prevalence of different sodic alkaline wetland habitat structures depends on water levels and seasonal fluctuation, which may be very variable year to year. Please refer to Section 6.1.2. vi. other published literature.

### 4.2 - What wetland type(s) are in the site?

#### Inland wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
Saline, brackish or alkaline water > Lakes >> R: Seasonal/ intermittent saline/ brackish/ alkaline lakes and flats		1	300	Unique
Saline, brackish or alkaline water > Marshes & pools >> Ss: Seasonal/ intermittent saline/ brackish/ alkaline marshes/ pools		1		Unique

#### Human-made wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
3: Irrigated land		2	5	
9: Canals and drainage channels or ditches		0	5	

#### Other non-wetland habitat

Other non-wetland habitats within the site	Area (ha) if known
Agricultural lands	551
Forested lands	10

### 4.3 - Biological components

#### 4.3.1 - Plant species

##### Other noteworthy plant species

Scientific name	Common name	Position in range / endemism / other
<i>Cirsium brachycephalum</i>	Small-flowered Thistle	including in 92/43/EGK directive Annex II

#### 4.3.2 - Animal species

<no data available>

### 4.4 - Physical components

#### 4.4.1 - 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.

#### 4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres)

a) Maximum elevation above sea level (in metres)

Middle part of river basin

Please name the river basin or basins. If the site lies in a sub-basin, please also name the larger river basin. For a coastal/marine site, please name the sea or ocean.

The site belongs to the River Tisza catchment area. The physical features of the site is characteristic for almost whole catchment area of the pans, but sodic wetlands have more extensive groundwater catchment area than on the surface. It is generally true that due to the winter precipitation and the high ground water level in the spring significant water volumes appear in the depressed areas (in the isolated depressions of lake beds and old water flows).

#### 4.4.3 - Soil

Mneral

Organic

Are soil types subject to change as a result of changing hydrological conditions (e.g., increased salinity or acidification)? Yes  No

Please provide further information on the soil (optional)

- Chernozem meadow soil types, which are surfaces developed on a sandy loess base situated in the highest level layers in the region, with high humus content. Their layer thickness varies 20-40 cm. Generally the salty ground water already does not impregnate these layers. In cases where these highest locations are relatively expansive, tillage activities are carried out on them, and if they are smaller in size (a few 100 m<sup>2</sup>), they form islands on the saline steppe, partly conserving the old sand and loess steppe flora of these areas.

- Solonetz meadow or carbonated solonetz soils, which appear in non-classical forms, in patches, and are more of a transition between the meadow and sodic soils in various combinations,

- Solonchak-solonetz soils, sodic solonchak soils, solonchak soils of eroded salt berms. Among these calcareous-sodic solonchak-solonetz soils are the most common, giving the character of the sodic plains found here.

#### 4.4.4 - Water regime

Water permanence

Presence?	Changes at RIS update
Usually permanent water present	
Usually seasonal, ephemeral or intermittent water present	

Source of water that maintains character of the site

Presence?	Predominant water source	Changes at RIS update
Water inputs from rainfall	<input type="checkbox"/>	No change
Water inputs from groundwater	<input type="checkbox"/>	No change

Please add any comments on the water regime and its determinants (if relevant). Use this box to explain sites with complex hydrology:

**The Danube-Tisza Interfluve**  
 As a result of its pedological (mainly calcareous-sodic plains developed on a fine granule rock bed) and geological structure (the significant presence of a fine waterproof clay layer) precipitation filter downwards with difficulty and may remain permanently in the depressions. It is generally true that due to the winter precipitation and the high ground water level in the spring significant water volumes appear in the depressed areas (in the isolated depressions of lake beds and old water flows).

It can be generally stated that the water permeability capacity of the sand dunes blown onto the loess of late pleistocene origin or of the original loess in the depressions of sand-covered areas is low. Due to their isolation and weak runoff conditions such depressions and low areas promoted the accumulation of periodic waters, which, as a result of the known salt composition of ground water, led to the formation of sodic wetlands and higher level sodic areas.

#### 4.4.5 - Sediment regime

Please provide further information on sediment (optional):

This sedimentary layer consists of sand blown out of the Danube valley in the ice-free periods of the Ice Age, which was structured as a series of sand piles in the north-south direction according the dominant wind direction, as well as loess developed during the ice formation periods, their transformed (e.g. soil) varieties and sediments washed out by local precipitation.

The sediment pattern delivered by the Danube-Tisza interfluvial winds protrudes slightly east of the current Tisza route, between the river layers of the Tisza. Therefore a geological situation developed in the smaller eastern section of the region where the Tisza, through its westbound movement, entered the alluvial fan of Danubian origin and in certain locations cut up and destroyed the surface of Danubian origin from the late Pleistocene period and enriched it with its own sediments (occasionally in an astonishing width of several hundred metres).

#### 4.4.6 - Water pH

Alkaline (pH>7.4)

#### 4.4.7 - Water salinity

Euhaline/Eusaline (30-40 g/l)

Please provide further information on salinity (optional):

The cause of salination in all cases is the salty ground water with a high Na(Mg,Ca)HCO<sub>3</sub> content. The Pannonic salt steppes, and marshes have developed by characteristic salt composition and continental climate, and wind-formed depressions.

The total solute content of the region's ground water is relatively high. Even the smallest values are around 1000 mg/l. The highest values vary between 2-10.000 mg/l. In the event of high ground water levels the ground water also brings solutes to the surface via its capillary ascent. The most important cations and anions in the ground water are Na<sup>+</sup>, Ca<sup>2+</sup>, Mg<sup>2+</sup> and HCO<sub>3</sub><sup>-</sup>, according to predominance Na<sup>+</sup>, HCO<sub>3</sub><sup>-</sup> couple with high pH values (sodic water).

4.4.8 - Dissolved or suspended nutrients in water

Eutrophic

4.4.9 - Features of the surrounding area which may affect the Site

Please describe whether, and if so how, the landscape and ecological characteristics in the area surrounding the Ramsar Site differ from the site itself. i) broadly similar  ii) significantly different

4.5 - Ecosystem services

4.5.1 - Ecosystem services/benefits

Provisioning Services

Ecosystem service	Examples	Importance/Extent/Significance
Wetland non-food products	Livestock fodder	Medium
Wetland non-food products	Other	High

Regulating Services

Ecosystem service	Examples	Importance/Extent/Significance
Maintenance of hydrological regimes	Groundwater recharge and discharge	Medium
Maintenance of hydrological regimes	Storage and delivery of water as part of water supply systems for agriculture and industry	Medium

Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Spiritual and inspirational	Cultural heritage (historical and archaeological)	Medium

Other ecosystem service(s) not included above:

**Within the Ramsar site:**  
The extensive grassland and agricultural uses are involved.

**In the surroundings/catchment:**  
Mainly the extensive agricultural, grassland and planted forest uses are involved.

**Hydrological values:**  
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. The site has an important role in the retention and storage of inland water and regulation of the groundwater level of the surrounding area as well.

**Social and cultural value:**  
No fisheries, forestry production, religious importance, archaeological sites corresponding with the wetlands. Social relations with existing wetlands can be understood by traditional Hungarian extensive farmland lifestyle especially with regard to domestic semi-nomadic animals grazing.

Have studies or assessments been made of the economic valuation of ecosystem services provided by this Ramsar Site? Yes  No  Unknown

4.5.2 - Social and cultural values

<no data available>

4.6 - Ecological processes

<no data available>

## 5 - How is the Site managed? (Conservation and management)

### 5.1 - Land tenure and responsibilities (Managers)

#### 5.1.1 - Land tenure/ownership

##### Public ownership

Category	Within the Ramsar Site	In the surrounding area
National/Federal government	<input checked="" type="checkbox"/>	<input type="checkbox"/>

##### Private ownership

Category	Within the Ramsar Site	In the surrounding area
Other types of private/individual owner(s)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Provide further information on the land tenure / ownership regime (optional):

**a) within the Ramsar site:**

Most part privately owned, 44 ha owned by the state and managed by the Kiskunság National Park Directorate.

**b) in the surrounding area:**

Mostly privately owned

#### 5.1.2 - Management authority

Please list the local office / offices of any agency or organization responsible for managing the site:

Kiskunság National Park Directorate

Provide the name and title of the person or people with responsibility for the wetland:

Zoltan VAJDA

Postal address:

H-6000 Kecskemét, Liszt F. u.19.  
Hungary

E-mail address:

vajdaz@knp.hu

## 5.2 - Ecological character threats and responses (Management)

### 5.2.1 - Factors (actual or likely) adversely affecting the Site's ecological character

#### Agriculture and aquaculture

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Wood and pulp plantations	Medium impact		<input type="checkbox"/>	No change	<input checked="" type="checkbox"/>	No change
Livestock farming and ranching	Low impact		<input checked="" type="checkbox"/>	No change	<input checked="" type="checkbox"/>	No change

#### Biological resource use

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Hunting and collecting terrestrial animals	Medium impact		<input checked="" type="checkbox"/>	No change	<input checked="" type="checkbox"/>	No change

#### Natural system modifications

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Fire and fire suppression	Medium impact		<input checked="" type="checkbox"/>	No change	<input checked="" type="checkbox"/>	No change
Dams and water management/use	Medium impact		<input checked="" type="checkbox"/>	No change	<input checked="" type="checkbox"/>	No change

#### Invasive and other problematic species and genes

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Unspecified	Medium impact		<input checked="" type="checkbox"/>	increase	<input checked="" type="checkbox"/>	increase

#### Pollution

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Agricultural and forestry effluents	Medium impact		<input checked="" type="checkbox"/>	No change	<input checked="" type="checkbox"/>	No change

Please describe any other threats (optional):

a) within the Ramsar site:  
Groundwater decreasing, water regulation, extensive agricultural pollution and disturbing factors, drying out, low grazing pressure, waterfowl hunting, increasing of natural mammalian (fox) and avian (crows) predators, burning.

The melioration measures in the catchment area decreased the extension of wetlands through lowering the groundwater table. From arable lands there is a nutrient source that may accelerate or cause eutrophication.

b) in the surrounding area:  
groundwater decreasing, water regulation, intensive agricultural pollution and disturbing factors, artificial forest planting, drying out, low or high grazing pressure, waterfowl hunting, increasing of natural mammalian (fox) and avian (crows) predators, burning.

### 5.2.2 - Legal conservation status

#### Regional (international) legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
EU Natura 2000	Csongrád-bokrosi Sóstó		partly

#### National legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Nature Reserve			whole

### 5.2.3 - IUCN protected areas categories (2008)

IV Habitat/Species Management Area: protected area managed mainly  for conservation through management intervention

### 5.2.4 - Key conservation measures

#### Legal protection

Measures	Status
Legal protection	Implemented

#### Other:

Further habitat restoration programmes are planned. Wildfowl hunting has been restricted since May 2004, when a new national decree on hunting entered into force: wildfowl hunting season has been shortened to 1 November – 31 January, only one occasion per month and no hunting at dawn.

Conservation measures proposed but not yet implemented:

Site is a Site of Community Importance (SCI), management plan in preparation. Unnecessary draining canals should be eliminated or plugged. The site should be purchased by the state in order to turn arable lands into grasslands and thus eliminate chemical pollution. Breeding islands could be created for Avocets (*Recurvirostra avosetta*).

### 5.2.5 - Management planning

Is there a site-specific management plan for the site? No

Has a management effectiveness assessment been undertaken for the site? Yes  No

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning processes with another Contracting Party? Yes  No

Please indicate if a Ramsar centre, other educational or visitor facility, or an educational or visitor programme is associated with the site:

There are no current scientific research and facilities on the site.

There is no visitors' centre, observation hides or nature trails, information booklets about the site.

### 5.2.6 - Planning for restoration

Is there a site-specific restoration plan? No, but a plan is being prepared

### 5.2.7 - Monitoring implemented or proposed

<no data available>

## 6 - Additional material

### 6.1 - Additional reports and documents

#### 6.1.1 - Bibliographical references

Boros, E. (1999): Ecological state of sodic water bodies in Hungary. Acta Biol. Debr. Oecol. Hung. 9: 81-105, 1999.

Boros, E. □ Biró, CS.2 (1999): A Duna-Tisza közti szikes tavak ökológiai állapotváltozásai a XVIII-XX. századok időszakában, Acta Biol. Debr. Oecol. Hung. 9: 81-105, 1999.

Others:

Boros, E., Pigniczki, CS. (2001): Feltöltődött szikes tavak rekonstrukciója és a szikes mocsári vegetáció kezelése a kiskunsági szikes tavaknál. Tűzok 6. évf. 2001/1. szám. 8-14.

Deák, J.Á (2001): Védelemre érdemes területek Csongrádon és Bokroson a Pilis-Alpári-homokhát és a Dél-Tisza-völgy találkozásánál, kézirat, Szegedi Egyetem Éghajlattani és Tájföldrajzi Tanszék, Szeged

Borsodi, A. 1 – Reskóné Nagy, M.2 – Gedeon, G.3 – Vladár, P.1 – Boros, E.4 – Márialigeti, K.1 (2003): Szikes tavak baktériumközösségeinek szénforrás értékesítési vizsgálata BIOLÓG rendszerrel. Hidrol. Közl. 2003. 83.évf. 25-28p.

Iványosi-Szabó, A. (1996): A KNP természetföldrajzi környezete. 20 éves a KNP 1975-1995 (Szerk. Dr. Tóth Károly), pp. 17-29.

Molnár, B. (1979): A nemzeti park tavainak kialakulása és vízföldtani fejlődéstörténete. Nemzeti Park a Kiskunságban (szerk. Dr. Tóth K.) Natura.155-164p.

#### 6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)

<no file available>

ii. a detailed Ecological Character Description (ECD) (in a national format)

<no file available>

iii. a description of the site in a national or regional wetland inventory

<no file available>

iv. relevant Article 3.2 reports

<no file available>

v. site management plan

<no file available>

vi. other published literature

<1 file(s) uploaded>

#### 6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:



Salt lakes regularly dry out in summer ( Mr. László Molnár, 06-07-2012 )

#### 6.1.4 - Designation letter and related data

Designation letter

<no file available>

Date of Designation