

# Ramsar Information Sheet

Published on 25 November 2015 Update version, previously published on 1 January 2007

# **Hungary**Upper Kiskunság Alkaline Lakes



Designation date 11 April 1979
Site number 187
Coordinates 46°48'36"N 19°10'18"E

Area 7 393,80 ha

https://rsis.ramsar.org/ris/187 Created by RSIS V.1.6 on - 5 October 2016

# 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 lymnological terms these very shallow intermittent waters are not lakes but rather comprise a characteristic type of wetlands with physical and ecological features similar to coastal pan ecosystems. The sodic-alkaline pans, marshes, and meadows of Kiskunság give a good special example of continental saline 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. pannonicicus. The site is a very important area for waterbirds during both breeding and migration season. The site comprises four major characteristic shallow open water sodic-alkaline pans (Büdös-szék, Zabszék, Kelemen-szék, Böddi-szék) and three major sodic-alkaline reedbeds (Szántó-szék, Kis-rét, Fehér-szék). There are many intermittent and temporary smaller sodic wetland pools among six major wetland units of the site.

# 2 - Data & location

#### 2.1 - Formal data

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

#### Compiler 1

Name	Zoltan Vajda
Institution/agency	Kiskunsági Nemzeti Park Directorate
	H-6000 Kecskemét, Liszt F. u.19. Hungary
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#### 2.1.2 - Period of collection of data and information used to compile the RIS

From year 2015

To year 2015

#### 2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)

Upper Kiskunság Alkaline Lakes

#### 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 O 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?

# 2.2 - Site location

# 2.2.1 - Defining the Site boundaries

b) Digital map/image

<1 file(s) uploaded>

Boundaries description (optional)

The site follows the boundary of the Upper Kiskunsági Alkaline Lakes unit of the Kiskunság NP, with the addition of the Böddi-szék (Lake Böddi) area, where the boundary follows the shoreline of the lake.

#### 2.2.2 - General location

a) In which large administrative region does the site lie?

Bács-Kiskun county

b) What is the nearest town or population centre?

Close to the villages of Fülöpszállás, Szabadszállás, Dunatetétlen territories. 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?

b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party?

## 2.2.4 - Area of the Site

Official area, in hectares (ha): 7393.8

Area, in hectares (ha) as calculated from GIS boundaries 7394.49

# 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

This is a vast sodic lowland plain of the Great Hungarian Plain, the former flood area of the River Danube, second in size only to the Hortobágy. The sodic plain has a rather variegated micro-relief. Differences of just a couple of dozen inches in elevation can produce different types of soils with distinctive floras to go with them. The high salinity and poor water economy of the soil allow only halophytic grass. It presents a nice variation of sodic meadows, pastures, sodic terraces and sodic barrens with a typical vegetation consisting of various salt-resistant and halophyte species. The sodic pans and salt marshes are the other important habitat types of the site from the point of view of birds and invertebrates as well. The shallow pans hold high salinity sodic water. Most of them regularly dry up because of the summer drought. The site is important not only from the point of view of natural inland salt habitats, but is important for birds as a nesting, feeding and roosting site as well.

Other reason

The site contains a representative and unique example of natural sodic-alkaline type wetlands within the Pannonic biogeographic region. It is the largest and most important salt area between the Danube and Tisza rivers in the Great Hungarian Plain. The so-called "szoloncsák" and "szoloncsák-szolonyec" types of these salt habitats and sodic soils are characterised by salt accumulation levels on or close to the soil surface, but they differ from the famous salt lands of the Hortobágy. (In the latter region salt accumulation level is more distant from the soil surface, and there are also differences in chemical composition of soils.)

- ☑ Criterion 2 : Rare species and threatened ecological communities
- ☑ Criterion 3 : Biological diversity

Justificati

The site supports populations of plant and animal species important for maintaining the biological diversity of Pannonic biogeographic region. Due to its geographical location (e.g. as a basin centre surrounded by mountains) and its other features (see section 1.1 Summary description), it became a place for the development of numerous endemic plant and animal species.

- ☑ 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
Centaurea scabiosa sadleriana			<b>2</b>					Pannonic endemic, biogeographically important
Cirsium brachycephalum		<b>2</b>			LC		Annex II of the EU Habitats Directive	
Entosthodon hungaricus			<b></b> ✓					Pannonic endemic, nationally protected moss
Lepidium cartilagineum			<b>2</b>					Pannonic endemic, biogeographically important
Plantago schwarzenbergiana			<b>2</b>					Pannonic endemic, biogeographically important and protected in Hungary
Puccinellia distans			Ø					Pannonic endemic, biogeographically important and protected in Hungary
Suaeda pannonica			<b>Ø</b>					Pannonic endemic, biogeographically important and protected in Hungary
Tripolium pannonicum			V					Pannonic subendemic

Criterion 3 - species which are not listed in the Catalolgue of Life:
Limonium gmelini ssp. hungaricum – Pannonic endemic, biogeographically important
Noteworthy flora which is not included in the Catalogue of Life:
Desmatodon cernuus – nationally protected moss Phascum floekeanum – nationally protected moss

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

Phylum	Scientific name	Common name	Species qualifies under criterion 2 4 6 9	Species contributes under criterion 3 5 7 8	Size Period of pop. Est. occurrence	IUCN Red A List	CITES Appendix I	CMS Appendix I	Other Status	Justification
CHORDATA/ AVES	Acrocephalus melanopogon	Moustached Warbler				LC © ST © TSF			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Alcedo atthis	Common Kingfisher				LC Sign			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Anser erythropus	Lesser White- fronted Goose				VU ●\$3 ●®F		<b></b> ✓	Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Anthus campestris	Tawny Pipit				LC Sign			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Ardea alba	Great Egret				LC			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Ardea purpurea	Purple Heron				LC Sisson			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds

Phylum	Scientific name	Common name	c c	und und rite	rion	С	Speciontrib unde criter	utes er on	Size Period of pop. Est. Occurrence	UCN Red / List	CITES Appendix I	CMS Appendix I	Other Status	Justification
CHORDATA/ AVES	Ardeola ralloides	Squacco Heron	1	<b>V</b>						LC or			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Aythya nyroca	Ferruginous Duck	V	V						NT		V	Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AMPHIBIA	Bombina bombina	European Fire- bellied Toad	<b>V</b>							LC OTH			Annex I of the EU Habitats Directive	
CHORDATA/ AVES	Botaurus stellaris	Eurasian Bittern	V	1						LC Sign			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Branta ruficollis	Red-breasted Goose	V	1						EN ●SP		V	Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Burhinus oedicnemus	Eurasian Stone- curlew	V	<b>√</b>						LC			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Charadrius alexandrinus	Kentish Plover;Snowy Plover	V	V						LC om			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Chlidonias hybrida	Whiskered Tern	V	1						LC Sign			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Chlidonias niger	Black Tern	V	<b>V</b>						LC Sign			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Ciconia ciconia	White Stork	V	<b>V</b>						LC Sign			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Ciconia nigra	Black Stork	1	1						LC			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Circus aeruginosus	Western Marsh Harrier	V	1						LC			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Circus cyaneus	Northern Harrier	V	<b>V</b>						LC ●鉄 ●開			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Circus pygargus	Montagu's Harrier	V	<b>V</b>						LC Sign			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ ACTINOPTERYG	Cobitis taenia	spined loach	V							LC Str			Annex I of the EU Habitats Directive	
CHORDATA/ AVES	Coracias garrulus	European Roller	V	V						NT ●SP			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
ARTHROPODA/ INSECTA	Dorcadion fulvum cervae		V										Annex I of the EU Habitats Directive	Pannonic endemic
CHORDATA/ AVES	Egretta garzetta	Little Egret	V	<b>√</b>						LC			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ REPTILIA	Emys orbicularis	European Pond Terrapin	V										Annex I of the EU Habitats Directive	

Phylum	Scientific name	Common name	criterion	Species contributes under criterion	Pop. Size Period of pop. Est. % occurrence Red List		CMS Appendix I	Other Status	Justification
CHORDATA/ AVES	Falco cherrug	Saker Falcon	<b>220</b>	0000	EN © SS		<b>4</b>	Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Falco columbarius	Merlin			LC Str			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Falco peregrinus	Peregrine Falcon			LC SS ONW	V		Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Falco vespertinus	Red-footed Falcor			NT St Oth		<b></b>	Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Gelochelidon nilotica	Gull-billed Tern			LC St OM			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Grus grus	Common Crane	<b>220</b>		LC St ONF			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Haliaeetus albicilla	White-tailed Eagle			LC St ONF	V	<b>✓</b>	Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Himantopus himantopus	Black-winged Stilt		0000	LC St OTM			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Hydrocoloeus minutus	Little Gull			LC St OTM			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Hydroprogne caspia	Caspian Tem		0000	LC St Oth			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Ichthyaetus melanocephalus	Mediterranean Gull	ØØ00					Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Ixobrychus minutus	Little Bittern	<b>2</b>		LC St Oth			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Lanius collurio	Red-backed Shrike			LC St OTM			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Lanius minor	Lesser Grey Shrike			LC ST			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ ACTINOPTERYG	Leuciscus aspius	asp						Annex I of the EU Habitats Directive	
CHORDATA/ AVES	Luscinia svecica	Bluethroat	220		LC est			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ MAMMALIA	Lutra lutra	European Otter	<b>2</b> 000	0000	NT • 55 • 68	V		Annex I of the EU Habitats Directive	
CHORDATA/ AVES	Mergellus albellus	Smew			LC ST			Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ MAMMALIA	Mustela eversmanii	Steppe Polecat						Annex I of the EU Habitats Directive	

Phylum	Scientific name	Common name	qu u cri	pecies palifies pale pale pale pale pale pale pale pale	contr	 Pop. Size	Period of pop. Est.	% occurrence	IUCN Red List	CMS Appendix I	Other Status	Justification
CHORDATA/ AVES	Nycticorax nycticorax	Black-crowned Night Heron;Black- crowned Night- Heron	<b>V</b>	<b>Z</b> OC					LC Sign		Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Otis tarda	Great Bustard	<b>V</b>	20c					VU ©\$\$ @\$\$	V	Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Pandion haliaetus	Osprey;Western Osprey	<b>V</b>	20c					LC ●数 ●簡		Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Phalaropus lobatus	Red-necked Phalarope	<b>V</b>	20c					LC Sign		Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Philomachus pugnax	Ruff	<b>V</b>	20c							Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Platalea leucorodia	Eurasian Spoonbill	<b>V</b>	20c					LC Sign		Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Plegadis falcinellus	Glossylbis	<b>V</b>	aoc					LC •\$: •\$#		Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Pluvialis apricaria	European Golden Plover;European Golden-Plover	<b>V</b>	20c					LC STRF		Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Porzana parva	Little Crake	<b>V</b>	20c							Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Porzana porzana	Spotted Crake	<b>V</b>	20c					LC Str		Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Recurvirostra avosetta	Pied Avocet	<b>V</b>	20c					LC Str		Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ ACTINOPTERYG	Rhodeus amarus		<b>V</b>						LC •\$		Annex I of the EU Habitats Directive	
CHORDATA/ MAMMALIA	Spermophilus citellus	European Ground Squirrel;European Souslik	<b>2</b>						VU Gi: GISF		Annex II and IV of the EU Habitats Directive	
CHORDATA/ AVES	Sterna hirundo	Common Tern	<b>V</b>	20c					LC Sit Other		Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AVES	Tringa glareola	Wood Sandpiper	<b>V</b>	20c					LC Site		Annex I of the EU Birds Directive	The site supports notable breeding, migrating, wintering and resident birds
CHORDATA/ AMPHIBIA	Triturus dobrogicus	Danube crested newt	<b>2</b>						NT		Annex I of the EU Habitats Directive	

Noteworthy fauna which is not included in the Catalogue of Life:	
- Saragossa porosa kenderiensis – Pannonic endemic	

# RIS for Site no. 187, Upper Kiskunság Alkaline Lakes, Hungary

Name of ecological community	Community qualifies under Criterion 2?	Description	Justification
1530 Pannonic salt steppes and salt marshes	✓		Annex I of the EU Habitats Directive
6250 Pannonic loess steppic grasslands	<b>2</b>		Annex I of the EU Habitats Directive
6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia)	Ø	important orchid sites	Annex I of the EU Habitats Directive

# 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.

- Lepdio-Puccinellietum and Astero-Agrostetum albae sodic marshes (see Section 6.1.2)
- Puccinellietum limosae sodic marshes (see Section 6.1.2)
- Bolboschoenus-Phragmitetum sodic marshes (see Section 6.1.2)
- Open bed of pans (see Section 6.1.2)

Other not characteristic wetlands types can be also found such as Alopecuretum pratensis meadow and Caricetum acutiformis ripariae marshes.

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 Salvio-Festucetum rupicolae.

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	4307	Representative
Saline, brackish or alkaline water > Marshes & pools >> Ss: Seasonal/ intermittent saline/ brackish/ alkaline marshes/ pools		1		Representative

# Human-made wetlands

i luman-made wellands				
Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
1: Aquaculture ponds		2	41	
3: Irrigated land		2		
9: Canals and drainage channels or ditches		3	29	

# 4.3 - Biological components

## 4.3.1 - Plant species

Invasive alien plant species

Scientific name	Common name	Impacts	Changes at RIS update
Elaeagnus angustifolia		Actually (minor impacts)	No change

#### 4.3.2 - Animal species

<no data available>

# 4.4 - Physical components

#### 4.4.1 - Climate

Climatic region	Subregion
C: Moist Mid-Latitude	Csa: Mediterranean (MId
climate with mild winters	with dry, hot summer)

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. For more information on climate, please refer to Section 6.1.2. vi. other published literature.

#### 4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in 94 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 sodic plain belongs to River Danube catchment area. The general physical features of the site is characteristic for almost whole catchment area of the pans, but have to put emphasis on sodic wetlands have more extensive groundwater catchment area than on the surface. The local wetland catchment area has two main part, on the major part is the lowland River Danube basin, and on the eastern part is the plain sandy ridge plateau.

#### 4.4.3 - Soil

Mineral 🗹

Organic 🗹

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

#### Please provide further information on the soil (optional)

- Chernozem meadow soil types
- Solonetz meadow or carbonated solonetz soils
- 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.

Please refer to Section 6.1.2. vi. other published literature for more information on soil types.

#### 4.4.4 - Water regime

#### Water nermanence

The state of the s			
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

	Source of water that maintains character of the site					
Presence?		Predominant water source	Changes at RIS update			
	Water inputs from rainfall	✓	No change			
	Water inputs from groundwater	<b>2</b>	No change			

#### Stability of water regime

Presence?	Changes at RIS update
Water levels fluctuating (including tidal)	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 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.

#### 4.4.5 - Sediment regime

#### Please provide further information on sediment (optional):

The total dissolved solids is dominated in sodium (Na+), calcium (Ca2+), carbonate (CO32-) ions, and high grey-brown coloured holomictic turbidity being permanently suspended by colloidal ion complex. The very high turbidity is in open 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 (Fcrit) 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 find velocity there can be found a lower turbidity less re-suspended belt (Fcrit) around the shoreline below a critical water depth. The lowest turbidity can be found every time among emergent marshland vegetation.

(ECD) Water turbidity and colour See above. The non-turbid transparent sodic-alkaline waters have brown colour.

#### 4.4.6 - Water pH

Akaline (pH>7.4) ☑

#### 4.4.7 - Water salinity

Mixohaline (brackish)/Mixosaline (0.5-30 g/l) ₩

Hyperhaline/Hypersaline (>40 g/l) ☑

#### Please provide further information on salinity (optional):

The salinity varies between hypo- (3-20 g.l-1) mesosaline (20-50 g.l-1) ranges corresponding with water level.

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 2000-10.000 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+, Ca2+, Mg2+ and HCO3-, according to predominance Na+, HCO3- couple with high pH values (sodic water).

The cause of salination in all cases is the salty ground water with a high Na(Mg,Ca)HCO3 content. The Pannonic salt (sodic) steppes, wetlands and marshes have developed by characteristic salt composition and continental climate.

#### 4.4.8 - Dissolved or suspended nutrients in water

Unknown 📝

#### 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 i) broadly similar O ii) significantly different o site itself:

#### 4.5 - Ecosystem services

#### 4.5.1 - Ecosystem services/benefits

#### **Provisioning Services**

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

#### Regulating Services

r togalating cor floor			
Ecosystem service	Examples	Importance/Extent/Significance	
Maintenance of hydrological regimes	Groundwater recharge and discharge	High	
Hazard reduction	Flood control, flood storage	High	

#### Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance		
Recreation and tourism	Recreational hunting and fishing	Medium		
Recreation and tourism	Nature observation and nature-based tourism	Low		
Spiritual and inspirational	Cultural heritage (historical and archaeological)	Medium		

#### Other ecosystem service(s) not included above

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.

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 regard to domestic semi-nomadic animals grazing.

Current recreation and tourism: Generally not important, only fishing tourism is intensive along the western border and eastern part of the site at the main regional irrigation channel, and a little ecotourism and bird watching tourism are involved.

# Within the Ramsar site:

The extensive grassland, reed harvesting and agricultural using are involved.

#### In the surroundings/catchment:

Mainly the extensive agricultural, grassland and planted forest using are involved

Have studies or assessments been made of the economic valuation of ecosystem services provided by this Ramsar Site?

<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

- Fu	טווט כ	ship

Category		Within the Ramsar Site	In the surrounding area
	National/Federal	<b> →</b>	
	government		

Private ownership

Category	Within the Ramsar Site	In the surrounding area
Other types of private/individual owner(s)	<b>&gt;</b>	✓

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

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54 % of the site is state owned and managed by Kiskunság National Park Directorate, others are in private ownership

In the surrounding area: Mostly private owned

# 5.1.2 - Management authority

Please list the local office / offices of any	Kiskunság National Park Directorate
agency or organization responsible for	
managing the site:	
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.
. 554. 444.555	H-6000 Kecskemét, Liszt F. u.19. Hungary
E-mail address:	vaidaz@knp.hu

# 5.2 - Ecological character threats and responses (Management)

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

Water regulation

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Water abstraction	High impact		✓	No change		No change

Agriculture and aquaculture

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Livestock farming and ranching	Low impact		✓	No change	✓	No change

Energy production and mining

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Oil and gas drilling	Low impact		✓	No change		No change

Biological resource use

Diological resource ase						
Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Hunting and collecting terrestrial animals	Medium impact		<b>2</b>	No change	<b>2</b>	No change
Logging and wood harvesting					<b>✓</b>	

Natural system modification	IS					
Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Fire and fire suppression	Medium impact		✓	No change	✓	No change
Dams and water management/use	Medium impact		✓	No change	✓	No change
Vegetation clearance/ land conversion	Low impact		✓	No change		No change
Unspecified/others			✓		✓	

Invasive and other problematic species and genes

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Invasive non-native/ alien species	Medium impact		<b>&gt;</b>	No change	✓	No change

#### Pollution

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Agricultural and forestry effluents	Medium impact		<b>₽</b>	No change	<b>2</b>	No change
Unspecified			✓		<b>2</b>	

Climate change and severe weather

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Droughts	High impact		✓	No change	✓	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, eutrophication, low grazing pressure, invasion by alien species (e.g. Eleagnus angustifolia), waterfowl hunting, increasing of natural mammalian (fox) and avian (crows) predators, burning.

The most important adverse factor threatening the site's ecological character is the ground water decreasing. In the area located between the Rivers Danube and Tisza the following factors are influencing the ground water level changes: precipitation, artesian water exploitation for water supply purposes, ground water exploitation mainly for irrigation purposes, increase of areas covered by forests, water management and other factors.

From the beginning of the 1970s to the middle of the 1990s the precipitation level dropped below the average, nearly 1000 mm precipitation shortage was experienced in the area. As a result ground water level started to drop, significant amount of the previous lakes dried up. During this time extensive ground water stock exploitation also started for the purposes of irrigation, which also contributed to the further reduction of ground water level.

In the area Danube-Tisza Interfluves the factors influencing ground water reduction are as follows and their respective share in percentage also indicated: weather (50%); artesian water exploitation:(25%); ground water exploitation (6%); changes to land utilisation (10%); water management (7%); other (hydrocarbon exploitation (2%).

# b) In the surrounding area:

Groundwater decreasing, water regulation, intensive agricultural pollution and disturbing factors, artificial forest planting, drying out, eutrophication, low or high grazing pressure, invasion by alien species (e.g. Eleagnus angustifolia), waterfowl hunting, increasing of natural mammalian (fox) and avian (crows) predators, burning.

#### 5.2.2 - Legal conservation status

Global legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
UNESCO Biosphere Reserve	Kiskunsági Biosphere Reserve		partly

Regional (international) legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
EU Natura 2000	Felső-kiskunsági szikes tavak és Mklapuszta		partly

National legal designations

	Designation type	Name of area	Online information url	Overlap with Ramsar Site
1	national park	Kiskunsági National Park		partly

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

Il National Park: protected area managed mainly for ecosystem protection and recreation

# 5.2.4 - Key conservation measures

Legal protection

Logar protoctori		
Measures	Status	
Legal protection	Implemented	

#### Habitat

Measures	Status
Hydrology management/restoration	Proposed

#### Other:

Legal protection: The whole site is protected by Hungarian nature conservation laws and is a Natura 2000 Special Protection Area (SPA), furthermore 90 % part of the site is Site of Community Importance (SCI) with regard to Pannonic sodic (salt steppes and marshes) habitats within the site. 70 % of the site belongs to Kiskunsági National Park, and 30 % of it is nature protection reserve (as alkaline lake protected by power of the act on nature conservation). The national park part of the site is an UNESCO Biosphere Reserve (Kiskunsági Biosphere Reserve). There are 1823 ha strictly protected area within the site in the national park territory.

Current management practices:

Two large-scale habitat restorations programmes will be carried out on the site (canal elimination and relocation).

Conservation measures proposed but not yet implemented:

Site specific management plan needs to be improved and implemented. Expanding of the national park territory is in progress towards to south direction by ca. 2000 ha sodic marshland and grassland habitat systems.

#### 5.2.5 - Management planning

Is there a site-specific management plan for the site? Yes

Has a management effectiveness assessment been undertaken for the site?

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning Yes O No 

processes with another Contracting Party?

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

Observation hides, nature educational trails, information tables and booklets are available on the site.

#### 5.2.6 - Planning for restoration

Is there a site-specific restoration plan? Please select a value

#### 5.2.7 - Monitoring implemented or proposed

Monitoring	Status
Water quality	Implemented
Plant species	Implemented
Birds	Implemented

General Hungarian biodiversity and bird monitoring program is run on the site. Other current research programmes are running, e.g. waterbird nutrient contribution to water quality, waterbird food resources, ecological factors of primary production, algae population dynamics, quantitative and qualitative food web structures of the characteristic sodic pans.

# 6 - Additional material

# 6.1 - Additional reports and documents

#### 6.1.1 - Bibliographical references

Please refer to Section 6.1.2. vi. other published literature for the list of Bibliographical references.

## 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:



Lake Kelemen is one of the largest of the alkaline lakes in the Kiskunság ( *Mr. Tibor Utassy, 13-08-2004* )

## 6.1.4 - Designation letter and related data

#### Designation letter

<no file available>

Date of Designation 1979-04-11