Information Sheet on Ramsar Wetlands (RIS) – 2006 version

Available for download from http://www.ramsar.org/ris/key_ris_index.htm.

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th 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, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd 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:
Jerkovich Gergely, Körös-Maros National Park Directorate
Hungary, H-5541 Szarvas, P.O. Box 72.

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DD MM YY

Designation date | Site Reference Number

2. Date this sheet was completed/updated:
Completed: during 80's, updated: 18.05.2006.

3. Country:
Hungary

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

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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 ❑X

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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: ❑ X

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:
After the serious drought in the 80's, the wet years (not all years) since 1999 resulted in good water conditions in the lake.

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

a) A map of the site, with clearly delineated boundaries, is included as:
i**) a hard copy** (required for inclusion of site in the Ramsar List): ❑;

ii**) an electronic format** (e.g. a JPEG or ArcView image) ❑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.
The boundary follows the land parcel boundaries that contain the wetland and the surrounding natural habitats.

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8. Geographical coordinates (latitude/longitude, in degrees and minutes):
Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.
46º 28' N, 20º 30' E

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9. General location:
Include in which part of the country and which large administrative region(s) the site lies and the location of the nearest large town.
County of Békés, 8 km south of town Orosháza

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10. Elevation: (in metres: average and/or maximum & minimum)
Between 85 and 91,5 m over Baltic Sea level

11. Area: (in hectares) 492

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12. General overview of the site:
Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

Lake Fehér at Kardoskút is an alkaline steppe lake in Southeast Hungary. As a former branch of river Maros, the area has been subject to a gradual salt accumulation resulting in a typical *puszta* fauna and flora associations on the wetland site. The wetland is one of the most fragile and valuable nature reserves in Hungary, along with several archaeological remains. Lake Fehér at Kardoskút has a fundamental role in the passage of thousands of migratory birds in Eastern 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
❑	❑	❑	❑	❑	❑	❑	❑	❑

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: As a specific wetland type, Lake Fehér at Kardoskút is rare in the appropriate geographical region (see also justification to criterion 3 below). The vast salt steppes have international importance as they cannot be found west of Hungary.

Habitats listed in Annex I of the Habitats Directive:
1530 Pannonic salt steppes and salt marshes
6250 Pannonic loess steppic grasslands

2: The lake supports an appreciable assemblage of rare and endangered species of animals as well as plants. (See point 20.)

Cirsium brachycephalum – included in 92/43/EGK directive Annex II

Helix pomatia Appendix III Bern Convention + Annex V Habitats Directive
Pelobates fuscus Appendix II Bern Convention + Annex IV Habitats Directive
Bufo viridis Appendix II Bern Convention
Bombina bombina Appendix II Bern Convention + Annex II and IV Habitats Directive
Rana lessonae Appendix III Bern Convention + Annex IV Habitats Directive
Rana esculenta Appendix III Bern Convention + Annex V Habitats Directive
Hyla arborea Appendix II Bern Convention + Annex IV Habitats Directive
Triturus cristatus NT IUCN Red list + Annex II Habitats Directive
Lacerta agilis Appendix III Bern Convention + Annex IV Habitats Directive
Natrix natrix Appendix III Bern Convention

The site supports several species listed in Annex I of the Birds Directive: Charadrius morinellus, Circus macrourus, Otis tarda, Anser erythropus, Branta ruficollis, Grus grus, Aquila heliaca, Himantopus himantopus, Recurvirostra avosetta.

Botaurus stellaris LC IUCN Red list + Annex I Birds Directive
Ciconia ciconia LC IUCN Red list + Annex I Birds Directive
Anser albifrons LC IUCN Red list + Annex I Birds Directive
Anser erythropus Global IUCN Red list VU; European IUCN Red List EN; Annex I Birds Directive
Branta ruficollis Global IUCN Red list VU; European IUCN Red List VU; Annex I Birds Directive
Circus aeruginosus LC IUCN Red list + Annex I Birds Directive
Circus macrourus Global IUCN Red list NT; European IUCN Red list EN; + Annex I Birds Directive
Aquila heliaca Global IUCN Red list VU + Annex I Birds Directive
Falco vespertinus European IUCN Red list VU + Annex I Birds Directive
Grus grus LC IUCN Red list + Annex I Birds Directive

Otis tarda Global IUCN Red list VU; European IUCN Red List VU; + Annex I Birds Directive
Recurvirostra avosetta LC IUCN Red list + Annex I Birds Directive
Himantopus himantopus LC IUCN Red list + Annex I Birds Directive
Charadrius morinellus LC IUCN Red list + Annex I Birds Directive
Charadrius alexandrinus LC IUCN Red list + Annex I Birds Directive
Limosa limosa LC IUCN Red list + Annex I Birds Directive
Tringa glareola LC IUCN Red list + Annex I Birds Directive
Asio flammeus LC IUCN Red list + Annex I Birds Directive
Lanius collurio LC IUCN Red list + Annex I Birds 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 (occasional records)
Spermophilus citellus Appendix II Bern Convention + Annex II and IV Habitats Directive

3. *Lepidio-Puccinellietum crisicum* is related more to saline lakebed communities of the Danube-Tisza Interfluve (the Kiskunság), rather than those east of the river Tisza (based on soil comparison and species composition). This means this community has an isolated occurrence here, east of the river Tisza, but is unknown elsewhere east of the river Tisza. Another special habitat of Lake Fehér at Kardoskút is *Agrostio-Caricetum distantis* on solontchak soils otherwise known from the Danube-Tisza Interfluve and unknown from elsewhere east of the River Tisza. The better quality lands around the lake have long been cultivated, so the potentially large loess grasslands (*Salvio-Festucetum rupicolae*) have nearly all disappeared, and there is only one remaining patch of this community.

4. Lake Fehér at Kardoskút provides refuge to migrant birds during the spring and autumn and forms an important stopover site (particularly in wet years, such as 1999 and 2000). Numbers, however, fluctuate to a great degree depending on water conditions.
A selection of peak numbers of waterfowl recorded during bird migration in recent years:

Larus ridibundus	30.000 (1999)	70-200 pairs breed, no wintering population
Anser albifrons	20.000 (1999)	no breeding or wintering population
Vanellus vanellus	15.000 (1999)	small breeding population, no wintering population
Grus grus	14.000 (1999) mostly Finnish ringed birds have been recovered; the migrant birds must mostly originate from Eastern Scandinavia, Poland and the Baltic states; wintering is rare in small numbers	
Larus cachinnans	8.000 (1999) Ringing data indicate that Larus cachinnans in Hungary mostly originates from the Adriatic area, but probably some also come from The Black Sea; the involvement of the Caspian breeding population is probably small. This is also confirmed by the fact that mostly michahellis race is observed, the nominate race occurs in much smaller numbers.	
Anas platyrhynchos	7.000 (1999) small breeding population, wintering rare.	
Anas crecca	5.000 (1999) no breeding population, wintering rare in small numbers	
Limosa limosa	3-4.000 probably NE European breeding population;	
Numenius phaeopus	3.100 (2004) no breeding or wintering population	
Numenius arquata	530 (2004) 80 pairs breed, no wintering population	
Anser anser	400 migrant	
Tringa erythropus	180 (2000) no breeding or wintering population	
Tringa glareola	150 (2000) no breeding or wintering population	

5: During migration in wet years, more than 20.000 wildfowl occur on the wetland at the same time. The following table summarises records from an approximately average year. Censuses do not cover gulls and waders.

Table 21:Lake Fehér at Kardoskút,

2004/2005

Species	Aug	Sept	Okt	Nov	Dec	Jan	Feb	Mar	April
POD CRI	0	0	0	0	0	0	0	0	2
ARD CIN	0	0	0	0	0	0	0	0	1
EGR ALB	0	0	0	0	0	0	0	0	2
ANA PEN	0	0	28	0	30	2	0	18	5
ANA CRE	0	47	210	25	2000	250	0	0	4
ANA PLA	0	120	450	460	400	400	0	12	0
ANA ACU	0	0	6	0	2	0	0	0	2
ANA QUE	0	0	0	0	0	0	0	0	12
ANA CLY	0	5	0	0	2	0	0	0	180
GRU GRU	0	4	2100	0	1450	2152	0	550	0
Total number of individuals	**0**	**176**	**2794**	**485**	**3884**	**2804**	**0**	**580**	**208**
Total number of species	**0**	**4**	**5**	**2**	**6**	**4**	**0**	**3**	**8**

6. The site support:

Grus grus 2.000 - 14.000 (1% 600)

Limosa limosa 3.000-4.000 NE European breeding population (1% 1,300 or 1,700)

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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.

During Quaternary period the river Maros had a branch that developed the alluvial plains of the region. Further development of the area therefore has been determined by the thick layers of sediment deposited by the rivers. During its history of a few thousand years, the lake dried out several times. The lake is rather shallow, the depth of water is usually less than 1 meter, there are no outlets of the wetland. There are soils associated with riverine soil types and alkaline solonetz type. The annual mean temperature is 10.5 ^{o}C, total precipitation is approximately 550-600 mm yearly.

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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).

Lake Fehér at kardoskút lies on the border between the Békési elevated ridge and the Csongrádi Plain, on the western edge of the Marosi alluvium. The area is situated in a plain that gently slopes from east to west, and is dissected into poorly drained basins. The relief of the site is rather homogenous and is only interrupted by former oxbow beds.

The lake itself is isolated from other water bodies, having neither inlet nor outlet on the surface. It has, however, important ground water connections to the ancient riverbeds of the Maros river.

18. Hydrological values:

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

Groundwater recharge plays an important role in water regime of the site.

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. R
2. 2. Ss

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.

A pioneer community of the deepest parts of the salt lakebed adapted to the extreme conditions there is *Crypsidetum aculeatae*. Zonally, the next community of the lakebed, slightly higher situated, is characterised by *Sueda maritima*. The most saline parts in the margins of the lakebed is typically covered by *Camphorosmetum annuae* community, which can be homogenous or mixed with *Sueda maritima* and *Puccinellia limosa*. Perhaps the most interesting community of the lake is *Lepidio-Puccinellietum crisicum*, which is related more to saline lakebed communities of the Danube-Tisza Interfluve (the Kiskunság), rather than those east of the river Tisza (based on soil comparison and species composition). This means this community has an isolated occurrence here, east of the river Tisza, but is unknown elsewhere east of the river Tisza. The transition zone between the lakebed and the shores is formed by *Phragmites communis* and *Bolboschoenus maritimus*. Where this zone dries out slowly, and salinity does not decline significantly, the plant community is nicely enhanced by Aster, forming *Bolboschoenetum maritimi asterosum*.

A special habitat of Lake Fehér at Kardoskút is *Agrostio-Caricetum distantis* on solontchak soils otherwise known from the Danube-Tisza Interfluve and unknown from elsewhere east of the River Tisza. In the area, it only occurs on the margin of the eastern side of the lakebed.

Natural habitats around the lake are characterised by salt steppes. North and south of the lake, a chain of dry salt grasslands (mainly *Achilleo-Festucetum pseudovinae*) connects to the major grasslands of southeastern Hungary, marking the most important flyway of waterbirds in the Carpathian Basin. These dry steppes are intersected by temporarily flooded pans and creeks, whose outer marginal zone is covered by *Agrostio-Alopecoretum pratensis*. Deeper areas are dominated by the today rather rare *Agrostio-Beckmanniaetum eruciformis*, and further down by *Bolboschoenetum maritimi*. These pans are surrounded by *Camphorosmetum annuae*, providing a special habitat to several animal species.

The better quality lands around the lake have long been cultivated, so the potentially large loess grasslands (*Salvio-Festucetum rupicolae*) have nearly all disappeared, and there is only one remaining patch of this community.

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.*

Agrostio-Caricetum distantis on solontchak soils only occurs here east of the river Tisza. Its typical species are *Carex distans*, *Scorzonera parviflora* and *Taraxacum bessarabicum*. Unfortunately, general drying of the area has caused three plant species to disappear, although there is still hope to find them in less studied areas around the site: *Acorellus pannonicus*, *Triglochin palustre* and *Schoenoplectus tabernaemontani*.

The algae studies of István Kiss needs to be mentioned: he confirmed the presence of nearly 200 alga species in the lake, describing several of them as new to science.

The outstanding value of the remaining loess grassland (*Salvio-Festucetum rupicolae*) is *Sternbergia colchiciflora*, with this population being the second largest in the region. Other typical species here include *Thalictrum minus* and *Astragalus austriacus*.

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.*

For a list of endangered species, see section 12. item 2. Other important, nationally protected species are: Talpa europaea, Erinaceus concolor, Lycosa singoriensis, Mantis religiosa. Lycosa singoriensis is biogeographically important, a typical species of steppe areas.

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:

Ruins of Csomorkány and the windmill of Székkutas are examples of cultural heritage of the region.

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:

24. Land tenure/ownership:

a) within the Ramsar site: Körös-Maros National Park Directorate (state owned) 69%, private 23%, other (cooperatives and local government) 8%)

b) in the surrounding area: cooperative farms privately (95%) owned

25. Current land (including water) use:

a) within the Ramsar site: Ploughland 39%, Grassland 39%, Marshland 5%, Other 17% (Total: 492 ha)

b) in the surroundings/catchment: Ploughland 51%, Grassland 43%, Marshland 1%, Other 5%

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: Drainage of the former extensive wetland system had a fairly negative impact on the area.
b) in the surrounding area: Next to the buffered zone intensified agricultural activity may have an adverse impact on the wetland in the future.

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 area has been designated as a Nature Reserve since 1965, Ramsar Site since 1979 and a core area of the Körös-Maros NP since 1997.

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 ❑X; VI ❑

c) Does an officially approved management plan exist; and is it being implemented?: The detailed management plan has still not been completed.

d) Describe any other current management practices: In recent years the numbers of grazing livestock have been raised to a level resembling the period of a decade before. Therefore the management problems of the site have been solved. Geese farms have disappeared in recent years so they are not threatening the quality of groundwater or the vegetation any more. Grasslands and reedbeds are managed in harmony with purposes of nature conservation. Part of the surrounding area has received conservation status in recent years. In 2005, grazing by sheep and Hungarian Grey Cattle and mowing in 1100 ha; fallow in 106 ha in order to restore grasslands; 10 ha of arable land was used for maize production for the grazing animals but also for *Grus grus* and *Anser* species.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.
Planned management measures: restoration of previous water regime of the Lake Fehér at Kardoskút. Restoration of the environment of Lófogó creek by eliminating drainage canals. Creation of a saline lake habitat for interpretation purposes. Construction of a winter shelter and a farm machine barn for the grazing animals. Restoration of further 280 ha of grasslands.

29. Current scientific research and facilities:

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.
Detailed hydrological, hydrobiological, botanical, paleoecological, entomological and ornithological surveys have been carried out in the past 30 years. At the site a meteorological station was set up in recent times, though it's not working yet. The site has a researcher station. The Directorate has bought a telescope to help monitor birds. Hydraulical research is done by ten observer wells that are set up connected to each other and serve groundwater level data automatically.
Biomonitoring: reptiles, amphibians, Camphorosmetum – annuae, Crypsido-Suedetum maritimae associations, Sternbergia colchiciflora and Mus spicilegus.

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.

Kardoskút Museum: renovated in 1997 and wildlife exhibition captions renewed in 2005. Leaflet on the site published in 2002. A visitor centre shall be built 2,5-3 kms far from the site within 2 years in order to implement educational measures. Visitors/researchers can use three observing towers and a path that surrounds the lake. "Day of Lake Fehér" celebrated in 2005.

31. Current recreation and tourism:

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

There are no significant recreational activities on the site or on its surroundings. The birdwatching towers can be used with prior permission.

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.

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.

Körös-Maros National Park Directorate
H-5541 Szarvas, P.O.Box 72., Anna-liget, Hungary
Tel.: +36 66 313 855, Fax: +36 66 311 658
janos.greksza@kmnp.hu

34. Bibliographical references:

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

Zs. Molnár & M. Bíró (1996): Vegetation history of the Kardoskút area (SE Hungary). In: Regional versus local history, ancient versus recent habitats. .- *Tiscia* 30, 15-25.

Juhász P. - Kiss B. - Olajos P. (1997): Faunisztikai kutatások a Körös-Maros Nemzeti Park területén. Kutatási jelentés. pp. 1-43.