

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

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

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

## Notes for compilers:

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

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

Attila Huber, Aggtelek National Park Directorate, H-3758  
Jósvafő, Tengersizem oldal 1.

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Designation date

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Site Reference Number

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

23 May 2006

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### 3. Country:

Hungary

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### 4. Name of the Ramsar site:

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

Baradla Cave System and Related Wetlands

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

This RIS is for (tick one box only):

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

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

#### a) Site boundary and area

The Ramsar site boundary and site area are unchanged:  X

or

If the site boundary has changed:

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

and/or

**If the site area has changed:**

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

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

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

No major change since designation.

**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.

Follows the passages of the known cave system, and on the surface the areas of the connected wetlands and water-related habitats (sinkholes, etc.).

**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.

latitude: min. 48°26'26" max. 48°29'24"

longitude: min. 20°27'56" max: 20°33'28"

**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.

North-East Hungary, Aggtelek-Rudabánya mountains

The nearest large town is Miskolc (with appr. 200 000 inhabitants, situated 70 km far from the Ramsar site)

**10. Elevation:** (in metres: average and/or maximum & minimum) 318.3-484.6 m

**11. Area:** (in hectares) 2075.196 ha

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

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

The 25 km long Domica-Baradla Cave System is a typical and the largest subterranean hydrological system of the karst plateau in the territory of Slovakia and Hungary in transborder position. The site is listed as a representative part of a bilateral UNESCO Biosphere Reserve and the World Cultural and Natural Heritage site. The site is characterised by a permanent subterranean stream, ponds, by rich dripstone features and diverse representatives of subsurface fauna as far as rich archeological findings.

### 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.

|                          |                          |                          |                          |                          |                          |                          |                          |                          |
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### 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).

Justification of Criterion 1.: The Domica-Baradla Cave System is a typical and the largest subterranean hydrological system of the karst plateau in the territory of Slovakia and Hungary.

The site shelters **Wet meadows and humid grasslands** (habitat type of The Annex I of the EU Habitat Directive)

Justification of Criterion 2.: internationally recognized species with a reference for their status (IUCN Red List, EU Habitats or Birds Directive Annexes)

*Animals:*

*Duvalius hungaricus* Annex II, Habitats Directive

*Carabus intricatus* IUCN Red List

*Maculinea teleius* IUCN Red List+ Annex II Habitats Directive

*Sadleriana pannonica* IUCN Red List + Annex II, Habitats Directive

*Eudontomyzom danfordi* IUCN Red List + Annex II, Habitats Directive

*Triturus cristatus cristatus* IUCN Red List

*Bombina bombina* IUCN Red List + Annex II, Habitats Directive

*Hyla arborea* IUCN Red List + Annex IV, Habitats Directive

*Aquila heliaca* IUCN Red List + EU Birds Dir. Annex I

*Circaetus gallicus* EU Birds Dir. Annex I

*Pernis apivorus* EU Birds Dir. Annex I

*Ciconia ciconia* EU Birds Dir. Annex I

*Ciconia nigra* EU Birds Dir. Annex I

*Perdix perdix* EU Birds Dir. Annex I

*Strix uralensis* EU Birds Dir. Annex I

*Dryocopus martius* EU Birds Dir. Annex I

*Dendrocopos medius* EU Birds Dir. Annex I

*Dendrocopos leucotos* EU Birds Dir. Annex I

*Lanius minor* EU Birds Dir. Annex I

*Rhinolophus euryale* IUCN Red list + Annex II Habitats Directive

*Rhinolophus ferrumequinum* IUCN Red List + Annex II, Habit. Dir.

*Rhinolophus hipposideros* IUCN Red list + Annex II Hab. Dir

*Myotis bechsteini* IUCN Red list + Annex II Hab. Dir

*Myotis emarginatus* IUCN Red list + Annex II Hab. Dir

*Myotis dasycneme* IUCN Red list + Annex II Hab. Dir

*Miniopterus schreibersi* IUCN Red List + Annex II Hab. Dir

*Nyctalus leisleri* IUCN Red List + Annex II Hab. Dir

*Sciurus vulgaris* IUCN Red List

*Citellus citellus* IUCN Red list + Annex II, Hab. Dir.

*Glis glis* IUCN Red list

*Muscardinus avellanarius* IUCN Red list + Annex IV. Hab. Dir.

*Lynx lynx* Annex II. Hab. Dir.

*Canis lupus* Annex II. Hab. Dir.

*Felis silvestris* Annex IV. Hab. Dir.

Plants: *Centaurea sadleriana* (IUCN European Red Book)

(see also sections 19 and 20 of the RIS)

Justification of Criterion 3.: The Domica-Baradla Cave System is a habitat for more than 500 species of troglobite, troglophile and troglaxene animals including endemic species as well as species first described from this region.

Justification of Criterion 4: all of the above in criterion 2 listed species regularly breed on the site.

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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): 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.

**Topography:** Low, karstic mountain region with a maximum altitude of 484 m. The area consists of limestones of Wetterstein, Steinhalm and Gutenstein type and some dolomites.

**Climate:** The climate is humid continental with long summers. The Carpathian Mountains have relatively strong climatical influence upon the area. The average annual temperature is rather low (8.2 °C) and the average temperature is only 15.5 °C in the growth season, such value can be measured only at the higher mountains of Hungary. The annual precipitation was between 600-700 mm but it significantly decreased during the last years, with an average of about 400-500 mm. The local microclimates are strongly influenced by the relief.

**Geology and geomorphology:** The Domica-Baradla Cave System is built up mainly of Triassic limestone with some dolomit. The Pelsőc-Aggtelek-Égerszög capture line goes here, which is the border of the covered and uncovered karstic area. The sinkholes of the cave system can be found along this capture line. The area is showing all the typical features of karstic region of medium height, such as small valleys, perennial- and large-discharge springs, brooks, scarcely forested or barren rocky mountain-sides and large dry dolines.

**Soils:** The variety of soil types reflects the heterogeneous geological composition of the region. Limestone, dolomites and their scree at the base of slopes are covered by the product of long-term weathering and residual soils (terra rossa). Brown rendzinas, common rendzinas and luvisols occur on the lower slopes of valleys, where gravels or clayey materials have accumulated through the weathering of limestones. Cambisols and rendzinas are characteristic of plateau sites with fewer fine karstic forms and with thicker weathering deposits, often continuously covered by oak-hornbeam forest. In the basins, brown soils are found on the margins, and hydromorphic floodplain and floodplain gley soils in the floodplains.

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## 17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type). The site contains the Hungarian part of the Baradla-Domica cave system and its superficial catchment area. Geologically, it forms part of the Aggtelek – Rudabányai Hills. Despite its small size, it is a geologically rather complex system, with various types of sedimental rocks in different strata, with folded layers and tectonic faults. The site is made up mainly of Triassic hill ranges and surrounding as well as intersecting basins filled with Pannonic formations.

Two distinct landscape types can be found in the catchment area. In the north, the uncovered karst holds stony, rocky hillsides with mostly natural wooded vegetation, while in the south the karst is covered with gravel, and the acid soil thus formed holds secondary heather and acidophilous oak woodlands, as well as arable lands cultivated for centuries.

The primary forests of the karst were felled for Turkey oak bark, charcoal and lime burning. In the lower altitudes, arable lands and pastures were formed in the place of former forests. The remaining silviculture aimed at profit-making rather than maintaining near-natural conditions, so the native tree species were in many places supplanted by coniferous trees. Due to wrong forestry practices, exposed southern slopes were heavily eroded, and wooded vegetation still could not evolve. The emerging limestone karr can be seen near Aggtelek.

Dolines and sinkholes are organic parts of the Baradla cave system. Some of them, such as Zombor-lyuk, Kis- and Nagy-ravasz-lyuk are partly surrounded by woodlands, interrupting the monotonousness of arable lands.

Heather has developed and sustained as a result of animal grazing. Species-rich meadows in humid valleys have been maintained by mowing for haymaking.

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## 18. Hydrological values:

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

Groundwaters and surface waters of the Domica-Baradla Cave System

### 1. Groundwaters

#### 1.1. Karstic water

As the the Domica-Baradla Cave System is in a karstic region, the major part of the groundwater is stored in the tectonic fissures, fractures and dissolutional cavities of the karstified Triassic limestones and dolomites. The recharge derives from the rainfall infiltrating through the surface, and from meteoric waters flowing into the karst system through sinkholes.

#### 1.2. Confined groundwater

In the Domica-Baradla Cave System area confined groundwater occurs only south from Aggtelek, in the 50-100 m thick Pannonian clayey-sandy-pebbly sediments. This sequence is considered more or less impervious because of its clay content, therefore only 5% of the rainfall can infiltrate. A part of the infiltrating water feeds the karst beneath, another part flows laterally towards the springs on the south. Some local springs discharge on the surface of the clayey pebble horizons.

#### 1.3. Unconfined groundwater

Unconfined groundwater occurs only in the valleys of major streams, and in the fluvial pebbly sediments of basins.

### 2. Springs

Springs can be best characterised by discharge, which is determined by the geological-morphological build-up of the catchment area, and basically by climatic conditions (rainfall, evaporation, melting). Depending on these conditions, the discharge of a spring may vary between a few l/min and a few thousand l/min. In this area the Jósza spring has the biggest discharge with a minimum of 3900 l/min and a maximum of 450.000 l/min (and 1.200.000 l/min in 1959). In some springs lunisolar effects were demonstrated.

### 3. Surface waters

The area is part of the catchment area of the Sajó river, which flows into the Tisza.

#### 4. Still waters

The surface of the Domica-Baradla Cave System is poor in still waters, the territory of them is small. The most well-known is the pond Vörös-tó, which has formed at the end of the 19<sup>th</sup> century in the area of a dolina, which got plugged by clayey sediments were eroded from the adjacent slope, after the demolishment of the vineyards. An other important example is the pond Aggteleki-tó, which formed by filling up of the sinkhole of the "Törökmeccset" side-passage.

Some artificial ponds are also known near Aggtelek (which play role in the flood prevention of the Baradla cave) and in the Baradla cave (rowing pond).

### 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.

Zk(b) is dominant, the other types occur in the surface in the following order of decreasing importance:

M, N, W, U, Ts, Tp

### 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.

**Habitats** according to the whole territory of Aggtelek National Park:

- caves
- stream, springs
- steppes, dry calcareous grasslands ad rocky grasslands,
- thermophilous forest fringes,
- humid grasslands and wet meadows,
- dry heathland,
- Juniper downs,
- tall herb communities,
- thickets,
- extrazonal beech forest,
- hornbeam and oak forest,
- thermophilous oak forest,
- scrub forest with pubescent oak,
- ravine forest,
- rockforest,
- riparian communities with willow.

### **Caves:**

*Important/Vulnerable species:*

Niphargus aggtelekiensis, Mesoniscus graniger, Duvalius hungaricus, Eukoenenia austriaca vagvoelgyii, Allolobophora mozsaryorum, Rhinolophus euryale, Rhinolophus ferrumequinum, Rhinolophus hipposideros, Plecotus austriacus, Plecotus auritus, Myotis nattereri, Myotis bechsteini, Myotis emarginatus, Myotis mystacinus, Myotis daubentoni, Myotis dasycneme, Eptesicus serotinum, Nyctalus leisleri.

### **Springs and riparian forest with willow:**

*Important/Vulnerable species:*

Dryopteris carthusiana, Equisetum hyemale  
Drusus trifidus, Sadleriana pannonica, Eudontomyson danfordii, Salamandra salamandra, Cinclus cinclus, Motacilla cinerea, Neomys fodiens, Neomys anomalus.

### **Bazophil marshfield (*Carici flavae - Eriophoretum*)**

*Important/Vulnerable species:*

Carex flava, Carex lepidocarpa, Dactylorhiza incarnata, Eriophorum latifolium.

### **Wet meadows (*Cirsio cani - Festucetum pratensis, Junco-Molinietum*)**

*Important/Vulnerable species:*

Betula pubescens, Dactylorhiza majalis, Gentiana pneumonanthe, Iris sibirica, Salix aurita  
Maculinea teleius, Phragmatiphila nexa, Lycaena hippothoe.

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## **21. Noteworthy flora:**

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

### **Endangered or threatened "red Book" plant species:**

*Centaurea sadleriana* (IUCN European Red Book)

### **Endangered or threatened species identified at the national level:**

*Adenophora liliifolia* (Hungarian RB - actually endangered species)

\**Dactylorhiza majalis* (Hungarian RB - actually endangered species)

\**Epipactis palustris* (Hungarian RB - actually endangered species)

### **Other important plant species protected at national level:**

\**Betula pubescens*

\**Eriophorum latifolium*

*Carex brevicollis*

*Daphne mezereum*

*Dentaria glandulosa*

*Jurinea mollis*.ssp. *macrocalathia*

*Neottia nidus-avis*

*Phlomis tuberosa*

*Phyllitis scolopendrium*

\* vulnerable species of different wetlands

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## **22. Noteworthy fauna:**

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

The extended underground world of the Aggtelek and Slovak Karst including the Domica-Baradla Cave System, provides a habitat for more than 500 species of troglobite, troglophile and troglaxene animals including endemic species as well as species first described from this region.

The biospeleological research in the Baradla Cave started as early as the middle of last century. In 1932 Endre Dudich described already 262 species from the cave, which number was unique in Europe that time. In 1970 435 species were described including *Protozoa*, *Nematoda*, *Rotatoria*, *Annelida*, *Crustacea*, *Diplura*, *Coleoptera*, *Diptera*, *Palpigradi*, *Araneidea*, *Acaridea*, *Mollusca* and *Mammalia*. Among species first described from this region, ***Duvalius hungaricus*** (*Coleoptera*) is an endemic troglobite species living exclusively in the caves of Aggtelek and Slovak Karst; for ***Allolobophora mozsaryorum*** (*Annelida*) Baradla Short Lower Cave is the only known habitat; while ***Mesoniscus graniger*** (*Isopoda*) and ***Niphargus aggtelekiensis*** (*Amphipoda*) are prominent by their large populations and ecological significance.

**Cave-dwelling endemisms:**

*Niphargus aggtelekiensis*

*Mesoniscus graniger*

*Duvalius hungaricus* (Hungarian RB - actually endangered species)

*Enkoenenia austriaca vagvoelgyii*

*Allolobophora mozsaryorum*

**Endangered, threatened or protected animal species on the surface** (only species included in the Hungarian Red Book or in the IUCN Red List):

**Orthoptera**

*Tettigonia caudata* (Hungarian RB - actually endangered species)

**Coleoptera**

*Carabus intricatus* (IUCN Red List)

*Lucanus cervus* (Hungarian RB - actually endangered species)

*Potosia aeruginosa* (Hungarian RB - actually endangered species)

*Trichoferus pallidus* (Hungarian RB - critically endangered species)

**Trichoptera**

\**Drusus trifidus* (Hungarian RB - actually endangered species)

**\*Lepidoptera**

\**Maculinea teleius* (IUCN Red List, Hungarian RB - potentially endangered species)

*Brenthis ino* (Hungarian RB - potentially endangered species)

*Argyronome laodice* (Hungarian RB - potentially endangered species)

*Pandoriana pandora* (Hungarian RB - potentially endangered species)

*Neptis sappho* (Hungarian RB - potentially endangered species)

*Limenitis populi* (Hungarian RB - actually endangered species)

*Apatura iris* (Hungarian RB - actually endangered species)

*Apatura ilia* (Hungarian RB - potentially endangered species)

*Charissa (Gnophos) pullata* (Hungarian RB - actually endangered species)

*Oria musculosa* (Hungarian RB - critically endangered species)

*Phragmatiphila nexa* (Hungarian RB - actually endangered species)

*Chersotis fimbriola baloghi* (Hungarian RB - potentially endangered species)

*Euxoa distinguenda* (Hungarian RB - actually endangered species)

**Gastropoda**

\**Sadleriana panonica* (IUCN Red List, Hungarian RB - actually endangered species)

**Cyclostomata**

\**Eudontomyzon danfordi* (IUCN Red List)

**Amphibia**

*Triturus cristatus* (IUCN Red List)

*Bombina bombina* (IUCN Red List 1996)

\**Hyla arborea* (IUCN Red List)

**Reptilia**

*Ablepharus kitaibelii* (Hungarian RB - critically endangered species)

**Aves**

*Aquila heliaca* (IUCN Red List, Hungarian RB - critically endangered species)

*Circus gallicus* (Hungarian RB - critically endangered species)

*Pernis apivorus* (Hungarian RB - actually endangered species)

\**Ciconia ciconia* (Hungarian RB - actually endangered species)

\**Ciconia nigra* (Hungarian RB - critically endangered species)

*Tetrastes bonasia* (Hungarian RB - critically endangered species)

*Perdix perdix* (Hungarian RB - actually endangered species)

*Coturnix coturnix* (Hungarian RB - actually endangered species)

*Otus scops* (Hungarian RB - actually endangered species)

*Strix uralensis* (Hungarian RB - actually endangered species)

*Dryocopus martius* (Hungarian RB - actually endangered species)

*Dendrocopos medius* (Hungarian RB - actually endangered species)

*Dendrocopos leucotos* (Hungarian RB - actually endangered species)

*Corvus corax* (Hungarian RB - actually endangered species)

\**Cinclus cinclus* (Hungarian RB - critically endangered species)

*Parus cristatus* (Hungarian RB - actually endangered species)

*Monticola saxatilis* (Hungarian RB - actually endangered species)

*Lanius minor* (Hungarian RB - actually endangered species)

*Emberiza cia* (Hungarian RB - actually endangered species)

### Mammalia

*Rhinolophus euryale* (IUCN Red list Hungarian RB - actually endangered species)

*Rhinolophus ferrumequinum* (IUCN Red List)

*Rhinolophus hipposideros* (IUCN Red List)

*Myotis bechsteini* (IUCN Red List, Hungarian RB - critically endangered species)

*Myotis emarginatus* (IUCN Red List, Hungarian RB - critically endangered species)

\**Myotis dasycneme* (IUCN Red List)

*Miniopterus schreibersi* (IUCN Red List)

*Nyctalus leisleri* (IUCN Red List, Hungarian RB - actually endangered species)

*Sciurus vulgaris* (IUCN Red List)

*Citellus citellus* (IUCN Red List) (in IUCN Red list(1996) as *Spermophilus citellus*)

*Glis glis* (IUCN Red List, Hungarian RB - actually endangered species)

*Muscardinus avellanarius* (IUCN Red List, Hungarian RB - actually endangered species)

*Felis silvestris* (Hungarian RB - actually endangered species)

*Lynx lynx* (Hungarian RB – extinct species)

*Canis lupus* (Hungarian RB – extinct species)

\* vulnerable species of different types of wetlands

## 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:

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, but national importance. Archaeological excavations revealed the presence of prehistoric man in the Baradla Cave in 1876. The most important archaeological sites are the Baradla-Domica Cave System with its settlements of Bükk culture both inside and in front of the cave entrance, and with its charcoal drawings unique in Central Europe.

The importance of the karstic springs was recognised by local people as early as in the Middle Ages. The energy of the springs has ever been utilised from ore crushing to milling grains. Even electricity was generated in the first half of the 20<sup>th</sup> century by the water of the Jósva spring thus creating public lighting in Jósvalő and later in the Baradla Cave.

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

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

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**24. Land tenure/ownership:**

(a) within the Ramsar site:

State owned: 69 %

Municipality: 17 %

Private: 6 %

Other: 8 %

(b) in the surrounding area:

State owned: 84,4 %

Cooperative: 0,2 %

Municipality: 2,9 %

Private: 12,2 %

Other: 0,2 %

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

(a) within the Ramsar site:

60% is forest,  
20% is grassland  
20% is cropland and abandoned,

(b) in the surroundings/catchment:

70% is forest,  
25% is grassland,  
5% is cropland.

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

a) within the Ramsar site:

Past:

- forestry
- chemicals used by agriculture
- waste-water and domestic waste

Present:

- forestry time and spatial restriction according to the management plan
- waste-water and domestic waste (decreasing)

b) in the surrounding area:

- chemicals used by agriculture
- animal husbandry
- waste-water and domestic waste
- forestry
- chemicals used by agriculture
- animal husbandry (decreasing)
- waste-water and domestic waste
- forestry time and spatial restriction
- chemicals used by agriculture (decreasing)
- animal husbandry (decreasing)
- domestic waste

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**27. Conservation measures taken:**

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

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

The Hungarian section of the Domica-Baradla Cave System is a part of the Aggtelek Karst. The territory of the Aggtelek Karst has been protected as landscape protection area since 1978. It was declared as a Biosphere Reserve in the frame of "Man and Biosphere" program of UNESCO in 1979 as well as the Slovak Karst Landscape Protection Area. The Aggtelek National Park (IUCN category II.) was established in 1985 as the continuation of the landscape protection area. The caves of Aggtelek and Slovak Karst have been included in the World Heritage List since 1996.

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

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

c) Does an officially approved management plan exist; and is it being implemented?: Management plan exists (from 01. 01. 1997.) but no longer meets the requirements of more recent national legislation (needs to be updated and passed again).

d) Describe any other current management practices: A major (3 million Euros) project took place in recent years to develop the Lake Vörös entrance of Baradla Cave for tourism.

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

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

New management plan that meets current legislative requirements is in preparation.

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

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

The **Complex Ecological State Assessment** of the Aggtelek National Park and Biosphere Reserve started in 1992 as well as in the other national parks in Hungary in the frame of a long term, nation-wide programme. This programme was based on former investigations and has used unified methods and generally the same taxa have been studied.

This programme has four aims:

- At first the main aim is to assess the present state of the national park and biosphere reserve according to the most important habitats and species.
- The second is that the result of the CESA would be the basis for updating the **zonation** of the national park - according to the actual situation and possibilities and the basis for the suitable **management plan** for the different zones.
- The third aim is that this complex research project would be the first step of a **long term biodiversity monitoring** and also an attempt of a nation-wide **biomonitoring** which will be applied not only for survey of protected areas.

- The results of the complex ecological assessment and the monitoring system give the scientific background of the **active nature management** and the **restrictions** of any human activity inside the NP.

**Abiotic research:**

Completed:

- geological mapping,
- complex assessment of strictly protected caves, springs and sinkholes.

Ongoing: geomorphology, meteorology, complex assessment of other protected caves.

**Biotic research:** (Complex Ecological Assessment)

**The target animal groups of the CESA in ANP  
1992-93-94**

| Type                                                       | The method of sampling                                                                                                                                                                              |
|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Ornithological and mammological survey:</b>             |                                                                                                                                                                                                     |
| Dinamics of different bird population:                     | - spot mapping - Passeriformes: 3x10 ha<br>- spot mapping - birds of prey: 20 000 ha<br>- line mapping: 4 line<br>- species research: Hazelhen, Corncrake, Barn owl, White stork, Red-backed shrike |
| Survey of small mammals                                    | - live traps                                                                                                                                                                                        |
| Data of bird migration                                     | - ringing                                                                                                                                                                                           |
|                                                            |                                                                                                                                                                                                     |
| <b>*Herpetological survey:</b>                             | - observation                                                                                                                                                                                       |
|                                                            |                                                                                                                                                                                                     |
| <b>Orthoptero-faunistical survey:</b>                      | - dish trapping                                                                                                                                                                                     |
|                                                            |                                                                                                                                                                                                     |
| <b>Lepidoptera survey:</b>                                 | - collection by singling<br>- light trap<br>*- observation (for protected species)                                                                                                                  |
| <b>*Micro-lepidoptera survey:</b>                          | - singling<br>- light trap                                                                                                                                                                          |
|                                                            |                                                                                                                                                                                                     |
| <b>*Trichoptera, Plecoptera and Ephemeroptera surveys:</b> | - collection by singling<br>- light trap                                                                                                                                                            |
|                                                            |                                                                                                                                                                                                     |
| <b>*Odonata survey:</b>                                    | - singling<br>- identification of the exuvia                                                                                                                                                        |
|                                                            |                                                                                                                                                                                                     |
| <b>*Araneae survey</b>                                     | - trap                                                                                                                                                                                              |
|                                                            |                                                                                                                                                                                                     |
| <b>Comparing survey of Carabidae populations:</b>          | - pitfall traps                                                                                                                                                                                     |
|                                                            |                                                                                                                                                                                                     |
| <b>Survey of Diptera:</b>                                  | - Malaise traps<br>- singling                                                                                                                                                                       |
|                                                            |                                                                                                                                                                                                     |
| <b>Estimating deer population:</b>                         | - observation - method of Langvatn                                                                                                                                                                  |

**CESA for the vegetation in the ANP  
1992-94**

| Type                                                                   | The method of sampling                                                                               |
|------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>1992-93</b>                                                         |                                                                                                      |
| <b>Botanical survey:</b><br>setting up a flora list of vascular plants | - based on the Herbaria of Hungarian Nature History Museum<br>- based on literature<br>- observation |
| coenological survey                                                    | - coenological relevé - 16 spots                                                                     |
| <b>Survey of the changing of vegetation and land-use:</b>              | - analysis of air photo series (1952, 1971, 1988)                                                    |

|                                                                        |                                                                                                                                                                           |
|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1994</b>                                                            |                                                                                                                                                                           |
| <b>Botanical survey:</b><br>setting up a flora list of vascular plants | - observation                                                                                                                                                             |
| survey of the Cryptogamic flora<br>(Lichens and Mosses)                | - based on the Herbaria of Hungarian Natural History Museum and the Esterhazy Teachers Training College in Eger<br>- based on literature<br>- observation<br>- collection |
| coenological survey                                                    | - coenological relevé - 40 spots                                                                                                                                          |
| investigation of the ecological demands of <i>Onosma tornense</i>      | - 3 study spots: 10x10 m divided into 50x50 cm microquadrat                                                                                                               |
| survey for estimation the damage done by game on isolated sample areas | - 6 quadrats (10 x 10 m) with 6 control area                                                                                                                              |

### 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.

#### Environmental education and public awareness:

- The National Park organises different **summer-camps** for pupils and students: "explore the nature"-camps, work camps (bird-ringing camp, habitat-restoration camp, research camp).
- The National Park organises **fieldtrips** for students of secondary schools, universities and postgraduate students.
- The specialised staff of the National Park usually hold **lectures with slide and video** on the nature and cultural heritage of the region for tourist-groups, students and local people.

#### Training programmes for specialists:

- The Aggtelek National Park **helps the teachers' work** in local nursery, primary and secondary schools and organises different programmes and competitions for local children.
- The National Park with the help of other governmental and non-governmental organisations organises **conferences** and **training programmes** on nature conservation, management and education.
- The National Park organises **fieldtrips** for students and postgraduate students.

#### Facilities for education and visitors' centers:

- Exhibition: Natural assets of Aggtelek National Park,
- Village Museum at Jósvalfő,
- 2 study trails.

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### 31. Current recreation and tourism:

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

Annually more than 200.000 (national: 90%, foreign: 10%) tourists visit mainly the Baradla showcave.

*Type of touristic activities:* cavetours, tracking on tourist paths and study trails, hunting.

*Facilities for tourist:* hotels, tourist hostels, campsites, private rooms, restaurants, tourists paths, study trails.

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### 32. Jurisdiction:

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

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

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### 33. Management authority:

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

Aggtelek National Park Directorate, H-3758 Jósvalfő, Tengerszem oldal 1. - HUNGARY

[Info.anp@axelero.hu](mailto:Info.anp@axelero.hu)

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### 34. Bibliographical references:

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

The following studies were published in 1997, the book entitled: Research in Aggtelek National Park and Biosphere Reserve (Proceedings of "Research, Conservation, Management" conference, Vol. II.), edited by E. Tóth - R. Horváth, published by the Aggtelek National Park Directorate.

#### Speleological and Geological Research in the territory of Aggtelek National Park

Lerner, J. - Kövesdi, J.: Management Plans for the World Heritage sites - Application of the IUCN Guidelines for the Cave and Karst Protection.

Szunyogh, G.: A Review and Evaluation of the Speleological Treasures of the Béke Cave with the Intention to Target a Complex Scientific Analysis.

Szunyogh, G. : The Mending of Man Made Destruction in the Béke Cave and Ways of the Restoration of the Original Condition.

Sásdi, L.: Karst drainage systems established by water tracing methods in Aggtelek N. P.

Szabylár, P.: The Role of Karstic Springs in the Development of Industries in Jósvalfő.

Dr. Dénes, Gy.: The source of the Jósva Stream and the name of the town of Jósvalfő.

Less, Gy.: The evolution of the geological structure of the Aggtelek-Rudabánya Mts.

Knauerné Gellai, M. - Baross G.: Geological bearings of the study-paths of the Aggtelek N.P.

Knauer, J.: Relation between morphology and rock-outcropping on some plateaus near Jósvalfő.

#### Results of CESA in ANP

Horváth, R. - Tóth, E.: Biodiversity Research in Aggtelek National Park and Biosphere Reserve

Varga, Z.: Biogeographical outline of the fauna of Aggtelek Karst and surrounding areas

Rácz, I. - Parragh, D. - Mező, H.: Studies on Orthoptera fauna of Aggtelek Karst

Szabó, S. - Varga, Z.: Changes in species composition and abundance of Lepidoptera in the Aggtelek Karst

Papp B. - Rajczy M.: Bioindication of habitat conditions with Bryophytes at some streams in Aggtelek National Park and Balaton-felvidék region, Hungary

Boldogh, S. - Gombkötő, P.: Monitoring and Conservation of House-dwelling Bat Colonies in Administrative Area of Aggtelek National Park

Horváth, R.. Investigation of bird communities using spotmapping in the territory of Aggtelek National Park

Horváth, R. - Farkas, R. - Kovács, K.: Red-backed shrike scientific research in Aggtelek National Park

Kovács, B.: Fish-faunistical data from the river Bódva in the area of the ANP

Hoitsy, Gy.: Fish-fauna of the waters in the Aggtelek National Park  
Dudás, Gy.: The spiderfauna of National Park at Aggtelek  
Orci Kirill, M.: A comparative study on grasshopper (Orthoptera) communities in the Aggtelek Biosphere Reserve  
Dósa, G.: *Inula ensifolia* (Asteraceae) as food plant preferred by daily butterflies (Lepidoptera: Rhopalocera)  
Deli, T.: Malacofaunistic researches in the National Park of Aggtelek  
Gyarmati, A. - Marschall, Z.: Bryoflora of ANP  
V. Sipos, J. - Varga, Z.: Phytocenology of semi-dry grasslands (Cirsio-Brachypodium) in the Aggtelek Karst  
Vasas, G. - Locsmandi, Cs.: The macroscopic fungi (Basidiomycetes) of the Aggtelek Karst

The following studies were published in 2003, the book entitled: Researches in Aggtelek National Park and Biosphere Reserve, edited by S. Boldogh, published by the Aggtelek National Park Directorate.

B. SZÚTS, F.: Ecological investigation and point-mapping of the distribution of *Onosma tornense* Jáv.  
SCHMOTZER, A.: Preliminary results of the long-term monitoring of grassland management systems.  
MOLNÁR, T. - MAGURA, T.: Study of the carabid fauna of the Aggtelek National Park.  
RÁCZ, I. A. - NAGY, A. - ORCI, K. M.: Orthoptera assemblages in different habitats of the Aggtelek Karst (North-East Hungary).  
BOLDOGH, S. - SZENTGYÖRGYI, P.: Research on Corncrake (*Crex crex* L. 1758) in the administrative area of Aggtelek National Park between 1997 and 2002.  
FARKAS, R. - BOLDOGH, S. - SZENTGYÖRGYI, P. - BARTHA, CS.: Research on Bee-eater (*Merops apiaster* L. 1758) population and its conservation in North Hungary.  
NAGY, D.: Research on historical land use in the Gömör-Torna Karst I. Reconstruction of former landscapes in the Aggtelek National Park on the basis of military surveys I-III.

Beyond these articles this book contains the list of all diploma works and reports on researches took place in the administrative area of ANP between 1996 and 2003.

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Please return to: **Ramsar Convention Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**  
Telephone: +41 22 999 0170 • Fax: +41 22 999 0169 • e-mail: [ramsar@ramsar.org](mailto:ramsar@ramsar.org)