Ukraine

Romania-Friendship Cave

Designation date: 20 March 2019
Site number: 2396
Coordinates: 48°15'21"N 23°37'56"E
Area: 0.13 ha

https://rsis.ramsar.org/ris/2396
Created by RSIS V.1.6 on - 9 September 2019
1 - Summary

The Friendship (Romania) Cave is a unique underground formation with fluctuating water regime, and it is the biggest cave in Ukrainian Carpathians. The wetland is a locality for a number of troglobite endemic invertebrate species, some of which became known only from this cave system, and hosts 14 globally important bat species in particular during their hibernation period. The wetland is significant for flood mitigation and is crucial in this aspect for the villages located down in the valley of Tereblia River, because it accumulates a great amount of precipitation and water coming from snow melting. The cave’s formation is associated with a giant limestone block of several cubic km – a specific feature of the tectonic Pieniny Klippen Belt, which passes through the southern part of the Uholka massif. The entrance to the cave is located at the bottom of an elliptic karst depression (10 x 15 m) with almost vertical walls. The shaft is of a gap type. At the depth of 30 m, there is a stream which surfaces as a karst source. The total length of the investigated corridors is 980 m, depth – 55 m. The Site is part of a core and buffer zones within the Carpathian Biosphere Reserve and located within the UNESCO World Natural Heritage Site "Ancient and Primeval Beech Forests of the Carpathians and Other Regions of Europe" (2017).
2 - Data & location

2.1 - Formal data

2.1.1 - Name and address of the compiler of this RIS

Compiler 1

Name: Bohdan Prots
Institution/agency: State Museum of Natural History National Academy of Sciences of Ukraine and WWF Danube Carpathian Programme
Postal address: Teatralna Str., 18, 79008, Lviv, Ukraine and Mushaka Str., 42, 79011 Lviv, Ukraine
E-mail: bohdan.prots@gmail.com
Phone: +38 0673533813
Fax: +38 0322356917

Compiler 2

Name: Vasyl Pokynchereda
Institution/agency: Carpathian Biosphere Reserve
Postal address: Krasne Pleso Str., 77, Rachiv, Zakarpatska Oblast, Ukraine, 90600
E-mail: pokynchereda@ukr.net
Phone: +38 0673 100158
Fax: +38 03132 22632

2.1.2 - Period of collection of data and information used to compile the RIS

From year: 2011
To year: 2018

2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish): Romania-Friendship Cave
Unofficial name (optional): Печера Румунія-Дружба (Pechera Romania-Druzhba)

2.2 - Site location

2.2.1 - Defining the Site boundaries

b) Digital map/image
<2 file(s) uploaded>

Former maps: 0

Boundaries description:
The Site situated in Tiachiv district, Zakarpatska Oblast (approximately 120 km south-eastwards of Uzhgorod, 40 km north of Tiachiv and 4 km east of closest Kycherely village). The cave is located within the Rika-Apsha dissected rocky low mountains made of flysch molasses containing giant limestone blocks-olistoliths. Area of the Site – 0.1375 ha, volume – 5500 m³, total length of corridors – 900 m. The entire cave system, as well as the surface above the cave, are part of the Ramsar Site.
The Site territory is a part of a core zone within the Carpathian Biosphere Reserve.

2.2.2 - General location

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

b) What is the nearest town or population centre?
Tiachiv town

2.2.3 - For wetlands on national boundaries only

a) Does the wetland extend onto the territory of one or more other countries? Yes ☐ No ☑
b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party?
Yes ☐ No ☐

2.2.4 - Area of the Site

Official area, in hectares (ha): 0.13

Area, in hectares (ha) as calculated from GIS boundaries: 0.13

2.2.5 - Biogeography

<table>
<thead>
<tr>
<th>Biogeographic regions</th>
<th>Biogeographic region</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU biogeographic regionalization</td>
<td>Alpine</td>
</tr>
</tbody>
</table>

Other biogeographic regionalisation scheme:

European-Siberian boreal sub-region, European-West Siberian forest province, Central European zone, Carpathian district, Montane-forest area.
3 - Why is the Site important?

3.1 - Ramsar Criteria and their justification

<table>
<thead>
<tr>
<th>Criterion 1: Representative, rare or unique natural or near-natural wetland types</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hydrological services provided</strong></td>
</tr>
<tr>
<td><strong>Other ecosystem services provided</strong></td>
</tr>
<tr>
<td><strong>Other reasons</strong></td>
</tr>
</tbody>
</table>

| Criterion 2: Rare species and threatened ecological communities |

| Criterion 3: Biological diversity |

| Justification | The site is an important hibernation place for 12 bat species, which are important for maintaining the biotic diversity within the region. The wetland is a typical locality for a number of troglobite endemic invertebrate species, which have been described within the last decades: Willemia wirae Kaprus, 1997, Arrhopalites carpathicus Vargovich, 1999 (Collembola), Duvalius transearpathicus Shilenkov and Rizun, 1989, Duvalius werchratskii Rizun and Janicki, 1994 (Carabidae). |

| 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

| Not identified |

3.3 - Animal species whose presence relates to the international importance of the site
The site is an important hibernation place for a number bat species, which are important for maintaining the biotic diversity within the region. The wetland is a typical locality for a number of troglobite endemic invertebrate species, which have been described within the last decades: Willemia wirae Kaprus', 1997, Arrhopalites carpathicus Vargovich, 1999 (Collembola), Duvalius transcarpathicus Shilenkov and Rizun, 1989, Duvalius werchratskii Rizun and Janicki, 1994 (Carabidae). There is a high probability to still find cave invertebrate species new for science here. The wetland shelters 14 Chiropteran species for hibernation. Thanks to the stable temperature situation and a high humidity about 1000-1700 bats hibernate there annually.

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

<table>
<thead>
<tr>
<th>Name of ecological community</th>
<th>Community qualifies under Criterion 2?</th>
<th>Description</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terrestrial underground caves, cave systems, passages and waterbodies</td>
<td></td>
<td>Natural caves, cave systems, underground waters and subterranean intersficial spaces.</td>
<td>EUNIS habitat type (code H1), Bern Convention, Resolution 4 habitat type, used for designation of Emerald sites</td>
</tr>
</tbody>
</table>
4 - What is the Site like? (Ecological character description)

4.1 - Ecological character

It is a corrosion-erosion karst cave with an entrance gap. The cave starts with a vertical shaft of 21 m deep, which leads to a chamber 20x15 m with a cone-shaped boulder heap on the floor. From the entrance chamber, there starts a network of corridors going northwards, south-eastwards and westwards. There are 6 streams within the cave, two of which are going across the main chamber and flow together. The others enter in turn the basic watercourse, which flows along the main gallery and gushes as a stream out of the cave, located 70 m lower than the main entrance. Air temperature in the remote places is 8-9°C, water temperature is lower by 1-1.5°C; humidity 98-100%.

The catchment area is represented by slopes between 15 and 30 degrees, and in some places up to 40 degrees, which are dissected by river valleys. The massif is mostly made of marls and sandstones, and also of Jurassic limestone and Cretaceous conglomerates. Brown montane-forest soils dominate here.

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

<table>
<thead>
<tr>
<th>Wetland types (code and name)</th>
<th>Local name</th>
<th>Ranking of extent (1: greatest - 4: least)</th>
<th>Area (ha) of wetland type</th>
<th>Justification of Criterion 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh, saline, brackish or alkaline water &gt; Subterranean &gt;&gt; Zk(b): Karst and other subterranean hydrological systems</td>
<td>1</td>
<td>0.13</td>
<td>Unique</td>
<td></td>
</tr>
</tbody>
</table>

| (ECD) Habitat connectivity | Isolated type of habitat, refugium, unique type |

4.3 - Biological components

4.3.1 - Plant species

<no data available>

4.3.2 - Animal species

<no data available>

4.4 - Physical components

4.4.1 - Climate

<table>
<thead>
<tr>
<th>Climatic region</th>
<th>Subregion</th>
</tr>
</thead>
<tbody>
<tr>
<td>D: Moist Mid-Latitude climate with cold winters</td>
<td>Dfb: Humid continental (Humid with severe winter, no dry season, warm summer)</td>
</tr>
</tbody>
</table>

The climate of the site is temperate, mean annual air temperature is +7°C, mean temperature in July is +17 °C, and in January -4 °C. Mean annual precipitation equals 948 mm, of which 622 mm occurs during the growing season. The air humidity is high.

4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres) 563
b) Maximum elevation above sea level (in metres) 563

- Entire river basin
- Upper part of river basin
- Middle part of river basin
- Lower part of river basin
- More than one river basin
- Not in river basin
- Coastal

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.
Mala Uholka river basin, which is a part of Tereblia river basin and part of upper Tysa (Tisza) river basin, which is included into Danube basin.

4.4.3 - Soil

<table>
<thead>
<tr>
<th>Soil Type</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral</td>
<td>☑</td>
<td></td>
</tr>
<tr>
<td>Organic</td>
<td>☑</td>
<td></td>
</tr>
</tbody>
</table>

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

Please provide further information on the soil (optional)

Brown montane-forest soils dominate here.

4.4.4 - Water regime

Water permanence

<table>
<thead>
<tr>
<th>Presence?</th>
<th>Usually permanent water present</th>
<th>No change</th>
</tr>
</thead>
</table>

Source of water that maintains character of the site

<table>
<thead>
<tr>
<th>Presence?</th>
<th>Predominant water source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water inputs from rainfall</td>
<td>No change</td>
</tr>
<tr>
<td>Water inputs from surface water</td>
<td>No change</td>
</tr>
<tr>
<td>Water inputs from groundwater</td>
<td>No change</td>
</tr>
</tbody>
</table>

Water destination

<table>
<thead>
<tr>
<th>Presence?</th>
<th>Feeds groundwater</th>
<th>No change</th>
</tr>
</thead>
</table>

Stability of water regime

<table>
<thead>
<tr>
<th>Presence?</th>
<th>Water levels largely stable</th>
<th>No change</th>
</tr>
</thead>
</table>

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

The wetland is significant for flood mitigation and is crucial in this aspect for the villages located down in the valley, because it accumulates a great amount of precipitation and water formed by snow melting.

Connectivity of surface waters and of groundwater

| Connectivity of surface waters and of groundwater | The cave water is linked to surface water and create one hydrological system |

Stratification and mixing regime

| Stratification and mixing regime | No data |

4.4.5 - Sediment regime

Significant erosion of sediments occurs on the site [ ]
Significant accretion or deposition of sediments occurs on the site [ ]
Significant transportation of sediments occurs on or through the site [ ]
Sediment regime is highly variable, either seasonally or inter-annually [ ]
Sediment regime unknown [ ]

<table>
<thead>
<tr>
<th>Sediment regime</th>
<th>Water turbidity and colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>High cleaness of water, high quality level.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sediment regime</th>
<th>Water temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1.5°C</td>
<td></td>
</tr>
</tbody>
</table>

4.4.6 - Water pH

<table>
<thead>
<tr>
<th>pH range</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid (pH&lt;5.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circumneutral (pH: 5.5-7.4)</td>
<td>☑</td>
<td></td>
</tr>
<tr>
<td>Alkaline (pH&gt;7.4)</td>
<td>☑</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please provide further information on pH (optional):

The water pH is changeble. In the dominant period of time the water pH is alkaline (7.5-8.1), however in the lengthy rainy periods it become Circumneutral (7.2-7.4).

4.4.7 - Water salinity

What is the Site like?, S4 - Page 2
4.4.8 - Dissolved or suspended nutrients in water

- Fresh (<0.5 g/l)
- Mixohaline (brackish)/Mixosaline (0.5-30 g/l)
- Euhaline/Eusaline (30-40 g/l)
- Hyperhaline/Hypersaline (>40 g/l)
- 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 site itself:

- Surrounding area has greater urbanisation or development
- Surrounding area has higher human population density
- Surrounding area has more intensive agricultural use
- Surrounding area has significantly different land cover or habitat types

Please describe other ways in which the surrounding area is different:

The site is located within the Uholka field division of the Carpathian Biosphere Reserve within the Core (70%) and Buffer zones (30%). 95% of the surface above the cave system is covered with beech forest, where only within the buffer zone is a limited economic management activity, which includes extraction of dead wood for the needs of local population for firewood. The remaining 5% is located on the outskirts of a hamlet of settlement Mala Uholka, where 7 families are living with a total number of 30 people. This area is mainly used for hay mowing. For the site there is no direct impact from the neighbouring settlement.

4.5 - Ecosystem services

4.5.1 - Ecosystem services/benefits

<table>
<thead>
<tr>
<th>Ecosystem service</th>
<th>Examples</th>
<th>Importance/Extent/Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provisioning Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fresh water</td>
<td>Drinking water for humans and/or livestock</td>
<td>High</td>
</tr>
<tr>
<td>Regulating Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hazard reduction</td>
<td>Flood control, flood storage</td>
<td>High</td>
</tr>
<tr>
<td>Cultural Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spiritual and inspirational</td>
<td>Inspiration</td>
<td>Medium</td>
</tr>
<tr>
<td>Scientific and educational</td>
<td>Educational activities and opportunities</td>
<td>High</td>
</tr>
<tr>
<td>Scientific and educational</td>
<td>Important knowledge systems, importance for research</td>
<td>High</td>
</tr>
<tr>
<td>Scientific and educational</td>
<td>(scientific reference area or site)</td>
<td></td>
</tr>
<tr>
<td>Scientific and educational</td>
<td>Long-term monitoring site</td>
<td>High</td>
</tr>
<tr>
<td>Scientific and educational</td>
<td>Major scientific study site</td>
<td>High</td>
</tr>
<tr>
<td>Supporting Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biodiversity</td>
<td>Supports a variety of all life forms including plants,</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>animals and microorganisms, the genes they contain,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and the ecosystems of which they form a part</td>
<td></td>
</tr>
</tbody>
</table>

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

4.5.2 - Social and cultural values

What is the Site like? S4 - Page 3
i) the site provides 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) the site has exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland

iii) the ecological character of the wetland depends on its interaction with local communities or indigenous peoples

iv) 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

<no data available>

4.6 - Ecological processes

<table>
<thead>
<tr>
<th>(ECD) Primary production</th>
<th>No data</th>
</tr>
</thead>
<tbody>
<tr>
<td>(ECD) Nutrient cycling</td>
<td>No data</td>
</tr>
<tr>
<td>(ECD) Carbon cycling</td>
<td>No data</td>
</tr>
<tr>
<td>(ECD) Animal reproductive productivity</td>
<td>High level</td>
</tr>
<tr>
<td>(ECD) Vegetational productivity, pollination, regeneration processes, succession, role of fire, etc.</td>
<td>Non applicable</td>
</tr>
<tr>
<td>(ECD) Notable species interactions, including grazing, predation, competition, diseases and pathogens</td>
<td>Non applicable</td>
</tr>
<tr>
<td>(ECD) Notable aspects concerning animal and plant dispersal</td>
<td>Refugium habitat</td>
</tr>
<tr>
<td>(ECD) Notable aspects concerning migration</td>
<td>Refugium habitat</td>
</tr>
<tr>
<td>(ECD) Pressures and trends concerning any of the above, and/or concerning ecosystem integrity</td>
<td>No visible impact, high value of ecosystem integrity</td>
</tr>
</tbody>
</table>
5 - How is the Site managed? (Conservation and management)

5.1 - Land tenure and responsibilities (Managers)

5.1.1 - Land tenure/ownership

<table>
<thead>
<tr>
<th>Public ownership</th>
<th>Within the Ramsar Site</th>
<th>In the surrounding area</th>
</tr>
</thead>
<tbody>
<tr>
<td>National/Federal government</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Private ownership</th>
<th>Within the Ramsar Site</th>
<th>In the surrounding area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other types of private/individual owner(s)</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Cooperative/collective (e.g., farmers cooperative)</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

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

The Site territory is a part of a core zone within the Carpathian Biosphere Reserve. It is also the UNESCO World Natural Heritage Property "Primeval Beech Forests of the Carpathians" (2007).

5.1.2 - Management authority

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

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

Mykola Rybak, director

Postal address: 77, Krasne Pleso Str., Rakhiv, Zakarpatska oblast, 90600, Ukraine

E-mail address: cbr-rakhiv@ukr.net

5.2 - Ecological character threats and responses (Management)

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

Human settlements (non agricultural)

<table>
<thead>
<tr>
<th>Factors adversely affecting site</th>
<th>Actual threat</th>
<th>Potential threat</th>
<th>Within the site</th>
<th>In the surrounding area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing and urban areas</td>
<td>Low impact</td>
<td>Low impact</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

Human intrusions and disturbance

<table>
<thead>
<tr>
<th>Factors adversely affecting site</th>
<th>Actual threat</th>
<th>Potential threat</th>
<th>Within the site</th>
<th>In the surrounding area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recreational and tourism activities</td>
<td>Low impact</td>
<td>Low impact</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Pollution

<table>
<thead>
<tr>
<th>Factors adversely affecting site</th>
<th>Actual threat</th>
<th>Potential threat</th>
<th>Within the site</th>
<th>In the surrounding area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garbage and solid waste</td>
<td>Low impact</td>
<td>Low impact</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Please describe any other threats (optional):

The wetland is located within the Carpathian Biosphere Reserve, which secures limited access and control of the nature resources. Among the basic types of nature use in this area, it is worth mentioning the following ones: forest use, recreation and traditional farming in particular pasturing. The basic threat for the given wetland lies in the fact that it is located at the village periphery. In particular local people sometimes throw garbage and dead domestic animals down into the cave. Despite the wonderful scenery of the site, it is not intensively visited because of its inaccessibility. Recreation pressure – mainly speleologists – is moderate here.

5.2.2 - Legal conservation status

<table>
<thead>
<tr>
<th>Designation type</th>
<th>Name of area</th>
<th>Online information url</th>
<th>Overlap with Ramsar Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other global designation</td>
<td>the UNESCO World Natural Heritage Property &quot;Primeval Beech Forests of the Carpathians&quot;</td>
<td><a href="http://whc.unesco.org/en/list/1133/multipler=1&amp;unique_number=1777">http://whc.unesco.org/en/list/1133/multipler=1&amp;unique_number=1777</a></td>
<td></td>
</tr>
</tbody>
</table>
5.2.3 - IUCN protected areas categories (2008)

- **Ia Strict Nature Reserve**: Implemented
- **Ib Wilderness Area**: protected area managed mainly for wilderness protection
- **II National Park**: protected area managed mainly for ecosystem protection and recreation
- **III Natural Monument**: protected area managed mainly for conservation of specific natural features
- **IV Habitat/Species Management Area**: protected area managed mainly for conservation through management intervention
- **V Protected Landscape/Seascape**: protected area managed mainly for landscape/seascape conservation and recreation
- **VI Managed Resource Protected Area**: protected area managed mainly for the sustainable use of natural ecosystems

5.2.4 - Key conservation measures

### Legal protection

<table>
<thead>
<tr>
<th>Measures</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal protection</td>
<td>Implemented</td>
</tr>
</tbody>
</table>

### Habitat

<table>
<thead>
<tr>
<th>Measures</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land conversion controls</td>
<td>Implemented</td>
</tr>
</tbody>
</table>

### Species

<table>
<thead>
<tr>
<th>Measures</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threatened/rare species management programmes</td>
<td>Partially implemented</td>
</tr>
</tbody>
</table>

### Human Activities

<table>
<thead>
<tr>
<th>Measures</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulation/management of recreational activities</td>
<td>Implemented</td>
</tr>
<tr>
<td>Communication, education, and participation and awareness activities</td>
<td>Implemented</td>
</tr>
<tr>
<td>Research</td>
<td>Implemented</td>
</tr>
</tbody>
</table>

Other:

The Site is managed by the Carpathian Biosphere Reserve. The Site belongs to the core and buffer zones of the Carpathian Biosphere Reserve, and corresponds to Category Ia IUCN (strictly protected area set aside to protect biodiversity and also geological/geomorphological features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values) and II IUCN (strictly limited use of natural resources). Scientists of the Carpathian Biosphere Reserve pay much attention to elaboration of ecological principles of natural ecosystems’ conservation and their management. The Carpathian Biosphere Reserve is a member of the World Network of UNESCO Biosphere Reserves since 1993. The Site also lies within the UNESCO World Natural Heritage Property Site "Ancient and Primeval Beech Forests of the Carpathians and Other Regions of Europe" (2017). The Project of Territory organization (Management Plan) for the Carpathian Biosphere Reserve has been implemented.

5.2.5 - Management planning

- **Is there a site-specific management plan for the site?** No
- **Has a management effectiveness assessment been undertaken for the site?** Yes

5.2.6 - Planning for restoration

- **Is there a site-specific restoration plan?** No need identified

5.2.7 - Monitoring implemented or proposed
Ecological, biological and geographic studies are conducted by Carpathian Biosphere Reserve’s scientists, scientists of the Uzhgorod National University, Institute of Ecology of the Carpathians National Academy of Sciences of Ukraine and State Museum of Natural History. An annual monitoring of overwintering Chiropteran fauna has been held for over 20 years already.
6 - Additional material

6.1 - Additional reports and documents

6.1.1 - Bibliographical references

<table>
<thead>
<tr>
<th>Reference</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postawa T., Pokynchereva V., Zagorodniuk I. Summer bat fauna of the Carpathian Biosphere Reserve (the Mala and Velyka Ugolka Valleys) // Studia Chiropterologica. – 2000. – V. 1. – P. 73-82</td>
<td></td>
</tr>
</tbody>
</table>

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
   <no file available>

6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:

<table>
<thead>
<tr>
<th>Photograph</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friendship Cave (Vasyl/ Zeleny, 08-02-2015)</td>
<td></td>
</tr>
<tr>
<td>Friendship Cave (Vasyl/ Zeleny, 07-02-2011)</td>
<td></td>
</tr>
<tr>
<td>Friendship Cave (Vasyl/ Zeleny, 07-02-2011)</td>
<td></td>
</tr>
<tr>
<td>Friendship Cave (Vasyl/ Zeleny, 07-02-2011)</td>
<td></td>
</tr>
</tbody>
</table>

6.1.4 - Designation letter and related data

Designation letter

Date of Designation | 2019-03-20