

# Information Sheet on Ramsar Wetlands

Categories approved by Recommendation 4.7 of the Conference of the Contracting Parties.

NOTE: It is important that you read the accompanying *Explanatory Note and Guidelines* document before completing this form.

**1. Date this sheet was completed/updated:**

September 15<sup>th</sup>, 1996

FOR OFFICE USE ONLY.

DD MM YY

17 09 96

Designation date

3SK010

Site Reference Number

**2. Country:** Slovak Republic

**3. Name of wetland:** Rudava River Valley

**4. Geographical coordinates:** 48° 28' to 48° 35' 30" N, 17° 02' to 17° 20' E; the centre approximately at 48° 31' N, 17° 09' E

**5. Altitude:** (average and/or max. & min.) 138 - 165 m; average 150 m a. s. l. **6. Area:** (in hectares) 560

**7. Overview:** (general summary, in two or three sentences, of the wetland's principal characteristics)

Rudava River is a relatively small left-side tributary of Morava River in western Slovakia which belongs to Danube River Basin. Its total length is about 45 km. The site represents the most valuable part of the Rudava River floodplain and surrounding sand dunes with well developed complex of various wetlands such as Rudava River itself, the river side arms, oxbow lakes, sand banks, peat bogs, fens, reed beds, swamps, periodic pools, wet meadows and pastures. The area represents unique type of the landscape as well as one of the last remaining larger natural areas in the cultivated Záhorie Region. It is considered to be one of the best preserved small lowland river ecosystems in Slovakia.

**8. Wetland Type** (please circle the applicable codes for wetland types as listed in Annex I of the *Explanatory Note and Guidelines*)

marine-coastal: A . B . C . D . E . F . G . H . I . J . K

inland: L . (M) . N . O . P . Q . R . Sp . Ss . (Tp) . (Ts)  
(U) . Va . Vt . (W) . (Xf) . Xp . Y . Zg . Zk

man-made: 1 . 2 . 3 . 4 . 5 . 6 . 7 . 8 . 9

Please now rank these wetland types by listing them from the most to the least dominant: M, Xf, W, Ts, Tp, U

**9. Ramsar Criteria:** (please circle the applicable criteria; see point 12, next page)

(1a) . (1b) . 1c . 1d | (2a) . (2b) . (2c) . 2d | 3a . 3b . 3c | 4a . 4b

Please specify the most significant criterion applicable to the site: \_\_\_\_\_

**10. Map of site included ? Please tick** yes  -or- no

(please refer to the *Explanatory Note and Guidelines* document for information regarding desirable map traits)

**11. Name and address of the compiler of this form:**

RNDr. JAROMÍR ŠIBL, Gallyova 43, SK-841 02 Bratislava, Slovakia, phone +421 7 716304, fax +421 7 724 811

Please provide additional information on each of the following categories by attaching extra pages (please limit extra pages to no more than 10):

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**12. Justification of the criteria selected under point 9, on previous page** (please refer to Annex II in the Explanatory Note and Guidelines document)

- 1a most of the wetland ecosystems of the Rudava River valley can be considered as representative natural and semi-natural ecosystems typical for the respective biogeographic region (more detailed information is given under point 16)
  - 1b within the Rudava River valley there can be found also some ecosystem types which are typical for more than one region (more detailed information is given under point 16)
  - 2a there are sufficiently large populations of rare, vulnerable and/or endangered plant and animal species living in the area (more detailed information is given under points 16, 17 and 18)
  - 2b the area has special importance for the preservation of the biological diversity of the whole region because of its size, relatively undisturbed character and unique composition of flora, fauna and ecosystems (see also points 16, 17 and 18)
  - 2c for some species the area has special importance as their habitat during critical period of their life cycles (fish migration and reproduction, reproduction of amphibians, reproduction and overwintering of dragonflies and other water invertebrates).
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**13. General location:** (include the nearest large town and its administrative region)

The area is located in Malacky district in western part of Slovak Republic. Rudava River springs in northern part of Borská Nižina Lowland near the village Bilikove Humence. In its upper reach it flows eastwards, then towards south-west and near the village Plavecký Mikuláš it turns westwards. Near Gajary it ends with its confluence with Morava River. The area represents mostly natural (unregulated) middle and upper reach of Rudava River and its floodplain (upstream/east of the highway bridge close to the village Veľké Leváre) between river kilometers 10 and 44, including also its main left side tributary Rudávka Brook (the reach between its confluence with Rudava and the village Rohožník). The nearest large town is Malacky which is about 8 km southward.

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**14. Physical features:** (e. g. geology, geomorphology, origins - natural or artificial; hydrology; soil type; water quality; water depth; water permanence; fluctuations in water level; tidal variations; catchment area; downstream area; climate)

**Geology and geomorphology:** Rudava River belongs to the geomorphological unit Borská Nižina Lowland. Rudava River originated through the accumulation of the water of the smaller streams at the foothill of Malé Karpaty Mts. It flows through the complex of inland (eolic) sand dunes established during interglacial periods. That is why there are present two basic forms of the relief: eolic relief (sand dunes) and the fluvial relief (the floodplain and terraces formed by the river). The Rudava River floodplain contrasts very strongly with the neighbouring sand dune landscape with strikingly different hydrological regime. Its underlying bedrock is formed by almost impermeable Neogene and Quaternary sediments. The resulting bodies of stagnant surface and underground water or the waterlogged soils occur in the places where clayey horizons are near the surface. Mostly the river sediments are covered by c. 10 - 15 m deep layer of permeable deposits of sandy eolic sediments (dunes) which were deposited there during the Holocene period.

**Climate:** The climate of the area is relatively dry and warm, with mean annual temperature of 9 - 10 °C. The coldest month is January, the warmest July. Precipitation is very low with annual average of 600 - 700 mm (during vegetation period 260 - 390 mm).

**Hydrology and hydrography:** Rudava River is 45 km long left-side tributary of Morava River. The area of its watershed is 439 km<sup>2</sup>. It has so-called rain-snow type of the water regime. The maximum discharges are in March and April and also in November and December, the lowest discharges are in September. Mean annual discharge is 0.51 m<sup>3</sup>.s<sup>-1</sup>. The forests cover about 60 % of the watershed.

In 1968 some sections of Rudava River were regulated including digging of new channel and construction of lateral dikes. These works together with other reclamation works in the watershed have influenced also the groundwater level. Between the highway bridge near Veľké Leváre (rkm 10) up to former forester house Ivan near Plavecké Podhradie and also in its upper section the river is still in its natural state (unregulated) and creates numerous meanders. The most important tributary of Rudava River is Rudávka Brook, which is mostly regulated.

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**15. Hydrological values:** (groundwater recharge, flood control, sediment trapping, shoreline stabilisation, etc.)

The area plays a crucial role in self-purification processes and sediment trapping, in the recharge and discharge of groundwater, moderation of local climate, support of food chains, etc.

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**16. Ecological features:** (main habitats and vegetation types)

Rudava River itself and its valley represent rich variety of natural and semi-natural habitats which are quite unique in Slovakia and therefore it has a great importance for the conservation of biodiversity. The natural values are mostly concentrated in the middle section of Rudava River. Unlike the upper and lower sections, this one has never been regulated and therefore the natural state of the river and its surrounding has been preserved.

The extremely dry sand dunes are there in the close contact with floodplain forests, peat bogs, wet meadows and other wetlands. Due to this unusually high diversity of habitats, a large number of species and communities can be found there with different ecological requirements on relatively small area (about 560 ha). According to the last surveys there have been recorded 505 species of higher plants (from this 101 are on the Red List of Czecho-Slovak Flora), more than 30 fish species (5 on the Red List), 13 species of amphibians and 5 species of reptiles (4 on the Red List), 48 bird species (13 on the Red List) and 24 mammals. Even the species which are rare in the whole Europe like Otter and European Beaver can be found here. Until now no more detailed biological research on invertebrates (except for benthic macroinvertebrates and dragonflies) has been carried out within the area. However, there were found some species which do not occur on any other place in Slovakia, or which are extremely rare.

**Soils and vegetation:** The specific geological and geographical conditions have determined the formation of prevailing soil types in the area: cambisols, planosols and histosols. The bedrock is extremely acid, what is reflected by the soils and vegetation. That is why in the lowland there are present also some communities which are common in the mountains of the altitude about 1,000 - 1,500 m a. s. l. In addition, there is still present the influence of the historical development of the region (during the glacial periods there was subarctic climate in the lowland). Some species have survived in suitable habitats since these periods (*Baeothryon alpinum*, *Bistorta major* and some *Sphagnum* species).

Different permeability of the substrate have determined formation of different types of the wetlands in the area. The most valuable are peat bogs (bog and mire fens) and fens, in which there is the highest number of rare and endangered plant species. From the flooded forest communities there often occurs the alliance *Alnion glutinosae* (MALCUT 1929) with associations *Carici elongatae - Alnetum* (KOCH 1926) and *Dryopterido cristatae - Alnetum* (NOWINSKI 1929). These natural communities determined by high ground water levels and regular floods are recently very rare. Dominant tree species is *Alnus glutinosa*, typical plant species are *Carex elongata*, *C. paniculata*, *Thelypteris thelypteroides*, *Hottonia palustris*, *Menyanthes trifoliata*, *Hydrocharis morsus-ranae*, *Calla palustris*.

Another rare association is *Caricetum paradoxae* (R. TX. ex VON ROCHOW 1951, syn. *Caricetum appropinquatae* ASZÓD 1938) with *Carex appropinquata* and many acidophilous species. From the noteworthy species in this association there are for example *Bistorta major* - glacial relic, *Dactylorhiza majalis*, *Thysselinum palustre*, *Menyanthes trifoliata* and *Sium latifolium*.

There are also rare associations *Caricetum rostratae* (DAGYS 1932) BAL.-TUL. 1963) with *Pedicularis palustre*, *Caricetum gracilis* (ALMQUIST 1929) and *Caricetum distichae* (JONAS 1933).

There are also two Nordic-Siberian peatbog associations: *Peucedano - Caricetum lasiocarpae* (R. TX. 1937) with *Carex lasiocarpa*, *Thysselinum palustre*, *Menyanthes trifoliata* and *Epipactis palustris*, and *Caricetum diandrae* (ALMQUIST 1929) JONAS 1933, with rare *Carex diandra*.

The communities of wet meadows are represented by the association *Cirsietum rivularis* NOWINSKI 1937 with *Cirsium rivulare*, *C. canum* and *Carex appropinquata*, species-rich association *Carici davallianae - Molinietum coeruleae* ŠPÁNIKOVÁ 1978 with *Molinia caerulea*, *Carex davalliana*, *C. diandra*, *C. appropinquata*, *C. lasiocarpa*, *Drosera rotundifolia*, *Comarum palustre*, *Epipactis palustris*, *Dactylorhiza majalis*, *Eriophorum angustifolium*, rarest species - glacial relic *Baeothryon alpinum*, *Rhynchospora alba*, *Gentiana pneumonanthe*, *Iris sibirica*, *Parnassia palustris*, *Menyanthes trifoliata*, *Comarum palustre*, *Eriophorum angustifolium*, *Dactylorhiza majalis* and *Drosera rotundifolia*.

There is also the association *Alopecuretum pratensis* STEFFEN 1931 and the associations from the alliance *Phalaridion arundinaceae* KOPECKÝ 1961.

**17. Noteworthy flora:** (indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important etc)

GENUS	SPECIES	AUTHOR	SUBSPECIES
<i>Agrostis</i>	<i>vinealis</i>	SCHREB.	
<i>Armeria</i>	<i>vulgaris</i>	WILLD.	<i>vulgaris</i>
<i>Baeothryon</i>	<i>alpinum</i>	(L.) JEGOROVA	
<i>Batrachium</i>	<i>fluitans</i>	(LAMK.) WIMMER	
<i>Berula</i>	<i>erecta</i>	(HUDS.) COVILLE	
<i>Blechnum</i>	<i>spicant</i>	(L.) ROTH	
<i>Cardamine</i>	<i>dentata</i>	SCHULT.	
<i>Carex</i>	<i>hartmannii</i>	CAJANDER	

<i>Carex</i>	<i>hostiana</i>	DC.	
<i>Carex</i>	<i>lasiocarpa</i>	EHRH.	
<i>Carex</i>	<i>pulicaris</i>	L.	
<i>Carex</i>	<i>umbrosa</i>	HOST	<i>umbrosa</i>
<i>Carex</i>	<i>appropinquata</i>	SCHUMACH.	
<i>Carex</i>	<i>davalliana</i>	J.E.SMITH	
<i>Carex</i>	<i>paniculata</i>	L.	
<i>Carex</i>	<i>pseudocyperus</i>	L.	
<i>Carex</i>	<i>stenophylla</i>	WAHLENB.	
<i>Carex</i>	<i>strigosa</i>	HUDS.	
<i>Comarum</i>	<i>palustre</i>	L.	
<i>Corallorhiza</i>	<i>trifida</i>	CHATEL.	
<i>Dianthus</i>	<i>serotinus</i>	WALDST. et KIT.	
<i>Dianthus</i>	<i>superbus</i>	L.	<i>superbus</i>
<i>Drosera</i>	<i>rotundifolia</i>	L.	
<i>Eleocharis</i>	<i>uniglumis</i>	(LINK) SCHULT.	
<i>Epipactis</i>	<i>palustris</i>	(L.) CRANTZ	
<i>Festuca</i>	<i>vaginata</i>	WALDST. et KIT. ex WILLD.	
<i>Gentiana</i>	<i>pneumonanthe</i>	L.	
<i>Hierochloa</i>	<i>repens</i>	(HOST) BESS.	
<i>Hottonia</i>	<i>palustris</i>	L.	
<i>Chimaphila</i>	<i>umbellata</i>	(L.) W.BARTON	
<i>Iris</i>	<i>sibirica</i>	L.	
<i>Koeleria</i>	<i>glauca</i>	(SCHKURK) DC.	
<i>Kochia</i>	<i>laniflora</i>	(S. G. GMEL.) BORB.	
<i>Liparis</i>	<i>loeselii</i>	(L.) L.C.RICH.	
<i>Lycopodium</i>	<i>clavatum</i>	L.	
<i>Menyanthes</i>	<i>trifoliata</i>	L.	
<i>Myosurus</i>	<i>minimus</i>	L.	
<i>Orchis</i>	<i>morio</i>	L.	
<i>Pedicularis</i>	<i>palustris</i>	L.	
<i>Platanthera</i>	<i>bifolia</i>	(L.) L.C.RICH	
<i>Polygala</i>	<i>amarella</i>	CRANTZ	
<i>Pulsatilla</i>	<i>pratensis</i>	(L.) MILL.	<i>bohemica</i>
<i>Pyrola</i>	<i>chlorantha</i>	SW.	
<i>Rhynchospora</i>	<i>alba</i>	(L.) VAHL	
<i>Salix</i>	<i>repens</i>	L.	<i>rosmarinifolia</i>
<i>Scirpoides</i>	<i>holoschoenus</i>	(L.) SOJÁK	
<i>Scrophularia</i>	<i>umbrosa</i>	DUMORT.	
<i>Thysselimum</i>	<i>palustre</i>	(L.) HOFFM.	
<i>Tithymalus</i>	<i>seguierianus</i>	(NECKER) PROKH.	

**18. Noteworthy fauna:** (indicating, e.g., which species are unique, rare, endangered, abundant or biogeographically important; include count data, etc.)

Fishes (36 species, source HENSEL, HOLČÍK 1992): *Eudontomyzon mariae* 1E, *Anguilla anguilla* 1O, *Abramis ballerus*, *Abramis bjoerkna*, *Abramis brama*, *Abramis sapa* 1I, *Alburnoides bipunctatus* 1I, *Alburnus alburnus*, *Aspius aspius*, *Carassius auratus* 1AL., *Chondrostoma nasus*, *Cyprinus carpio* 1V, *Gobio albipinnatus* 1I., *Gobio gobio*, *Gobio albipinnatus* 1I. x *Gobio gobio*, *Leucaspis delineatus*, *Leuciscus idus*, *Leuciscus leuciscus*, *Phoxinus phoxinus* 1I, *Pseudorasbora parva* 1AL., *Rhodeus sericeus amarus*, *Rutilus rutilus*, *Scardinius erythrophthalmus*, *Vimba vimba*, *Cobitis taenia* 1V, *Noemacheilus barbatulus*, *Silurus glanis*, *Esox lucius*, *Oncorhynchus mykiss*, *Salmo trutta* m. *fario*, *Salvelinus fontinalis* 1AL., *Gymnocephalus cernuus*, *Perca fluviatilis*, *Stizostedion lucioperca*, *Barbus barbus*

Amphibians: *Hyla arborea*, *Pelobates fuscus*, *Bufo bufo*, *B. viridis*, *Rana arvalis*, *R. temporaria*, *R. dalmatina*, *R. ridibunda*, *R. lessonae*, *R. kl. esculenta*, *Bombina bombina*, *Triturus vulgaris*, *Salamandra salamandra*

Reptiles: *Lacerta agilis*, *L. viridis*, *Natrix natrix*, *Coronella austriaca*, *Anguis fragilis*

Birds: *Ciconia nigra*, *Anser anser*, *Alcedo atthis*, *Luscinia svecica*, *Remiz pendulinus*, *Ardea cinerea*, *Anas platyrhynchos*, *Circus cyaneus*, *Vanellus vanellus*.

Mammals: *Cervus elaphus*, *Capreolus capreolus*, *Sus scrofa*, *Vulpes vulpes*, *Lutra lutra*, *Castor fiber*, *Ondatra zibethicus*

**19. Social and cultural values:** (e. g. fisheries production, forestry, religious importance, archaeological site, etc.)

The area has been used by humans since ancient times. For many centuries it has produced timber, fish, game and various crops. It is still important for fish reproduction, forestry, water supply, education and scientific research, grazing, outdoor recreation, etc.

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**20. Land tenure/ownership of:** (a) site (b) surrounding area

a) site: small private owners, communities and the Slovak state. Because of the ongoing process of reprivatization, the ownership relations are unclear until now.

b) surrounding area: most of the surrounding area are owned by the Slovak state and local communities.

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**21. Current land use:** (a) site (b) surroundings/catchment

a) site: There are only few regular or seasonal settlements along the reach of the river concerned. Main human activities are: forestry, extensive agriculture, hunting, fishing, short-term recreation.

b) surroundings/catchment: military training (most of the area is designated for this purpose), agriculture, forestry, recreation, sand and gravel mining, drilling for oil, small-scale industries, traffic (highway and main railway).

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**22. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land use and development projects:** (a) at the site (b) around the site

a) site: because of the process of reprivatization, the ownership especially of the agricultural land is changing from the state and cooperative ownership back to former private owners. This can have devastating consequences - near Holbičky settlement after being given back to the former private owner one of the most species-rich meadows of the area was ploughed and the most valuable peatbog was partly drained by him.

The area is threatened by one development project which would cause (if implemented) substantial changes in the land use - the Studienka Dam Project near village Studienka. The reservoir and the dikes would destroy about 10 km of the most valuable middle section of the Rudava River floodplain.

b) around the site: serious threat represents also the overexploitation of the natural resources in the area, mainly by recent unsustainable logging practices - clearcuts, planting of pine monocultures which are increasing the vulnerability to forest fires, but also potential sand and gravel mining, drilling for oil, overfishing, water management measures (regulation and drainage schemes), using of pesticides and fertilizers in agriculture, illegal dumping of waste, development of tourism, especially the building of second houses, etc. The water quality of Rudava River is also threatened, mainly by the municipal waste waters and by the run-off of the agrochemicals from the adjacent fields.

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**23. Conservation measures taken:** (national category and legal status of protected areas - including any boundary changes which have been made; management practices; whether an officially approved management plan exists and whether it has been implemented)

Recently there are no protected areas. There is also no officially approved management plan for the area concerned. Since 1994 there have been adopted some restoration measures to restore the natural channel conditions in the regulated part of the upper reach of Rudava River.

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**24. Conservation measures proposed but not yet implemented:** (e. g. management plan in preparation; officially proposed as a protected area, etc.)

The proposal for designation of The Rudava Valley Nature Reserve is under preparation by regional authorities responsible for nature conservation in cooperation with NGOs. The area is also considered to be included in the existing Protected Landscape Area (PLA) Záhorie. The first draft of the (unofficial) management plan for the area concerned has been elaborated by Slovak Rivers Network (NGO) in 1996.

Also the complex study "Rudava River Restoration Project" is under preparation. The study will contain technical, environmental, economical and other measures to restore the natural state and ecological functions of the regulated reaches of Rudava River itself and its main tributaries (Rudávka, Trstienka). It will be the first comprehensive river restoration project in Slovakia.

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**25. Current scientific research and facilities:** (e. g. details of current projects; existence of field station, etc.)

There are no facilities for scientific research in the area. However, several research projects have been done in the area, focused on the inventories of some groups of organisms (higher plants, fish, benthic organisms, dragonflies).

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**26. Current conservation education:** (e. g. visitors centre, hides, information booklet, facilities for school visits, etc.)

Although the area has enormous educational potential for conservation and ecological education, it has practically not been used for educational purposes. It is in some extent used for the field excursions and training of the university students.

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**27. Current recreation and tourism:** (state if wetland is used for recreation/tourism; indicate type and frequency/intensity)

There is almost no facility for recreation and tourism in the area except for few old houses and second houses. The area is mainly used for recreational purposes, collecting of mushrooms, fishing and hunting by local inhabitants. After the establishment of a management plan, soft tourism (ecotourism) could be introduced.

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**28. Jurisdiction:** (territorial e. g. state/region and functional e. g. Dept. of Agriculture/Dept. of Environment, etc.)

State: Ministry of Interior, Ministry of Environment, Ministry of Agriculture, Forestry and Water Management of Slovak Republic at Bratislava

Regional: Regional Office at Bratislava, District Office at Malacky

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**29. Management authority:** (name and address of local body directly responsible for managing the wetland)

Slovak Environment Agency, Regional Centre, Hanulova 5/d, SK-844 40 Bratislava, phone/fax +421 7 783 982

Water management administration: Danube River Catchment Administration at Bratislava, division at Malacky

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**30. Bibliographical references:** (scientific/technical only)

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Personal references: D. VALACHOVIČ, A. KÖRTHY, V. STANOVÁ, V. GRULICH, J. HOLČÍK, K. HENSEL

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