

Field Trip

29 September 2011

The Morava River Floodplain Ramsar Site

Programme and information

Programme of the field trip

Meeting point: **8.00 am** in the Lobby of the Holiday Inn Hotel

Buses leave the hotel car park at **8.15**

8.15 – 18.30 Route Trnava – Devín – Devínske jazero – Horný les forest – Kakvica locality – Malé Leváre – locality Raudazí – Moravský Ján (SK) - Hohenau (AT) – Skalica

(packed lunch will be provided for those participants that have booked this package; all the other participants should bring their own lunch)

19.30 – 20.30 Skalica Courthouse – Green Heart of the Central Europe – 10 years of the Trilateral Ramsar Platform – cooperation within the Trilateral Ramsar Site Floodplains of the Morava-Dyje-Danube Confluence in Austria, Czech Republic and Slovakia

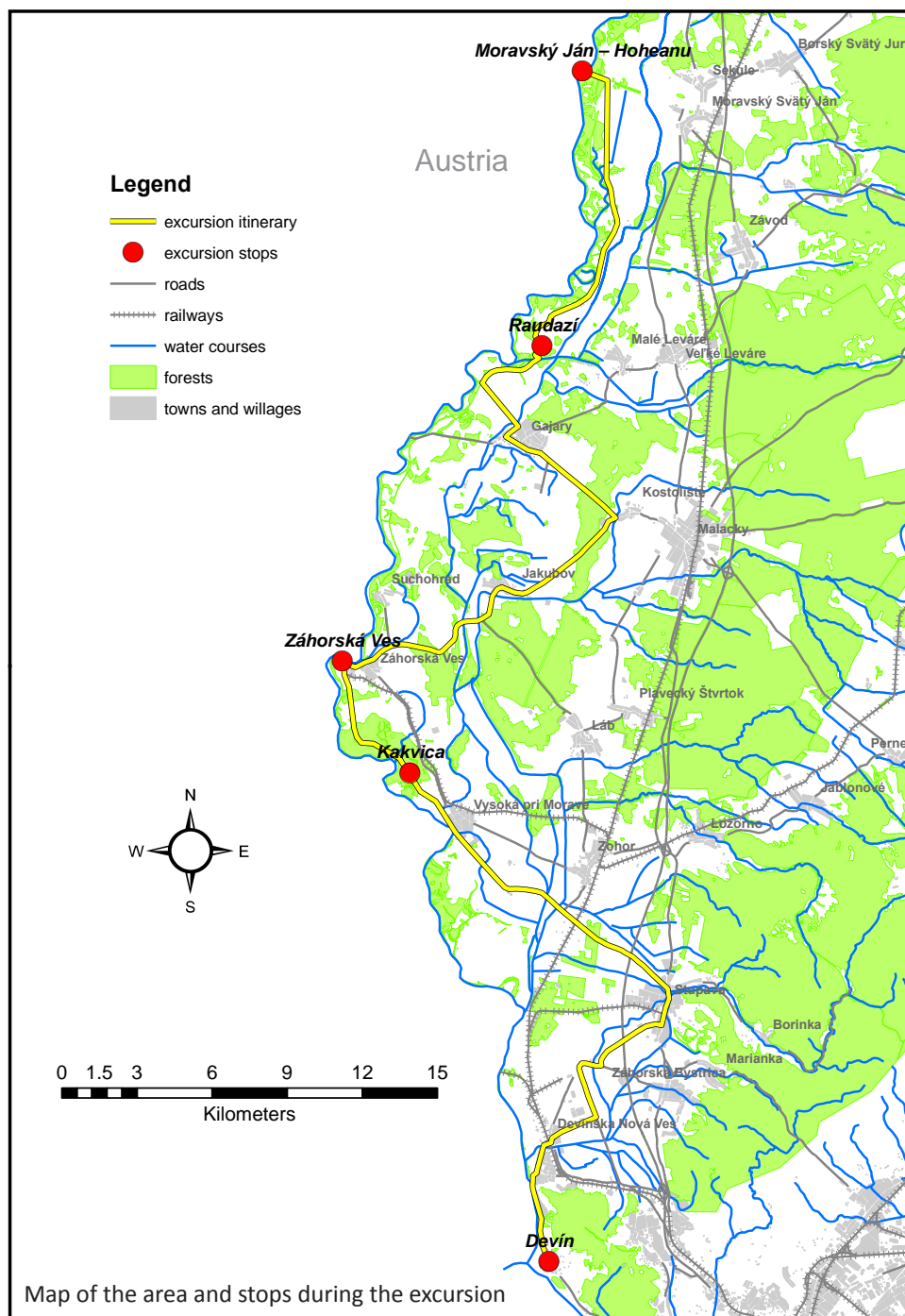
20.30 – 22.00 Dinner in Skalica Courthouse (provided by the Ministry of Environment of the Slovak Republic)

Buses leave Skalica to take participants back to their hotels in Trnava at **22.00**.

The trip is guided by Mr. Dušan Vlachovič, director of Záhorie Protected Landscape Area, Mrs. Mirka Plassmann and Mr. Milan Janák of Daphne – Institute of Applied Ecology, Mr. Gerhard Egger, Mrs. Karin Donnerbaum – WWF Austria.

The expected situation at the end of September in this part of Slovakia is cool (up to 20 °C), cloudy and possibly rainy weather. As the trip includes a short walk in wet habitats, participants are advised to bring a wind- and water-proof jacket and sturdy footwear. The meteorological prognosis can be found on following website: http://www.meteoprog.sk/en/weather/Malacky/11_15/.





1st stop

Devín

Devín is a part of the Slovak capital Bratislava on a confluence of the Morava and the Danube rivers (158 m above sea level), near the border with Austria. So called Devín Gate is a breakthrough of the Danube River to the Carpathian Mountains. The area along these border rivers was a part of so called "Iron Curtain". It symbolized the ideological fight and acted as a physical boundary dividing Europe in two separate areas during the time between the WWII (1945) and the Cold War (1989). Valuable nature conditions were developed in this security zone - well preserved floodplain forests, grassland habitats, oxbow lakes and other wetlands can be found there. Several nature reserves and other protected areas have been designated in the vicinity of Devín, including Natura 2000 sites (Danube Floodplains, Bratislava Floodplains, Devínska kobyla).



The ruins of an ancient castle on a limestone rocky cliff above the rivers represent one of the most important monuments of the Slovak history. Exceptional strategic location, already known by Celts and Romans, was the main reason to build a Slavic hill-fortress right there. The site is called Dovina in the first written reference from 864 AD. It was one of the most important fortresses during the era of the Great Moravia. After the fall of the Great Moravian Empire, Devín lost its strategic importance for a long period. It regained importance in the 13th century, during Austrian-Hungarian fights of Devín Gate, when a stone fortress-castle was built on the castle hill. During the 15th century, extramural settlement with a new dwelling palace on the east side was added. The castle cliff is also protected as the National Nature Monument.

Geological evolution of the Morava River

The area is a part of Vienna Basin, which is, based on geological evolution, classified as Neogene sedimentary basin. The basin fill is composed of shallow – marine, and partly of lacustrine Neogene deposits, built-up mostly of sandstone and clays with different facial development, attaining thickness of approximately 3 km. Neogene sediments

do not reach surface, they are overlaid by Quarternary sediments. Quarternary is represented mainly by fluvial sediments - sands and sandy gravels. The composition is towards back transiting to sands with fine gravel with partings of clayey sands or sandy clays. Thickness of Quarternary deposits varies in range of 7 – 12 m.

The formation of the Morava River began 1,75 mil. years ago. The river runs from the hills of Malé Karpaty Mountains towards the centre of Vienna Basin. The river spring is located near Kralický Sněžník hill in the altitude of 1 275 m above sea level (near the border of the Czech Republic and Poland). River length is 329 km.

The Morava River has always played an important role as one of the main tributaries of the Danube River, and as a migration route for many plant and animal species expanding from the Danube region towards northern latitudes. The Morava floodplains have been colonised by Palaeolithic and Neolithic civilisations, which were the first to induce anthropic pressure on the river ecosystem.

Hydrology

Within Slovakia, the Morava is a lowland river with a very low average slope of 0,18 ‰, average yearly discharge is 111 m³.s⁻¹, average current velocity is 0,6 m.s⁻¹.



The river penetrates into Quarternary sediments of eolian and fluvial origin. On this substrate, the water flow created naturally meandering lowland river channel and floodplain with a dense network of side arms and meanders. Total catchment area is 26 580 km², lying mostly on silicate upland of Sudeten and Bohemian massifs.

Representativeness of the area

The area is a good and representative example of natural and near-natural wetland types, associated with riverine ecosystem of central Europe, nowadays considered as rare or uncommon in Europe. The area is inhabited by 18 globally threatened fauna species (according to IUCN categories: 3 VU, 8 LR, 7 DD species), for example: *Triturus cristatus*, *Crex crex*, *Numenius arquata*, *Castor fiber*, *Microtus oeconomus*, etc.) and several plant species, considered as threatened on national level (4 CR, 10 EN, 18 VU and 6 LR species), and some of them also on international level (for example *Achillea aspleniifolia*, *Lathyrus pannonicus*, *Plantago altissima*, *Lindernia procumbens*, *Bolboschoenus maritimus*, *Allium angulosum*, *Gentiana pneumonanthe*, *Gratiola officinalis*, *Ophioglossum vulgatum* etc).

Plant communities of *Cnidion venosi*, *Alopecurion pratensis*, *Molinion coerulae*, *Hydrocharition*, *Magnopotamion*, *Bidention tripartiti*, *Salicion albae*, *Ulmenion minoris*, considered as threatened on national as well as international level are well conserved.



The area is rich in biodiversity, with around 600 cyanophyte species, 800 species of vascular plants, 100 species of molluscs, 50 fish species, 14 amphibian species, 256 bird species and 43 mammals, all considered as rare and scarce within Pannonian bioregion. Within this area, subendemic and/or typical species of corresponding biogeographical region occur, for example *Lathyrus pannonicus*, *Fraxinus angustifolia* subsp. *danubialis*. etc.

The area is an important site for migrating bird species and a wintering site of water birds.

Protected areas:

- Protected Landscape Area Záhorie – first lowland, large-scale protected area in the Slovak Republic.
- Ramsar Site Morava Floodplains (1996)
- 12 SCIs (2004), Alúvium Moravy pri Suchohrade, Ciglát, Devínske alúvium Moravy, Devínske jazero, Devínske lúky, Dlhé lúky, Gajarské alúvium Moravy, Horný les, Kačienky, Kútsky les, Rieka Morava, V Studienkach
- SPA Záhoriské Pomoravie (2004)
- Trilateral Ramsar Site Floodplains of the Morava-Dyje-Danube Confluence (2007)

Problems negatively influencing the natural processes

Water management – key importance

- technical regulations of the river
- rapid decrease of lateral waterbodies, backwaters, loss of spawning grounds
- deterioration of water quality in the river



Forest management – alluvial forests

- forest types change towards dryer forest types
- forests with allochthonous tree species
- unsuitable management – loss of continuity

Agriculture

- notable decrease of meadows (permanent grassland) + illegal ploughland within inundation

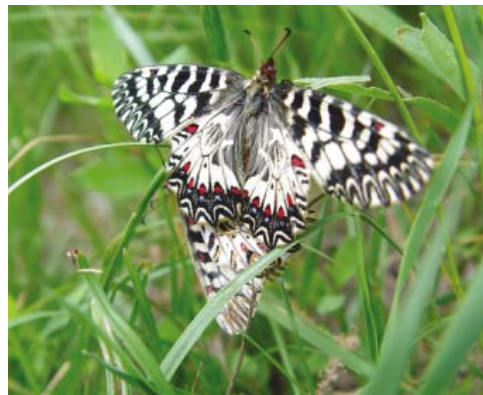
Biodiversity conservation

- disappearance and decrease of several species
- beaver activities colliding with human interests (economical and security)

Human activities present from ancient times have influenced natural auto-processes. Prevailing part of communities developed with human influence – as a cultural land they depend on human input, and also on recovery of human caused disturbances.

Ramsar Site area range from mouth of the Morava, 0,0 rkm, up to the confluence of the Dyje on rkm 72. It covers an area of 5200 ha, including:

- 55.9 % arable land (38,6 % meadows)
- 32.5 % forests
- 7.6 % waterbodies
- 4.0 % succession on ploughland



2nd stop

Devínske jazero (largest meadow in western Slovakia, 10.5 km²)

Meadows

Morava floodplains have retained its state thanks to severe regime that was established during the “Iron Curtain” times, and thanks to traditional ways of alluvial meadows management, preserved until today.

However, environmental problems did not bypass Morava floodplains. Flooded area shrunk to 24% of its original size due to intensive draining, changes of wetlands water regime as well as changing of alluvial meadows to arable land. Trying to increase vesture, 506 ha of meadows within flooded area were turned into arable land. This resulted in increased transport of chemicals and fertilizers directly to the groundwaters and waterbodies, which increased the risk of soil erosion.

Because of frequent flooding, most of these localities were abandoned, enabling weed and invasive species spreading. Biodiversity decreased again, but fortunately, protection of most valuable parts of sites was assured, and projects to recover harmed parts of alluvium (ploughed alluvial meadows and cut off meanders) were implemented.

Since 1997, 140 ha of meadows were restored.

In agricultural production, plant farming dominates over animal farming. Farmers prefer permanent grasslands over ploughland as hay-market is more profitable.

Agricultural land constitutes 56% of the Ramsar Site area.

Predominant part of agricultural land is grassland (70%).

Transformation of permanent grassland still lasts.

Management and grassland recovery goals:

- To maintain the area and proportion of grasslands within Ramsar site by permanent management (owners or users)
- To transform the arable land to permanent grasslands with near-natural species composition
- To maintain the meadows on the borderline with forest and waterbodies in order to prevent decrease of their area.



3rd stop

Horný les forest - Kakvica locality

Forests constitute 32% of the Ramsar Site area, they are second most important component of landscape structure. Present forest types vary from mixed ash-alder alluvial forests, riparian mixed forests to Pannonic woods with *Quercus petraea* and *Carpinus betulus*. Two pine stands can be found on stray sand dunes. A part of the forest stand originates from abandoned meadows and pastures with occurrence of solitary tall oaks.



The conditions of the forests were influenced by the Morava river regulation and partly by forest management in 1960s and 1970s.

Consequence:

Forest communities change towards dryer types
Problematic forest stands of hybrid poplar, attaining 11% of tree composition
Successive spreading of invasive trees and herbs

Remaining forests within the Ramsar Site constitute only a segment of pristine compact alluvial forests on both banks of the Morava River. Alluvial forests in the area are composed mostly of oak, ash and elm. Compared to original wood composition, frequencies (densities) of allochthonous Euro-American poplar and autochthonous ashes increased. Oak, the most suitable economically in the past, but more vulnerable ecologically, has decreased in abundance. The area covered by introduced tree species is around 126 ha (10.7% of total forest area). Preservation of the valuable autochthonous tree species' gene pool is an important part of the forest management.



4th stop

Záhorská Ves

Záhorská Ves is the most western village on the Slovak territory (147 m above sea level). The main channel of the Morava River separates Záhorská Ves from Austrian territory with frontier villages Angern an der March and Mannersdorf (connected with raft).

The name Záhorská Ves is used since 1948. Various other names were used in times before: 1301 – Magyarfalu, 1557 – Magyarfalw, 1773 – Uherskawesz, 1786 – Uherská Ves, 1920 – Uhorská.

The village has 1560 inhabitants nowadays. Inhabitation and burial-ground dates back to primeval times. Cremation tombs from 6th – 7th century (Great Moravian Empire era) preserved. The first written reference is from 1301. The village was occupied by Croatian colonists in the 16th century.

5th stop

Malé Leváre – locality Raudazí

Ichthyofauna:

- 54 fish species have been recorded up to date
- 6 species are absent compared to historical records (*Lampetra planeri*, *Huso huso*, *Acipenser ruthenus*, *Thymallus thymallus*, *Rutilus pigus*, *Hucho hucho*)
- Reproduction has been confirmed in 34 species



Sterlet restitution

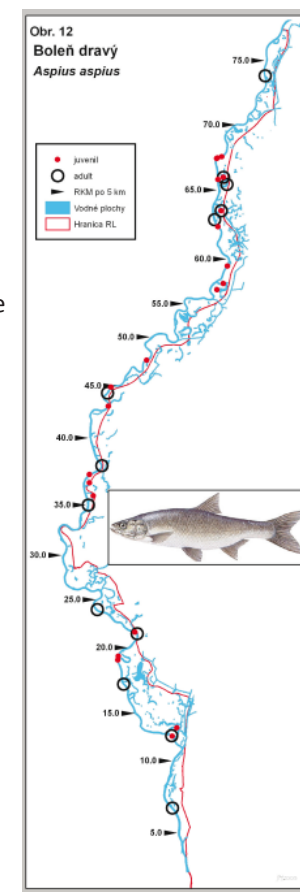
The natural restitution is impossible for migrating species as their migrating route to the sea was interrupted by human made dams on the Danube (Djerdap 1, Djerdap 2, SVD Gabčíkovo).

Administration of Protected Landscape Area (PLA) Záhorie is trying to facilitate the restitution of the sterlet, releasing 2500 young specimen in 2006, and 5 000 in 2007. Released sterlets are genetically autochthonous (Danubian population), and have all preconditions to contribute to the natural reproduction.

The administration of Záhorie PLA plans to release 5 000 individuals of sterlet annually to stabilise the population of this species in the middle section of the Danube River basin.

Restoration of Mudminnow (*Umbra krameri* Walbaum, 1792) population

Since 1994, The administration of Záhorie PLA deals with following activities to restore mudminnow populations:



- identification and research of sites with potential occurrence of the species
- recovery of two local populations (1997 - 1998) and subsequent monitoring
- emergency transfers of individuals threatened by sites' drying out

6th stop

Moravský Ján (SK) – Hohenau (AT)

The light fortification

The light fortification was built in Slovakia after 1937. Small objects continuously fortified the lower part of the Morava River between Devín and Kúty. The ford ways were fortified as well. Slovak part of the light fortification was almost finished and about 1800 objects were built between the years 1937 and 1938. 150 of them remained in Záhorie.

Invasive species

Elimination of allochthonous tree species, an example of the site where removal of alien American ash tree was carried out.

Hohenau

In cooperation with the nature conservation and former sugar factory in Hohenau about 17 ha of original cooling ponds and 38 ha of sludge pits were transformed to protected "birdlife world". It acts as the only breeding site of the Mediterranean gull in Austria and it is an important site during the bird migration.



Other interesting sites

National Nature Reserve Dolný les (river restoration)

The existence of the unique wetlands of this Ramsar Site depend mainly on hydrological regime of the Morava river and its tributaries. Previously strongly meandering Morava river channel has been subject to several regulations. Since the end of the 19th century the completion of flood dikes resulted in a significant reduction of the previous floodplain area, and it also limited natural river meandering. The Morava river length was shortened by more than 10 km by direct trenches which cut off 23 meander bends in the Austrian - Slovakian river stretch. Separation of meanders from the main channel resulted in intensive silting and ongoing degradation.

In the lower part, water flow dynamics are strongly influenced by water level regime

of the Danube River, that creates a backwater effect upstream of the Morava river confluence, reaching up to about 25 km. This stretch of alluvium is thus frequently flooded, mainly in spring time. The backwater effect causes the slow-down of the flow, thus intensifying the alluvium silting up by fine grain sediments and colmatage of the bottom and cut off meanders' banks.

The massive floodplain constriction causes a backwater effect, reaching up to 30 rkm up the stream during the floods. Reduction of the flood discharge speed there creates appropriate conditions for intensive sedimentation, similar to that occurring in the vicinity of the river mouth (flood discharge run-off is slowed down by backwater effect of alluvium flooding and causes similar silting effects and intensive floodplain sedimentation as in lower part). The continual process of massive sediment deposits contributes to the successive rising of the floodplain area, and with ongoing degradation of riverbed creates higher differences between the river and meander bed. This reduces interaction of surface and ground water, and results in successive degradation of meander ecosystem. Rising of the inundation ground reduces capacity of embankment area during the high floods.



Several Slovak and Austrian organisations have tried to change this unfavourable trend since 1996.

Present activities:

- Harmonisation of the European directives implementation process in conditions of the Lower Morava (rkm 0-59), methodological - operating practices unification;
- Preparation of common bilateral plan of the Lower Morava river system restoration, in accordance with EU directives; common list of measures prepared based on the results of studies and projects, with respect to the monitoring results of achieved restoration measures on both sides. It includes list of specified restoration measures on Austrian as well as Slovak side.
- Defining alternative measures to enhance (ameliorate) flood protection - common list (plan) of measures with integrated effect – to enhance effectiveness of flood protection and at the same time to recover ecological status of original floodplain area of the Lower Morava.

Bôrová

A sand dune within the river alluvium - several hectares large sand dune in the middle of floodplain area. On very short distance we can observe transitions of plant communities between two hydrologically extreme conditions. The dune serves as a refuge for terrestrial animals during the floods.



Last stop

Skalica city

We will finish our trip in the small historical town of Skalica lying on a border with the Czech Republic (Moravia) where important meetings of monarchs of neighbourhood kingdoms took place in the past. It ranks among the ancient Slovak towns which could proud themselves with the attribute "Free Royal Town" in the past centuries. Skalica has an important position on the historic map as well as on the present map of Slovakia, with stable economic infrastructure in the region between Moravia and Záhorie.



The History of Skalica

Favourable living conditions were the reason for the intensive settlement of this territory as early as the Early Stone Age (4,000 B.C.). The settlement continued in the Late Stone Age, Bronze Age, Iron Age, La Tene times, Roman times, Early Slav times, and Great Moravian times. The first written notes of Skalica date back to 1217 and 1256. On October 6, 1372, Lewis the I., the king of Hungary awarded Skalica privileges of a "Free Royal Town". The town was guaranteed the right to build the town walls, its inhabitants were free from paying taxes and other fees and the goods produced by the inhabitants of Skalica were toll free throughout the kingdom. Skalica was also awarded the privilege of organizing weekly fairs and annual fairs.

Skalica became an important economic, cultural and spiritual centre of the neighbourhood as early as the first half of the 15th century. Skalica ranked among the 5 or 6 biggest and most important towns in Slovakia in the 17th century. Crafts and trade flourished in Skalica and different guilds were founded. Skalica drapery, which developed at the end of the 18th century was well-known everywhere in Hungary. As for the agriculture, it was the viticulture that developed the most. Viticulturalists founded their association, the so-called Brotherhood of St. Urban more than 300 years ago. It was based on the principle of guilds of craftsmen. Some of the historical sights, for example The Church of St. Urban, patron saint of viticulturalists and the guild Altar of St. Urban with the emblem of viticulturalists in the Parish Church date from this period, too. High-quality red wine is still made here and numerous small houses which can be found in vineyards offer you a chance to taste this delicious drink.



The spiritual and social life of the town has been influenced by several monastic orders since the 15th century (the Franciscans, Carmelites, Jesuits, Paulines, Merciful Brethren). It led to the spread of the catholic faith and the development of the culture and education.

Town historical reserve

Skalica has kept its historical character up till now, despite the unwelcome urban modernism of the second half of the 20th century. Luckily, the influence of this style is not very strong and Skalica can be proud of a well-preserved historical town centre



– town historical reserve. The town centre consists of a unique triangular square surrounded by numerous historical sacral and secular buildings. Some of them can be found in the side streets as well. Remains of the medieval town fortification system which surround the bigger centre can still be found. They are best preserved near the Church and Monastery of Franciscans. The area of St George's Rotunda and its neighbourhood with narrow stone paved streets offer the breath of the past centuries.

We will have a dinner and celebration of the Trilateral Ramsar Platform in the [Culture House](#) (The Catholic Circle)

This Secession building of the so-called Slovak House ranks among the most interesting buildings in Skalica. We can still admire it in its original state. The idea of building the Culture House was inspired by Dr. Pavol Blaho who was born in Skalica and had a strong national consciousness. It was designed by Dušan Jurkovič, a well-known architect in those days. His style is characterized by folk inspiration. The building was open to the public in 1905. Several rooms of this building were designed for the folk collections of Dr. Blaho which inspired the idea of founding a regional museum. The facade of this building is decorated with the mosaics made of Mikoláš Aleš's paintings. The walls of the grand theatre hall as well as the original curtain are decorated with figure paintings by Jozef Úprka and Antoš Frolka. This building is the cultural centre of Skalica even now. The permanent exposition of the Museum of Záhorie region and the Gallery of Július Koreszka can be found on the first floor.

During the special evening and celebration of the Green Heart of the Central Europe – the trilateral cooperation within the Ramsar Sites on the floodplains of the Morava, Dyje and Danube rivers in Austria, Czech Republic and Slovakia, the evaluation of 10 years of Memorandum of Understanding and short information will be provided by the representatives of relevant ministries from the three countries, involved partners and NGOs. Cultural performances (dance and music) from neighbouring regions will follow together with tasting of the local products.



