

Reviving a wonder of nature

Life+ Project *Renaturing the Lower Morava Wetlands*





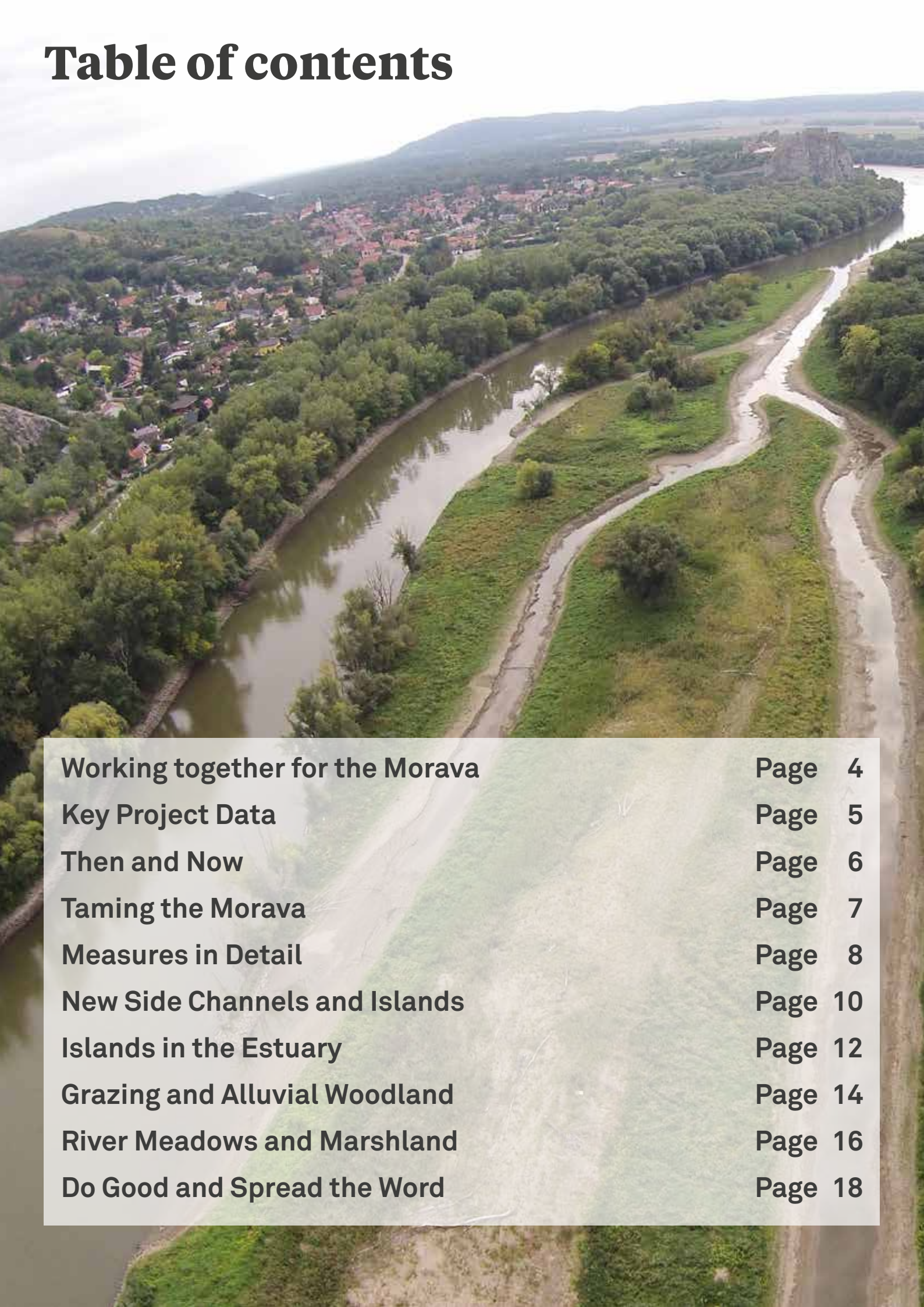
Thank you!

**Thank you to everyone who encouraged and supported the Life+ Project.
For the challenges that we overcame together.
For all that we learned over eight years.
For a more beautiful river landscape.**



View of the wooden bridge in the Alte Zipf area with higher water levels being run off from the flood protection dam.

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Working together for the Morava

The Morava – a habitat and a wonder of nature

The Morava and Thaya wetlands are not only a wonder of nature in the East of Austria – they are also home to over 500 endangered animal and plant species and a biodiversity hotspot in Central Europe. At the same time, however, they are also a place where the local population and many visitors live, work and come to enjoy themselves. So this is a landscape that is under twofold pressure: from the humans who use it and from conservation goals whose aim is to protect and improve the environment. Austria has particular responsibility in this context. The river and its surroundings are important for all of our activities – living, agriculture and forestry, hunting, fishing and recreation. People and buildings also have to be protected from flooding, as we saw most recently in 2006.

But in this day and age we also have the important task of preserving and continually improving this natural ecosystem and habitat, with the grand aim of handing the area on to future generations in good condition.

A key challenge in relation to the planning of the Life+ Project, which was and is specifically tasked with achieving the above goals, is the particular situation of the Morava, which is a boundary river. The protracted and sometimes laborious process of coordinating with our Slovakian neighbours was chiefly evident in the length of the planning process and the equally long official approval process that went along with it. Ultimately, though, the project team and stakeholders delivered a successful project that is seen as an effective pilot on both sides of the border, as recent media coverage, not least in Slovakia, demonstrates.

But the Lower Morava Life+ Project is not the end of efforts to improve the river habitat; it is only the first in a series of proposed bilateral undertakings. We have already started planning – so that we can ensure the Morava is a beautiful and high-quality environment for our children, one that interests them and provides space for human life and the natural world.



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Key Project Data:

- ▶ **Project area:**
From Angern on the Morava to the confluence with the Danube at Markthof
- ▶ **Partners:**
via donau - Österreichische Wasserstraßen-Gesellschaft mbH
Environmental association WWF Österreich
Lower Austria Fisheries Association
- ▶ **Supporters:**
European Union, Lower Austria Regional Government Office,
Austrian Federal Ministry for Sustainability and Tourism
- ▶ **Duration:**
October 2011- October 2019
- ▶ **Budget:**
3.5 m. EUR
- ▶ **Protected areas in project:**
International:
Trilateral Ramsar site Danube-Morava-Thaya Wetlands
European protected area /Natura 2000
Austria:
Danube-Morava-Thaya Wetlands Conservation Areas
Kleiner Breitensee 44.5 ha
Lower Morava Wetlands 1,223 ha
Angern and Dürnkrut Morava Loop 81 ha
Baumgarten an der March Salt Steppe 11 ha



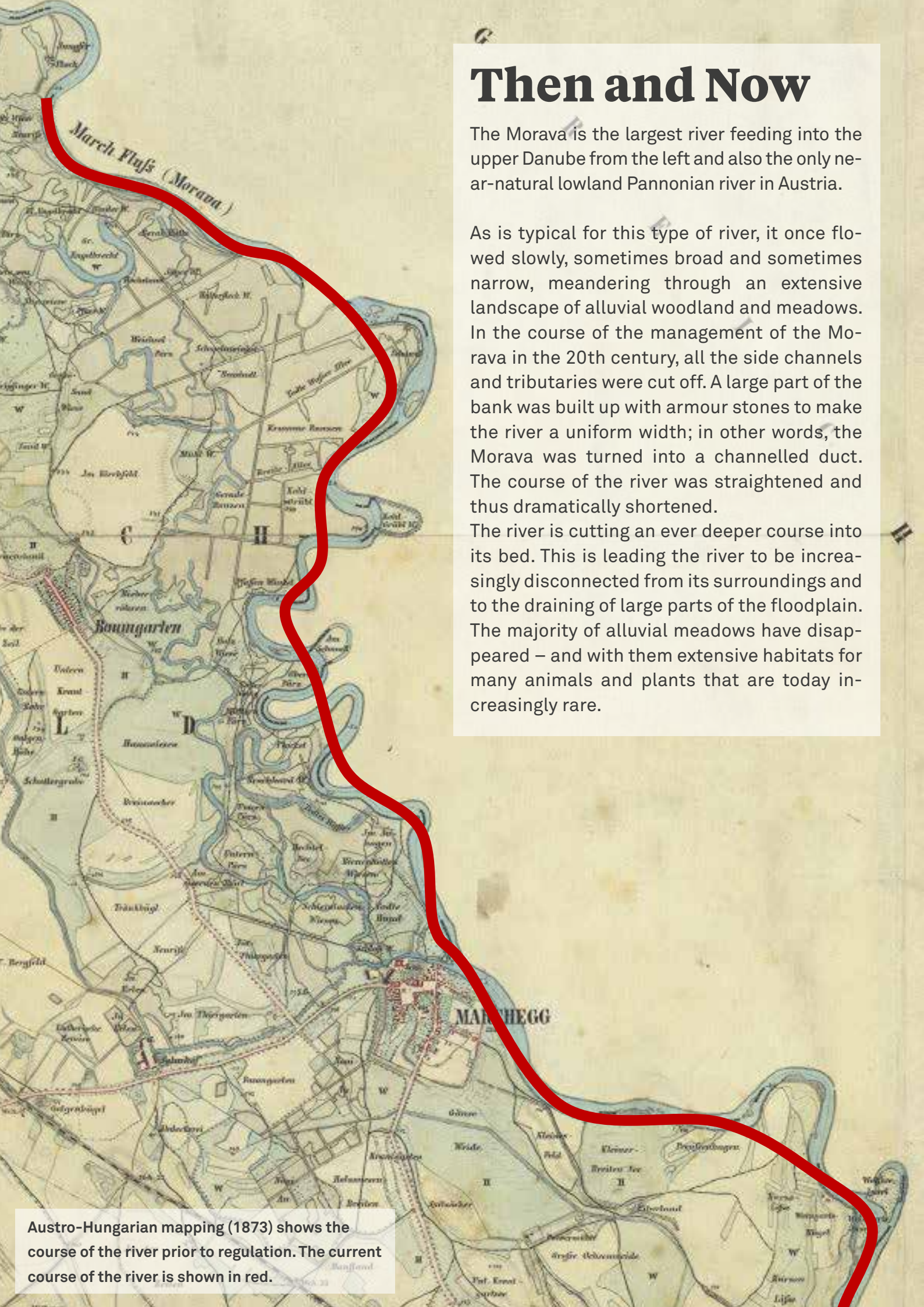
Project team members on a visit to Alter Zipf

Then and Now

The Morava is the largest river feeding into the upper Danube from the left and also the only near-natural lowland Pannonian river in Austria.

As is typical for this type of river, it once flowed slowly, sometimes broad and sometimes narrow, meandering through an extensive landscape of alluvial woodland and meadows. In the course of the management of the Morava in the 20th century, all the side channels and tributaries were cut off. A large part of the bank was built up with armour stones to make the river a uniform width; in other words, the Morava was turned into a channelled duct. The course of the river was straightened and thus dramatically shortened.

The river is cutting an ever deeper course into its bed. This is leading the river to be increasingly disconnected from its surroundings and to the draining of large parts of the floodplain. The majority of alluvial meadows have disappeared – and with them extensive habitats for many animals and plants that are today increasingly rare.



Austro-Hungarian mapping (1873) shows the course of the river prior to regulation. The current course of the river is shown in red.

Taming the Morava

The goals of river regulation

- ▶ Improved land management
- ▶ Reduced flooding through construction of flood defences
- ▶ Improved conditions for shipping
- ▶ Border demarcation and better border surveillance between Czechoslovakia and Austria ('Iron Curtain')

Border watchtower on the Morava in the 1980s.

Facts about the regulation of the Morava

- ▶ From: 1936 to 1984
- ▶ No. of side channels and branches cut off: 18
- ▶ Reduction in length: 10.85 km
- ▶ Width before regulation: 30-300 m
- ▶ Width after regulation: 70 m
- ▶ Built-up sections of bank: 75 %
- ▶ Amount of armour stones used: approx. 600,000 m³ or 1.1 m tonnes
- ▶ Floodplain loss: 80 %

Embankment protection on the Morava



Measures in Detail

Planning and Preparation

Several years of planning were undertaken to analyse the historical situation of the Morava and its surroundings along with the changes and structures introduced by regulation.

This key information was used to re-establish historical side channels, taking current conditions into account.

The channels were connected so as to enable water to flow through them all year round. The fact that the Morava is a border river and that all stages had to be coordinated with Slovakia was particularly challenging and time-consuming, and meant that the project had to be extended by two years.

Construction work also highlighted the Morava's ancient and often contested role as a border river: bomb disposal experts who scan all construction sites not only found partly operational remains from the Second World War, they also unearthed older finds, dating back to Roman times.

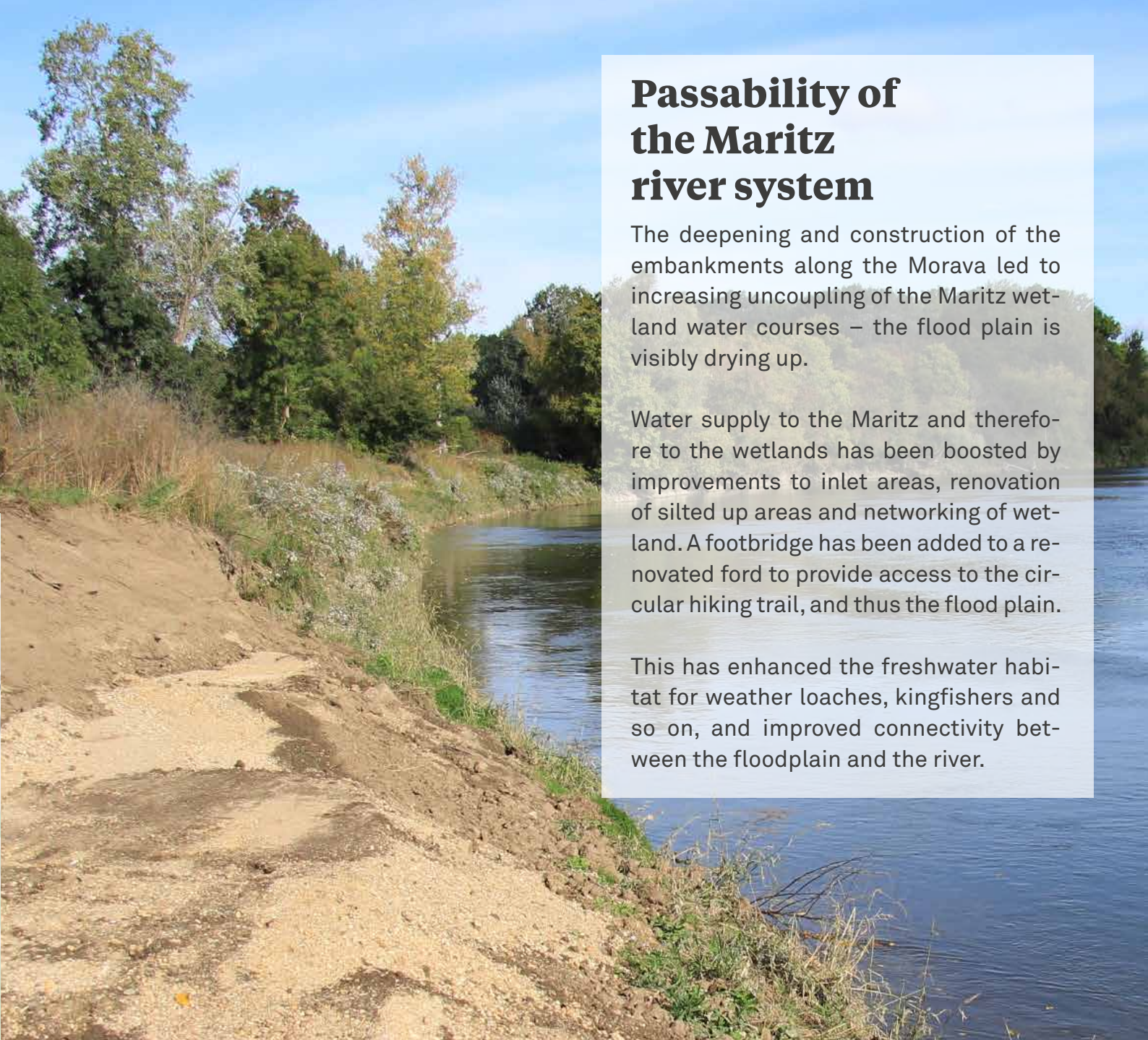


Passability of the Maritz river system

The deepening and construction of the embankments along the Morava led to increasing uncoupling of the Maritz wetland water courses – the flood plain is visibly drying up.

Water supply to the Maritz and therefore to the wetlands has been boosted by improvements to inlet areas, renovation of silted up areas and networking of wetland. A footbridge has been added to a renovated ford to provide access to the circular hiking trail, and thus the flood plain.

This has enhanced the freshwater habitat for weather loaches, kingfishers and so on, and improved connectivity between the floodplain and the river.



Excavating the Maritz system inlets.

New Side Channels and Islands

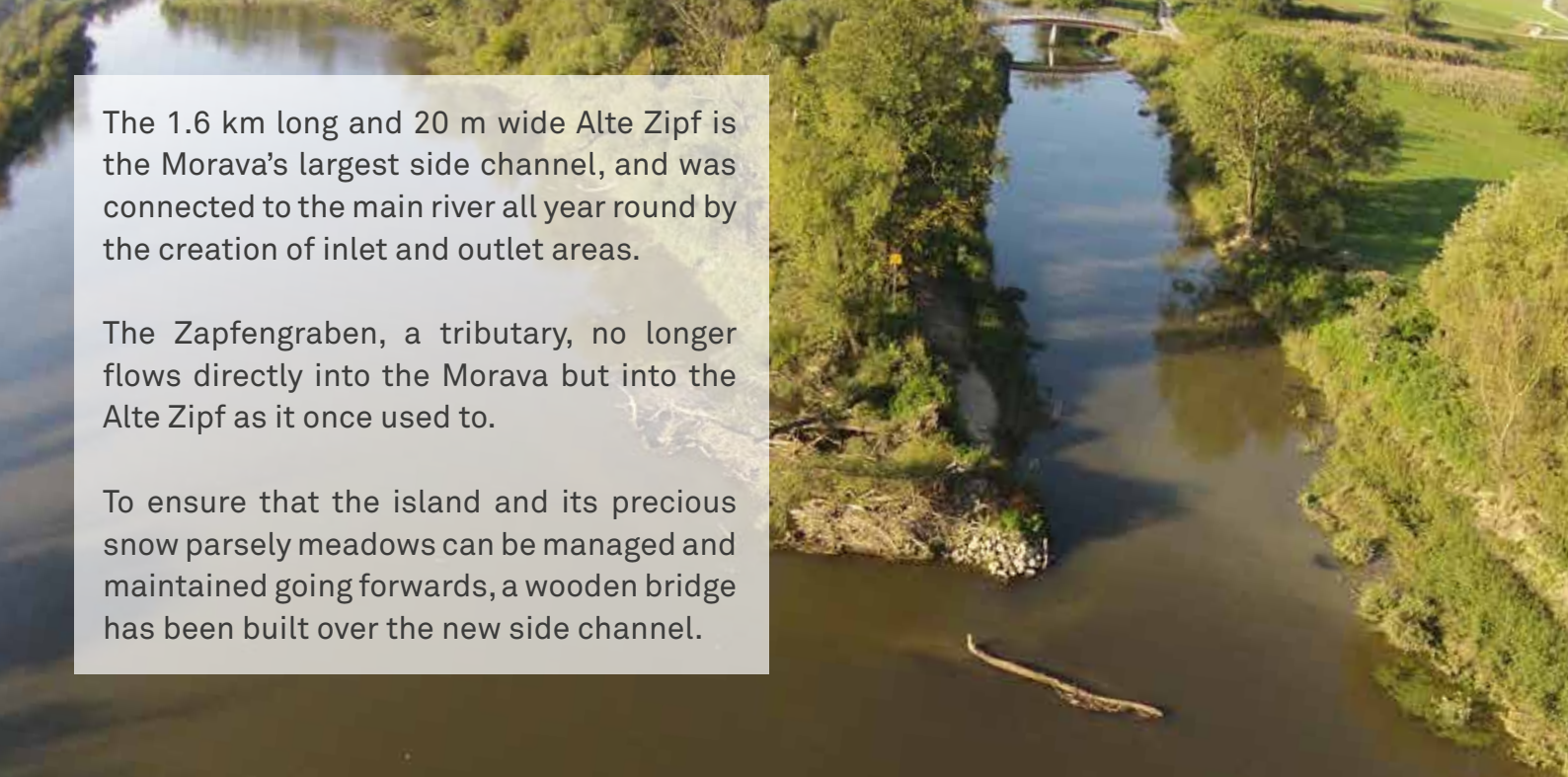
From autumn and winter 2017 to 2019, a total of 7.3 kilometres of side channels, with water flows all year round and representing 60,000 m² of water, were reconnected to the Morava.

Existing regulating structures, such as rock armour on the banks, were removed section by section or adapted, and barriers (stone dams across the direction of flow in the side channels) were removed completely. The Morava can thus now create its own side arms and banks dynamically again and linkages between the main river and the adjoining floodplain have been improved – which is especially important in the context of hot, dry summers.



Two new side channels have been re-established on their historical courses in the Wolfsseeinsel area. Since 2017, the 6-metre outer Wolfsseeinsel channel has flowed for 990 m through alluvial woodland and beds of reed and sedge.


The inner Wolfsseeinsel channel runs directly alongside the Morava. Here, existing barriers have been removed and an initial trench dug. The aim is for the erosive force of the Morava to help the channel develop of its own accord.



The 1.6 km long and 20 m wide Alte Zipf is the Morava's largest side channel, and was connected to the main river all year round by the creation of inlet and outlet areas.

The Zapfengraben, a tributary, no longer flows directly into the Morava but into the Alte Zipf as it once used to.


To ensure that the island and its precious snow parsely meadows can be managed and maintained going forwards, a wooden bridge has been built over the new side channel.



A side channel approx. 1.6 km in length (the Inner Luss Channel) has been re-established on its historical course in the Lange Luss area.

An old channel running in parallel (the Outer Luss Channel) has been linked to it by a channel and deposits of sludge have been dredged.

The channel, which runs dry in summer, primarily provides a habitat and spawning ground for a variety of amphibians.



A special breeding and restocking programme has been introduced in the new side channels for the European weather loach (*Misgurnus fossilis*), so called because it becomes restless before a change in the weather and often comes to the surface to gulp air.

Islands in the Morava Estuary

Before the Morava was regulated, the final 3 km before it flowed into the Danube were a river landscape over 300 m in breadth with numerous side channels and islands

Regulation constricted the Morava to a standard 70 m, with the rest of the river bed cut off from the river by large dams across and along it, which meant that it almost completely silted up.

The project removed all transverse structures and re-established side channels and islands.

The large freshwater mussels of the Morava are often inconspicuous, but they are of great importance. A full-grown mussel can filter up to 100 litres of water per day and thus makes a key, natural, contribution to the improvement of water quality and the nutrient cycle.

Although the mussels used to be present in large numbers, they are now very rare. The newly created side channels of the Morava provide a habitat for five of our seven native large species, including two pond mussels, the swan mussel (*anodonta cygnea*) and the duck mussel (*anodonta anatina*), and three species of river mussels, the painter's mussel (*unio pictorum*), the swollen river mussel (*unio tumidus*) and the thick shelled river mussel (*unio crassus*), which is protected throughout Europe.





The Stempfelbach is being given a new, 970 m outlet. This 'displaced' outlet has the same features as the natural confluence of lowland river tributaries and is thus a valuable habitat for fish, shellfish and other aquatic species.

2.3 km of new tributaries were thus created alongside the new Stempfelbach outlet from

September 2017 to January 2018.

The power of the water from the Morava and the Danube can now create a dynamic river landscape again here. This is especially important for fish, shellfish, waterfowl, other aquatic animals and healthy softwood alluvial woodland.

Year-round grazing

Hoofed animals such as aurochs and tarpan were a characteristic feature of the landscapes of Central Europe for millennia. Large herbivores, they created a mosaic of diverse habitats – ranging from park-like clearings to open pasture.

The WWF grazing project links back to old traditions. As part of the Life project, a total of 9 Koniks were brought to the Morava from a reserve in Poland in 2015 and 2016. By the end of the Life project, the herd had grown to 21 animals, which had split into 3 groups and colonised more than 70 ha of pasture.

The animals are a completely natural way of shaping and managing the wetland landscape and at the same time create a multitude of attractive habitats for many endangered species: open, sandy ground for insects and in turn rich food sources for insectivores such as the hoopoe and the red-backed shrike. White stork also prefer open low-growing meadows to tall grass. The measures are accompanied by extensive monitoring and have had a highly positive effect on biodiversity in the first 5 years.



Grazing benefits species such as Cepero's groundhopper (*Tetrix ceperoi*) and the rare *Trifolium retusum* clover.

Alluvial woodland and invasive species

11 types of invasive species were classified in the project area, species whose massive numbers lead to a deterioration in the typical, unspoilt condition of the alluvial woodland. To prevent them spreading throughout the project area, their locations were first charted in detail and they were then mechanically removed.



The Morava-Thaya wetlands are home to the most important hardwood alluvial woodlands in Europe. The 1,100 ha Lower Morava Wetlands conservation area (approx. 860 ha alluvial woodland and 160 ha meadows) between Marchegg und Zwerndorf is a particularly important habitat for many indigenous animal and plant species.

Along the banks, invasive species such as box elder can be secured in the water with hemp ropes. These allow the trees to be used as cover by aquatic animals.

River Meadows and Marshland

Snow parsely wetland meadows

Intensivisation of agriculture in the 20th century dramatically reduced the number of wetland meadows in the Morava-Thaya area: today only around 20% of the original meadows remain. These meadows are therefore classified as critical conservation objectives for the Morava-Thaya wetlands Natura 2,000 area. The LIFE Project purchased over 12 ha of the area and has returned it to grassland. It has succeeded in re-establishing traditional snow parsely wetland meadows by sowing indigenous seed types typical for the site and transferring mowed material from adjoining areas.

Snow parsely wetland meadows are characterised by alternate periods of flooding and dry seasons throughout the year. Depending on the length of individual phases (which are determined by the elevation of the ground) the meadows are characterised by different combinations of species and there are often gaps in vegetation. However, common to all of them are the marsh snow parsely (*selinum venosum*) that gives them their name and other rare species, e.g. the solitary clematis (*clematis integrifolia*) and the hedge hyssop (*gratiola officinalis*). Other ground-nesting birds, such as the rare corncrake (*crex crex*) also use these meadows.





The inconspicuous hollows

The Morava's extensive foreshore has many hollows that fill with water at certain times of the year and are known as 'Sutten' (hollows). Over the decades these were often neglected parts of the landscape, and were often viewed by farmers as obstacles to cultivation. Many were backfilled and the drainage of fields by means of trenches and pumps meant that the hollows dried out too rapidly.

A 20-year management agreement covering over 20 ha of hollows has been concluded with farmers, to ensure that account is taken of the species present there, and that these biodiversity hotspots continue to be preserved.

At high water or after heavy rainfall, these hollows 'emerge' suddenly, fill with water and come to life. Within a very short time, shield shrimp (e.g. the triops) hatch, and rare plants such as water mudwort and bur-reed germinate. For amphibians (e.g. fire-bellied toads, moor frogs and Danube crested newts) and 30 bird species (such as lapwings and sandpipers), the hollows are often the only remaining habitats in the agricultural landscape.



Do good and spread the word

As early as the project planning phase, but above all during construction, project managers were consistently keen to ensure that residents had appropriate, comprehensive and up-to-date information about the project, its aims and its impact.

This was provided in the form of field trips, information events, lectures, school visits and many one-to-one conversations.

Alongside the provision of information folders, hiking maps (see QR Code) and visitor guidance in the Marchegg nature reserve, the project was also documented on film.

The project has its own website, www.life-march.at, which provides detailed information. As well as project videos, the homepage also includes monitoring reports.



A celebration was held in Marchegg to mark the conclusion of the project. Visitors enjoyed an extensive programme including music, food and guided tours to present the project.

Field clean-up with Marchegg Middle School



Dozens of visits to the construction works were organised, with young and old, residents and (inter-)national experts.



The project generated a large media response in newspapers and on television – especially from our neighbours in Slovakia.





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