

Field excursion 2: ERRC2014 – SEE River Project Final Event

Restoration of Danube side-arms at Wachau

The very scenic Danube gorge of the Wachau hosts one of the oldest and most attractive cultural landscapes in Europe. It combines steep mountain slopes with extended vineyards and orchards, medieval villages, castle ruins and famous monasteries (World Heritage Site) with river cruising, wine tasting and cycling along the Danube, thus making it a top tourist destination.

The attractive character of the Wachau is also due to the fact that it remained one of Austria's two non-impounded Danube sections, though past waterway regulation led to various degradations. Over the last ten years several EU-LIFE projects substantially improved the river-floodplain systems. During this trip we will visit the most impressive reconnected and restored Danube side-arms (improved hydro-morphology, fish migration and flood retention). The project proponents, having consulted their plans with local stakeholders, will explain how they integrated the interests of navigation, flood protection, recreation and local land uses with ecology.

The trip will start at the upper Wachau with the 4 km long Schallemmersdorf-Grimsing side-arm system and its restored large gravel banks. For re-establishing ecological dynamics, large sediment volumes had to be excavated from silted-up side-arms and used for restoring shallow bank habitats. Returning back over the Danube, next stop will be the rebuilt mouth of Pielach river, a pre-alpine tributary that is very important for spawning of Danube fish. The travel along the famous cycling route bypasses the restored Schönbühel side-branch. After lunch at the wine village of Rührsdorf, the successful combination of ecological flood protection with modern technical dike structures will be shown. A walk along the restored side-arm will serve to look at Danube salmon habitats and at Rossatz island with its new gravel banks and floodplain forest.

Tentative timing:

8:30 Start at from Tech Gate Vienna (conference venue) Lunch at typical restaurant in Wachau (*included!*) 18:30 Arrival at Tech Gate Vienna

Field trip hosts and guides:

Arbeitskreis Wachau (Workgroup Wachau for Regional Development) *freiwasser* Consultants for Ecology, Engineering and Water Management *viadonau* Austrian waterways agency





Danube salmon at spawning site © IHG





The reconnected Danube side-arms and flood Plain island at Rührsdorf. © Markus Haslinger

Information about the field trip Wachau

1. Area and Overview

In the cause of the so-called "Major Danube Regulation" in the 19th century, the Danube in the Wachau section was canalised by river regulation structures along both river banks and its side arms were cut off. This has led to a disconnection between the river and the floodplains and resulted in the drying up of large wetland areas. Due to the construction of several hydropower plants (especially the one upstream in Melk in 1982) the Danube in this reach has also been subject to river bed degradation, leading to a lowering of water levels and the groundwater table.

In the past 10 years, thanks to several LIFE projects, various environmental improvements have been made on the Danube in the Wachau but also along its tributaries Pielach, Melk and Ybbs. The projects include measures on the entire free-flowing section of the Danube between Krems and Melk.

The restoration works in the Wachau were done in 2003 – 2008 within the project LIFE Nature "Wachau" and were continued with the LIFE+ project "Flusslebensraum Mostviertel - Wachau" (= *River Habitat Mostviertel - Wachau*) which was launched in 2009 and will conclude in 2014. Actually the grant agreement for the next LIFE+ project "Auenwildnis Wachau" (=*Wilderness Wetland Wachau*) was sent by EU Commission in Juli 2014, so this will start in 2015 and is planned to be finished in 2020.

The LIFE projects want to achieve measures aiming at the improvement of river habitats especially in two Natura 2000 sites "Wachau" and "Wachau – Jauerling". These measures encourage and promote viable habitats for all fish species of the Danube River, i.e. Appendix II species of the Natura 2000 Directive. The majority of the 57 typical fish species of the Danube are on the red list, making immediate protective measures urgently required. The projects will thus make a significant contribution to the conservation of biodiversity while also improving the ecological functioning of this area in accordance with the EU Water Framework Directive.



LIFE projects at the Danube: area and overview © viadonau

2. LIFE Nature Wachau

2.1 Organisation

Grant:	LIFE Nature Wachau (LIFE03 NAT/AT/000009 from 2003)
Duration:	01.07.2003 – 30.06.2008
Overall costs:	5.200.000 Euro, EU funding rate: 50%
Project organisation:	
Lead Partner:	Arbeitskreis Wachau – Regionalentwicklung (Workgroup Wachau for Regional Development)
Partners:	viadonau (formerly: Wasserstraßendirektion; <i>Austrian waterways agency</i>) Wachaugemeinden (<i>local communes</i>) NÖ Landesfischereiverband (<i>Lower Austrian Fishermen Association</i>) NÖ Landesregierung (Landschaftsfonds) (<i>Landscape Fund of Lower Austria</i>) Federal Ministry for Agriculture, Forestry, Environment & Water Management

2.2 Key measures

- Side-arm reconnection Rührsdorf/Rossatz over a total length of more than 3 km and two large inflow openings at Rührsdorf, to ensure thru-flowing of the side-arms almost all year round. The construction of two bridges ensures easy access to the floodplains and orchards between the Danube and its side- arms.
- Tributary system Grimsing of a length of approx. 1.4 km. The island surrounded by the Danube and its side-arm was left to its natural development and became classified as a nature reserve (Naturschutzgebiet "Grimsing").
- Downstream (uni-directional) connection of the old arms at Aggsbach, upstream the side- arm Grimsing, Schopperstattlacke and Sportplatzlacke/Anzuglacke through the removal of the deposited fine sediments.
- Restructuring of Wachau embankments: Disposal of dredged gravel from the navigation channel for the continuous setup of new gravel shores, gravel banks and islands next to the navigation channel. Thereby, the creation of wave-impact protected spawning sites for Danube fish is made possible. The gravel remains in the flowing water system of the Wachau. Between 2003 and the end of 2008, over 5 km of new gravel structures were created. These measures are still being implemented in the areas created for this purpose.
- > Management of dry grassland (e.g. through innovative grazing projects, mowing)
- > Preservation/ improvement of FFH- relevant forests.

Side-arm reconnection Rührsdorf/Rossatz



Tributary system Grimsing © Haslinger



3. LIFE+ Flusslebensraum Mostviertel – Wachau (=*River Habitat*)

3.1 Organisation

Grant: LIFE+ Flusslebensraum Mostviertel- Wachau (LIFE07 NAT/AT/000010 from 10.11.2008)

Duration:	01.01.2009 – 30.06.2014
Overall costs:	6.685.000,-€, EU funding rate 50%
Project organisation:	
Lead Partner:	NÖ Bundeswasserbauverwaltung (Lower Austrian branch of the Federal Water Construction Authority)
Associated Partners:	viadonau (<i>Austrian waterways agency</i>) Stadtgemeinde Amstetten (<i>municipality</i>) Stadtwerke Amstetten (<i>municipal utility company</i>) Verein Lanius (<i>NGO</i>)
Co-Financiers:	NÖ Landesfischereiverband (<i>Lower Austrian Fishermen Assoc.</i>) Landschaftsfonds NÖ (<i>Landscape Fund Lower Austria</i>) Federal Ministry for Agriculture, Forestry, Environment & Water Management

3.2 Key measures

- Side-arm reconnection at Schallemmersdorf over a total length of 2.2 km and one large inflow opening, to ensure thru-flowing almost all year round. The construction of a drivable bridge ensures easy access to the floodplains between the Danube and side- arm Schallemmersdorf.
- Side-arm reconnection at Schönbühel over a total length of 1.55 km and one large inflow opening to ensure thru-flowing all year round. The island surrounded by the Danube and its side-arm is not accessible anymore and left to its natural development.
- Downstream (unidirectional) connection of the Biotop Frauengärten through the removal of the deposited fine sediments.
- Reconstruction of the mouth of River Pielach and of the Lateiner side- arm to restore fish migration routes between the rivers Pielach and Danube
- At the river Ybbs, improvements of the riverbed and new habitats have been realized. The urban reach in Amstetten has been restored: a fish bypass was constructed around the weir of Greinsfurth, a branched riverbed near Winklarn and a secondary channel at Hausmening have been built.

3.2.1 Side- Arm Reconnection Schallemmersdorf

- Reinforcement of existing remains of side- arms on a stretch of approx. 2.2 km in order to recreate habitats for young and spawning fish and wintering areas for adult fish; water bodies became protected from ship induced wave impacts.
- Year-round flow even at low water periods (LNWL: approx. 5 m³/s, MW: approx. 33 m³/s) with a dynamic sequence of fords and pools (depth at LNWL: ford ⇒ 1.0 m, pool ⇒ 2,5 m); natural structure of the riverbank (flat gravel banks, creeks, steep banks) as potential nesting habitat for birds breeding on gravel and steep walls as well as spawning grounds for fish.
- Reconnection of the side- arm Schallemmersdorf to the existing LIFE project Grimsing over the entire 4 km long side-arm system
- > 2 oxbow lakes connected only downstream for fish species that may want to avoid the stream
- > 2 small lakes for amphibians
- > 1 wildlife refuge for deer
- Dismantling of three traverses (bottom weirs)
- Construction of a drivable bridge to replace traverse no. 1 (clearance: 25 m, road width: 3.5 m)
- Locally adapted reforestation along the tributary Felbringbach for the clearings required to reconstruct the side- arm of Schallemmersdorf (approx. 0.58 ha permanent clearing, approx. 2.7 ha temporary clearing).

Side- branch Schallemmersdorf: inflow opening before reconstruction, 2009 © viadonau





Side- arm reconnection Schallemmersdorf, 2014 © Haslinger (extremfotos.com)

3.2.2 Reconstruction of the mouth of river Pielach and Lateiner Altarm

- Improvement of fish passage from River Danube into River Pielach by extension of the Pielach section at the mouth. Creation of an approximately 200 m long, new river bed to bypass the former outflow situation of River Pielach where a ramp at Danube banks is situated. The River Pielach is the most important tributary of the Danube section "Wachau":several fish species migrate into the River Pielach every year to their spawning areas. The most important species is the Danube salmon (*Hucho hucho*).
- Establishment of an approximately 120 m long, natural river bed between the "Lateiner" arm and the new mouth of River Pielach with the aim to enable fish passage. The Lateiner, a former side branch of River Danube, was cut off from other water bodies by constructing the Danube hydro-power dam at Melk.
- Re-design of the river banks of the Danube at the mouth of the River Pielach. Removal of the stone-blocks and deposition of gravel, which was digged out during the construction work.



Aerial view of new mouth of River Pielach © Haslinger (extremfotos.com)

4. Trip guides and contacts

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