



RUR & KALL
Lebensräume im Fluss



Rur & Kall

Fluvial Habitats

A LIFE+ Project in the Northern Eifel Region

- Restoration of Rivers • Managing Wet Meadows
- Establishing Alluvial Forests • Developing Floodplains



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From left to right:
Violet Copper,
Common Frog,
Fire Salamander

A Deceptive Idyll?

Reasons for the LIFE+ Project of the Biological Stations Düren and StädteRegion Aachen

In the course of mechanising agriculture in the 1950s, the wet meadows in the upper reaches of the Kall lost their economic importance. They either went fallow, or non-native spruce trees were planted there. However, this type of cultivation has resulted in a significant decline in species that are common to wet meadows. One of the target species of the project has also been affected: the Violet Copper.

The aim of the LIFE+ Project: Managing the habitat of the Violet Copper.

The wet meadows of the Kall and its tributary valleys have extensively been reforested with spruce trees. But a dense fir forest offers no chance of survival to the typical inhabitants of alluvial forests, such as the Black Stork.

The aim of the LIFE+ Project: Removing the non-native spruce trees and initiating the development of alluvial forests.

Weirs and barrages were built to divert water from the Kall to mill ditches. Wherever forest roads cross

tributaries, the streams were channeled into pipes. In many places, the pipe outlets caused plunges. The river habitat was divided into many isolated sections, which also affects the aim of the Migratory Fish Programme by the Federal state of North Rhine-Westphalia: the Rur and the Kall are considered important potential spawning grounds for Atlantic Salmon.

The aim of the LIFE+ Project: Removing obstacles and creating a continuous aquatic habitat.

The agricultural use of the lower Kall valley caused a separation of stream and floodplains: the Kall which was redirected to the edge of the valley, has seeped into the subsoil, so that the meadows are rarely flooded. Marsh areas and swamps have become rare, and flood channels and small water bodies have more or less completely disappeared from the lower Kall valley.

The aim of the LIFE+ Project: Creating flood channels and shallow depressions as a habitat for amphibians, dragonflies, Daubenton's Bats and other endangered species.





The River Kall

– A Green Lifeline

The river Kall flows from the southwest to the northeast through the protected area called „Kalltal und Nebentäler“ [Kall valley and tributary valleys] which covers 626 hectares. It is an axis and plays an important role in the local, regional, national and European biotope network. This valley axis connects the Belgian Hautes Fagnes (High Fens) with the river Rur and thus with the transnational river regimes of the Meuse and the Rhine.

For the most part, the Kall is a semi-natural and unspoiled low-mountain river lined by alder trees and alder swamp forests. At its upper reaches it is wide and open, as its tributaries have only made slight cuts into the ancient bedrock at the foot of the High Fens. The alluvial zones and slopes are mostly used as grassland or pasture. Some of them are valuable species-rich grasslands on siliceous substrates in mountain areas,

mountain hay meadows and wet meadows rich in biotopes. All around the village of Simonskall the water cuts deeper into the landscape. The floodplain dominated by grassland gets narrower and the adjacent steep, often rocky slopes are usually wooded. Oak and hornbeam forests are predominant here.

The Kall valley is the habitat of many rare animal and plant species. The LIFE+ project focuses in particular on species that are protected in Europe, such as the Violet Copper which needs flower-rich wet meadows, the Bullhead and the Brook Lamprey which live in cool, oxygen-rich streams, or the Black Stork that depends on intact floodplains and extensive forest areas.

-  Project Area
-  StädteRegion Aachen
-  Kreis Düren



The Subsidy Programme

LIFE +



FFH Directive

The European Union (EU) has committed itself to the protection of biodiversity. To this effect it has issued the Fauna-Flora-Habitat Directive (FFH Directive). This directive defines how wildlife species, their habitats and a Europe-wide network of such habitats are to be secured and protected.

Natura 2000

As a result of said directive, Natura 2000 was established, an EU-wide network of protected areas. Special protected areas (FFH areas and European bird sanctuaries) have been designated, where habitats and species, that are typical of individual member states and are of importance on a European scale, can be found.

LIFE+

LIFE+ is a European Union (EU) programme for the financial support of projects at Natura 2000-listed sites that benefit the environment in the European Union. The "Rur & Kall – Lebensräume im Fluss" project ["Rur & Kall – Fluvial Habitats"] falls within the scope of „Nature and Biological Diversity“. The planned measures were intended to enhance habitats as well as animal and plant species that are typical of the region and are of importance to Europe.



Due to water pollution and numerous transverse structures, salmon has become extinct in Germany since the middle of the 20th century. It is only thanks to the „Salmon 2000“ Migratory Fish Programme by the state of North Rhine Westphalia that an increasing number of salmon returns to the rivers Rhein and Sieg every year.



Atlantic Salmon

Salmo salar

TARGET SPECIES

Salmon also used to be common in the Rur and Kall. In order to repopulate those rivers with salmon as part of the „Salmon 2000“ Migratory Fish Programme by the state of North Rhine Westphalia, the Rur has been stocked with juvenile salmon each year starting in 1996 and the Kall since 2008.

However, it is rather difficult to repopulate rivers with salmon as they are migratory fish: juvenile fish migrate at the age of 2–3 years as so-called „smolts“ from the Kall via the Rur and Maas/Rhine to the North Sea. This is where they mature, and they only return to their birthplace to spawn. The returnees are examined and counted in the catching station of the hydro-

electric power plant in Roermond. Their onward voyage to the Rur system is currently still hampered by more than 50 transverse structures in the river Rur.

They lay their eggs in the Trout and Grayling Zone of flowing waters that provide oxygen-rich gravel rock ramps. In favourable years, salmon also move to small rivers like the Kall to lay their eggs. The salmon repopulated in the river Kall is of the Loire-Allier species which can reach up to 1.2 metres in length. This species must therefore wait for the water level to rise (e.g. due to heavy rainfall or prolonged precipitation).



Technical fish pass in Roermond



Male Atlantic Salmon



Female Atlantic Salmon



From top to bottom:
 Alluvial forest rich in Bistort;
 Bridge over the river Bosselbach;
 The river Richelsbach: unleashed by
 removing the bank and riverbed
 fortifications in April 2016

What has been

Success Stories of the “Rur & Kall” LIFE+ Project (2012 – 2018)

- **initial development of alluvial forests**
 on approximately 10 hectares of former spruce forests
- **resumption of a sustainable land use** on 12 hectares
 of bushy wet meadows in the floodplains
- **purchase** of around 10 hectares of grassland and forests
 by the district government of Cologne, department
 of „Nature and Landscape Conservation“, thereby
 permanently securing the conservation of nature
- **restoration of the passability** of the river Kall
 and its larger tributaries over a distance of 33 km
 - > removal of stream pipes and construction of bridges
 at 13 locations
 - > modification of culverts at four locations
 - > remodelling of barrages and weirs at five locations
 - > redesign of two fords

achieved by LIFE+?



- **restoration of semi-natural creeks:** removal of bank and riverbed reinforcements
- creation of eight water bodies and thus **new habitats for amphibians and dragonflies**
- comprehensive monitoring studies of plants, butterflies, fish and living organisms in the interstitial gravel systems of the streams to **document the success** of the measures taken
- **information provided to the public** by way of exhibitions, internet and leaflets, a hiking and cycling guide through the project area and permanent information boards at three locations that are highly frequented by tourists
- **Environmental education:** presentation of short films about the project and about beavers in schools, at the National Parc Gates and at information stands as well as supporting a film project involving school classes.



From top to bottom:
The Violet Copper,
the European Bullhead,
group of students visiting
the exhibition



From left to right:
Hay harvest in the "Hohes Venn"
Cultivation in the "Hoscheiter Venn"
Snowy fallow in the Kall valley

Fluvial Habitats

in the Kall Valley

For centuries, alluvial forests were common in the valleys of the Northern Eifel region offering a natural habitat untouched by man. They were characterized by downy birch, willow, alder and ash. In the wake of progressive settlements and the clearing of woodland, birch and alder forests as well as ash and hornbeam forests were lost in the Eifel region, also in the Kall valley. The developed areas were often used as meadows or pasture. During that period, plants and animals that previously only existed in alluvial-forest clearings were able to spread. As was the case in many places of the Eifel region, farming wet and poor soil proved to be a laborious and unproductive task. Since the wet soil and its lack of nutrients hampered the growth of plants, it was not possible to harvest hay more often than once a year. The forage grass was of bad quality. In the old days, the hay gathered from march areas was used as stable bedding – as an alternative to straw.

In the course of mechanising agriculture it no longer paid off to cultivate land in areas where tractors could not be used. From the 1950s onwards, many people gradually gave up farming, as there were other sources of income available to them. The alluvial plain along the Kall lost its economic importance and was no longer cultivated. Spruce trees were planted on fallow areas. The land was to be used profitably by the sale of wood at a later stage. The animals and plants native to alluvial forests and marsh areas had therefore no chance of survival. Species that are endangered both nationally and throughout Europe were threatened with extinction in the Kall valley.

The conservation measures implemented under the LIFE+ project were aimed at converting unnatural spruce forests into alluvial forests and fallow land into moderately used wet grassland. This is meant to restore valuable plant and animal habitats.



Wet Meadows

Due to its location at the edge of the High Fens, there is much more rainfall in the Northern Eifel than elsewhere. As a result of the numerous rainfalls, the soil is in some places permanently saturated with water to the extent that rainwater emerges from the ground in shallow places. Such spring corridors can regularly be found in the project area. The water gathers in small rivulets – so-called spring depths – from where it flows downhill to the next larger stream.

Flat spring areas or areas near the riverbanks in valley beds are particularly populated by plants that are adapted to wet conditions. Among the many examples are the Broad-leaved Marsh Orchid (*Dactylorhiza majalis*), Bogbean (*Menyanthes trifoliata*) and Bistort

(*Bistorta officinalis*). Rushes, such as the Sharp-flowered Rush (*Juncus acutiflorus*) characterise this plant community.

Animals use plants in many ways, and a number of species are specialized on wet grassland as a habitat. Amphibians use water-filled hollows as spawning grounds. Birds build their nests in high grass for breeding. Nectar-sucking insects can find a wide variety of blossoms all year round. Some nutrition specialists exclusively feed on plants that only grow on wet soil. Special features of the Kall valley are, for example, the Whinchat and the European Stonechat (*Saxicola rubetra*, *S. rubicola*), the Raft Spider (*Dolomedes fimbriatus*), the Drinker (*Euthrix potatoria*), the Bog Fritillary (*Boloria eunomia*) and the Violet Copper (*Lycaena helle*).



Alluvial Forests

The forests along the springs and in the valleys of the Northern Eifel are diverse habitats. Wet or shallow soil alternates with stony, nutrient-poor or nutrient-rich soil, thus enabling the coexistence of cleared areas covered with special herbs and impenetrable, multi-level groves made up of shrubs and deciduous trees. Perennial green conifers are not native to the alluvial forests in the project area.

In spring, the sunlight can therefore penetrate the crowns of bold trees and reach the forest soil in a typical alluvial forest along the river Kall. Peat Moss cushions (*Sphagnum spec.*), occasionally dotted with Arctic Starflowers (*Trientalis europaea*), spread on the marshy soil at the edges of the High Fens. Wood Stitchwort (*Stellaria nemorum*) is the characteristic species in the cool and wet locations of alder and ash tree alluvial forests along the streams.

What is remarkable is that the Black Alder (*Alnus glutinosa*) has adapted to the oxygen deficiency in its roots. This species has a distinct cell tissue in the bark of its lower stem, which is in contact with the outer air and can drain oxygen right into the roots. In addition, this tree has a symbiotic relationship with certain bacteria. While the bacteria supply nitrogen to the tree, the tree supplies the bacteria with carbohydrates.

The Eared Willow (*Salix aurita*) likes to spread in wet grassland. However, it is not the seedlings that reproduce here but rather clones of the very same source plant. After only a few years of growth, the outer arching branches of the plant tilt to the ground under their own weight. When they come into contact with the ground, roots sprout from the branches thus stabilising them. In this way the branch can steady itself, grow upwards and branch out further. The round-eared willow thus grows in width rather than in height.



From left to right:
Broad-leaved Marsh Orchid,
Bogbean, European Stonechat,
Raft Spider, Drinker, Eared
Willow, Wood Stitchwort,
alder and ash tree alluvial
forest along the streams

Low-Mountain Stream Habitats

Rocks or gravel of different sizes can be found in the riverbed of the Kall and its tributaries. Rock ramps with shallow, rapidly flowing water alternate with deep potholes and slowly flowing water, which is characteristic of the so-called „Upper Trout Region“. Brown Trout in particular needs the flat and therefore oxygen-rich, gravelly rock ramps for spawning. It uses its tail fin to mould spawning pits into the stony subsoil. Besides the eponymous Brown Trout, the European Bullhead and the Brook Lamprey are also adapted to this habitat.

In many places, the interstitial spaces of the streams are clogged up with sand or mud. However, in the Kall valley they are largely intact and are of high ecological significance, and not just for fish. The cavities consisting of loose granular soil deposits, which are located just below the water surface, is full of life. It is home to aquatic organisms, such as turbellaria, freshwater shrimps, water beetles, mosquitoes, mayfly larvae, caddis flies and stone flies, to name but a few. Studies conducted for the LIFE+ project have shown

that high-quality communities of rare species of insects have formed in the river Kall and its tributaries, whereby some of them are classified in the Red List as endangered species in the state of North Rhine-Westphalia. For example, the Golden-ringed Dragonfly (*Cordulegaster boltonii*) was detected along the river Raffelsbach. This large dragonfly, which can be found along clean, small flowing waters, is characteristic for spring creeks and is designated an endangered species which is specially protected in Germany.

The diversity of fish species and other aquatic species depends to a large extent on different habitats existing simultaneously in rivers. The changeover of riverbeds and riverbanks on the one hand and the body of water and interstitial gravel systems on the other is also of importance. The shallow riverbanks offer protection and warm up faster. The interstitial gravel system serves as a retreat for larvae and small fish, e.g. during flood waves or the passage of contaminated wave, thus enabling at least part of the fish population to survive.



The accessibility of tributaries is necessary. If the water level is sufficiently high due to heavy rainfall in autumn, trout rise to the small tributaries, spawn and retreat to the Kall or the Rur. Juvenile fish can grow up in tributaries where they are not disturbed by predators. The river Tiefenbach, for example, is excellently suited for that purpose and is considered to be the nursery of Brown Trout.

Insurmountable obstacles, such as smooth pipes with fast flowing water, barrages, weirs or plunges at pipe outlets led to the river Kall being split into various sections. Before the LIFE+ project was implemented, many tributaries were cut off from the Kall by piping.

A photograph of a riverbank with a rocky streambed and lush green vegetation. The river flows from the right towards the center, with a rocky bank on the left. The background shows a forested hillside.

From left to right:
Brown Trout,
Brook Lamprey,
Golden-ringed Dragonfly



Due to its small wingspan of only 2.5–3 cm and the dark colour of the upper side of its wings, the Violet Copper is rather inconspicuous at first sight. However, several extraordinarily structured wing scales refract the light in such a way that the blue parts are mainly reflected. The upper surface of the wings is in blue-violet hues and shimmers with every movement of the butterfly. Whilst almost the entire upper side of the wings of male butterflies shimmers in a blue hue, the wings of female butterflies are coloured in small areas only.



Violet Copper

Lycaena helle

After more than 30 years of nature conservation work, people in the Northern Eifel have slowly but surely come to realise what this species actually means for nature in the region – it is a special feature that reflects the character of the landscape and its habitat.

Wherever water flows, there will be the Violet Copper. It tolerates low temperatures and even flies in cloudy conditions and light rain. It often develops in particularly large numbers after long winters with lasting snow covers. During the post-glacial resettlement in central Europe, it could only permanently settle in the higher areas of some low-mountain ranges and in the foothills of the Alps. The Northern Eifel is one of only four regions in Germany offering the very conditions that are suitable for this species.

A decisive factor for the prevalence of this species is Bistort (*Bistorta officinalis*), a perennial plant with pink inflorescences that grows up to 1.2 metres in height and covers wide areas. In central Europe, the caterpillars of the blue morpho butterfly exclusively feed on the leaves of this plant.

All measures to protect the Violet Copper are aimed at protecting and developing entire habitats. It can therefore be described as an „umbrella species“. Like an umbrella, it also protects a variety of other species. For example, in addition to the Violet Copper another 27 butterfly species and close to 200 moth species were identified in the wet fallow areas of the upper Kall valley alone in the course of the project. They all benefit from the conservation of nature provided by Rur & Kall LIFE+!





From left to right:
Area "Hexenplatz"
near Konzen before
and after clearcutting

Implementing Measures on Site

When Conservationists Fell Trees

It was the aim of the Rur & Kall LIFE+ project to cut down 8 hectares of forest for the benefit of nature. This intention was supported by nature conservationists of the state government of North Rhine-Westphalia and the EU alike. However, forest is nature – so why cut it down?

The decisive factor was that the forest which was cut down consisted of spruce tree culture and was for economic use only, whereby spruce trees are neither native to the Northern Eifel region nor to Western Europe as a whole for that matter. The spruce tree – the Prussian tree – is a symbol of planned but unnatural forestry, which has been common practice since the 19th century. The „bread [high-yielding] tree of forestry“ is undemanding, easy to care for and grows quickly. This is precisely why it was planted in many places in the barren Eifel region.

However, densely growing evergreen trees take light from the indigenous flora. Streams and riverbanks are in the shade all year round. The water temperature stays permanently low. Light-loving water and marsh plants cannot thrive here. Spruce needles do not decompose easily and are no source of nutrition for river organisms. In the past, the large-scale cultivation of spruce trees led to the loss of habitats for many species, some of which have subsequently become extinct in the Eifel region.

On those grounds, spruce trees have been felled in the valley meadows of the Eifel from the 1980s onwards. On the one hand, local alluvial forests were to be fostered, and on the other biodiverse valley meadows. The result is highly positive for nature lovers and hikers: alder, birch and willow trees, daffodils, spignels, arnica, coppers, demoiselles, water ouzels, grey wagtails – the list of species that benefit from the “spruce-felling” measures of nature conservation goes on almost indefinitely.



Land Purchase

Nature takes its time. It takes many decades to turn a spruce-free forest area into a structurally diverse alluvial forest. When implementing such a project, you want to be sure that such development measures will be assured by the owner of the land in the future. You are on the safe side if you purchase land for the benefit of nature conservation.

For the Rur & Kall LIFE+ project we had set ourselves the goal of acquiring 5.5 hectares of land – both forest and fallow meadows. To this effect, we negotiated with the owners of almost 60 parcels of land. Not all discussions were successful. We often learned interesting things about the way forests and meadows were managed before. We felled spruces that the owners had planted together with their parents. For example, at the location “Brückborn” every seedling had been planted in the bog heaps that had especially been piled up for that purpose. In their childhood some people raked areas during the hay harvest, only for those areas to turn into fallow land over the years.

Many years ago their fathers flogged fence posts into the ground, which are weathered today, for fencing in their livestock.

The sale opened up the prospect of the marsh areas, which had been fallow for decades, being cultivated again thanks to nature conservation. The project was appreciated by the very people who used to farm the land in the old days. This personal contact with the former owners is an obligation for nature conservationists to treat the acquired land with great care.



Wetland restoration

Nature does not stand still. Once a meadow is no longer used for agriculture, its character changes. Light-loving plants growing from small seeds each year are over the years covered by the litter that develops every year. Plants drawing energy from a thick storage root each spring have an advantage. Grasses forming mounds are slowly but steadily growing. Woody plants that were previously suppressed by mowing and grazing can increasingly overgrow, shade and ultimately displace herbs and grasses.

This process is called „natural succession“ and it does not stop at the fallow areas in the upper Kall valley. To ensure that the many species, which can still be found in the Kall valley but are rare throughout the country, are preserved, this development must be stopped. There are two ways to do so, namely mowing or grazing. The Rur & Kall LIFE+ project decided to implement a mowing system that takes the requirements of as many species as possible into account. Only sections of the marsh areas were mowed.

Mowers instantly affect animals, especially spiders, insects and other arthropods. Many animals are also indirectly deprived of their livelihood, such as nectar and food plants, vantage points, mating places or nests. The majority of the animals and plants in meadows that are cultivated in a traditional way have adapted to this annual intervention. However, as the wet fallow areas had not been mown for years, a number of rare species were able to settle there, which would probably not have survived regular mowing in the long run. Therefore, the management concept for the wet fallow areas in the Kall valley provides for mowing to be done at different locations on a rotating basis each year. It takes about five years for the mowing to be resumed in the same area. This ensures that progressive succession is halted and that plant and animal species, which are both tolerant and intolerant to mowing, can coexist. Since mowing does not start before September, most plants can bring their seeds to fruit maturity and release them into the environment, juvenile birds become fledged and the caterpillars of many butterflies pupate.



Use of Different Mowers

We chose different types of mowing technics. First, we mowed 'on foot' and used a brush cutter. This is the best way to get familiar with the terrain. Obstacles, such as water holes, large boulders, fence posts that had fallen to the ground or barbed wire can be located, marked or removed. After mowing, the areas were cleared by hand. As in the past, rakes and pitchforks were used, which proved to be a physically demanding and time-consuming task.

Next, we used a hand-held single-axle mower. These devices run partly on wide rollers and partly on chain conveyors, each of which prevents the mower from sinking into the wet subsoil. Working with single-axle mowers reduces physical stress and is more efficient than using brush cutters. And yet, the litter still has to be cleared by hand once the mowing has been completed.

The use of a crawler mower and loader was more convenient for everyone involved. This device was first used in the region in 2015. The wide chains make it possible for the mower, which used to be an alpine snow groomer, to move over the wet, mushy soil without sinking into it. The front-mounted flail mower easily made its way through rushes, sedges and mounds. A fan blew the cut material straight into the loading basket. Once the basket was full, it was emptied at the outer edge of the area that was mowed. The last step in the process of marsh-area mowing was the removal and disposal of the hay. The hay was collected by a front-loader tractor and taken for composting.



From left to right:
removal of hay, hand-held single-axle mower,
crawler mower and loader

Restoring the Passability of Streams

Insurmountable obstacles, such as smooth stream pipes with a fast flow of water, plunges at the outlet of pipes, barrages or weirs have led to the river Kall being split up into various sections. Many tributaries were cut off from the Kall by pipes. This made it almost impossible for bullheads or trout to migrate within the river system.

Removal of Stream Pipes and Construction of 13 Bridges

However, at 13 locations the stream pipes could not be removed without replacement, as the paths were still to be used by timber transport vehicles and as hiking trails. The existing pipes were therefore removed and bridges were built. For cost reasons, it was not possible to build more appealing bridges made from wood and steel or natural stone.



Prefabricated concrete elements with a bottom gap to allow for an unconstrained riverbed were made. Within a few months after building the bridge, a new natural gravel riverbed emerged. The danger of plunges developing in the future has thus been eliminated.



Insurmountable obstacles:
smooth stream pipes with a fast flow of water



August, 2014 (River "Klafterbach"):
the stream pipe is used as drainage while building the Bridge



Restoration of the passability for fishes and invertebrates on the stream bed (River "Bosselbach"):
Within a few months after building the bridge, a new natural gravel riverbed emerged.



Culvert under the street "Panoramastrasse" before implementation of measures (June 2014): the stream bed, 55m long, smooth and concreted, is not passable for fishes.

Optimising of four stream pipes

At four locations the stream pipes did not have to be removed but was optimised by fleeces and/or by clearance cairns to ensure that fish can rise again.

Implemented stone barriers slightly raise the water level and diminish the velocity of water flow. The barriers were alternately fixed at the left and right hand side of the stream pipe. Thus the water streams in a wavy line through the passage with alternate segments of higher and lower flow rates. As a result sediments are deposited serving as microhabitat for the macrozoobenthos and fishes may have a rest behind the barriers on their way up the stream. Actually during a monitoring of these passages in 2017, Brown Trouts and European Bullheads were found throughout the whole stream pipe.



A fleece anchored in the concrete base optimised the deposition of sediment within a few weeks.



The insertion of stone barriers inside the culvert is only possible with hand operated chain dumpers.



Successful implementation: Stone barriers inside the culvert in autumn 2015

Conversion of barrages and weirs

However, along the bigger rivers said function, e.g. the drainage of water in mill ditches, had to be maintained. The barrages and weirs could therefore not be removed without replacement. In the autumn of 2016 the Kall was led around the weir in Simonskall in the form of a loop and led into a new riverbed. To a large extent, the downhill gradient and flow conditions now correspond to the natural course of the Kall. During control fishing in the autumn of 2017 a dense colonisation of the new arm of the river with Bullheads, Brown Trout and juvenile Salmon (of stocking measures) was established.



The weir in Simonskall is not passable for Brown Trout and European Bullhead.



Viewing direction upstream: the new arm of the river (left) has a high attraction current. Fishes follow this attraction current and do no longer fail to pass the weir in Simonskall.



Building a new riverbed: in autumn 2016 the Kall was led around the weir in Simonskall in the form of a loop.



Viewing direction downstream after successful implementation: backwater area of the weir in Simonskall (on the left in the photo); the new riverbed in form of a loop (on the right of the photo).



From top left to bottom (clockwise): Common Toad, Fire Salamander, European Beaver, Grass Snake; on the right: Alpine Newt

Developing Floodplains

Amphibians, such as Grass Frogs, Common Toads, Common Newts oder Dalmate Newts, Fire Salamander, Bats, Black Storks benefit from still waters that are either permanently or occasionally water-bearing. Therefore, flood channels and shallow depressions were excavated at several locations in the Kall meadows that fill up with leachate seeping from the slopes and with rainwater or floodwater. Whenever areas were easily accessible, the excavated soil was removed. Whenever areas were not accessible, the soil was applied to other locations along the slopes.



As the Bullhead lacks a swimming bladder, it lives close to the riverbed. Its pectoral fins are spread. Therefore the Bullhead is pressed to the ground, so that it can easily withstand strong currents.



European Bullhead

Cottus rhenanus

TARGET SPECIES

The Bullhead lives in the Trout and Grayling Zone of flowing waters that provide excellent water with high oxygen content and low temperatures – this is why the bullhead is quite common in the river Kall and its tributaries. The Bullhead is a special feature of low-mountain streams. It is a species protected by the Fauna-Flora-Habitat Directive (FFH Directive) throughout Europe and is also the target species of the LIFE+ project.

The Bullhead placed special demands on the measures taken in the Kall valley: as it lacks a swimming bladder, it lives on riverbeds and cannot manage even minor plunges – quite in contrast to the Brown Trout which is an excellent swimmer.

Fords, such as the one at the Kall between the village “Simonskall” and the “MestrengerMühle” inn, can also be an obstacle to migration.



This ford was stabilized with a smooth concrete slab. It formed a barrier that was not passable for Bullheads and hampered the movement for Brown Trout and Salmon.



Restoration of the passability for Bullhead and even small invertebrates: The concrete base was removed and rebuilt with stones arranged offset.

Understanding & Experiencing Nature with LIFE+

The Kall valley is not only a protected area for many endangered animal and plant species but also serves as a peaceful recreation area for walkers and hikers. When these people come across excavators and harvesters, it is indispensable to provide information on the measures taken and to explain them. Project films, information boards placed in the area and a travelling exhibition help people see the special features and beauties of the Kall valley: you do only protect what you know!

The existing „4-Tälerweg“ [“Four-Valley Trail”] and „Kalltalweg“ [“Kall Valley Trail”] hiking trails can be experienced anew: in a flyer designed in cooperation with the





Rur-Eifel-Tourism Board the most beautiful sections of the trail are described and are guiding hikers from one location where measures were taken to the next.

The „Rur & Kall-Radtour [the Rur & Kall bike tour], a 44 km circular tour with a difference in altitude of more than 500 metres, is more demanding. It offers a fascinating view of the Kall valley as an axis joining the High Fens and the Rur valley. The flyers are available free of charge at the National Park Infopoint in Zerkall.





TARGET
SPECIES

Brook Lamprey

Lampetra planeri

The body of the Brook Lamprey resembles that of an eel, however, it is neither fish nor worm but belongs to the species of cyclostomes due to its round, jawless mouth. Like the Bullhead, it is protected by the FFH Directive throughout Europe.

The Brook Lamprey benefits from the wide variety along streams and in streams, as it spawns on gravel rocks in shallow water, just like the Bullhead and Brown Trout. Afterwards, their larvae retreat for 3–5 years into muddy, quiet streams sections. Only its mouth protrudes into the flowing water to filter fine particles. Adult Brook Lampreys no longer take in food and die once they have laid their eggs. They therefore do not eat fish, unlike River Lampreys which cling to the flesh of fish with their suction mouths.

The Brook Lamprey owes its German name “Bachneunauge” [Nine eyes] to the circular body openings that are arranged in rows on each side, seven of which are branchial clefts and the other two an olfactory organ and an eye.



Clearly visible:
seven branchial clefts
and the circular
sucking disc



Even the Brook
Lamprey cannot pass
the culverts due to
large plunges and
the strong current.



Using prefabricated
concrete elements
with a bottom gap to
build a bridge, a new
natural gravel river-
bed emerges and
therefore restores
the passability.

European Beaver

Castor fiber

TARGET
SPECIES

Ever since the Rureifel-Jülicher Börde forestry office resettled beavers in 1981, beavers have been a common feature of the Hürtgenwald [Hürtgen Forest] again. This impressive hydraulic engineer builds stable dams made of branches, soil and stones in small, shady and cool streams, thus forming more or less large ponds. This results in a uniquely diverse landscape of inestimable value – standing and fast-flowing waters alternate with sunny and shaded sections of the river. Especially aquatic insects, such as dragonfly larvae and amphibians, benefit from beavers. So do Kingfishers, Black Storks and Grass Snakes, which are also common in beaver habitats.

Beaver dams only seemingly interrupt the flow of water: they are made of organic material offering loopholes to numerous animals. In addition, they are only kept for a few years, quite in contrast to pipes. These dams break during floods or are abandoned by beavers when they move on in search of a new home range.

In the course of the project there were also constant changes – some old beaver home ranges were abandoned and numerous new ones were set up at the Kall, Tiefenbach I, Richelsbach, Steinbach and Tiefenbach II, among others.

Beavers are vegetarians. In summer their diet consists of terrestrial herbs and aquatic plants. In contrast they feed on bark and twigs of trees in winter. Since beavers are not able to climb trees they fell them to reach their food easily accessible from the ground.





The LIFE+ Project

Partners & Supporters

The „Rur & Kall – Lebensräume im Fluss“ LIFE+ Project [“Rur & Kall – Fluvial Habitats”] is a joint project of the Biological Station Düren (project manager) and the Biological Station StädteRegion Aachen (project partner). The Ministry of Environment, Agriculture, Nature and Consumer Protection (MULNV) was also a project partner.

The district of Düren, the municipality of Hürtgenwald and the city region of Aachen also provided excellent support in financing and implementing the project.

The budget of the project amounted to approximately EUR 2.3 million, most of which was financed by the state of North Rhine-Westphalia and the European Union.

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Picture credits:

Archiv Heimatverein Konzen: Hay harvest in the “Hohes Venn”, Cultivation in the “Hoscheiter Venn”; K. Enting: European Bullhead (frontal view); G. Feldhaus: Atlantic Salmon (male Salmon); D. Fey: Atlantic Salmon (female Salmon); J. Freyhoff: Brook Lamprey (view of suction mouth); M. Harzheim: Fire Salamander; H.-J. Jochims: Atlantic Salmon (juvenile Salmon); B. and C. Kutschenreiter: European Beaver (individual and group); A. Pardey: Golden-ringed Dragonfly; B. Stemmer: Brown Trout; J. Vogt: beaver dam; P. Toschki: Black Stork, Grass Snake, Common Toad, Fire Salamander (portrait), Alpine Newt

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RUR & KALL

Lebensräume im Fluss

More Information on:
www.rurundkall.de

