Reeds for LIFE – Lebendige Röhrichte

Layman's report

Reeds for LIFE

Protection and Restoration of an Important Habitat at the Bienener Altrhein

Reeds for Life

LEBENDIGE RÖHRICHTE

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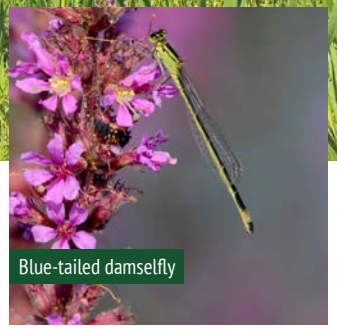
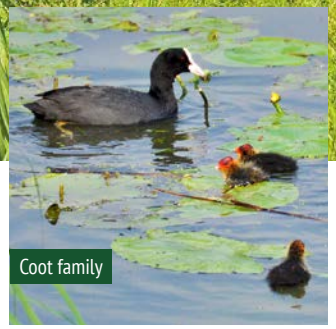
The website with all project details:

lebendige-roehrichte.de/en

Decline of reedbeds


Blue-tailed damselfly


Coot family


The Bienener Altrhein in 1995, with broad shore vegetation, islands of reeds, and extensive stands of water lilies and pond lilies

Diversity at risk –
Decline of reedbeds along the Bienener Altrhein

Where land and water meet, fascinating habitats emerge: reedbeds. Reedbeds are dense stands of tall-growing plants and are usually named after the dominant species, such as common reed or cattail reedbeds. They fulfil several important functions for nature and people. They provide birds, fish, amphibians and insects with safe breeding grounds and refuges. At the same time, they purify the water, protect riverbanks from erosion, and are an important part of the natural cycle of water bodies. However, in the project area around the Bienener Altrhein on the Lower Rhine, approximately 65% of the reedbeds were lost between 1995 and 2018. Cattails were particularly hard hit, having almost completely disappeared.

The cause is known: In 2015, the 'Naturschutzzentrum im Kreis Kleve e. V.' demonstrated that the feeding behaviour of coypu plays a decisive role in the loss of cattail reedbeds.

To counteract this loss and restore biodiversity, the EU-funded LIFE project 'Reeds for LIFE – Lebendige Röhrichte' was implemented from 2018 to 2026. Through targeted measures, the reedbeds were successfully restored.


The Bienener Altrhein in 2017—the extensive reed beds and floating-leaf plants have disappeared

Project area

Old channels of the Rhine –
valuable habitats for rare species

The project area covers approximately 1,120 hectares in the three nature reserves 'Bienener Altrhein, Millinger Meer & Hurler Meer', 'Empeler Meer' and 'Grietherorter Altrhein' which are also designated as 'Natura 2000' sites. Together, they form a valuable system of old Rhine channels with very rare species typical of floodplain landscapes. The Grietherorter Altrhein is directly connected to the Rhine. Due to its location, the Bienener Altrhein has no direct connection to the Rhine. Between the two areas lies a so-called 'summer dike'. It is lower than the main dike and prevents small and moderate floods from reaching the area of the Bienener Altrhein.
However, the two old Rhine channels are connected to each other via the Dornick lock. This allows the water level in the Bienener Altrhein to be regulated to a certain extent. A fish ladder ensures that migratory fish can pass through here.

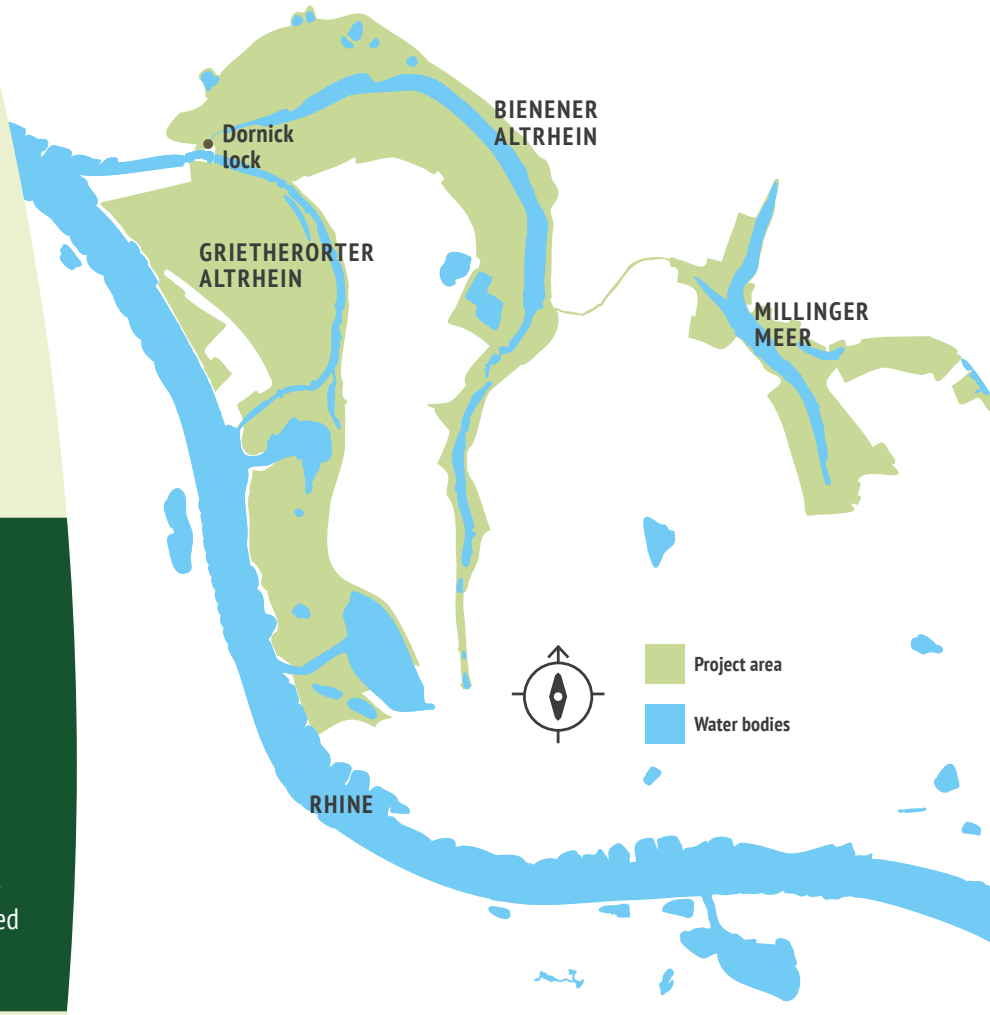
The Bienener Althrein (in the foreground) as well as the Grietherorter Altrhein and the Rhine (in the background) seen from a bird's-eye view

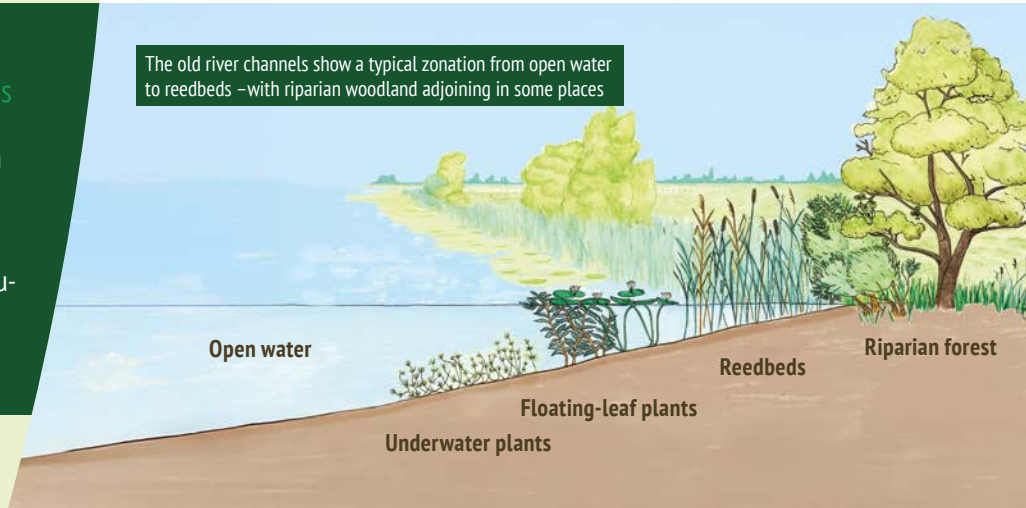
LIFE –
EU funding programme

The acronym LIFE stands for L'Instrument Financier pour l'Environnement (Financial Instrument for the Environment). LIFE is the European Union's funding programme designed to support environmental and climate protection projects within the EU. The 'Reeds for LIFE' project was 60% funded by the LIFE programme.

Natura 2000 –
The EU's network of protected areas

Natura 2000 is the name of a European network of protected areas established to conserve particularly valuable and threatened habitats and species. It includes protected areas in all EU member states.





Reedbeds as a habitat: Plants

Flowering rush

Common reed (left) and broadleaf cattail (right) are among the more commonly known reedbed species. They form large single-species stands in many places within the project area.

Loosestrife

Bur-reed

Water forget-me-not

Reedbeds –
Vibrant riparian landscapes

Reedbeds grow along water banks and in shallow water zones. Usually, one plant species dominates the stand – common reed and cattail are particularly well known.

However, reedbeds can also be incredibly diverse. Species such as bur-reed, reed sweetgrass or bulrush appear in a wide variety of forms and shades of green. Flowering plants such as purple loosestrife , flowering rush and water mint add flashes of colour.

Reedbeds are full of life. They provide food, shelter and breeding grounds for specialised birds, insects and fish. Water levels, light and soil conditions change the scenery from year to year. Species that dominate today may give way to others tomorrow. This creates a living, ever-changing mosaic – a dynamic habitat of great ecological importance.

A species-rich reedbed with a floating-leaf plant, the water lily, in the foreground

Reedbeds as a habitat: Animals


Resting dragonfly (Green-eyed hawker)

Life in the reedbeds –
Hidden diversity

Even if it doesn't seem so at first glance, reedbeds are home to a wide variety of animal species. Their inhabitants are often secretive, small or inconspicuous.

More information on the black tern conservation project:

nz-kleve.de/artenschutz/trauersee-schwalbe/artenschutzprojekt


Bitterling during egg-laying


Reed warbler with prey


Black tern with chick


Soft-winged flower-beetle specialising in reedbeds


Peacock butterfly on purple loosestrife

Fish

There's plenty going on underwater too. Between the stems of reed plants, various fish find a place to spawn and shelter for their young. One notable inhabitant is the critically endangered European bitterling: it relies on large mussels for reproduction and, in return, helps to disperse their larvae. Coypus eat the mussels, thereby disrupting this vital cycle in the ecosystem.

Birds

Reedbeds provide many bird species with shelter from predators and serve as breeding or resting sites, song perches or feeding grounds. Some birds, such as the reed warblers, build their nests among the stems. Ducks and geese nest on the ground. The critically endangered black tern also breeds at the Bienener Altrhein. It used to nest along the edges of the cattail reedbeds. Today, artificial nesting platforms help ensure its breeding success.

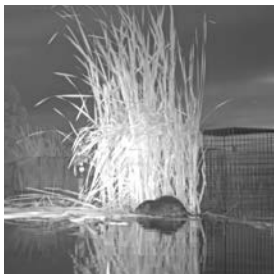
Insects

Many insects are closely associated with the reeds. Numerous larvae develop, well protected, within the stems or rootstocks. Some species spend their entire lives in the reeds, such as many dragonfly species. Their larvae grow in the water before eventually climbing up the reed plants to transform into adults. Adult dragonflies find shelter, food and resting places in the reeds.

Measures for reedbeds

Habitat loss at the Bienener Altrhein –
Coypu grazing as the main cause

The coypu is a species introduced from South America by humans. It is considered an invasive species and severely impacts the biological diversity and value of the nature reserve. The damage caused by the species has been clearly demonstrated by preliminary studies at the Bienener Altrhein: coypu browsing is a major contributor to the decline of cattail reedbeds. Between 1995 and 2018, 65% (15 ha) of the reedbed cover at the Bienener Altrhein was lost. The introduced rodents preferentially feed on the nutrient-rich growing points of the cattail, from which new shoots and roots develop. The plants can no longer regrow and die off. The stands collapse, causing the shallow banks to subside and remain permanently flooded. Since reed plants need open, periodically dry mudflats to germinate, the stands can no longer regenerate and spread without these conditions. Consequently, the area's biodiversity is seriously threatened.



An experiment showed how coypus decimated a stand of cattails within a week after a protective fence had been removed.

A reedbed damaged by coypu feeding

Coypu trap

Setting up the plantings

Water level loggers to monitor water levels

Clearing of willow shrubs

LIFE Project –
Measures for thriving reedbeds

These measures help to restore the reedbeds:

- → Control of coypu to reduce grazing pressure
- → Fenced reedbed plantings, as a basis for natural regrowth
- → Dynamisation of water levels to restore natural conditions
- → Removal of woody vegetation to reopen former reedbed sites

Coypu control

Cattail plants damaged by coypu feeding

Coypu trap on a raft with heat protection

Rapid reproduction – high food requirements

A look at their reproduction and food requirements shows why the impact on the nature reserve is so severe:

- 2–3 litters per year, averaging 5–6 young (up to 13 young per litter)
- Young animals reach sexual maturity after just 5–6 months
- Eats ¼ of its body weight every day. The heaviest animal caught during the project weighed 9.6 kg – and thus consumed approximately 2.4 kg of plants per day
- In 2019, 380 animals were caught in the project area. These had a total weight of 1,321 kg – meaning the animals consumed around 330 kg per day and 121 tonnes per year

Controlling the coypu – for greater biodiversity

The intensive grazing by the invasive coypu is leading to the gradual loss of reedbed habitat. This directly threatens biodiversity in the area. Birds, fish and insects that are highly adapted to reedbeds are particularly affected. These species have nowhere else to go.

Removing coypus from the project area is therefore a necessary measure and the only way to preserve these habitats and their species communities. This is carried out by trapping and culling – currently the only effective and at the same time animal-friendly method. A detailed procedure has been developed for this purpose to ensure that suffering and pain for the coypus are kept to a minimum. The carcasses are then put to use – for example, as food for lynx at a nearby wildlife park. A long-term management plan ensures that the area remains free of coypus.

Introduced species – harmless or invasive?

Plants or animals that do not naturally occur in a particular region and have been introduced by humans – for example, through trade, transport or release into the wild – are called non-native species. Many of these species have so far caused little concern. Some, however, spread rapidly, displacing native species and disrupting the ecological balance. They are then considered invasive. In Germany, this applies to around 10% of non-native species. The coypu is one of them. An EU regulation lists such invasive species and sets out measures for managing them.

Fenced plantings

Plantings protected from browsing – A helping hand for the reeds

Along the shore, where broad belts and islands of reeds once dominated the landscape, nature has been given a helping hand through plantings – well protected from grazing by fences and mesh panels. The fencing also helps in other ways: it reduces the impact of waves, thereby promoting the deposition of sediment. This allows the soil to slowly rebuild itself – an important step in ensuring that reeds can return permanently. When the old reed-beds disappeared, the ground had subsided in many places, leaving it permanently flooded. As a result, new plants could no longer germinate. Thanks to the planting programme, the soil can also build up again. This supports the natural spread of the reeds – and thus also their many inhabitants.

Between 2018 and 2025, around 17,000 reed plants were planted – across approximately 1.5 hectares, protected by around 3.2 km of fencing. This was only made possible thanks to the tireless commitment of many volunteers.

Through planting, new reedbed-islands are emerging in the Bienener Altrhein

A bird's-eye view of the plantings

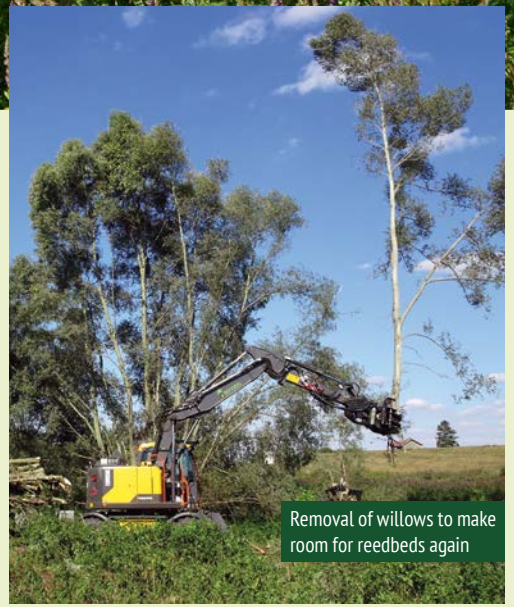
Clearings & Water Levels

Open mudflats at the Bienener Altrhein with colourful purple loosestrife

Making room for reeds –
targeted clearing of woody vegetation

In some places along the Bienener Altrhein, the reeds had been displaced by encroaching willow thickets. Selected areas were therefore specifically cleared of woody vegetation.

Importantly, no protected species or valuable habitats were removed. Floodplain forests and other significant stands were fully preserved. In total, 2.3 ha of woody vegetation were cleared, creating space where reeds can now grow once more.



Removal of willows to make room for reedbeds again

Bienener Altrhein, August 2022

Bienener Altrhein, July 2023

Dynamic water levels –
for a richer natural environment

Floodplains thrive on change – biodiversity is only preserved where water levels fluctuate. In late summer, reeds need open mudflats so that new plants can develop from seeds. Without these, the reeds cannot spread. At the Bienener Altrhein, the water level can be adjusted seasonally within certain limits – thus allowing the dynamics of a natural floodplain to be partially restored. This is controlled via the 'Dornick lock', which has a fish ladder at its outlet. Automatic water level loggers record the water levels and help with the adjustment.

Dornick lock with fish ladder

Monitoring: Measuring success

Garganey

Reed bunting

Focus on Breeding Birds –
Monitoring success in the breeding area

Breeding birds in the area have been recorded every year since 1981. These regular data show which species breed here and how their numbers are changing.
In order to assess the impact of the project measures, particular focus is placed on waterbirds and reedbed birds. They are sensitive to changes in their habitat and are therefore well suited as indicators of improvements in the reedbeds.

View from above –
Mapping reedbeds using a drone

To closely monitor the development of the reedbeds, aerial images are regularly taken using a drone. Thanks to variations in shades of green and growth patterns, it is even possible to distinguish between different plant species in the images. The stands are then digitally mapped and compared on a computer, so that changes over the course of the project become apparent. This method saves a great deal of time but cannot fully replace fieldwork. In particular, areas with a high species-diversity cannot be fully assessed from the air and must therefore still be checked on site.

Drone footage shows the natural growth of reedbeds along the Bienener Altrhein between 2019 and 2021

Results, achievements & outlook


Iris-reedbed


Bluethroat

Where reedbeds return, life follows –
Measures show first successes

The reedbeds have spread considerably. And along with the reedbeds, the number of breeding birds has also increased.

- around 12 hectares of new reedbeds have been added – equivalent to roughly 15 football pitches and an increase of 77 %
- of all plant species, the common reed was able to spread the most: it now covers an area almost twice as large as it did at the start of the project
- diversity has also increased: whilst the stands were previously dominated mainly by six plant species, there are now 12 species forming large stands
- several bird species have returned: after a long absence, reed warblers, sedge warblers and marsh harriers are once again breeding in the area
- new arrival: the Savi's warbler – a rarity in North Rhine-Westphalia – is breeding for the first time at the Bienener Altrhein
- bluethroats and water rails are also benefiting from the project – their numbers have reached new highs

Conclusion & Outlook –
Securing success, strengthening reedbeds

The LIFE project 'Reeds for LIFE – Lebendige Röhrichte' impressively demonstrates how threatened habitats can be restored. Through the removal of an invasive species, plantings, water level management and targeted removal of woody vegetation, the project has succeeded in reversing the decline of reedbeds in one of the most important nature reserves on the Lower Rhine.

Even after the project ends, it will be important to keep the area free of coypus and to continue monitoring along with targeted public outreach. Only in this way can the successes be secured in the long term. This LIFE project has not only contributed to local nature conservation but also to the European goals of Natura 2000 and LIFE: to preserve Europe's biological diversity and keep it alive for future generations.


Sedge warbler


Marsh harrier

Experience this diversity for yourself – on our excursions about breeding birds and reedbeds.

nz-kleve.de/aktuelles-und-veranstaltungen/programm

Project information & legal notice

Project overview –
Further details on the project

- Project reference number: LIFE17 NAT/DE/000460
- Project title: Promotion and recovery of reeds in the Natura 2000 area DE-4104-302 'NSG Bienener Altrhein, Millinger und Hurler Meer'
- Project acronym: Reeds for LIFE
- Project coordinator: Naturschutzzentrum im Kreis Kleve e. V.
- Project area: FFH-site DE-4104-302 'Naturschutzgebiet (NSG) Bienener Altrhein, Millinger und Hurler Meer und NSG Empeler Meer' and FFH-site DE-4203-303 'NSG Grietherorter Altrhein'
- Project duration: July 2018–December 2026
- Budget: € 1,838,584.00
- Funding: 60% European Union, 36% Ministry of the Environment, Nature and Transport of the State of North Rhine-Westphalia
- Additional Funding: see other funding partners listed opposite

Project management

NATURSCHUTZ ZENTRUM im Kreis Kleve e.V.

Project funding

Life

NATURA 2000

Ministerium für Umwelt, Naturschutz und Verkehr des Landes Nordrhein-Westfalen

Further funding

Kreis Kleve ... mehr als niederrhein

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