



# Vielfalt auf Kalk

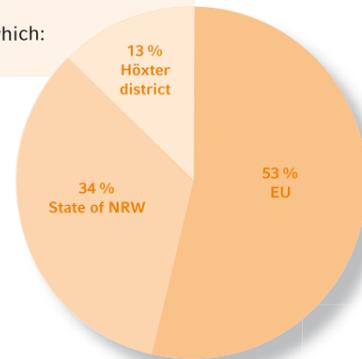
A nature conservation project  
for the optimisation of dry habitats characterised by limestone  
in the cultural landscape of the Höxter district.



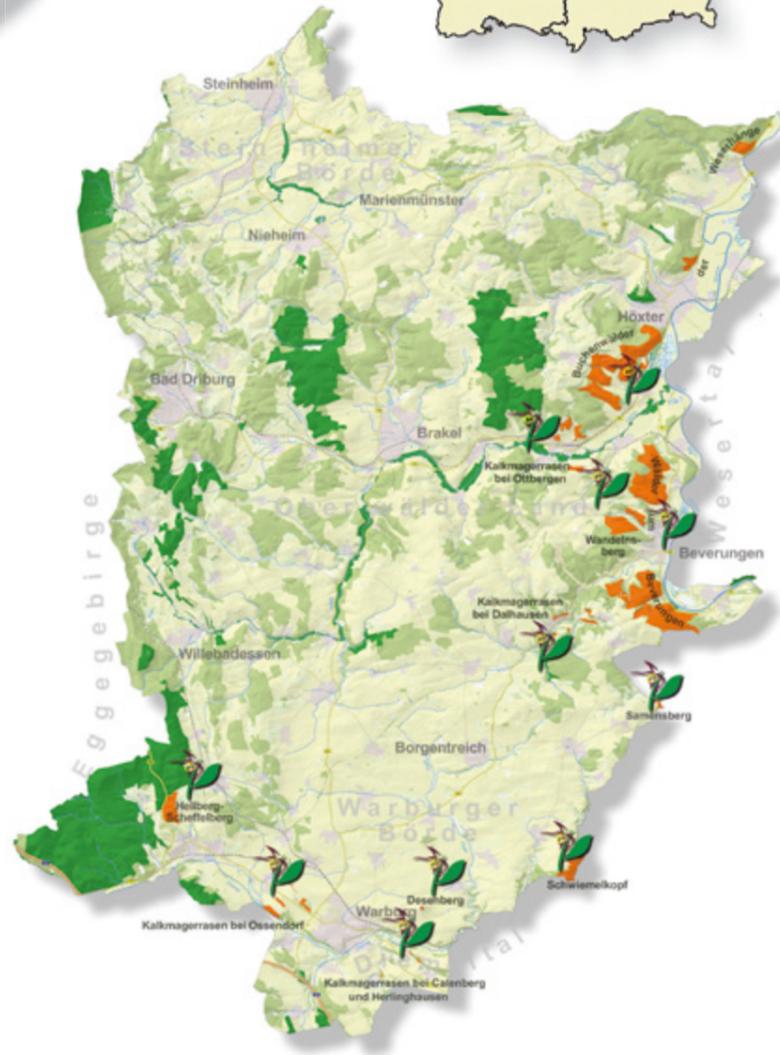
## Project facts

**Duration:**  
September 2011 - June 2017

**Total budget:**  
1.100.000 €, of which:



## District of Höxter



## Project areas

- DE-4221-302  
Calcareous nutrient-poor grassland near Ottbergen
- DE-4222-301  
Forests of the Weser slopes - Ziegenberg
- DE-4321-301  
Calcareous nutrient-poor grassland near Dalhausen
- DE-4321-304  
Wandelnsberg near Beverungen
- DE-4322-304  
Forests around Beverungen - Selsberge, Rotsberg
- DE-4420-301  
Hellberg-Scheffelberg near Scherfede
- DE-4420-303  
Calcareous nutrient-poor grassland near Ossendorf
- DE-4421-302  
Schwiemelkopf near Körbecke
- DE-4421-303  
Desenberg near Warburg/Daseburg
- DE-4422-306  
Samensberg near Manrode
- DE-4521-302  
Calcareous nutrient-poor grassland near Calenberg and Herlinghausen

## Imprint

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## Project promoter and partner



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## An introduction to the *Life+* project

Within large parts of the Höxter district, Muschelkalk represents the base rock. In these areas the dry habitats characterised by limestone are of great value due to their high species diversity. The semi-dry calcareous grasslands, juniper heath grasslands, rock formations and orchid-rich beech woods offer habitats for animal and plant species, whose usual range is the south and south-east of Europe.

These centres of diversity are part of our European natural heritage. Numerous measures of this *Life+* project aimed at their restoration or optimisation and secured a sustainable use of these areas:

- Clearing and enlargement of overgrown semi-dry calcareous grasslands,
- Rejuvenation of overaged junipers and enlargement of populations,
- Promotion of species rich lowland hay meadows,
- Eradication of wood small-reed stands,
- Transformation of non-native to site-adapted forest stands,
- Promotion of sparse forest stands for the improvement of the coherence between isolated semi-dry grasslands,
- Optimisation of the orchid-rich beech woods,
- Reinforcement and optimisation of the lady's slipper orchid stands.



## Ladies and Gentlemen,

The cultural landscape of the Höxter district is blessed with many attractive landscapes for nature related recreation purposes. Moreover, many of these areas are of trans-regional value for the conservation of species diversity, one of the most important natural assets of our planet.



In relation to this, the so-called „dry habitats characterised by limestone“, such as the semi-dry calcareous grasslands, limestone rocks or calcareous beech woods, are of particularly high significance. These areas build the habitat basis for numerous animal and plant species such as orchids, colourful butterflies and reptiles, whose usual range is the Mediterranean region.

In the Höxter district, it is possible to experience many of these unique nature paradises up close. This is also due to the LIFE+ project „Vielfalt auf Kalk“, with which it was possible to secure these limestone habitats as a retreat for rare and protected animal and plant species. This brochure will give you a fascinating insight into these unique landscapes as well as into the successful efforts undertaken, in order to sustainably ensure the preservation of this part of our European natural heritage.

I hope you will enjoy reading this brochure.

*Friedhelm Spieker*  
 District Chief Executive

# What is Life+

LIFE = L'Instrument Financier pour l'Environnement is a European funding programme, exclusively supporting environmental protection issues. The programme has been in existence since 1992 and funds measures in the areas of biodiversity, environmental and climate protection.

The funding category „Life - Nature & Biodiversity“ is aimed at the conservation of species and habitats of community importance.

## What is NATURA 2000? What are FFH-areas?

NATURA 2000 represents the network of protected areas within the European Union, aimed at ensuring a trans-national protection of endangered plant and animal species, as well as their natural or near-natural habitats.

It is based on the guidelines and framework of the Fauna-Flora-Habitat-Directive (short: FFH-Directive) and consists of FFH-areas and Special Protection Areas for birds.

### Beech woods



78 %

The European natural heritage is represented by 43 FFH-areas with a total area of 8,360 ha and one Special Protection Area, sized 3,510 ha, in the Höxter district. The largest share of the FFH-areas is taken by the beech woods and their different varieties at around 6,500 ha (78 %).

### Water bodies



14 %

The area of the Natura 2000 areas for the protection of water bodies and their alluvial forests totals around 1,200 ha (14 %).

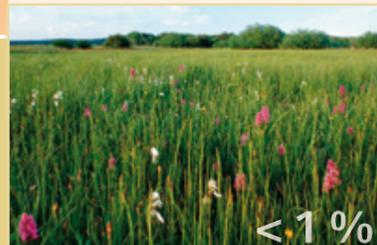
### Semi-dry calcareous grasslands



7 %

The area of the FFH-areas, aimed at the preservation of semi-dry calcareous grasslands, juniper (*Juniperus communis*) formations on calcareous grasslands, calaminarian (heavy metal rich) grasslands and lowland hay meadows, adds up to around 540 ha (6.5 %).

### Calcareous fens



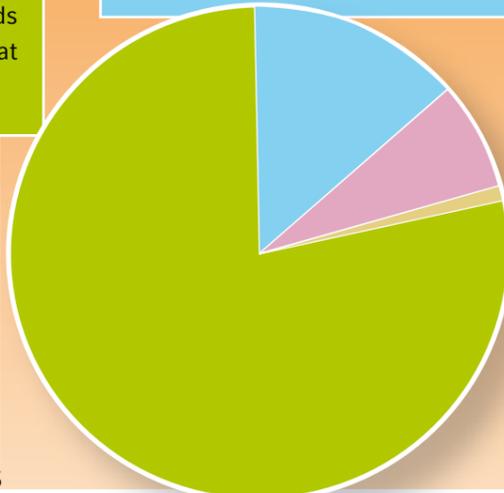
< 1 %

The calcareous fens are a naturally very rare and simultaneously highly endangered habitat type. At a total size of 20 ha (1.5 %) the areas, aimed at the protection of these habitats, take a comparatively small share.

## 6 protected areas

A total of six protection areas were specially designated for the conservation of the European animal and plant species: Northern crested newt, greater mouse-eared bat and lady's slipper orchid. The size of these areas is around 100 ha (1.2 %).

The Special Protection Area „Egge“, a conservation area for woodland bird species, is dominated by various deciduous and coniferous tree stands.



## Hotspots of species diversity Semi-dry calcareous grasslands and juniper heath grasslands

**Semi-dry calcareous grasslands** are some of the most species rich habitats of Central Europe, thus being a true jewel of the European natural heritage (habitat type 6210). The mostly sparse swards are growth sites of many native orchids, gentians and numerous other endangered plant species. Around 30 of today's butterfly species present in the Höxter district are highly dependent on these semi-dry grasslands for their survival. These areas act further as a retreat for the sand lizard and smooth snake as well as for the red-backed shrike and tree pipit in the nowadays predominantly intensively used landscapes.

Semi-dry grasslands were once widely distributed in Central Europe. They served as pasture grounds for sheep and goats and were a characteristic element of the traditional cultural landscapes in the low mountain ranges. Parallel to the economic demise of sheep farming in the mid-20th Century these grasslands were no longer used. These characteristic areas were widely planted with coniferous trees, converted into intensively used grassland or agricultural fields, opened up for building development or were simply lost to na-

tural succession with the advancement of shrubs. Of the former 4,400ha of semi-dry grasslands and nutrient poor pastures in the Höxter district, only around 150 ha exist today. The orchid-rich variations of these grasslands are classed as priority habitat types at the European level and are under a special protection status (habitat type 6210\*). In cases where such semi-dry grasslands are populated with juniper, these areas are formally called **juniper formations on heaths and calcareous grasslands** and are also part of the European natural heritage (habitat type 5130).

The remaining semi-dry calcareous grasslands and juniper heath grasslands are often of a very small size, overgrown with shrubs or separated by planted coniferous stands. This leads to negative effects for the species of the nutrient poor grasslands, whose long-term survival is not guaranteed on these small „islands“. This situation also puts the users at a disadvantage. Often these are shepherds, for which it is increasingly difficult to farm and use these areas due to their small-scaled, scattered and partially overgrown nature.



Cross gentian



Fringe-flowered gentian



Chalkhill blue



Chiltern gentian



Three-toothed orchid



Terratrak - an all-terrain tractor in operation at Hellberg-Scheffelberg



Eradication of a wood small-reed stand with a single-axle mulcher



A sparse forest stand at the Kalkberg near Dalheim



Clearing of tree crown cuttings and uprooting of rootstocks using an excavator



Mechanical shrub-clearing using an excavator

## Help for the dry grasslands

In order to enhance the conservation status of the semi-dry calcareous grasslands in the project area, around 20 ha were cleared of encroaching shrubs. In addition, spruce stands, planted in the past, were cleared on another 5 ha, so that a total of 25 ha were obtained for the regeneration of the species rich nutrient poor grasslands. These areas were included in the existing grassland use but still require further regular care for several years since the sheep alone are not capable of preventing a regrowth of the cleared shrubs. In order to allow for an efficient cutting regime of these areas in the future, an all-terrain tractor was acquired with project funds, enabling a fast and efficient maintenance, even on slopes.

## A special case – the juniper (*Juniperus communis*)

Many of the juniper stands in the project areas are overaged and no longer exhibit sufficient rejuvenation. In order to overcome this problem, stem cuttings were taken and established horticulturally. After two years these could be planted into the project areas. In that way, the juniper stands were enlarged by around 7.5 ha.



Planting of established junipers. A growth tube structure protects the young plant.

Motorised manual maintenance work in a juniper stand



Wood harvest using a harvester



Energetic utilisation of cuttings as woodchips

## Sparse forests – Bridges between the habitats

In order to make dense forest stands, previously acting as barriers between isolated semi-dry grasslands, more permeable for species of open areas, these tree stands were thinned. The resulting sparse forest stands also come as a benefit to shepherds, since these areas are no longer an obstacle when moving and herding sheep. Sheep and goats in turn help to maintain the sparse character of the woodland by browsing on young trees.

Several newly established permanent fence structures act as a further benefit for pasturing, since shepherds no longer have to erect temporary electric fences on the shallow soils of steep slopes. Whenever possible, any wood resulting from clearing of shrubs and felling of trees was used for energetic utilisation in the form of woodchips, if there was no other use. That way a small contribution to climate protection was achieved.

Sheep herd on the move in thinned sparse forest





View onto the Rabenklippen near Höxter



Bartling's-broomrape



Sage-oatgrass meadow at Rabensberg near Ossendorf



Ox-eye daisy



▲ Lapidary snail

▼ St. Bernard's lily



Scorpion vetch



## Rock habitats and pioneer grasslands

At the steep slopes of the river valleys of Weser and Diemel **calcareous rocky slopes** and **calcareous scree of hill and montane levels** are found, which are protected European-wide as habitat types 8210 and 8160\*, respectively.

Particularly good examples of this habitat type are found in the area of the Rabenklippen at the Ziegenberg in the FFH-area "Buchenwälder der Weserhänge". The Rabenklippen are trans-regionally known due to the existence of several highly rare plant species. The Bartling's-broomrape (*Orobanche bartlingii*) and scorpion vetch (*Coronilla coronata*) only occur here in the state of NRW. Other species such as the moon carrot (*Seseli libanotis*), St. Bernard's lily (*Anthericum liliago*) or the New Forest cicada (*Cicadetta montana*) are mostly limited to this site.

The **rupicolous calcareous pioneer grasslands** (habitat type 6110\*) are found at small scales in the Höxter district. These are either located within semi-dry calcareous grasslands or in direct connection to calcareous rocky slopes and scree habitats.

All of these three habitat types are characterised by extreme site conditions. A distinguishing feature is the poor water availability, which inhibits the growth of trees and shrubs. However, since these areas are often located within forests, these habitats are often shaded out by surrounding tall trees. This was not the case in the past, as the forest stands were very sparse due to wood pasturing and coppicing.

In order to recreate and offer sunny conditions to these extremely rare habitat types and their respective typical species, these stands and their surrounding area were cleared of trees as part of this LIFE+ project.

## Colourful flower-rich lowland hay meadows

Species-rich fresh grassland has disappeared almost entirely in the lowlands and the low mountain ranges. This is especially true for the two-cut hay meadows. In the light of this decline the remaining areas are protected as lowland hay meadows (habitat type 6510) on a European scale.

One of the most beautiful meadow types of Central Europe is the **sage-oatgrass meadow** (*Salvio-Arrhenatheretum*), similar and often adjacent to the semi-dry calcareous grasslands. Especially in May and June before the first annual cut these areas are extremely colourful with the meadow sage, ox-eye daisy, meadow salsify, common sainfoin and bird's-foot trefoil in full bloom.

With the goal of securing and optimising the existing sage-oatgrass meadows as well as creating new ones, suitable stands were enriched with missing species as part of the LIFE+ project. This was achieved through the use of seed-containing mown grass from intact meadows, which was then distributed in previously prepared seedbed patches of differing sizes in the target areas. Over the next years the species will then colonise the neighbouring meadows from these patches. With the use of this method, around 30 ha of oatgrass meadows could be optimised or newly created.

Through contractual agreements with the users of these areas, a goal-oriented management is guaranteed for the future.



Mowing seed-containing material with Terratrac



▲ Spreading seed-containing mowing material



Seeding meadow sage ▶





Red helleborine



Early-purple orchid



## Orchid-rich beech woodlands and other sparse forest formations

The distribution range of the European beech is globally restricted to Europe. Therefore, Europe has the sole responsibility for the preservation of the beech dominated forest communities. The European Union meets these requirements by including all beech forest communities in the FFH-Directive, thus granting protection.

One of the protected beech wood habitat types is the **Medio-European limestone beech forest of the Cephalanthero-Fagion** (orchid beech woods, habitat

type 9150), of which the stands in the Weser mountain range are at its most northern distribution border. Here, this habitat type occurs at small scales on south and south-west exposed slopes.

Typical is the sparse, patchy tree layer allowing a great amount of light to reach the forest floor as well as the resulting distinctive, species-rich herbaceous layer. Numerous woodland orchid species such as the white and red helleborine (*Cephalanthera damasonium* and *C. rubra*), the greater butterfly-orchid (*Platanthera chlorantha*) or the early-purple orchid (*Orchis mascula*) contribute to the name of this habitat type.

Orchid beech wood at the Ziegenberg near Höxter



Coppice wood with regrowth from stumps

In the past these orchid beech woods and neighbouring forest stands were used as coppice. Even today this is still recognisable by the gnarled, crooked tree trunk bases as a result of the repeated regrowth from the stumps. Originally fast-growing forests developed into these orchid beech woods due to this traditional management. However, as coppicing practises ceased to exist, these stands returned to high forests, resulting in a sharp decline of this habitat type along with its species richness and fascinating woodland image. To counteract this decline, tall shading trees were removed individually in order to create sparse forest stands in a 35 ha area as part of this LIFE+ project.

Motorised manual after care of a strongly thinned pine forest



Coppice with standards in the Steigerwald (Franken)

Regular targeted tree removal will ensure the preservation of this habitat type in the future. Furthermore, the traditional coppice with standards management will be reintroduced on small scales.

As another measure, European black pine and spruce, non-suitable to the site conditions, were removed from potential orchid beech wood sites and replaced with high amounts of more shade-intolerant tree species such as sessile oak, wild service tree, European hornbeam and field maple, being better adapted to these site conditions.

Removal of spruce trees

## Species of the FFH-Directive

Animal and plant species, specially protected on a European scale, are listed in the annexes II and IV of the FFH-Directive. Some of these are:

- » Lady's slipper orchid (*Cypripedium calceolus*),
- » Sand lizard (*Lacerta agilis*),
- » Smooth snake (*Coronella austriaca*),
- » Large blue (*Maculinea arion*)
- » Stag beetle (*Lucanus cervus*).

For the support of their populations or the improvement of their conservation status, special species protection measures were implemented during this LIFE+ project.

The populations of the **lady's slipper orchid**, which occurs with one exception in no other area of NRW, were enhanced by 200 horticulturally raised individuals. Furthermore, former growth sites of the lady's slipper were optimised. Liverworts were planted in special seedbeds, acting as carriers of a symbiotic fungus, important for the germination of the orchid's microscopic seeds, thus creating favourable conditions.

The **sand lizard** and **smooth snake** will benefit from the recreation of special structures, such as piles of stones and dry stone walls as well as from rocky ridges and excavations cleared of vegetation. These structures serve as sun bathing spots, hiding places and hibernation grounds for these warmth-loving species. The **stag beetle**, whose larvae develop in rotting dead wood, will benefit indirectly from the thinning of the forest stands. The increased amount of light and warmth at the forest floor will favour the development of the larvae.

The clearance of shrubs on the former semi-dry grasslands and removal of barriers between these sites greatly benefit the **large blue**. This butterfly species was recorded again recently for the first time in many years at two former sites near Dalhausen.



Large blue butterfly



» Lady's slipper orchid

» Stag beetle



» Smooth snake

» Sand lizard



Dry stone wall as habitat for reptiles



» Participants at the networking conference of the LIFE projects in NRW



» Training course for nature and landscape guides



» LIFE symposium speakers



## You only protect what you know!

Dry habitats on limestone support a great variety of fascinating animal and plant species and exhibit an exceptionally high aesthetic value. In order to make this experience accessible to all areas of the public, numerous guided hikes, presentations and excursions were held as part of this LIFE+ project.

**Special training courses** for nature and landscape guides created the base for an autonomous programme around this European natural heritage. **Excursion days** were designed and performed for grammar and vocational schools with great positive feedback. Further, students of the OWL University at Höxter had the possibility to take part in several **research projects**; six Master and Bachelor studies with project specific hypotheses were carried out.

A **symposium** was held in collaboration with the OWL University, which allowed for the opportunity to address and discuss some of the questions that occurred during the project with around 100 participants.

» Guided tour together with the WDR (West German Broadcasting) to the semi-dry calcareous grasslands near Dalhausen

## Measures

Target value (in ha)  
Actual value (in ha)

Measure	Target value (in ha)	Actual value (in ha)	Percentage
Clearance of shrubs	15.31	19.8	138 %
Coniferous forest to open land	2.35	4.73	201 %
Eradication of wood small-reed	3.17	3.22	102 %
Optimisation of lowland hay meadows	28.44	30.9	109 %
Promotion of juniper	5.82 (1.370 individuals)	7.51 (831 individuals)	61 % (Ex) 129 % (ha)
Creation of special structures	0.29 (15 structures)	0.35 (29 structures)	121 % (ha) 193 % (Str)
Sparse forests	22.80	29.77	131 %
Transformation into appropriate forests	4.80	8.44	176 %
Optimisation of the 6110*, 8160* and 8210 habitat types	2.70	2.63	97 %
Creation of forest edges and fringes	3.04	3.14	103 %
Revival of coppice with standards	3,25	1.84	56 %
Enhancement of lady's slipper orchid stands (in sites)	18 sites	15 sites	83 %
Building of fence structures (in m)	2,936 m	2,744 m	93 %



Schwiemelkopf near Borgentreich-Körbecke

▲ Before the measures

▼ After the measures



## A landscape to live in and to enjoy



The semi-dry grasslands with their flower richness and colourful butterflies, the fascinating juniper heath grasslands, rock formations and sparse forest stands with some of their bizarre tree forms are all habitats of hundreds of rare and mostly endangered animal and plant species. At the same time these landscapes have a great aesthetical charm and are highly attractive to recreational visitors from near and far. These aspects were already considered in the EFRE-project „Erlese-ne Natur“ within the Höxter district by incorporating these habitats into a district-wide network of hiking trails in order to give the public an understanding of this „European natural heritage“.

Since the measures for the optimisation of the semi-dry grasslands and the species rich meadows also positively facilitate the use of these areas, one may call this a „win-win“-situation: The enhancement of the existential basis for the characteristic animal and plant species promotes the basis for tourism at the same time, securing jobs in gastronomy and accommodation services. Simultaneously, the framework conditions are enhanced for the farmers, enabling a sustainable use of these areas.

Given all of these aspects, this project delivers a valuable contribution to the permanent preservation of these various and diversified typical cultural landscapes in the Höxter district.



### Many people have helped!

Much of this would not have been possible without the huge commitment of the numerous project participants. The pronounced successful implementation of the measures in the forest areas is thankfully most and foremost down to the supervising forest officers and to the landowners - the towns and state of NRW. Many suggestions were made as part of the regular meetings by the accompanying workgroup, which contributed to the successful implementation of the measures.

Trainees and federal volunteers of the „Landschaftsstation in the Höxter district“ enabled an implementation of many additional measures with their outstanding dedication. These helped in building dry stone walls and piling up stones, created nesting aids for birds, insects and bats and helped to establish these in the areas.

Members of the nature conservation groups and associations, especially those of the „Naturkundlicher Verein Egge-Weser“, carried out voluntary mapping as part of the monitoring of the measures and actively supported the project by landscape maintenance work. Lastly, professional guidance was given to the project by the OWL University during the establishment of the oatgrass meadows and the enhancement of the lady's slipper orchid populations.





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Ministerium für Umwelt, Landwirtschaft,  
Natur- und Verbraucherschutz  
des Landes Nordrhein-Westfalen

