The EU LIFE project "Sloping mires of the Hochwald" in the Hunsrück-Hochwald National Park

One of the most exciting mire systems stretches on the south-eastern slope of the Erbeskopf, which is with 816 m above sea level the highest elevation of the Rhenish Massif. In this devastated system restoration measures are carried out within the framework of the EU LIFE nature conservation project **Sloping mires of the Hochwald**. After a comprehensive planning phase, clearing of spruce, blocking of drainage ditches and renaturation of forest roads take place. These measures aim to trigger a positive development of the mire areas. Rainwater is intended to be retained longer and lastingly in the area to stop peat degradation. Typical mire species are expected to recover and start to spread again and measures will secure the spring mires (Brücher) typical for the National Park for the future.

The Foundation for Nature and Environment Rhineland-Palatinate is coordinating the project. One half of the project is funded by the EU: Implementation is carried out in close cooperation with the Hunsrück-Hochwald National Park authorities, the Bergwaldprojekt and the Rhineland-Palatinate state forestry administration. The project is further financially supported by the NABU Rhineland-Palatinate and the nature conservation department of the Ministry of Environment, Energy, Food and Forestry.

LIFE is the most important funding instrument of the EU for the practical implementation of environmental and climate policy. In the funding programme, the priority area LIFE Nature & Biodiversity serves to finance nature conservation measures aiming to conserve or restore natural habitats and populations of wildlife animal and plant species in Natura 2000 areas (EU 2017).

No water no peatland

The word "peatland" is a pre-scientific term commonly used to designate a specific kind of landscape which is characterised by an excess of moisture. Today, the term is used for peat-forming landscapes or landscapes with elevated deposits of peat. Peat is formed by sedentary accumulation of decaying plant material. Excess water is the most important factor in the formation of peat (Succow & Joosten 2001). The resulting anaerobic conditions slow the decomposition of organic matter down, allowing peat to accumulate.

Mires are rare ecosystems and of major importance as a retreat for distinctive plant and animal species. In the Hunsrück, the up to 5,000 year old mires have developed on waterlogged hillside debris or grey loam soils favoured by a cool climate and high annual precipitation. Anthropogenic factors like abstraction of drinking water, drainage ditches, road construction and afforestation lead to considerable changes and partly loss of mire habitats. Primary aim is to stimulate or restore a water regime with trickling surface run-offs to achieve long-term rewetting of dried-up sites.

The project area is characterised by a sub-oceanic mountain climate with high precipitation, moderately cold winters and cool summers. The average annual precipitation amounts to about 1,000 mm and the annual average temperature lies around 6.5°C.

According to their hydrology, peatland areas in the National Park can be classified as spring and sloping mires and sporadically as swamp mires. At sites with good water supply throughout the year,

areas dominated by peat mosses without forest cover and species of transition mires develop (Scholtes 2002).

Use and degradation of the mires

From the beginning of the 19th century, mires were systematically drained and planted with spruce for economic purposes (Schultheiß 2016). Additionally, mires were used for drinking water production and an extensive road network was built.

The impacts of these interferences are still omnipresent today: a disturbed water balance, erosion, loss of the native vegetation and release of CO_2 through decay of the upper peat layers which consist of up to one half of organic carbon.

Today, natural wetland habitats generally show an unfavourable conservation status. Due to its rarity bog woodland which can be found within the project area is listed as priority natural habitat type in the Habitats Directive.

Revitalising potentials

Surveys of the original biotic and abiotic factors of the project areas are an essential basis for targeted renaturation measures. Development measures need to be closely adapted to available potentials and species present on the site. To achieve this, data on different parameters is collected, which are at the same time important for later success monitoring and as basis for further research. Within the framework of the LIFE project these include pedological site mapping with determination of peat bulk densities, computer-aided analysis of drainage structures, mapping of the run-off behaviour and evaluation of historical maps as well as mapping of valuable vegetation and especially peat mosses *(Sphagnum spec.),* mapping of habitat types under the Habitats Directive and a survey of dragonflies.

The collected data are evaluated from a nature conservation point of view and included in an action plan. For future success monitoring and research, exact documentation of the measures implemented is necessary too.

As any kind of water regulation has an influence on the sloping mires, removal of drainage systems is a key measure for successful renaturation. The underlying principle is to slow down the downhill run-off using dams to diffusely drain water sideways starting at the upper reaches of the ditch (Zerbe & Wiegleb 2009).

These works are partly carried out using special low ground pressure machinery, partly by national park rangers or with the support of voluntary helpers of the Bergwaldprojekt project partner.

Without enhancement of the water regime, a considerable proportion of spring mires would further degrade and eventually disappear due to the strong imprint left by humans. A wet peatland habitat is a self-supporting system. The bog woodland areas within the biogeographic region of the Hunsrück are considered to be primary habitats which are able to survive without human intervention due to abiotic conditions and only natural disturbances. In the Hunsrück, mires with a stable water regime will therefore fulfil the qualifications for a lasting existence within the nature zone of the National Park.

Aims of the project

Reactivation, improvement and establishment of a network of peatland areas and adjoining forest communities within the project area thus securing these habitats as well as development of a network of near-natural alluvial forests in the Traunbachtal.

What exactly is done?

› Preparation of an action plan
› Computer-aided analyses and data processing
› Collection of baseline data
› Removal of non-indigenous shrubs and trees
› Restoration of the water regime
› Renaturation of forest roads
› Development of a near-natural alluvial forest
› Use of a bog excavator
› Success monitoring
› Publicity work

Special species

Next to woodland species like black stork, wildcat or black woodpecker, some highly specialised peatland species can be found within the project area. Currently 19 species of peat mosses, essential in the formation of peat, have been documented in the National Park. Cranberries, different cottongrasses and the round-leaved sundew can also be found next to numerous dragonfly species like the common hawker.

Project partners

The **Foundation for Nature and Environment Rhineland-Palatinate** (Stiftung Natur und Umwelt Rheinland-Pfalz) is a charitable foundation under public law. The LIFE Hochwald project is one of now six EU LIFE Nature projects of the foundation. In addition to implementation of own projects the foundation is funding lasting development of nature and environment, a sustainable regional development and supports voluntary work. Part of the diverse spectrum of projects are maintenance and development of nature conservation areas, the protection of especially endangered animal species as well as the equipment of environmental education centres, the creation of nature trails and the production of publications.

Aim of the **Bergwaldprojekt e.V.** is the protection, conservation and maintenance of the forest, especially the mountain forest, and the cultural landscape as well as better understanding of how nature works, of forests and the dependency of human beings on these fundamentals of life. To achieve this, the Bergwaldprojekt works with volunteers in forests, bogs and mires and field biotopes in various locations in Germany. Aim of the voluntary work is to conserve the diverse function of the ecosystems, to raise the awareness of participants for the importance and endangerment of our natural resources and to motivate a broader public towards a responsible use of natural resources.

The **Hunsrück-Hochwald National Park** is located in the south-west of Germany linking the federal states Rhineland-Palatinate and Saarland. The Hunsrück is characterised by uplands with sheer endless forest and woodland areas and is surrounded by some of Germany's best vine regions Mosel, Rhine, Nahe and Saar. The Federal Agency for Nature Conservation already today refers to the Hunsrück as a biodiversity hotspot.

The **Rhineland-Palatinate state forestry administration** is a strong and reliable partner of the Foundation. A majority of the measures is implemented by local foresters already involved in the planning stage of these measures. Active participant is the Kompetenzzentrum für Waldtechnik (Centre of Excellence for forest engineering) in Hermeskeil.

Project period
01.01.2015 to 31.12.2020

Contact
Jan Hoffmann and Nicole Fournier
Diether-von-Isenburg-Str. 7 | 55116 Mainz
Tel. 06131 1650-70
For further information on the Foundation for Nature and Environment and the project please visit www.snu.rlp.de or www.life-moore.de

Literature

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