



It's all about the moss

Alkaline fens in Brandenburg – a LIFE Nature Project





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Dear readers,

One of the greatest challenges of our time is the preservation of biological diversity, which is the foundation of life for us and for future generations. Fens are hotspots of biodiversity, and Brandenburg features one of Europe's, and Germany's, highest concentrations of this unique landscape. The state of Brandenburg bears a special responsibility for the preservation of alkaline fens within Europe's Natura 2000 network. Brandenburg's alkaline fens, however, have become quite rare. Drainage and the intensification or abandonment of agricultural land use caused a nearly complete transformation of the appearance of the fens. Pristine open alkaline fens, ranged with small sedges and rich in brown mosses, are only found today in protected areas.

From 2010 to 2015, the NaturSchutzFonds Brandenburg Foundation, working together with the state of Brandenburg and private conservation foundations and associations, implemented the "Brandenburg Alkaline Fens" LIFE Nature Project. Financial support from the European Union enabled the project to stabilise and improve almost 1,000 hectares (nearly 2,500 acres) of fens in 13 Natura 2000 sites in Brandenburg. We would like to express our thanks to all of the project participants.

We invite you, dear readers, to experience the diversity and beauty of Brandenburg's alkaline fens.

BSR. Ruhe

Dr. Bernhard Schmidt-Ruhe
Managing Director



Swamp cinquefoil



Angled paludella moss



Five-spot burnet moth on valerian blooms

Alkaline fens – wet and rich in species

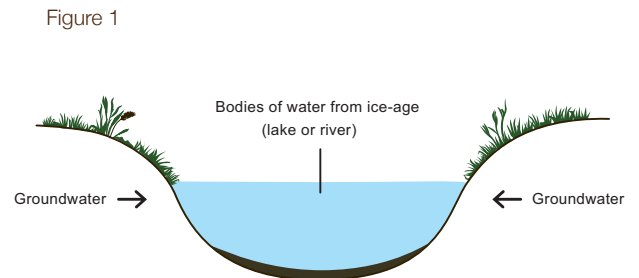
The cottongrass shimmers like silver on the wet meadows. White and violet orchids glimmer in the early summer light. A snipe searches for insects and mussels in the mud. Sundew rises forth from a thick tapestry of moss. Alkaline fens are rich in species, diverse and full of life, yet they have become increasingly rare in Brandenburg and in Europe. One hundred years ago, they were widespread throughout Brandenburg. Their history began over 11,000 years ago, when the last Ice Age shaped the surface of the land in Europe.

Water flowing out of the glaciers created small valleys, lowlands, and lakes (see Figure 1).

In the valleys and lowlands, which are wet year-round, the dead remains of trees, flowering plants, and mosses became peat, layer by layer. To this day, mineral-rich groundwater flows constantly out of springs at the edges of the valleys. It courses through the peat in a percolation mire on its path to a stream (see Figure 2).

Plants, mussels and snail shells sank to the lake bottoms and formed massive deposits. Over the centuries, this meant that the lakes became ever smaller in a natural way: they silted up. Wherever the lakes have disappeared, terrestrialisation mires often dominate the landscape (see Figure 3).

Fens receive most of their water supply from groundwater. This is what makes them different from bogs, which are often called rain-fed mires. Consistent excess water ensures that the peat does not come into contact with the surrounding air.





Bogbean



Brown moss peat



Blandow's bogmoss

This conserves the peat in water so that it cannot decay. Because new organic plant matter is added each year, intact moors grow by about one millimetre each year. One moor with seven metres of dense peat layers is therefore already about 7,000 years old.

Today, the few remaining conserved alkaline fens are the preserve of vascular plants and mosses that have become rare. These plants include grass-of-parnassus and bogbe-

an, as well as Loesel's twayblade and other orchid species. Brown mosses are especially characteristic for these fens. They get their name from the brown colour of their peat. This is why alkaline fens are also called brown moss fens. Typical examples of brown mosses are angled paludella moss, Blandow's bogmoss, and varnished hook-moss. The mission of the "LIFE Nature Project was to preserve this diversity in Brandenburg's alkaline fens.

Figure 2

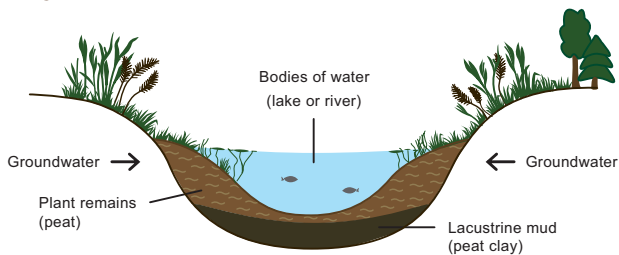
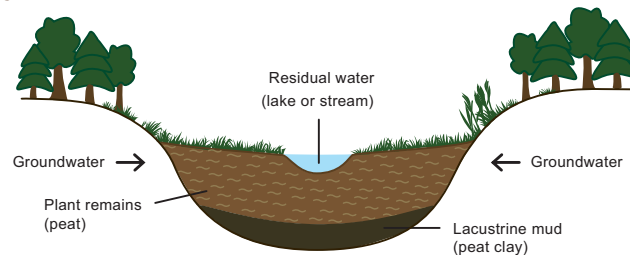


Figure 3



"Herringbones" and "diversion ditches"

Feed and litter for animals were always scarce in the sandy terrain of the Mark Brandenburg. Farmers were dependent on using fens and forests for this purpose until well into the middle of the twentieth century. They dug offset ditches by hand into the fens so that they could mow their meadows better. This was good for many plants in the meadows, but the water level was always somewhat too low for the fens.

While many fens were drained on a large scale in the 1960s and 1970s, a few fens fell into a deep sleep. The numerous old hand-cut offset ditches were no longer maintained, but they still continued to work. Tall forbs, reeds, willow bushes, and alders crept into the fens and ousted the smaller fen vegetation, which often lived a shadowy existence beneath their larger competitors.

In the Bollwintal valley, farmers from the nearby village also attempted to make the fen meadows amenable to farming, which was a difficult struggle against the swampy subsoil. When cultivation no longer paid off, people gave up on trying to farm the land, but the drainage ditches remained.

Ditches dug parallel to the edge of the woods – also called catch ditches – caught fresh groundwater and directed it further into “offset ditches”. These guided the water quickly into the Bollwinfließ stream. People call the pattern formed by offset ditches and the stream a herringbone pattern. These ditches are closed today.







The fens are

Ditches were the means by which water was redirected from the fens into streams and brooks. So, if there are significantly less ditches and the streams flow more slowly, then the water also remains longer in the fens. That at least was the hope. And it worked! However, nearly every ditch had to be filled in or blocked. Years of experience had shown that the drained peat from the fen is the best construction material for closing up ditches. This peat is very poor at absorbing water and therefore does a very good job of sealing up former ditches. This meant that no foreign materials had to be brought in from outside the fens. All that was needed was to scrape off 10 to 25 centimetres of peat, and that was all the material that was needed.

Groundsills or small dams helped in streams and brooks. They caused the water to only flow out of the fen if it reached a certain level. If the water level is lower, then it stays in the fen. Sometimes deadwood also helped to extend the path of the water, which promotes near-natural development and significantly improves diversity in the water.




wet again

In 2012, the Lange Dammwiesen (Long Dam Meadows) of Strausberg were still a fen with innumerable deep and broad ditches. The old ditches were filled with more than 8,000 cubic metres of peat, which caused almost eight kilometres of trenches to disappear. A lot also happened on the main stream, the Stranggraben: two long groundsills now hold the water level at the height of the surrounding surface; over 50 tree trunks were placed in the streambed that was straightened decades ago. They ensure that the Stranggraben will become more natural once again. The water now flows slower over one-and-a-half kilometres. Thanks to help from the NABU Regional Association "Strausberg-Märkische Schweiz", more than 100 hectares (almost 250 acres) in the Lange Dammwiesen are being rewetted.



Moor frog during pairing season





The Maxseeniederung lowlands east of Kienbaum is a large terrestrialisation mire of about ca. 115 hectares (about 284 acres) at the confluence of the Mühlenfließ and Stöberbach streams, and once they come together they are called the Löcknitz.

Many areas have lain fallow for decades. In the course of the LIFE Nature Project, reed beds have been mown down and deadfall and groundills have been built into the streams. The old ditches are now closed, and the lowlands are being rewetted on a large scale.



Pistenbullies, farmers, and water buffaloes



Wherever alder trees, willows and reeds have grown up, there was little room left for sun-hungry mosses and orchids. They often managed to survive though in swampy soil. These plants needed a bit of help to have a chance to survive the competitive conditions in nature.

Caterpillar vehicles, also called Pistenbullies, are typically used to maintain ski slopes, and they helped to remove young alder trees and willow bushes. They move around well in fens thanks to the fact that they don't exert much pressure on the ground. Especially in the area around the Töpchiner Lakes, Pistenbullies have put a new face on several fen areas.

The fen became wetter, enabling bogbean, orchids and cottongrass to rapidly re-conquer the new habitat. The

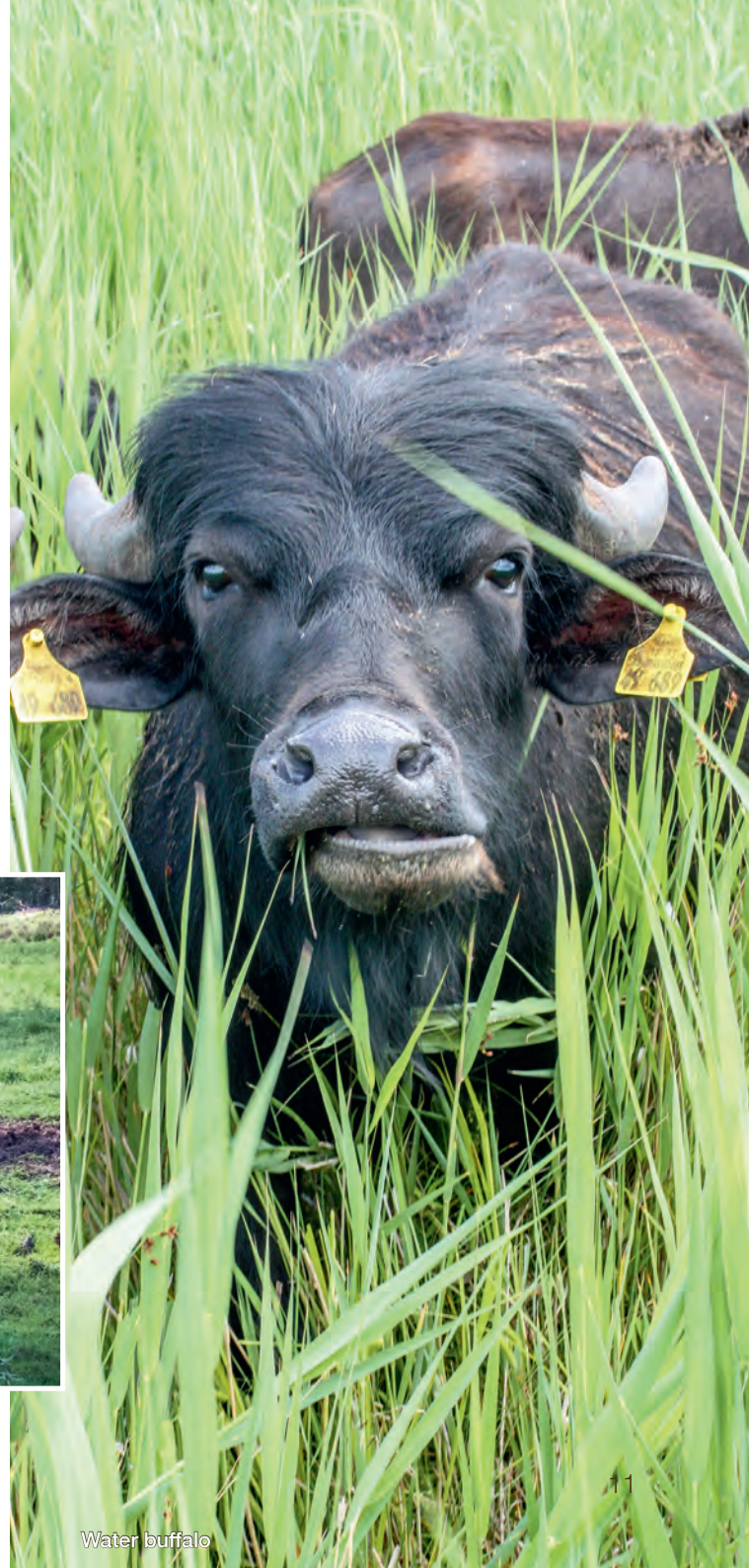
Pistenbullies have also proven themselves in the swampy work of mowing down reeds. However, using them regularly is hardly affordable.

Grazing with water buffaloes or robust cattle, however, offers a very good and affordable alternative, because they are excellent at adapting to the wet soil and the nutrient-poor, coarse feed. Water buffaloes have been grazing since 2011 on fens around the Töpchiner Lakes that were previously unused and covered in reeds. They are creating a small-scale, diverse mosaic of micro-habitats for snipe and lapwings, for small mosses and magnificent orchids. The structures that are typical for alkaline fens – which consist of small rises in elevation (hummocks) and water-filled depressions (hollows) – have become more pronounced as an effect of grazing.

The LIFE Nature Project has been able to win over farmers as partners for the fens in several Natura 2000 sites. Now water buffaloes graze alongside cattle, such as Galloways or Scottish Highland cattle, in fens that had formerly gone unused for several years. Sheep also contribute to caring for the fen landscape. The close cooperation with farmers, as in Töpchin, gives us reason to hope for the future of the fens.



Scottish Highland cattle



Water buffalo



Listening to and speaking with each other

Fens are mysterious. Some people find them uncanny, and others are afraid of them. Most people don't know anything about the fens that are pretty much right outside their door.

Farmers and their children, however, associate other stories and experiences with their meadows in the fens. They talk about the hard work of mowing the meadows. And how the laboriously mown grass can only be brought home in the winter, when the ground is frozen. Others tell stories of lapwings and snipe that they watched when they were young, and they note that they have heard and seen them less and less. Or about pike that they could catch with wooden sticks and their bare hands in the flooded meadows.



Conservationists often have a completely different relationship with the fens. They view them as natural habitats that are worth protecting and that host a broad array of plants and animals. Drainage ditches and nutrient contamination threaten this diversity. They want to rewet painstakingly cultivated meadows to preserve the fens. These two camps have to listen to and speak with each other in order to understand their different perspectives. That's how trust is built. People can share information, relieve each other's reservations, and discover common ground. Sometimes, residents and conservationists even begin working together to preserve the fens.

People best understand the beauty and uniqueness of fens once they pay them a visit. Because almost all of the fens are located in conservation areas, you can wander through the fens and experience them directly.

Twenty information boards along accessible and popular paths provide information about the alkaline fens, the conservation area, and what the project has achieved.



Children can embark on an adventurous expedition into the fens with Lilly and her friend, the blue dragonfly Madame Azuré.

The children's fen manual and an animated film with Lilly and her friend are available at the NaturSchutzFonds Brandenburg Foundation.



What comes next

for the LIFE Project?

Five years are a brief time in the life of a fen – yet in five years, people working in the LIFE Nature Project were able to set a course for the future for the evolving environment of the fens.

The “Brandenburg’s Alkaline Fens” LIFE Nature Project has acquired about 600 hectares (almost 1,500 acres) of fens. The majority of the fens in the project areas are now owned by the NaturSchutzFonds Brandenburg Foundation, its project partners, or the state of Brandenburg.

Closed ditches, damming structures, fords and groundsills ensure that large volumes of water are retained throughout the year. The fens can grow again and will be able to develop in the coming decades, largely without human intervention. Water gauges were built in the fens and streams to monitor how things are going, so that we can see over the long term how successful the LIFE Nature Project has been.





The development of vegetation in the fens is monitored continuously at over 200 control plots. All of these permanent observation areas were established in the project. These plots enable us to gather information about the long term success of many measures, even after the end of the LIFE Nature Project.

Cooperation between agricultural operations and conservation organisations to preserve the fen meadows will con-

tinue not just at the Töpchiner Lakes but also in the Lange Dammwiesen of Strausberg, in the Wegendorfer Mühlenfließ of Altlandsberg, and the Dahme-Heideseen Nature Park. The Brandenburg forestry service will also take care of the alkaline fens in the Gramzowseen lakes south of Fürstenberg, the Löptener Fenne in the Dahme Lakes district, and the Bollwintal valley in the Uckermark.

Working together with project partners to conserve the fens

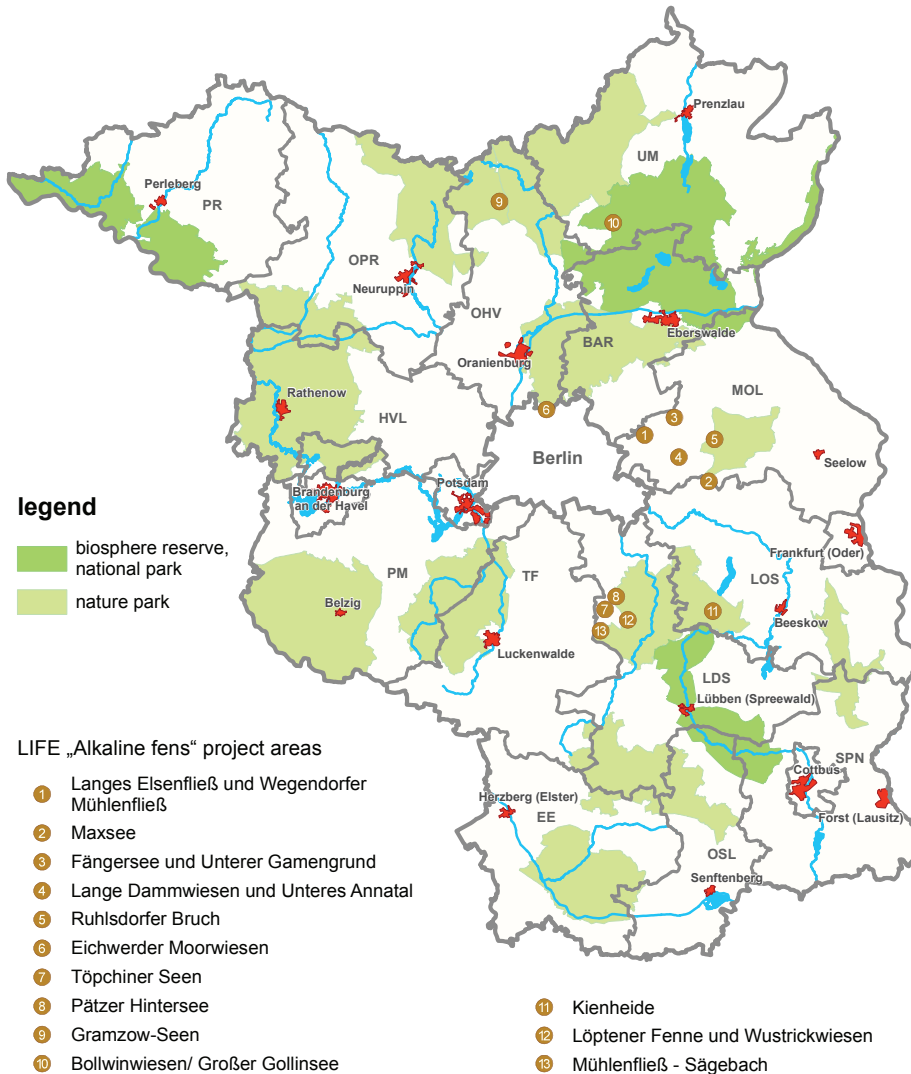


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**Landesamt für
Umwelt,
Gesundheit und
Verbraucherschutz**

The NaturSchutzFonds Brandenburg Foundation



Bogbean, which grows in cold water. Kingfishers that elegantly take to the skies. Bog-bulls that don't have fur or horns. The natural world of Brandenburg is as extraordinary as it is diverse.

The NaturSchutzFonds Brandenburg Foundation was founded 20 years ago by the state of Brandenburg to preserve the unique natural habitat between the Uckermark and Lausitz and between the Oder and Elbe rivers. The Foundation has been dedicated since then to protecting the natural world right outside its front door, working together with the Brandenburg park rangers, who serve as mediators between people and nature.

The Foundation funds and carries out projects to preserve Brandenburg's biodiversity. These campaigns are as diverse as the natural world itself, ranging from small local projects to complex, large-scale projects such as the one described in this brochure: "Brandenburg's Alkaline Fens" LIFE Nature Project. The Foundation's years of dedication and commitment have made Brandenburg's alkaline fens fit for the future. This is species protection and climate protection in one, because in the face of looming climate change, the landscape's water supply is crucial, especially for the conservation of fens.



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