Lille Vildmose

Restoration of raised bog

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What is Natura 2000?

Natura 2000 is an ecological network of protected areas within the European Union. The objective of the network is to maintain the diversity of plants, animals and habitats in Europe.

What is LIFE+ Nature?

LIFE+ Nature is a financial instrument that supports projects aiming at the protection and restoration of Natura 2000 areas.

Further information

Visit the project's website to find more information about the project and see what is happening right now in Lille Vildmose.
www.lifelillevildmose.dk

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Restoration of raised bog in Lille Vildmose

There is no doubt that Lille Vildmose is an outstanding natural environment. More than 50 % of the area with preserved raised bog in Denmark is found in Lille Vildmose. However, decades of peat cutting and farming have left the central areas of the bog severely damaged.

To improve the situation in Lille Vildmose, the foundation Aage V. Jensen Naturfond, the Municipality of Aalborg, and the Nature Agency Denmark will carry out an extensive restoration project. The project, which is supported by LIFE+ Nature, started in September 2011 and will continue until 31st of December 2016. The objective is to secure the preserved areas of raised bog and also create a basis for the restoration of degraded raised bog.

The project has a budget of 5.6 million Euros. Active raised bog is a highly prioritized habitat in the Natura 2000 network. Because of this, LIFE+ Nature supports the project with 75 % of the costs instead of the usual 50 %.

Objectives expected to be met before the end of the project include:

- Lake Birkesø will be restored as a shallow lake with a surface area of 130 ha
- The water level will be raised over 770 ha
- The central areas of Lille Vildmose will be home to at least 50 red deer
- 200 ha. of tree growth will be cut down
- Breeding birds will benefit from reduced numbers of raccoon dog, American mink, and red fox
- 2 new observation platforms and 8 new areas with information boards will be established

Water level has been raised on former peat cutting area in the northern part of "Mellemområdet"

The project area

The restoration project is situated in Denmark's biggest protected land area, which covers 76 km^2. As the largest active raised bog in the Northwest European lowland, Lille Vildmose is appointed a Natura 2000 site indicating its importance in European context. Hence, Denmark is obliged by European law to preserve it.

The central part of Lille Vildmose is in focus in this restoration project. According to the conservation declaration from 2007, the project area is earmarked for nature restoration.

What will happen – and when?

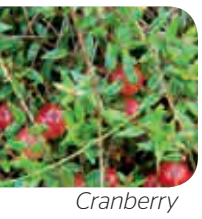
Several interventions in the project area are included in the LIFE+ project. They are all marked on the map inside this brochure. The project also includes monitoring the development in the area. The populations of American mink, racoon dog, and red fox will be regulated. New observation platforms and information boards will be erected.

A project like this requires a lot of preparatory work. In 2012 and 2013, the partners involved will primarily work on planning and other preparatory tasks. Consequently, most of the actual work will take place in the second half of the 5-year-long project period. Visit the project's website to see what is happening right now.

Sphagnum

Development of raised bog in Lille Vildmose

The raised bog in Lille Vildmose developed in a former lagoon that was covered by reeds. 1200 years ago, sphagnum mosses started to grow in the lagoon. Like a sponge, sphagnum absorbs water, and it also creates an acidic environment. In these acidic and waterlogged conditions, dead plants did not decompose but built up as peat. The peat layer grew and lifted the bog surface. At some point the peat layer became so thick that the living plants on the bog surface were fed only by rain water, which is acidic and poor in nutrients. This is a characteristic feature of a raised bog.



Cranberry

Heather

Vegetation in a raised bog

In contrast to what is the case in most Danish habitats, there are no trees in an active raised bog. Trees can only survive at the edge of the bog. The plants that thrive in a raised bog are adapted to the waterlogged, acidic, and nutrient-poor environment. Besides sphagnum, important species include:

- round-leaved, oblong-leaved, and great sundew
- cranberry
- common cotton-grass
- heather, cross-leaved heath and bog-rosemary

Peat accumulation

A raised bog is a climax community. This means that it is the stable final stage in the development of a biological community. Undisturbed climax communities do not change over time. As long as there are no serious disturbances, dead sphagnum continuously accumulates as peat. Over 1200 years, the peat layer in Lille Vildmose has reached a thickness of almost 5 meters.

Resources in Lille Vildmose

Lille Vildmose was stable and undisturbed until the year 1759, where the exploitation of the bog's resources started. In the 1760's, count Adam Moltke reclaimed four lakes in Lille Vildmose in order to use the land for pasture. Small-scale peat-cutting started in the outlying areas of the bog.

Stacked peat

Cranes

In 1937, an extensive reclamation of land was initiated in the central Lille Vildmose to gain more land. In less than 4 years, 200 km. of ditches were dug. In the years leading up to the Second World War, the cutting of peat was also increased. During the war, peat was a valuable source of fuel. After the war, peat was used more and more as soil improvement material.

Extraction of peat for soil improvement

Aerial view of "Mellemområdet" - Lake "Lillesø" in the foreground

How can drainage damage a raised bog?

As the water leaves a raised bog, the peat begins to decompose. The peat then becomes richer in nutrients and less acidic. Birch and other trees start to grow, and they further drain the bog. As a consequence, the peat settles, and the original bog vegetation is suppressed by new species that thrive in the altered environment.

A brighter future

Peat-cutting in Lille Vildmose ended in 2011. However, 250 years of peat-cutting and land reclamation have left serious traces. The original 55 km² of raised bog is reduced to only 20 km². The objectives of this LIFE+ project are to protect the preserved raised bog and to create the conditions necessary to restore degraded raised bog.

Restoring a raised bog is a lengthy process. Over the next few years, the bog will become visibly wetter, and its vegetation will change. Still, it may take centuries before active raised bog is fully restored. This LIFE+ project will improve the opportunities for some degraded areas to recover as an active raised bog in a natural balance.

What will happen in Lille Vildmose during the project?

1 Higher water levels

Where: Smidiefenner, Purkerfenner and southern Moufenner, Paraplymosen and Høstemark Mose.
Why: In areas previously used for peat cutting and grazing, higher water levels will improve the opportunities for sphagnum to grow. The conditions in Paraplymosen and Høstemark Mose will also improve. Ditches and channels will be sealed with dams and dikes. Some will be reinforced with membranes.

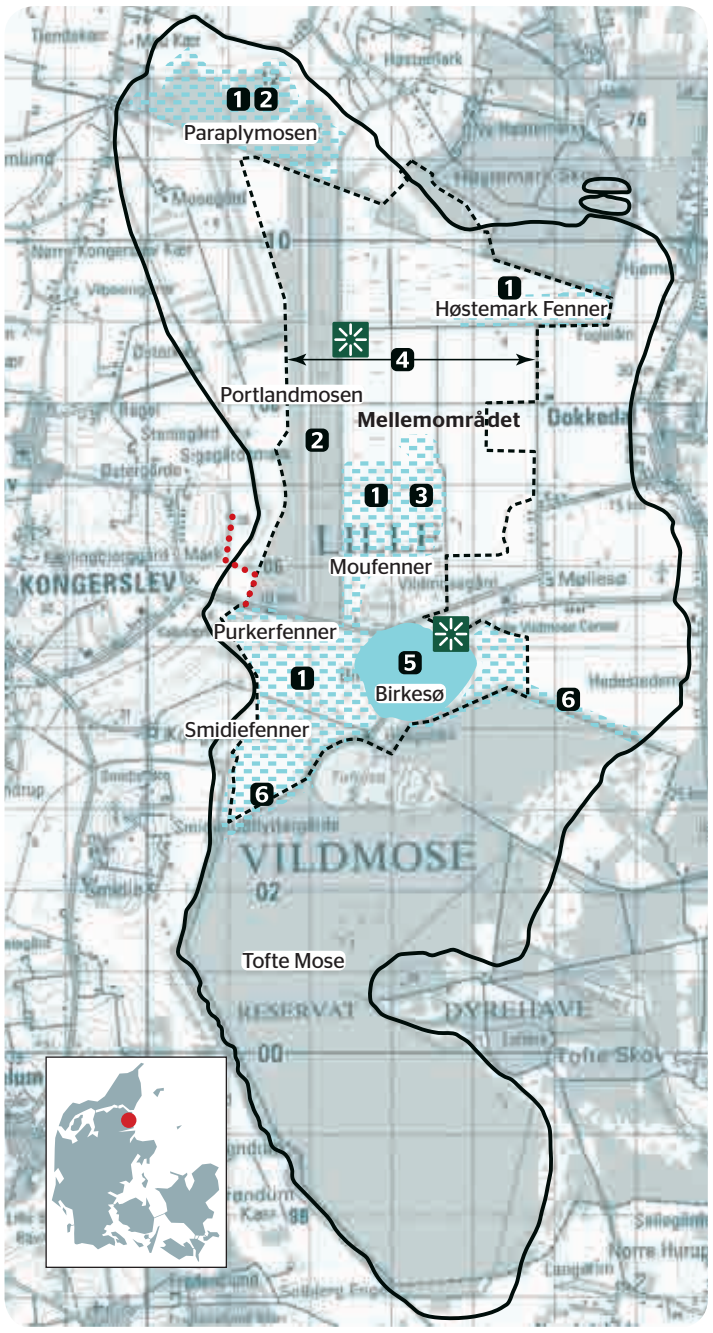
2 Clearance of trees

Where: Portlandmosen
Why: Trees will be cut down, because they cause further drainage of the raised bog in Portlandmosen. The cutting will be repeated after a period of time to prevent regrowth.

3 Experiments with spreading of sphagnum

Where: Moufenner
Why: In a demonstration project, sphagnum will be spread in areas formerly used for peat cutting. The objective is to investigate whether this can speed up the restoration of severely damaged raised bog.

Sheet piling in drainage ditch



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4 Red deer in a new fence

Where: The central areas of Lille Vildmose
Why: Grazing red deer is a natural and gentle method to control the regrowth of trees. To prevent the red deer from leaving the area, 22 km. of new fence is built. This will not change the accessibility of the area. Entry and exit of cars and visitors remain unrestricted.

Red deer stag

5 Lake Birkesø will be restored

Where: Former Lake Birkesø, north of Lake Tofte Sø.
Why: The restoration of Lake Birkesø, reclaimed in 1761, will minimise the drainage from the northern edges of Tofte Mose. The shallow lake will also attract a rich bird life. A new access road to Lake Tofte Sø will be established as well as a new observation platform.

6 Reinforcement of the edges of Tofte Mose

Where: The northeast and northwest edges of Tofte Mose
Why: Water from Tofte Mose is seeping to the low-lying areas surrounding the bog. There is a risk that the steep edges could collapse. To prevent this, two dikes are established to prevent collapse and seepage of water.