



Peatland restoration and sustainable grazing in Brandenburg

Brandenburg, Germany (52°09'53.27"N, 13°35'10.09"E)

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Water buffaloes grazing fen meadows.

Summary

From 2010 to 2015, Naturschutzfonds Brandenburg is implementing the LIFE Nature Project 'Alkaline Fens in Brandenburg'. Through this project, the Naturschutzfonds Brandenburg manages conservation activities intended to safeguard and develop large alkaline fens in fourteen Natura-2000 areas in the federal state of Brandenburg, in Northeast Germany near Berlin. Over the last two centuries, numerous fens were converted into arable land and drained using many small ditches. However, during last fifty to sixty years, agricultural land use on these fens has ceased. The drainage ditches, however, have remained active, causing peat soils to degrade and mineralize. The increased availability of nutrients in combination with the lower water levels has allowed reeds, shrubbery and woods to overgrow the fens. During the first step of the project's revitalization process, biomass was removed through mowing and eliminating shrubs. Afterwards, water levels were stabilized to ground level or slightly above. To stop the drainage on sloping fens all ditches had to be completely filled. The filling material was obtained by cutting peat on bordering peatland. The results of the rewetting were evident almost instantly. Within days, groundwater levels rose up to 20 centimetres. Within a year typical plant species of alkaline fens started to grow on bare soil.

1. Practice description

Area of the site	375 ha (NATURA2000–Site)	
Current land cover/use	Currently used as grassland and as meadows.	
Previous land cover/use	Most of the area was used as grassland until the 1960's. A large proportion of the land use was abandoned and only small areas are still being mowed today.	
Origin of intervention	The goal of the EU–LIFE project 'Alkaline fens of Brandenburg' is to restore alkaline fens in Brandenburg	
Types of intervention used in the area	<input checked="" type="checkbox"/> Rewetting <input type="checkbox"/> Drainage <input type="checkbox"/> Cultivation of crops <input checked="" type="checkbox"/> Grazing <input type="checkbox"/> Forestry <input type="checkbox"/> Aquaculture <input type="checkbox"/> Fishery	
Duration of implementation	Mowing took place in winter 2010. Since 2011, water buffaloes have grazed on the fen meadows. Drainage channels were blocked at the end of 2013 .	
Main purpose of the practice	Removal of biomass and nutrients. Providing better conditions for fen species. Restoring the natural water levels on or slightly above ground level.	
Level of technical knowledge	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input checked="" type="checkbox"/> High	
Water table depth from surface	from – 0.5 to 0 m	
Present active drainage system	Width of channels	All channels were blocked
	Distance between channels	

2. Implementation of activities, inputs and cost

N	Establishment of activities	Input/materials	Duration	Cost
1	Mowing, shrub removal (removal of biomass)	Pisten–Bullies (normally used in ski areas) that have low ground pressure due to their caterpillar tracks	1 month in 2010 (15 ha) 1 month in 2012 (12.4 ha)	16 000 € 11 500 €
2	Grazing with water buffaloes	Fencing Construction of an open stable for live stock Purchase and care of water buffaloes	Ongoing since May 2011	21 000 € 20 000 € 10 000€
3	Construction of dams and ground sills in drainage channels	Small excavators and dumpers, wood pillars	Dec. 2013 to Feb. 2014	91 000 €

Remarks

The goal of activity 2 is to continuously remove reed and other large herbal plants to provide better conditions for small fen species like mosses and sedges. Water buffaloes are adapted to the difficult conditions on wet and peaty soils. Also, they do not have high demands on feed quality. However, it is necessary to provide them with an open stable during winter.

3. Environmental characteristics

Climate	<input type="checkbox"/> Tropical <input checked="" type="checkbox"/> Temperate <input type="checkbox"/> Boreal			
Average annual rainfall	550 mm			
Altitude	~37 m a.s.l.			
Slope	0 %			
Peat depth (cm)	<input type="checkbox"/> ≤ 30 <input type="checkbox"/> 30–50 <input checked="" type="checkbox"/> 50–100 <input checked="" type="checkbox"/> 100–300 <input checked="" type="checkbox"/> >300			
Peatland type based on the water source	<input checked="" type="checkbox"/> Fen <input type="checkbox"/> Bog <input type="checkbox"/> Undefined			
Hydrologic network	Silted up lakes and percolation fens connected with a small stream and several lakes			
Main vegetation species	Before practice	Reed (dominant), sedges		
	During practice	Sedges, mosses		
Water quality	Water pH	7–7.5		
	Water turbidity	–		
	Dissolved organic carbon content	Drainage channels	–	
		Surface water	Before practice	approximately ~9.8 mg L ⁻¹
		During practice	–	

4. Socio-economic dimension

Local stakeholders	Private land owners, land users, department of forestry
Land tenure	Mostly private (before the project), Naturschutzfonds Brandenburg (after the project)
Land, water, and other natural resource access and use rights	Permits for the rewetting were obtained by the relevant water and nature conservation authorities by Naturschutzfonds Brandenburg
Conflicts	Some land owners were skeptical about the planned actions in the beginning, mostly about rising water levels.
Conflict resolution mechanism	Local land users and owners were informed about the project. In some cases compensation was paid for the lost agricultural value of the land after rewetting.
Legal framework	Brandenburgisches Naturschutzausführungsgesetz (law of nature conservation, Brandenburg) Brandenburgisches Wassergesetz (law of water, Brandenburg) FFH-Richtlinie (i.e. Habitats-directive)
Products derived from the peatland	Organic beef
Market orientation	Organic beef is sold in a local shop directly at the farm.

5. Assessment of impacts on ecosystem services

1 highly decreasing/ 2 moderately decreasing/ 3 slightly decreasing/ 4 neutral/ 5 slightly increasing/ 6 moderately increasing/ 7 highly increasing

Provisioning services	Agricultural production	5
	Food security and nutrition	4
	Employment	4
	Income	4
	Non-timber forest products yield	4
	Livelihoods opportunities	5
	Resilience and capacity to adapt to climate change	5
Socio-cultural services	Level of conflicts	4
	Gender equality	4
	Learning and innovation	6
Regulating services	Waterborne carbon (DOC) loss	2
	Fire frequency	4
	Biodiversity	6
	Subsidence rate	1
Off-site benefits	Water quality	6
	Frequency of flooding	3

6. Climate change mitigation potential

1 highly decreasing/ 2 moderately decreasing/ 3 slightly decreasing/ 4 neutral/ 5 slightly increasing/ 6 moderately increasing/ 7 highly increasing

Impact	Rate	Estimate (t ha ⁻¹ year ⁻¹ , CO ₂ -eq)	Remarks
Net GHG emission	–	–	–
CH ₄ emission	–	–	–
CO ₂ emission	–	–	–
N ₂ O emission	–	–	–
Carbon sequestration/ storage abovegrounds	–	–	–

7. Additional information

For further information please refer to www.kalkmoore.de

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