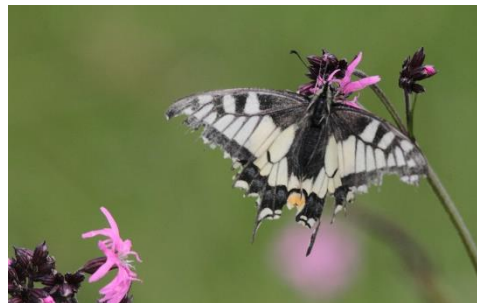


Can paludiculture promote fen biodiversity?

A literature-based review with focus on Europe



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GREIFSWALD
MIRE
CENTRE

Bog paludiculture - Biodiversity



Vanellus vanellus



Orthetrum coerulescens

both pictures L. Zoch

„... habitat for characteristic bog species from all orders (except butterflies)“

(Reich et al. 2019)

„... a subset of characteristic spiders of natural peatlands were recorded in the Sphagnum farm “

(Muster et al. 2020)

„Artificial Sphagnum farming sites are surrogate habitats for bog and *Sphagnum*-specific fungi.“

(Dahl et al. 2020)

Fen paludiculture

wet meadows



wet pastures



Typha

Phragmites

Literature review

- Effects of
- rewetting
 - mowing
 - grazing
- on fen biodiversity

n=124

- peer reviewed articles
- reports
- assessments

Taxa

- invertebrates n=54
- avifauna n=47
- vegetation n=38



Effects of mowing

Harming/killing of individuals

- timing
- machinery

(e.g. Oppermann & Claßen 1998, Tyler et al. 1998)

Reduction of litter

- increase in light availability
- changes in microclimate

(e.g. Bosshard et al. 1988, Diemer et al. 2001)

Homogenisation of habitat

- vertical structures
- host plants/winter refuges

(McBride et al. 2011)



Example: common reed cutting

Vegetation

(Decleer 1990, Cowie et al. 1992, Valkama et al. 2008)

Increase in species richness

- +90% compared to unmanaged stands
- mostly herbaceous plants

Avifauna

(Kube & Probst 1999, Vadász et al. 2008, Tanneberger et al. 2012)

Impeded: characteristic reed species (e.g. Bearded reedling)

Promoted: open landscapes species (e.g. Common snipe)

Invertebrates

(Schmidt et al. 2005, Valkama et al. 2008)

Impeded: detritivores, shade preferring species (e.g. Isopoda)

Promoted: phytophagous species (e.g. Aphidina, Auchenorrhyncha)

	Wet meadow	Wet pasture	Common Reed	Cattail
Vegetation	+	+	+	+
Aves	+	+	+/-	
Chironomidae			-	
Corixidae			-	
Thysanoptera			-	
Lepidoptera	+	+/-	-	
Hymenoptera			-	
Isopoda			-	
Araneae	+/-	+/-	+/-	
Coleoptera		+	+/-	
Aphidoidea			+	
Diptera			+	
Oligochaeta			+	
Acari			+	
Hydrophilidae				+
Orthoptera	+/-	+/-		
Mollusca	-	-	-	
Formicidae	+			
Amphibia		+		
Odonata		+		
Staphylinidae		+		

March 2019 in Berlin

22 German experts for vegetation, birds, arthropods and amphibians

„Paludiculture is a viable tool to enhance mire specific biodiversity on former drained, intensively used organic soils.“



all pictures M. Nerger

→ Mitigation of inhibiting effects

With regard to mowing

- Timing
(e.g. not before mid of August in the case of Phragmites cultivation)
- rotation fallows: leaving min. 10% of the area uncut
- mowing machinery: oscillating instead rotating technique

Paludiculture

has the potential to contribute to (fen) biodiversity conservation.

- reestablishment of characteristic fen species
- creates/maintains habitats
- but also inhibiting effects

needs accompanying research with regard to mire specific biodiversity.

- before-after comparisons on paludiculture pilots
- long term effects of use

Detailed review will be published within BfN-Skripten!

Närman et al. (subm.) Klimaschonende,
biodiversitätsfördernde Bewirtschaftung von
Niedermoorböden. BfN Skripten.

Tanneberger et al. (subm.) What do we sink about soil
carbon? Paludiculture as sustainable land use option
to store and sequester carbon in temperate European
fen peatlands. Regional Environmental Change.

Thank you for listening!



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