

Land use in the Thurbruch—a fen area shifting from drainage based agriculture to paludiculture?

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Introduction

The Thurbruch is a 1,600 ha large fen area with two shallow lakes, on the island of Usedom. It is a typical example for the cultivation and agricultural use of extensive peatland areas in NE Germany. The current utilisation is characterised by conflicts between land users, high costs of maintaining the drainage system and high greenhouse gas emissions. We investigate whether paludiculture, i.e. the utilisation of rewetted peatlands, could be a long term reasonable alternative.

Land use history

First attempts to reclaim the Thurbruch dates back to 1750. Since then several actions took place to drain the fen area, but were restricted by sand accumulation blocking the ditches and insufficient maintenance, especially in times of war¹.



fig. 1 Hydroconstruction works in the 18th

The accessible parts of the Thurbruch were mainly used as grassland but also vegetables were grown and peat cut to be sold in the harbour of Świnoujście¹.

Only in 1967/68, during socialistic times, the whole Thurbruch was successfully drained and the grassland utilisation was intensified to increase yield and quality of fodder. Today, most of the area is used for suckler cow husbandry, just a small part for dairy farming.

Current land use conflicts

The drainage of peatlands leads to peat mineralisation and subsidence. For the Thurbruch an average subsidence of 2 cm/year was calculated for the period of 1964–1996².

Drainage leads to

- global effective greenhouse gas emissions
- high costs for maintenance of the complex drainage system (dikes are in need of renovation, energy costs for pumping stations increase steadily)
- difficulties in husbandry due to peatland degradation f.e. decreasing fodder quality
- conflicts between farmers, fishers and conservationists concerning intensive drainage
 - farmers need low water levels in the lakes to get their land drained, fishers and conservationists demand high ones; today local residents are additionally in fear of wet basements caused by higher groundwater tables
- the cost effectiveness of the current farming system relies on agricultural subsidies

Rewetting can reduce disadvantages of drainage, but usually grassland utilisation would need to be abandoned. Paludiculture is an alternative where benefits of rewetting and utilisation of land is combined.

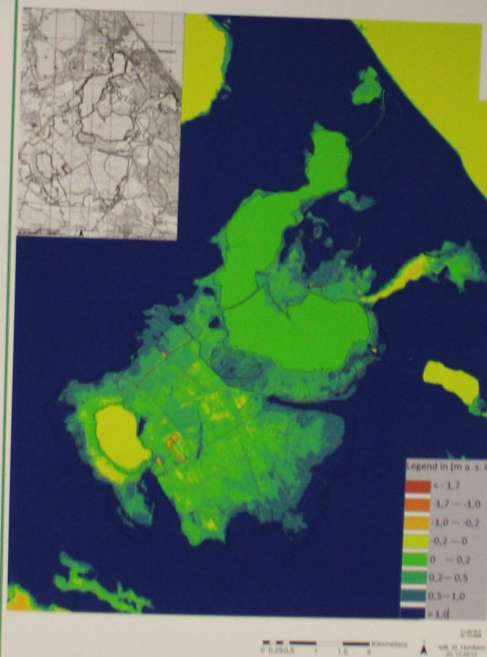


fig. 2/3 Digital terrain model of the Thurbruch/ topographic map

Potentials for Paludiculture

The digital terrain model shows the current elevation of the surface in the Thurbruch (fig.2/3). The big green and the big yellow spots are two lakes, where the water tables are regulated. The black line borders the potential area for paludiculture. If this area would be rewetted, different water levels would develop according to the elevation ranges.

The digital terrain model is the basis to project future utilisation options for three different scenarios: 1) a base line scenario of ongoing drainage depending beef and dairy cattle farming, 2) maximal rewetting and wet land use, and 3) an intermediate scenario of paludiculture that compromises between the interests of farmers and nature conservation. Stakeholder interviews and a model for future vegetation changes will give informations for estimating plant biomass potential in the area. After assessing possibilities for regional marketing the economic revenues of farmers in the Thurbruch can be compared for the three scenarios.

References and figures

- ¹ Knobelsdorff-Brenkenhoff, B. v. (1992). Die "Aal-Beek- Kolonisten" und das Thurbruch auf der Insel Usedom in Vorpommern. Im Selbstverlag der J. G. Herder Bibliothek Siegerland e.V., Siegen.
- ² Neubauer, D. (1998). Untersuchung der physischen Geländeoberfläche im Meliorationsgebiet Thurbruch (Usedom). Diplomarbeit, Fachhochschule Neubrandenburg.
- ³ Schliemer, D. (2005). Die Geschichte der Insel Usedom. Hinostroff Verlag GmbH, Rostock.
- Fig. 1: Hydroconstruction works in prussia in the 18th century. After Gilly und I. A. Kytelwein: Praktische Anweisung zur Wasserbaukunst... Berlin 1809. From Knobelsdorff-Brenkenhoff, B. v., 1992, p. 26.
- Fig. 2: Digital terrain model. Landesamt für innere Verwaltung Mecklenburg Vorpommern (Ed.), 2012. Digitales Geländemodell 2. Schwerin.
- Fig. 3: topographic map © GeoBasis-DEAM-V 2013



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