





Biological restoration of extracted peatbogs in the Třeboň Basin

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Still extracted peatbogs in the Třeboň Basin:

- 1. Člunek
- 2. Branná
- 3. Hranice

Extraction for the spa

(underwater):

- 4. Lázně Třeboň
- 5. Lázně Bechyně



Future development?

- Rašelina Soběslav (extraction company): the extraction licence until 2020.
- All extracted peatbogs are almost completelly extracted. Minimum layer of 60 cm of peat was not kept!
- According to the law the extraction company should make technical recultivation, afterwards the owners should make a biological recultivation (= planting, etc.) according to the recultivation plans. These are not always available, however usually planting of pines, birch or alder was planned.

The returning of sites (technical restoration) to the owners is going on...



Extracted site Branná

Main owners: Lesy ČR, Třeboň Future?

- Planting with pines
- Spontaneous succession
- Retention basin
- "Rewetting" restoration –
 increase of water table by
 dams, creating of small pools –
 problem: the site was forested
 before the extraction therefore
 it should be forested in the end
 otherwise the owners should
 pay high compensations



Extracted site Člunek

Main owners:

Rašelina a.s., Lesy ČR, Střížovice village

Future?

- Pine plantation
- Blueberries plantations
- •"Rewetting" restoration towards a minerotrophic peatbog – good sources of water and diaspores



Extracted site Hranice

Main owner: Lesy ČR

Future?
Plantation with pines and alder (ongoing)

In a small part "rewetting restoration": the drainage system will be blocked by dams and small pools will be created



Konvalinková P., Prach K. (2014): Environmental factors determining spontaneous recovery of industrially mined peat bogs: A multi-site analysis, Ecological Engineering 69: 38-45.

P. Konvalinková, K. Prach / Ecological Engineering 69 (2014) 38-45

WATER LEVEL DRY > 30 cm below surface AQUATIC 30 - 0 cm below surface 5.5 6.5 water pH PEAT 4.0 Pioneer annual vegetation Aquatic vegetation Eriophorum vaginatum Calamagrostis Carex canescans Echinochloa crus-gali Bare peat Juncus articulatus epigejos Spergularia rubra Potamogeton natans Juneus bulbosus Scleranthus perennis Utricularia spp. Juncus effusus Persicaria hydropiper Rumex acetoseila Gradual terrestrialization. Fen Bog vegetation then initial fen or bog vegetation Agrostis canina Carex nigra C. rostrata Calluna vulgaris Drosers rotundifolia Erlophorum angustifollum Grassland or ruderal grassland Heath stands Calamagrostis canescens E.angustifolium Ericphorum vaginatum Juncus effusus J. filiformis Lysimachia vulgaria Carex rostrata Juncus effusus E.vaginatum E. angustifolium Molinia caerulea Peucedanum palustre Avenella flexuosa Calamagrostis epigejos Calluna vuigaris Lysimechie thyrsiflore Sphegnum app. Ledum palustre 15 Phragmites australis Viola palustris C. villosa Cirsium arvense Phragmites australis Molinia caerulea Sphagnum spp. Deschampsie cespitose Hoicus lenatus Potentilia palustris Typha latifolia Oxycoccus palustris Vaccinium uliginosum Betuta penduta Betule pubescens or aquatic vegetation persists Sphagnum spp. Birch-pine forest Wet birch forest Agrostis canina Dryopteris diletate Calamagrosfis opigojos Carex brizoides Equisetum sylvatica Juncus effusus Deschampsia cespitosa Molinia caerulea Fen? Heath Molinia caerulea Scirpus sylvatica Bog Bog Rubus spp. Veccinium myrtillus Campylopus introflexus vegetation vegetation? persists? 5 Betula pendula Pinus sylvestris Picea abies Betula pendula B. pubescens Frangula alnus Picea abies Salix cinerea S. aurita Populus tremula Sorbus aucuparia

Fig. 3. Generalized scheme of spontaneous vegetation succession on milled peatlands in relation to the main environmental factors. Target species are marked in bold.

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Negative side of the "rewetting" restoration

- The residual layer of peat is very thin in most sites the natural succession after rewetting will lead probably very quickly to the development of willow or reed stands which are not very "popular" for the owners.
- Diaspore of target peatbog species (i.e.peaty vegetation) is missing or scarce in the close vicinity (Branná, Hranice)
- Non-native species are already present (Elodea canadensis Branná)
- The blocking of drainage channels will be not enough for rewetting of the extracted sites due to high summer temperatures and low precipitation in the next years.
- Most sites were forested before extraction, according to the law they should be also forests after that. Otherwise high compensations should be paid for the conversion to the non-forested ground.

Sunny side

- Several meetings with Třeboň and PLA Třeboňsko representative were initiated – they support the idea of rewetting at least in a part of the extracted sites
- Lesy ČR has a big problem with bark-beetle calamity in the Czech Republic. They want to increase water retention in forests, so there is a possibility to increase water level in a part of extracted sites and to devote it to water retention and spontaneous succession.
- There is a possibility to gain a project to conduct the "rewetting" restoration from the Ministry of Environment







Spontaneous succession after rewetting 18 years ago (Borkovická blata):

- + former black peat already covered by sedges and grasses, peat moss already present, dense population of *Drosera*
- reed stands are starting to invade along the drainage ditches