MIRE DEGRADATION & RESTORATION IN ESTONIA

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03.09.2014 Lille Vildose
NorBalWet peatland workshop
1952 According to state amelioration scheme some 1,55 milj ha of land will need drainage

Drained peatlands 1992:

- ca 650 000 ha for agriculture (mainly fen peat areas)
- ca 560 000 ha for forestry
- ca 20 000 ha for peat excavation
Distribution of main open mire types in Estonia in 1950 (after Laasimer, 1965) and in 2012 (after Paal, Leibak, 2013)

<table>
<thead>
<tr>
<th>Mire type</th>
<th>1950</th>
<th>% in excell. + very good state in 2012</th>
<th>2012, in excell. + very good state</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ha</td>
<td>N</td>
<td>ha</td>
</tr>
<tr>
<td>Poor fens</td>
<td>152 000</td>
<td>5</td>
<td>7 800</td>
</tr>
<tr>
<td>Rich fens</td>
<td>74 900</td>
<td>21</td>
<td>15 600</td>
</tr>
<tr>
<td>Floodplain fens</td>
<td>83 000</td>
<td>3</td>
<td>2 420</td>
</tr>
<tr>
<td>Spring fens</td>
<td>1 500</td>
<td>45</td>
<td>670</td>
</tr>
<tr>
<td>Mixotrophic fens</td>
<td>76 200</td>
<td>38</td>
<td>29 100</td>
</tr>
<tr>
<td>Heath moors</td>
<td>3 000</td>
<td>36</td>
<td>1 090</td>
</tr>
<tr>
<td>Open bogs</td>
<td>250 000</td>
<td>50</td>
<td>124 500</td>
</tr>
<tr>
<td>Total</td>
<td>640 600</td>
<td>28</td>
<td>181 180</td>
</tr>
</tbody>
</table>
Bogs: 2180 km²
35% drained

Transitional: 1479 km²
64% drained

Total: 9150 km² 69% drained

Fens: 5312 km²
84% drained

Extraction areas: 161 km² (incl 49 km² abandoned)
Peat mining – milled peat extraction
Estonia’s legislation enact that all abandoned mining sites must be re-cultivated. However, almost no full scale restoration has been done on extracted peatlands.

In 2005 National Audit Office focused on this problem.

Important step toward the after-use of extracted peatlands in Estonia was their revision carried out by the Estonian Geological Survey, published in 2005-2008.

Revision:
• estimates the area and the state of extracted peatlands,
• gave the overview of their current plant cover,
• evaluate the remaining peat resources,
• based on remaining peat layer, current state, local environment etc gave the recommendations for further peat extraction or restoration.
Rehabilitation with „Peat moss transfer method”

widely known also as “Canadian method“

Ohtu abandoned peatbog 18.05.2006.
Extracted peatland area after the end of restoration activities (beginning of May 2012). Water level is mostly *ca* 20-25 cm deep.
Since the end of 1970-s

May 2012

September 2013
Estonian Nature Conservation Development Plan (NCDP)  
until 2020

• At least 2000 ha of abandoned (owned by state) peat extraction areas must be rehabilitated as wetlands

• Funding: National & ERDF investments in 2015-2020

• 2014 public tender for techical restoration plan
Draining peatlands for forestry

Approx. 30 % (300,000 ha) of Estonia's mires have been drained for improving forest production or afforestation since beginning of 19th century.

In the beginning of 1970’s afforestation of ombotrophic bogs were recognized as clearly uneconomic activity and therefore drainage activities are not supported by state subsidies anymore.

Drainage areas and ditches around bogs have caused serious impact on mixotrophic (transitional) mire habitats forming a belt (*lagg zone*) around the raised bogs.

*Delayed effect of surrounding drainage to ombotrophic bogs itself is still unclear, but it could be a cause of the invasion of trees to open bog areas.*
Scots Pine (*Pinus sylvestris*) encroachment in Nigula Bog
Tree coverage vz bird habitat change

Blue – open habitats
Green – woody habitats

Change of % of open habitats in Nigula Bog
Management planning: peatland restoration

Wilderness area 11 530 ha – untouched bog complex with only small disturbed area (<100 ha) in SE part

Kuresoo Bog
The story of Kuresoo mire restoration project in Soomaa NP

Spring 2013
Habitat restoration experiments for *Tetrao urogallus*
Experimental site Paraspõllu for Ca-rich fen restoration experiments 2010 -
ERDF investments 2007 -2015 (ca 1 miljon euro) : Restoration of raised bog and transitional mire habitats in Lahemaa (Viru, Hara), Soomaa (Kuresoo), Endla, Rannu, Muraka 2007-2013 (about ~ 2080 ha).

Restoration plans for 10 mire site in Ramsar area (ca 2000 ha)

Technical plans for restoration drained mires in Soomaa NP in 2014 (ca 1000 ha).

Management plans for all Natura 2000 areas (incl. defining restoration needs) must be ready 2015
Estonian Nature Conservation Development Plan (NCDP) until 2020

• Restoration near-natural hydrology at least 10 000 ha of drained mires on Natura 2000.

• Funding: National and ERDF investments (10 miljon euros already planned for period 2015-2020)

• 2014 public tender for restoration plans for bog and rich fen restoration areas
Building peat dams by volunteers (www.talgud.ee)
Drained peatlands for agriculture - future?
Ramsar sites in Estonia

Number of designated sites: 17
Total area: 304 778 ha
Number of peatland sites: 12
Several large already protected peatland sites are in „shadow lists“