Large scale network and restoration of peatbogs and wetlands in Southern Belgium

Planning and first results

Dufrêne M., Dierstein A., Frankard Ph., Janssens X., Motte G., Parkinson D., Pirard H. and Pontegnie M.

(SPW/DGO3/DEMNA - UGCSH - NATAGORA)
Peatbogs and wetlands in Southern Belgium

Haine valley

Ardennes

Semois valley

Ghent
Peatbogs and wetlands in Southern Belgium

Ardenne:

- Peat bogs: 23%
- Spruce: 34%
- Deciduous: 35%
- Mixed heaths: 6%
- Grasslands: 4%
- Fields: 3%
- Urban: 1%
- Military camp: 1%

Ghent
Peatbogs and wetlands in Southern Belgium

Plateau des Hautes-Fagnes

UTM 5x5 km

- Alluvial soils
- Peat (high, low)
- Gleyed soils
Peatbogs and wetlands in Southern Belgium

Plateau des Tailles

Alluvial soils
Peat (high, low)
Gleyed soils

UTM 5x5 km
Peatbogs and wetlands in Southern Belgium

Saint-Hubert

UTM 5x5 km

- Alluvial soils
- Peat (high, low)
- Gleyed soils

Legend:
- < 100 m
- 100-200 m
- 200-300 m
- 300-400 m
- 400-500 m
- 500-600 m
- 600-700 m
Peatbogs and wetlands in Southern Belgium

Croix-Scaille

- Alluvial soils
- Peat (high, low)
- Gleyed soils
Raised bogs:

• Historical peat extraction (for domestic heating)
• Recent drainage for spruce plantations

from 2,000 ha => 200 ha
Conservation state and threats

Raised bogs:
• Historical peat extraction (for domestic heating)
• Recent drainage for spruce plantations
  from 2,000 ha => 200 ha

Other peaty biotopes (wet heaths, mires, wood, ...)
• Recent drainage for spruce plantations
  from 11,000 ha => 1,000 ha

Wet grasslands, mires, wet woods, alluvial forests:
• Drainage for agriculture and spruce plantations
  from >150,000 ha => < 40,000 ha
  = 10% of Southern Belgium and 50% are in Ardenne
## Conservation state and threats

### Natura2000 biotopes:

<table>
<thead>
<tr>
<th>Natura2000 Habitats</th>
<th>Range</th>
<th>Area</th>
<th>Structure</th>
<th>Future</th>
<th>Global</th>
</tr>
</thead>
<tbody>
<tr>
<td>4010 Wet heaths</td>
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<tr>
<td>6410 Molinia meadows</td>
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<tr>
<td>6430 Wet tall herb grasslands</td>
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<td>7110 Active raised bogs</td>
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<tr>
<td>7120 Degraded raised bogs</td>
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<td>7140 Transition mires</td>
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<td>7230 Alkaline fens</td>
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<tr>
<td>91D0 Bog woodlands</td>
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<tr>
<td>91E0 Alluvial forests</td>
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</tbody>
</table>

Non-Natura2000 biotopes => similar evaluation

Only 1% of protected sites in Wallonia
(< 10,000 ha - rate of 150 ha/an)

Very slow process of protection and restoration!
Conservation priorities and actions

Priorities:

• to stop threats on existing sites
• to restore their quality and to extend area
• to restore new sites to increase connectivity

How?

• Quite good N2000 designation for wet biotopes
• Allow the design of several large LIFE projects
  • Administrations (scientists, managers) and/or NGOs
• Key point:
  • concentrate actions on existing major regional nodes to have locally good population systems (sources for surrounding sinks) instead dispersed actions.
Conservation priorities and actions

Large LIFE projects (peat and wet biotopes):

In Ardenne:
Since 2002:
• 7 projects
• 19 MEuros

Expected results:
> 4,000 ha restored
> 1,500 ha protected for 2010

2002: Pearl mussels
2006: Plat. Tailles
2003: Saint-Hubert
2006: Croix-Scaille
2007: Hautes-Fagnes
2006: Otter
Natura2MIL
Conservation priorities and actions

Main restoration actions:

Spruce cutting or milling
Conservation priorities and actions

Main restoration actions:

- Restoration of mires
- Ditch blocking
- Large dams
- Rotovating vegetation and subsoil with water level control (heavily cut-over bogs with only Molinia vegetation)
Preliminary results: vegetation trajectories

Analysis of permanent vegetation plots:

- Old spruce clear cuttings
- Recent spruce clear cuttings
- Degraded wet heathlands
- Bog woods
- Peatbogs, wet heaths

299 stations - 109 species - % - Bray-Curtis index - Ward clustering - IndVal analysis
Preliminary results: vegetation trajectories

Analysis of permanent vegetation plots:

- Old clear cuttings
- New clear cuttings
- Peatbogs
- Bog woods
- Wet heaths

PCOA - %Δ = 22%
Preliminary results: vegetation trajectories

Analysis of permanent vegetation plots:

- Peatbogs
- Bog woods
- Wet heaths
- Old clear cuttings
- New clear cuttings

Strong vegetation change during restoration actions...
Preliminary results: vegetation trajectories

Analysis of permanent vegetation plots:

![Vegetation plots diagram]

Relative index indicates clearly increasing abundances...
Analysis of permanent vegetation plots:

Spruce plantations in 2005 ... (sod cutting)
Preliminary results: connectivity

Croix-Scaille project

Old network

Existing site area = 66 ha
All sites connected at 2000 m level
Buffer 500 m = 2600 ha

New network

... multiplied by 4.5
... at 1000 m level
... multiplied by 1.8
Preliminary results: connectivity

Croix-Scaille project

Number of potential links between sites

A lot of new links:
(4.5 times more exchange possibilities below 4 km level)
Preliminary results: connectivity

**Saint-Hubert**

- 135 ha multiplied by 3.9
- 1500 m => 1000 m level
- 2400 ha multiplied by 2.0
- < 4 km dist. multiplied by 2.9

**Plateau des Tailles**

- 295 ha multiplied by 2.6
- 2000 m => 1000 m level
- 3800 ha multiplied by 1.8
- < 4 km dist. multiplied by 3.3
Hautes-Fagnes project

Preliminary results: connectivity

Restoration works (on 3500 ha)

Existing sites (5700 ha natural reserves)

New sites (785 ha)

Very large drained site, priority on restoration
Pearl mussel project

Priority to obtain a quite complete connectivity of major zones for Pearl mussel populations!

Existing protected sites (48 ha of natural reserves)

New natural reserves (229 ha)

Restored sites (50 ha)
Species response to restoration of ecological networks

Saint-Hubert:
- > 250 new ponds (> 20 m²)
- > 2500 ditch blocking

Dragonfly species number

2004-5
Aeshna grandis, Gomphus pulchellus, Cordulia aenea, Lestes viridis, Orthetrum brunneum, O. cancellatum, O. coerulescens, Platycnemis pennipes, Somatochlora arctica

2008
Coenagrion scitulum, Ischnura pumilio, Lestes dryas, Sympetrum sanguineum, S. striolatum, ...
Species response to restoration of ecological networks

Libellula depressa

Year of first observation
Species response to restoration of ecological networks

Sympetrum danae

Year of first observation
Species response to restoration of ecological networks

Orthetrum coerulescens

Preliminary results: species response response

Year of first observation
Species response to restoration of ecological networks

Leucorrhinia dubia

Year of first observation
Species response to restoration of ecological networks

Somatochlora arctica

Preliminary results: species response

Year of first observation
Species response to restoration of ecological networks

**Butterflies**

Slower response but *Boloria aquilonaris*, is now recovering at Saint-Hubert (where it was extinct in 2000) and colonizing new sites at Plateau des Tailles.

**Birds**

Return of migratory of *Grus grus*, increase density of *Lanius excubitor*, *Falco subbuteo*, *Ciconia nigra*, *Aegolius funereus*, *Saxicola torquatus*, *Locustella naevia*, ...
First evaluation

Taken home messages

• With > 4,000 ha restored and >1,500 ha of new protected sites, LIFE projects will change landscapes in Belgian Ardenne!
• Biodiversity in peat and wet biotopes should be enhanced in a next future
• Forester and local people behaviour against peat biotope is also slowly changing
• But, at least 10,000 ha of spruce plantations are still waiting similar restoration actions ...
Taken home messages

We need now to make the link between main restored peaty areas with new other LIFE+ projects

It’s not the end ...
Thanks to all people allowing to realise such dreams!
(Administrations, NGOs, owners, ... and project teams)
Early morning, yesterday, on Saint-Hubert LIFE project

Thank you for your attention!