Dry heathlands and sandy open grasslands in a suburban environment in the south of Brussels (Belgium)
Assessment of the conservation status

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Introduction

Study area :
• The upstream Dyle hydrographic subbasin (43.000 ha), located in Brabant phytogeographic district → This region is characterized by a high diversity of local ecological conditions due to the alternance of important tertiary sand outcrops and quaternary silty layers.

A worrying concern :
• Loss of open semi-natural habitats, in particular dry heathlands, sandy grasslands and grassheaths (further called "heathlands") due to:
  • Abandonment of former agro-sylvo-pastoral activities, causing a natural afforestation towards the climactic forest, and plantation of Pinus sylvestris orchards during the 19th century;
  • Urbanisation caused by the proximity of Brussels (~25 km) during the 20th century.

Research questions

➢ What was the evolution of heathlands distribution from 1770 to the present?
➢ What is the current conservation status of heathlands in the study area?
➢ What is the variation of local plant communities within the studied semi-natural habitats?

Evolution of heathlands distribution

<table>
<thead>
<tr>
<th>Current afforestation of ancient heathlands (1770)</th>
<th>Number of patches</th>
<th>Area (ha)</th>
<th>Proportion of the total area (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urbanisation</td>
<td>58</td>
<td>452.6</td>
<td>48.39</td>
</tr>
<tr>
<td>Pinus sylvestris orchard</td>
<td>20</td>
<td>239.6</td>
<td>31.35</td>
</tr>
<tr>
<td>Broad-leaved orchard</td>
<td>12</td>
<td>81.5</td>
<td>19.35</td>
</tr>
<tr>
<td>Natural afforestation</td>
<td>8</td>
<td>66.9</td>
<td>4.72</td>
</tr>
<tr>
<td>Meadow</td>
<td>5</td>
<td>65.2</td>
<td>4.41</td>
</tr>
<tr>
<td>Cropland</td>
<td>9</td>
<td>63.5</td>
<td>4.24</td>
</tr>
<tr>
<td>Roadway</td>
<td>1</td>
<td>23.3</td>
<td>1.49</td>
</tr>
<tr>
<td>Sand quarry</td>
<td>2</td>
<td>14.5</td>
<td>1.18</td>
</tr>
<tr>
<td>Total</td>
<td>119</td>
<td>1460.2</td>
<td>100%</td>
</tr>
</tbody>
</table>

Methods :
• Digitization of heathlands patches of historical maps (1770);
• Exhaustive survey of all ancient heathland patches to determine current afforestation and digitization of all current heathland patches.

Results : dramatic reduction (95%) of heathlands area between 1770 and 2006 in the study area (see tables), mainly caused by urbanization.

Current conservation status of heathlands in the study area

Methods :
• Exhaustive survey of sand outcrops (192 sites analysed - ~737 ha) aiming at:
  • Drawing up a floristic list for each of them;
  • Assessing colonization by shrubs and trees;
  • Assessing abundance of structural heathland species (Calluna vulgaris, Vaccinium myrtillus, Molinia caerulea, Pteridium aquilinum, Deschampsia flexuosa and Cytisus scoparius).

Results :
• 393 vascular plant species observed;
• 30 plant species of high conservation value at the regional scale;
• Regional extinction of 4 dry heathlands typical species since 1956 : Lycopodium clavatum, Genista pilosa, G. anglica and Cuscuta epithymum;
• Invasion of heathlands by social grasses, shrubs and trees, and (exotic) invasive species (10 sp.), in particular Prunus serotina (70% of sites were invaded), Robinia pseudoacacia (15%) and Amelanchier lamarckii (7%);
• Remaining heathlands (72 ha) are threatened by spontaneous afforestation and urbanization.

➢ Generalized ageing and encroachment since the middle of the 20th century = rather bad conservation status

Phytosociological characterization

Methods :
• 144 vegetation relevés (9m²) using B.B. method;
• Directed sampling in representative areas;
• Twinspan classification

Results :
• 241 vascular plant species;
• 19 vegetation facies varying in species composition and having their own indicator species

➢ high diversity at the community level

Perspectives

• A plan of restoration priorities has been established for the study area and management measures have been proposed.
• The potential for heathlands restoration is c. 360 hectares, in which c. 40 hectares should be restored in priority.