

Northern Atlantic wet heaths with *Erica tetralix* (4010) – Belgium (CON)



Photo: Saxifraga-free nature images-Willem van Kruijsbergen

Conservation status	IUCN EU27: Vulnerable (EUNIS habitat F 4.1) BE CON: U2+
Protection status	Habitats Directive: Annex 1
EU area (2007-12)	EU: 7,151 km ² BE CON: 30 km ²
MS where improving	BE (CON)
Other MS	BE (ATL), DE, DK, ES, FR, IE, NL, PT, UK, LV, SE, PL

Summary: Wet heath includes humid, peaty or semi-peaty heaths, other than blanket bogs, of the Atlantic and sub-Atlantic domains. They have been traditionally managed by grazing and controlled burning or cutting, which prevents their succession into forest. However, such practices have declined widely, and the habitat is also often impacted by nitrogen deposition, desiccation, acidification, overgrazing, uncontrolled burning, artificial drainage, afforestation, invasive species and recreation. As a result the conservation status of the habitat remains unfavourable in all biogeographic regions. Only in the continental biogeographical region of Belgium has a genuine increase been reported of the area occupied by this habitat.

The most important conservation measures that have contributed to the improvement in Wallonia have firstly been the establishment of protected areas to ensure long term conservation and management through land purchase or the establishment of long term agreements with private landowners. The majority of measures have taken place on public lands with a nature reserve status. This has then been followed by restoration measures, including the removal of trees, top soil removal and restoring hydrological conditions. Management of the habitat includes grazing and mowing in order to prevent its succession into forest. Long term management and protection of the area is a key factor in the conservation of this habitat type. This has been facilitated by informing all stakeholders of the benefits of the conservation measures for them and communicating plans and actions with the general public to ensure their long lasting support. Secondly, the restoration has been planned in a long-term broad landscape perspective which raised the interest of various stakeholders.

Background

Status and EU occurrence

The majority of the Annex I habitat 'Northern Atlantic wet heaths with *Erica tetralix*' (code 4010) in the EU is in the UK and Ireland (85%) and it spans uplands (between 300 and 600m altitude) and lowland areas (EC, 2008).

According to Article 17 Member State reports, the conservation status of the Northern Atlantic wet heath over the 2007-2012 period remains similar to the previous assessment - unfavourable-bad in the Atlantic, Boreal, and Continental biographical regions, and unfavourable-inadequate in the Mediterranean region). In the Continental and Mediterranean regions the trend is deteriorating (Annex 1). The structure and function as well as the future prospects of the habitat were assessed by most Member States as unfavourable-bad, whilst range assessments were mostly favourable. As a result of declines in quality, the Red List status of wet heaths (EUNIS code F4.1) in the EU28 is considered to be vulnerable (EC, 2016).

Belgium is the only Member State that reported a genuine improvement in this habitat for its Continental biogeographic region.

Ecological requirements

Wet heath habitats are strictly limited to nutrient poor soils, and usually occur where there is impeded drainage so that the water table is above or at ground level for at least some of the year. The Annex I 'wet heath' habitat

type includes humid, peaty or semi-peaty heaths, other than blanket bogs, of the Atlantic and sub-Atlantic domains. The vegetation is typically dominated by mixtures of cross-leaved heath (*Erica tetralix*), heather (*Calluna vulgaris*), grasses, sedges and sphagnum bog-mosses. The openness of the low vegetation is important for the occurrence of characteristic wet heath flora and fauna.

The restoration and the management of heath habitats are conditioned by their history. In countries like Belgium, Netherlands and France, for example, heath habitats are the result of centuries of use by farmers and livestock breeders. A combination of grazing from large herbivores, as well as very restricted controlled burning or cutting, plays an important role in arresting their succession to woodland and the maintenance of the open dwarf shrub community (Hampton, 2008).

Pressures and threats

Member States reported a broad range of pressures and threats over the 2007-12 period, corresponding with the ecological requirements of the habitat (EEA/ETC-BD, undated). Most 'highly important' pressures were 'grazing by livestock' (24 times mentioned), 'changes in water bodies conditions' (19 times mentioned), 'vegetation succession/biocenotic evolution' (17 times mentioned) and 'air pollution'. The same four activities were also reported as being the highly important threats, respectively mentioned 18, 18, 14 and 18 times. In the Continental biogeographic region of Belgium, similar pressures and threats were reported¹. Pressures and threats of high importance were change in species composition, missing or wrongly directed conservation measures, anthropogenic reduction of habitat connectivity, problematic native species and water abstractions from ground water.

The classical extensive types of land-use that made these habitats flourish and wide spread within the Ardennes have disappeared. The environment is now much richer in nutrients, causing large amounts of nitrogen deposition on the habitat, which is sensitive to eutrophication (Herremans, pers. comm., 2018). Other threats are desiccation, acidification, overgrazing, or grazing abandonment, uncontrolled burning, artificial drainage, afforestation, invasive species and recreation (EC, 2008). For example, spruce plantations have fragmented habitats of wet heath and the drainage required for the forest has contributed to the desiccation of the mires. The remaining area is often invaded by Purple Moor-grass (*Molinia caerulea*), a species that benefits from drainage, burning and atmospheric nitrogen pollution. In the Tailles plateau heath used to be managed through agricultural practices involving extensive grazing and mowing. The abandonment of these practices led to land use changes and consequently the deterioration and disappearance of the wet heath.

Drivers of improvements: actors, actions and their implementation approaches

Organisers, partners, supporters and other stakeholders

Various parties have been involved in actions with respect to restoration of wet heaths in Belgium. NGO's (NGO Natagora, Nature park high Fens-Eifel, a hunting association) together with Walloon public Nature and Forest Service and other parties such as universities and local volunteers have been involved in several LIFE projects (e.g. LIFE02 NAT/B/008595, LIFE06 NAT/B/000082 – see Annex 2). The LIFE-project in Saint Hubert (LIFE03 NAT/B/000019) was coordinated and promoted by a hunting association. The UGCSH (Cynegetic Management Association of the Saint-Hubert forestry massif), was founded in 1985 as result of hunters' explicit wish to cooperate in a more harmonious management of large fauna, and to settle debates confronting forestry and hunting interests and on the desire for a wider access of the forest to the public, conflicting with an emblematic hunting territory ("Chasses de la Couronne"). As a result a Regional Centre of Environmental Awareness (CRIE) and an integrated management project of the massif (PGISH) were created (EC, 2007).

¹ http://cdr.eionet.europa.eu/Converters/run_conversion?file=/be/eu/art17/envuib4ka/BE_habitats_reports-13916-154522.xml&conv=350&source=remote#4010CON

Contributions / relevance of strategic plans

In Wallonia there is not a formal strategic plan for the conservation of wet heath. However, the LIFE projects on the plateau of the Ardennes (Wallonia) that targeted the peat ecosystems and their related/associated habitats (like wet and dry heath and *Nardus* grasslands) covered all the peaty plateau (Plateau des Hautes Fagnes; Plateau des Tailles; Plateau de St Hubert; Plateau de Spa; Plateau de la Croix-Scaille; Plateau de Libramont; and finally the project on military camps that included the Military Camp of Elsenborn actually part of the Plateau des Hautes Fagnes). This succession of LIFE projects was the result of a vision of a few people and resulted in a kind of 'metaproject' for the entire high plateau of the Ardennes natural region. The projects improved the connectivity between sites on each of the high plateau but also the overall connectivity across the plateau. This was done purposely but not as part of an official strategic plan (Herremans pers. comm., 2018).

Measures taken and their effectiveness

For a habitat type like wet heath, long term conservation and management are key requirements. For this reason the sustainability of the investments made in restoration and management works have to be ensured by long term duration of a strong protection status of the land. In many LIFE projects in the Belgian Ardennes this has been achieved by the purchase of land in the best locations, or by achieving agreements with land owners for the control of the land for at least 30 years with financial compensation. The restoration works that followed often included the cutting of trees, sod cutting², top soil removal and hydrological restoration (e.g. LIFE03 NAT/B/000019, LIFE05 NAT/B/000087, LIFE05 NAT/B/000089, LIFE06 NAT/B/000091, LIFE10 NAT/BE/000706) and exceptionally controlled fire (LIFE05 NAT/B/000088). The latter measure is cheap, but can meet social resistance in Belgium because of aesthetic reasons and for the supposed impact on the fauna (Jean-Paul Herremans pers. comm., 2018).

Experience shows that it is important that target species are able to repopulate the restored sites. This requires, in the first place, careful handling of the remaining residual populations and the diaspores (seeds and spores etc) present in the soil (see also EC, 2008) as a resource for the recolonisation of rehabilitated parts of an area. Moreover, additional efforts to increase the accessibility of the restored sites from the neighbouring landscape can also be important. Increasing their internal ecological connectivity, such as done at the Plateau de St Hubert, increases their chances for long time improvement.

The land owners of the area of concern varied from the Walloon region, communes to private owners. The first phase of the project therefore consisted of negotiations between these owners and administrators. This procedure determined which areas would be used for nature conservation. By raising awareness of the advantages of a LIFE project for the land owners, 650 ha was made available in this phase, instead of the 300 ha foreseen by the project.

The focus of this project was much more on the restoration of open landscapes than on specific habitats types, with the exception of peat bogs and wet forests. As most of these sites were occupied by spruce plantations, trees were cut down and removed and in some areas the top soil was removed. Subsequently, hydrological rehabilitation was initiated. By infilling drains, building earth dikes, recuperating water from neighbouring areas, slowing down its flow and digging ponds, the specific humid characteristics of the habitats were restored. The initial aims of the project have been greatly surpassed, with 83 km of drains neutralised, more than 15 km of dams built and 24 large ponds have been excavated. In addition to this, the water system includes over 2,400 small ponds resulting from the infilling of drains or of the creation of dams. This resulted in an increase of biodiversity in the area, especially regarding dragonflies, amphibians and birds.

The openness of the vegetation is being maintained through grazing management in over 100 ha. The financial viability of the areas is being contributed to by their access to agro-environment measures payments, and the agricultural premiums resulting from the preservation of a local race of sheep (Roux Ardennais) and the increased choice of organic farming.

Public awareness has been raised about protection of habitats and species, for example by distribution of brochures, educational modules for schools and a video documentary about the development of the project.

² Sod cutting is dissimilar to excavating topsoil. The micro-relief is well preserved and the vital seed bank is exposed, germinating more easily. Sod cutting may reveal old livestock trails and trenches, enhancing the cultural experience of the landscape. Small scale cutting and mowing is preferred whenever topsoil removal would be superfluous. On vulnerable locations, measures were carried out manually and patchwise, in order to improve recolonisation. (Natuurpunt, 2011)

Furthermore, three scenic viewpoints have been built for the general public as well as 13 educational panels in the forest.

Monitoring indicators have been identified and put into use in order to follow the effects on a long-term basis of the measures that have been taken. All the acquired grounds have become the ownership of the Walloon Region. All rehabilitated sites are included in one State Nature Reserve. An advisory Management Commission has been formed by scientists to provide advice on the daily management of the nature reserve. A hydrological study, carried out by the Agronomics faculty of Gembloux, should provide some information about the role of peat habitats in the regulation of water. Public and private land owners stay proprietors of the land while the Walloon Region is responsible for the management and the costs. Within the area game hunting is considered as a means of nature conservation and is allowed as well as forestry production, with respect for the interests of biodiversity and protection of habitats.

As the measures taken in the LIFE-project in Saint Hubert proved to be very successful, other LIFE-projects have adopted the model as well. A project, which adopted similar measures, has been set out in the High Fens (LIFE06 NAT/B/000091). A socio-economic study concluded this project will have positive impacts on biodiversity, recreational use of the land, CO2 emission reductions, and well-being in seven local communities. Another project, with a model similar to the one in Saint Hubert was conducted on the Tailles plateau (LIFE05 NAT/B/000089). In these projects economic loss through the removal of production forests was minimal, as unproductive forests were cut. Furthermore, economic benefits for the stakeholders could be increased through hunting, the supply of drinking water and tourism.

The conservation of wet heath after LIFE projects depends on long-term recurring management (see ecological requirements). The effectiveness of the maintenance of habitats, such as wet heath, can depend on several issues. First and most important is the general lack of financial resources for recurring management and maintenance. Other factors which can play a role are human factors, such as efficiency inside the administration, differences in the number of involved volunteers, and the ecological expertise involved during the restoration of the habitat (Herremans pers. comm., 2018).

The measures taken by Belgium for the conservation of the wet heaths are listed below.

Application of conservation measures for wet heath in the Continental biogeographical region for 2007-2012 in Belgium

Measure	Type	Ranking	Inside/outside Natura 2000	Broad evaluation
2.1 – Maintaining grassland and other open habitats	Contractual One Off	High	Both	Maintain Enhance
6.1 – Establish protected areas/sites	Legal Administrative	High	Both	Not Evaluated
6.3 – Legal protection of habitats and species	Legal Administrative	Medium	Both	Not Evaluated
6.5 Adaptation/abolition of military land use	Contractual	High	Inside	Maintain Enhance

Source: BE-CON Article 17 report 2013 available at <https://bd.eionet.europa.eu/article17/reports2012/>

Funding sources (current and long-term) and costs (one-off and ongoing)

Many of the projects were funded by various partners. For example, during its six-year term, 50% of the High Fens LIFE project was funded by the EU, 49.9% by the Walloon Public Service and 0.1% by the Nature Park High Fens-Eifel non-profit organisation.

Future actions:

The Walloon PAF for Natura 2000 in 2014-2020 identifies the following priority actions:

- Ensure management in the long term (mainly grazing and mowing; turf stripping).
- Ensure conservation and enlargement of patches in areas currently not concerned by LIFE projects in order to avoid a range size reduction and to ensure connectivity for typical species (SPW, 2014).

The Belgian Nature Integrated Project (BNIP) uses the targets of the Federal, Flemish and Walloon PAFs to develop and implement an operational framework, to provide expertise and to support LIFE projects in the field.

Achievements

Impacts on the target habitat

The Continental biogeographical region in Belgium reported a genuine increase in the area of wet heath, from 20 to 30 km² over the period from 2007 to 2012, although its range remained unchanged at 5,900 km².

Other impacts (e.g. other habitats and species, ecosystem services, economic and social)

Projects were often not designed to improve only the wet heaths. At the High Fens various other habitats were increased and the system evolved towards a more natural peatbog vegetation type of fens, transitional mires, peaty heathlands and dry heathlands (LIFE06 NAT/B/000091).

The measures taken to restore such heath landscapes offer opportunities for various species, like breeding habitat for various bird species. Two migratory bird species, that have rarely nested in Wallonia, are now breeding at the High Fens: the Little Ringed Plover (*Charadrius dubius*) and the Common Teal (*Anas crecca*). The clear-cuts in the forests have been colonised by the Stonechat (*Saxicola torquata*), Tree Pipit (*Anthus trivialis*) and Meadow Pipit (*Anthus pratensis*) (LIFE06 NAT/B/000091). In the High Fens dragonflies increased, indicating wet- and heathland restoration.

Furthermore many projects reported benefits for ecosystem services (increased CO₂ sequestration, drinking water supply and recreation), local economies (positives effects on the tourism sector, increased hunting and increase of extensive farming and forestry practices) and education (scientific studies and educational modules for schools) (e.g. LIFE03 NAT/B/000019, LIFE06 NAT/B/000091 and LIFE05 NAT/B/000089).

Conclusions and lessons learnt

The key targeted conservation measures that led to the improvements

- Establishing protected areas through land purchase or agreements with the owners of private land, ensuring long-term conservation and management.
- Restoration measures that removed tree plantations, restored hydrological conditions, removed nutrient-rich top soil (e.g. by sod cutting) and maintained/reinstated extensive grazing.

Conservation measures that have not been sufficiently effective

- Mowing or grazing alone was often not enough to restore changed and unfavourable sites. Experiments in the Belgium Ardennes have shown that long-term mowing had relatively little effect (Jacquemart *et al.*, 2003).

Factors that supported the conservation measures

- Enabling target species to repopulate the restored sites increases the chances for long-term improvement. This firstly requires careful handling of the remaining residual populations and the diaspores present in the soil, and secondly, an increase in ecological connectivity within the area and with the surrounding landscape.
- Involvement of all stakeholders and land owners from the start of the project, informing them and making agreements with them about the use of the land.
- Informing all stakeholders of the benefits of the conservation measures for them, e.g. improved water quality and hunting opportunities.
- Building a dedicated integrated management project with a long-term scope ensured continuity over the succession of projects.

Factors that constrained conservation measures

- Nitrogen deposition transports nutrients from local, regional and other sources into the wet heath, adding nutrients to the nutrient-poor environment thereby endangering the occurrence of the habitat type. However, frequent sod-cutting to remove these nutrients is not an option as it has negative consequences on the remaining seedbank as well as some animal species. Grazing management helps to remove nutrients from the area. However, local restoration measures need to be aligned with other measures such as regional, national or European emission reduction measures (De Heer *et al.*, 2017).

- Despite restoration of the essential habitat conditions and meticulous implementation of the measures, it was sometimes found that some species did not return. The fact is that many plant species only have a short-lived seed bank. Research on Belgium heaths, showed that species lacking a persistent seed bank seemed to be especially sensitive to isolation (Piessens et al., 2004). It is therefore particularly important to ensure that habitat patches where such species are still present should be prioritised for protection and are not degraded or isolated from sites that can be restored.

Examples of good practice, which could be applied to other habitats

- Securing long term management of the area from the start of the project by means of land purchase, long term agreements with land owners and ensuring a strong protection status for the area.
- Communication with the local people and involving them in plans and actions is of great importance. Involvement of locals increases possibilities to communicate the project to different layers of the society. Local volunteers can also have an important role in the project itself, thereby utilising local knowledge and building local commitment for the Natura 2000 sites.
- Planning restoration in a broader landscape perspective and also focussing on other pressures such as ecological fragmentation and (air) pollution is important for long lasting positive effects.

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Authorship

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Annex 1 Status of Northern Atlantic wet heath with *Erica tetralix* (H4010) at EU and Member States Levels

Favourable **FV** Unknown **XX** Unfavourable - inadequate **U1** Unfavourable - bad **U2**
 Qualifier (+) improving (-) deteriorating (=) stable (x) unknown (n/a) not reported

Biogeographical Region and Member State	2001-06	2007-12				
	Overall	Range	Area	Structure	Future	Overall (with qualifier)
Atlantic						
BE	U2-	U1	U2	U2	U2	U2 (=)
DE	U2	U2	XX	U2	U2	U2 (-)
DK	U2	FV	U1	U2	U2	U2 (-)
ES	XX	XX	XX	XX	XX	XX (0)
FR	U2	FV	U1	U2	U2	U2 (=)
IE	U2	FV	U1	U2	U2	U2 (=)
NL	U1	FV	U2	U1	U1	U2 (-)
PT	U1	FV	U1	U1	U1	U1 (-)
UK	U2-	FV	FV	U2	U2	U2 (=)
LV	XX	U1	U2	U2	U2	U2 (X)
SE	U2-	FV	U2	U2	U2	U2 (-)
Continental						
BE	U2	FV	FV	U2	U2	U2 (+)
DE	U1	U1	U1	U2	U2	U2 (-)
DK	U2	U1	U2	U2	U2	U2 (-)
FR	U2	U2	U2	U2	U2	U2 (-)
PL	U2	XX	XX	XX	XX	XX (0)
SE	U2-	FV	U2	U2	U2	U2 (-)
PT	U1	FV	U1	U1	U1	U1 (-)

Source: Member State Article 17 reports as compiled by ETC-BD on EIONET
https://bd.eionet.europa.eu/activities/Reporting/Article_17/Reports_2013

Annex 2. LIFE Nature Projects that aimed to help conserve Northern Atlantic wet heath with *Erica tetralix* in the Continental Biogeographical Region of Belgium

Project Title	Project N°	MS	Type Of Beneficiary
Ardenne liégeoise - Restoration of natural habitats in the « Ardenne liégeoise » region	LIFE10 NAT/BE/000706	BE	Regional authority
PLT Hautes-Fagnes - Rehabilitation of heaths and mires on the Hautes-Fagnes Plateau	LIFE06 NAT/B/000091	BE	Regional authority
Cx SCAILLE - Actions for the valleys and turf moors of Croix Scaille (Belgium)	LIFE05 NAT/B/000087	BE	NGO-Foundation
NATURA2MIL - Rehabilitation of habitats in military camps in Wallonia	LIFE05 NAT/B/000088	BE	Regional authority
PLTTAILLES - Rehabilitation of natural habitats on the Tailles Plateau	LIFE05 NAT/B/000089	BE	Regional authority
Saint Hubert - Rehabilitation of peat and wet habitats on the Saint-Hubert Plateau	LIFE03 NAT/B/000019	BE	NGO-Foundation
Action plan for heaths, mat-grasslands and associated habitats in Belgium	LIFE96 NAT/B/003034	BE	NGO-Foundation

Source: Life Programme database.