# Sheet 11 :
# Biodiversity in the Fagnes

## A / Description of the animation

This animation focuses on one of the key components of the Fagnes: peat bogs. It shows how peat bogs, which are a unique and sometimes poorly known ecosystem in Belgium, are undergoing the combined effects of climate change and human intervention. According to some researchers, this fragile ecosystem is a relic left over from the last ice-age and could disappear from Belgium in less than 50 years' time. The same thing goes for many rare species that inhabit them, like the black grouse.

Landscape in the Fagnes

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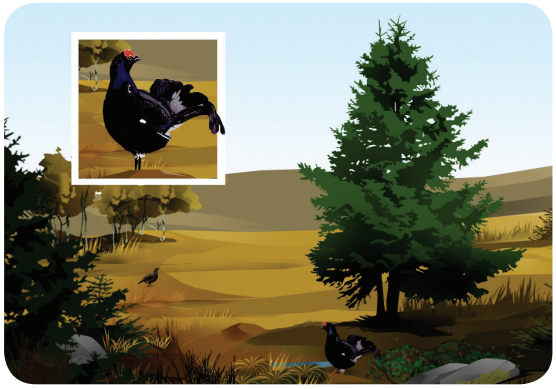
## B / Let's take a closer look...

### 1/ THE BLACK GROUSE: AN UMBRELLA SPECIES?

The black grouse is a highly demanding species and its habitat requires a wide range of elements. This is why it is thought of as an "umbrella species" for its area of distribution. Its very presence – and the general health of its population – indicates that the environment is healthy. Since the grouse's habitat is made up of a mosaic of different environments, keeping an eye on its conservation also boils down to ensuring the living conditions for a wide range of rare plants, needing the same conditions to survive.

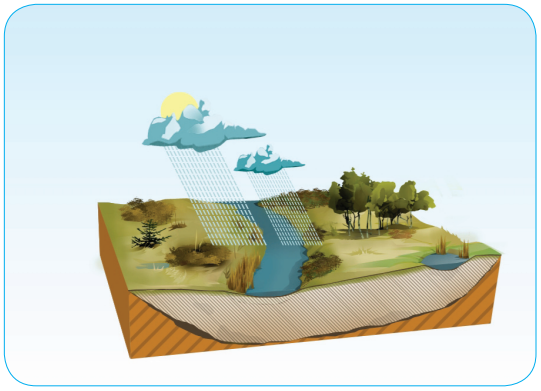


### 2/ A PROCESSION OF ANCIENT SPECIES...

Peat bogs, such as those in the Hautes-Fagnes, provide ideal climatic conditions that have enabled some "cold" plants to survive even after the end of ice-ages. The flora found in these moist environments is full of ancient species that date back to this period. These are species that are both rare and fragile, such as the bog bilberry, which generally grows in high altitude (never below 600 m), bog rosemary or cranberry.

### 3/ ...AND SPECIALISED ONES, TOO

Cool climate, poor soil which is saturated in water...peat bogs are ecosystems that can only provide a home to species having a high level of adaptability.



For example, plants that need nitrogen to produce protein have had to adjust to the lack of food available as well as to the acidity of the peat bogs:

- Some of them have developed a particularly extensive root system, such as cotton-grass, which has roots over a metre long.
- Others, like the sundew, have simply had to become carnivores in order to obtain the protein they need to grow!
- The cranberry, a more social species, has developed a symbiosis with a fungus that clings to its roots, enabling the cranberry to absorb more minerals.

Some animals also depend greatly on peat bogs. This is the case of the endangered cranberry butterfly so called because its caterpillars feed exclusively on cranberry leaves, making the species dependent on this type of environment.

As a result of all this, peat bogs are real biological storehouses, sheltering numerous rare or endangered species that are essential to preserve.

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## 4/ THE "MEMORY" OF PEAT BOGS

As a result of the constant presence of water, peat bogs prevent matter from oxidising quickly, because they are very low in oxygen. This special property enables organic matter to be preserved, with little decomposition. The gradual accumulation and piling up of organic matter helps make peat bogs a sort of archive for the vegetation that has grown there in the past.

Palynologists (scientists who study pollen and spores) are able to extract "cores" of material from peat bogs and to study the layers of pollen left by shrubs and plants deposited over the centuries. This enables them to "read" the history of the landscapes, climate and atmospheric pollution.

## 5/ A HERITAGE TO BE RESTORED

These incredibly rare environments are exceptionally valuable in terms of biological interest and heritage value. There used to be some 3000 hectares of these bogs in Wallonia. In more recent times, though, peat exploitation, drainage, spruce plantation, fires, cutting, moss raking (to provide bedding for livestock) and general trampling have resulted in the total area being greatly reduced. Today, it is believed that there are less than 200 hectares of intact high peat bog and 2000 hectares of damaged high peat bog left in Wallonia .

Most of the major peat bog areas are now protected, but merely listing them as natural reserves will not be enough to save them. As a matter of fact, peat bogs having been partially exploited commercially or drained are usually not recolonised by sphagnum. This means that the bogs have to be restored if we wish to recreate the conditions that are suitable for the development of its specific vegetation.

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## C / Group activity to be conducted in the classroom:

EVERYTHING IS TIED TOGETHER!

### Aims

- Learning about the concept of ecosystem
- Broaching the notion of food chain and habitat
- Thinking about the decisions that need to be taken to preserve biodiversity

### Equipment

- As many "species" identity cards as there are pupils
- Clothes-pins for attaching the identity cards to the children's tops during the game
- Ball of elastic string

### Timing :

20 minutes or more of actual game (depending on the number of participants and length of the discussion)

### Procedure

**Preparation:**
One week before the game, each player draws the name of a species living in the Belgian Hautes-Fagnes. They have to identify the species and look for an illustration, find out what it eats (and what it is eaten by), and what its habitat and needs are.

List of the species that can be used: Black grouse – Raft spider – Weasel – Slow-worm – Meadow pipit – Wheatear – Bog rosemary – Cranberry – Cotton-grass – Bog bilberry – Marsh orchid – Sundew – Subarctic dragonfly – Heather – Bilberry – Birch – Grasshopper warbler - Arctic starflower – Common frog – Marten – Wildcat – Bog asphodel – Cross-leaved heather – Ringed snake – Cranberry fritillary – Bog fritillary – Wasp spider – Bistort – Hedge bindweed – Peat moss

Recommended website for obtaining information about the species mentioned:
http://environnement.wallonie.be/amisdelafagne/HF/HF%20Faune/HFfaunInvert.htm

Ask each pupil to create an identity sheet for his or her species.

**Step 1:**

- On the day of the game, the players sit down in a circle, displaying their species identity card clearly.
- The teacher gives the ball of string to one of the pupils in the group, who then presents his or her species. The

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pupil then throws the ball to another member of the group (keeping hold of the end of the string) and asks him/her to present his/her species. The two "connected" members try to see whether they have a link. If not, the ball is thrown to another pupil. Each time a link is established (for example when the pupil who is the "Black grouse" meets the "Birch"), the pupils attach themselves to one another using the elastic string, (since, in our example, the black grouse feeds on birch catkins during the winter).

– Discussion: as the string becomes tangled up, it forms a web that represents life in an ecosystem. The web shows how the various organisms are in close interaction with one another within an ecosystem. Each element of this web has an effect on the entire system.

Step 2:

– Choose a species. Are the children able to predict what will happen if thais species disappears from the web? What other organisms will be affected? What will happen to the ecosystem?

– Pull on the species that is disappearing so as to show how this would affect the other species that are linked to it. This also shows how even a minor imbalance can affect the entire system in general.

## D / Ressources/ Références


– The climate is us, WWF Belgium, 2006.
– The black grouse: symbol of the Fagnes, MRW-DGRNE, 2005. Can be ordered free of charge from the Walloon Region Portal > General information > Documentation > Publications.
http://www2.ecol.ucl.ac.be/tourbiere/index.html
http://www.ulg.ac.be/museezoo/cococococks/liege/procpdf/loneux.pdf
– The database of teaching tools provided by the Réseau Idée network:
http://www.reseau-idee.be/outils-pedagogiques/
– Other activity suggestions at:
http://www.cifen.ulg.ac.be/inforef/projets/climatic/pollens.htm