



Border Mires - The Border Mires - Active  
Blanket Bog Rehabilitation Project

LIFE98 NAT/UK/005432



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#### Project description:

##### Background

Located in Northern England, the Border mires pSCI is considered to be one of the most important remaining active blanket bogs in the UK, outside Scotland. The project focused on 15 sub-sites altogether covering approximately 40% of the total pSCI (as it was in 1999). These are situated in and around the Kielder Forest which is the largest man made forest in Northern Europe. They are also home to five annex I bird species, such as golden plover *Pluvialis apricaria*, golden eagle *Aquila chrysaetos*, and peregrine falcon *Falco peregrinus* which will benefit substantially from the improvements to the quality of the habitat. In the past, agricultural drainage and afforestation have encroached onto the blanket bogs and resulted in drying out and degradation of the habitat. However, one positive aspect of the proximity of the forest is that grazing animals have been excluded and burning has not been carried out for over 30 years so much so that the blanket mire has a naturalness that is almost unique in the UK. The project was run by a partnership of government and non-governmental bodies and most of the actions carried were non recurring. Thus, ditches were blocked to reinstate the integrity of the bogs' hydrological systems, trees were cut and removed on some 200ha to enlarge the blanket bog area and finally naturally regenerated trees were removed from open bog. Since the project was also breaking new ground with mire rehabilitation on previously afforested areas, there was a lot of interest by both forestry and conservation organisations on the project's successes. Two workshops were organised to present the results of the project and to promote further networking both within the UK and in the rest of Europe.

EU-LIFE co-financing provided a vital initial investment for the long term conservation of this unique site. Once the trees are removed and the ditches blocked the natural processes of peat formation will take over and, in time, the blanket bogs will become self sustaining.

## Objectives

The overall objective for the project was: 1. To ensure that the quality of all blanket bog habitat is improved to a near-natural and sustainable condition. 2. Where possible to ensure that the pre-afforestation boundaries of the low elevation blanket bog units are re-established. 3. To expand the area of high elevation blanket bog so that the area, free from the influence of the forest edge, is enlarged, thereby benefiting the Annex 1 bird species that breed and forage in the project area. 4. To encourage other private owners within the SAC to take positive action towards achieving favourable conservation status in land under their control.

## Results

The project generally exceeded its objectives. Overall the LIFE project managed to complete about 25% of the total task set by the Border Mires Management Committee for this complex and vast SAC. This is an example of LIFE-Nature funding allowing a partnership to complete a significant part of their work whilst also helping develop techniques. Overall 500 ha of mire have been partially restored through the project. The condition of the sites has been moved from 'unfavourable' to 'unfavourable-recovering': time will slowly improve the quality of the restored areas. To deliver the bog restoration programme, the project partners went through a learning process. This included the definition of restorable bogs, the range of techniques, the strengths and weaknesses of the techniques, their costs and likely problems. Preparatory actions involved the review of Forest Enterprise management plans to identify the original extent of the mires prior to afforestation. The mapped features of the original mire expanse would be incorporated into revised management plans as long term restoration objectives. The conifer clearance target (197 ha) was completed and was exceeded with additional work funded by English Nature. Trees were removed in several ways; by cutting and chipping on-site, by felling to waste, by cable-craning to lift whole trees clear of the bog, by conventional harvesting techniques and by killing standing trees by ring-barking or herbicide. Overall the project reported that the average cost of conifer clearance was £900/ha. More dams than envisaged were constructed on open mires (1849: +22%) but fewer than expected (1606: -15%) on cleared mires. On the open mires more ditches were found so the target increased. On the areas first cleared of conifers the project learnt that it is difficult to accurately assess the amount of work required until the trees are removed. And the technique used for removal can also influence the need for additional dams; some of the heavier techniques actually destroy the drainage system. The project refined techniques for damming of drainage ditches. Early dams were constructed of elm boards and whilst effective they were expensive and the materials heavy to carry. Other materials have included plywood, plastic sheeting, peat and plastic piling. A paper was prepared

on damming ditches in peat bogs giving advantages and disadvantages of each material. The clearance of conifer regeneration on open mires was completed to ensure that the threat of spread of self-sown trees is minimised. The main species involved were Sitka spruce and lodgepole pine. It is proposed that future planting near open mires should use Norway spruce as this does not seem to pose such a problem. The densities of self-sown trees cleared ranged from 50/ha to 40,000/ha and were from seedlings to 5m high trees. The project created 100 wader pools using explosives as planned. However, media interest in this rather unusual technique allowed a further 30 pools to be created for a television programme. Monitoring work was completed to measure the water levels and recovery of soils and vegetation. The difficulty with this work is that the project period is just too short to detect significant changes but early results are encouraging. Monitoring has been of water levels (using permanent water level dip-wells), indirect measurements of wetness using the presence of testate amoebae and vegetation monitoring. Testate amoeba are single-celled animals which, because of their 'test' (shell) can be detected throughout the depth of peat. The different communities found in peat bog cores can indicate the relative wetness of the bog at any period in time. The technique has potential. Aerial photography is an ideal monitoring technique to show gross landscape changes. A survey was commissioned for 2002 but poor weather conditions postponed this to outside the project period. A mid-term and a final seminar attracted 60 and 70 people respectively. The project is also recorded on a video. A number of scientific articles were prepared as a result of the monitoring work. Although dissemination was not a major element of the project there was good networking with other practitioners. Whilst many of the principles and techniques for mire restoration are generally well-known, the practical seminars helped to come up with new ideas. Key lessons from the project were;

- That landscape scale restoration of blanket bog is possible
- If the hydrology can be re-established then recovery is surprisingly quick
- A detailed assessment of the relative merits of the different techniques and their unit costs
- The resource requirements to complete the task of bog restoration in Kielder.

The Border Mires LIFE Project focused on the Natura 2000 element of the much wider Border Mires suite of raised and blanket bog sites. Since the beginning of the project a further 2500 ha of mire habitat were added to the 8188 ha Border Mires Kielder-Butterburn cSAC. The project has worked successfully on 15 sites within the cSAC but there are 59 sites in total and the Border Mires Management Committee face the challenge of ensuring that their vision to restore all sites over the next 10 years or so can be achieved. One of the management/partnership dilemmas is potentially a difference in timescales between the Forest Design Plan process of Forest Enterprise which is intended to restore the mire boundaries over several decades as trees are harvested and not re-planted (the 50,000 ha conifer forest will be reduced to a 40,000 ha conifer forest with 10,000 ha of other habitats) and the more urgent timescales set by the UK Government to meet the obligations of the Habitats Directive. In terms of communicating about Natura 2000 it was difficult for this project to reach a general audience and, even if it could, the habitats and their conservation issues are more 'specialist' than 'generalist'. The project material and video was therefore targeted at a professional audience rather than the general public. The project had no website. The project experience has helped to assess the long-term needs for achieving a balance between forestry and conservation interests. The boundaries between mire and plantation are now incorporated into the Forest Design Plans as medium-term targets. In this way conservation and forestry interests can work

together towards mutually acceptable goals. An example of this will be the testing of the use of Norway spruce as the conifer crop to be planted near to open mires.

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Environmental issues addressed:

Themes

Habitats - Bogs and Mires

Keywords

public-private partnership, protected area, site rehabilitation

Target EU Legislation

- Nature protection and Biodiversity
- Directive 79/409 - Conservation of wild birds (02.04.1979)
- Directive 92/43 - Conservation of natural habitats and of wild fauna and flora- Habitats Directiv ...

Target Habitat types

- 4010 - Northern Atlantic wet heaths with Erica tetralix
- 4030 - European dry heaths
- 7130 - Blanket bogs (\* if active bog)
- 7230 - Alkaline fens

Natura 2000 sites

SCI UK0012923          Border Mires, Kielder - Butterburn

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Beneficiaries:

Coordinator	Northumberland Wildlife Trust
Type of organisation	NGO-Foundation

Description	The Northumberland Wildlife Trust's aims are to protect the wildlife and wild spaces of Northumberland and North Tyneside and to provide the means by which people can enjoy and understand the assets that are protected. NWT works in partnership with a range of stakeholders including local authorities, landowners, statutory agencies and the business community.
Partners	Forest Enterprise English Nature University of Newcastle Northumberland National Park Authority RAF Spadeadam

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#### Administrative data:

Project reference	LIFE98 NAT/UK/005432
Duration	01-AUG-1998 to 31-JAN -2003
Total budget	465,697.19 €
EU contribution	233,228.44 €
Project location	North(United Kingdom)

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#### Read more:

Publication: Article-Paper	Title: Life after conifers Author: Simon Webb Year: 2001 Editor: English Nature Enact Vol 9 No 2 No of pages: 5
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