

RESTORING ACTIVE BLANKET BOG IN IRELAND

Project reference: LIFE02NAT/IRL/8490

A REPORT ON THE RESTORATION OF PROJECT SITE No. 16. SLIEVE
BLOOM MOUNTAINS, CO'S. LAOIS AND OFFALY



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Project Site Nos 16 – Slieve Bloom Mountains, Co's Offaly and Laois (Demonstration site)**1. Introduction**

Grid reference N 2 0	Elevation (m) 300 to 482	Bedrock geology Old Red Sandstone and shale.
SAC Name and number Slieve Bloom Mountains (412)	Site area (ha) 252.0	Main restoration methods Fell to waste of naturally regenerating conifers and drain-blocking.
Area of conifer cover (ha) 0	Area of open blanket bog/heath (ha) 252.0	
Noteworthy plant/animal species occurring <i>Vaccinium oxycoccus</i> , <i>Andromeda polifolia</i> , Hen Harrier (<i>Circus cyaneus</i>).		

Subsites within the project

Subsite name	Grid reference	Elevation (m)	Area (ha)
Glendine	N 310 057	310 to 450	89.5
Johnsborough	N 261 005	340 to 460	22.7
Clashroe & Garraunbaun	S 19 95	370 to 430	86.6
Glenletter	N 244 046	350 to 391	14.7
Tulla/Crumlin and Cumber	N 21 00	300 to 482	38.7

The Slieve Blooms are an isolated, inland mountain range, composed of Old Red Sandstone and shale, which straddle the border between counties Offaly and Laois. The site supports extensive areas of mountain blanket bog habitat and also includes the headwaters of several important river systems, including the River Barrow. The upland blanket bog within the mountain range is considered to be one of the best and least disturbed examples of mountain blanket bog habitat in the country and these areas form the Slieve Bloom Mountains Special Area of Conservation. Adjacent to the SAC, the lower mountain slopes of the Slieve Blooms are extensively afforested with conifers. The project area is 252 hectares which occurs over a number of different sub-sites distributed throughout the mountain range (see previous table).

The blanket bog within this site generally occurs on gently sloping terrain between altitudes of 300 and

400 metres. The bog vegetation is usually dominated by ling heather (*Calluna vulgaris*) which is accompanied by a well-developed carpet of mosses (mainly *Sphagnum capillifolium* and *Hypnum jutlandicum*) and various lichens (*Cladonia* sp.). Other frequent plant species include hare's tail cotton-grass (*Eriophorum vaginatum*), crowberry (*Empetrum nigrum*), bilberry (*Vaccinium myrtillus*) and deer sedge (*Trichophorum cespitosum*). An unusual feature is the abundance of cranberry (*Vaccinium oxycoccos*) and bog rosemary (*Andromeda polifolia*) which are more typical of lowland raised bog habitats. The Slieve Blooms are known to be one of the strongholds of the Annex II bird of prey Hen Harrier (*Circus cyaneus*).

The main impact of afforestation on the blanket bog habitat at present is the regeneration of Sitka spruce and lodgepole pine out onto intact bog and heath from adjacent forestry plantations. Within this site the restoration primarily consisted of the felling to waste of the naturally regenerating conifers with drain blocking also carried out in the marginal areas of certain sub-sites. In general, the conifer regeneration was largely confined to drier areas of blanket bog which were subject to some degree of peat-cutting in the past. Because of the small size of the trees and their widely scattered distribution there was little or no observable difference in the associated vegetation after tree felling.

2. Methods

The vegetation occurring at the site was described using the Zurich-Montpellier approach (Mueller-Dombois and Ellenberg, 1979), where the percentage cover of the various vegetation layers and plant species in a defined area is estimated visually. The cover of plant species in relevés was estimated in accordance with the Domin scale which is outlined in the table below.

Table 1. The Domin scale of cover/abundance.

1 = <4% cover with few individuals
2 = <4% cover with several individuals
3 = <4% cover with many individuals
4 = Cover between 4 and 10%
5 = Cover between 11 and 25%
6 = Cover between 26 and 33%
7 = Cover between 34 and 50%
8 = Cover between 51 and 75%
9 = Cover between 76 and 90%
10 = Cover between 91 and 100%

In addition to plant species presence and cover, the following parameters were noted for each relevé:

- (1) Size
- (2) Percentage cover of vegetation, bare soil, water and rock.
- (3) Percentage cover and height of the different vegetation layers, e.g. shrub, dwarf shrub, herb and bryophyte.
- (4) Soil type and depth.
- (5) Slope and aspect.
- (6) Additional details, such as the composition of the surrounding vegetation, degree of grazing and disturbance.

During the initial fieldwork a number of colour photographs of the site and vegetation encountered were taken with a digital camera and a selection of these are presented in this report in order to illustrate the vegetation descriptions and changes in the habitats/vegetation present over time. Mosses, liverworts and higher plants not readily identified in the field were collected and keyed out at a later date using keys in the appropriate publications (see below). During the field survey, particular attention was paid to the possible occurrence of plant and animal species which are considered to be rare in both a national and local context with particular emphasis on animal species listed in Annex II of the E.U. Habitats Directive and plant species listed in the Irish Red Data Book for vascular plants (Curtis and McGough, 1988), the 1999 Flora Protection Order and Annex II of the E.U. Habitats Directive.

Plant species nomenclature in this report follows Stace (1997) for vascular plant, Smith (2004) for

mosses, Smith (1991) for liverworts and Dahl (1968) for lichens.

3. Photographs

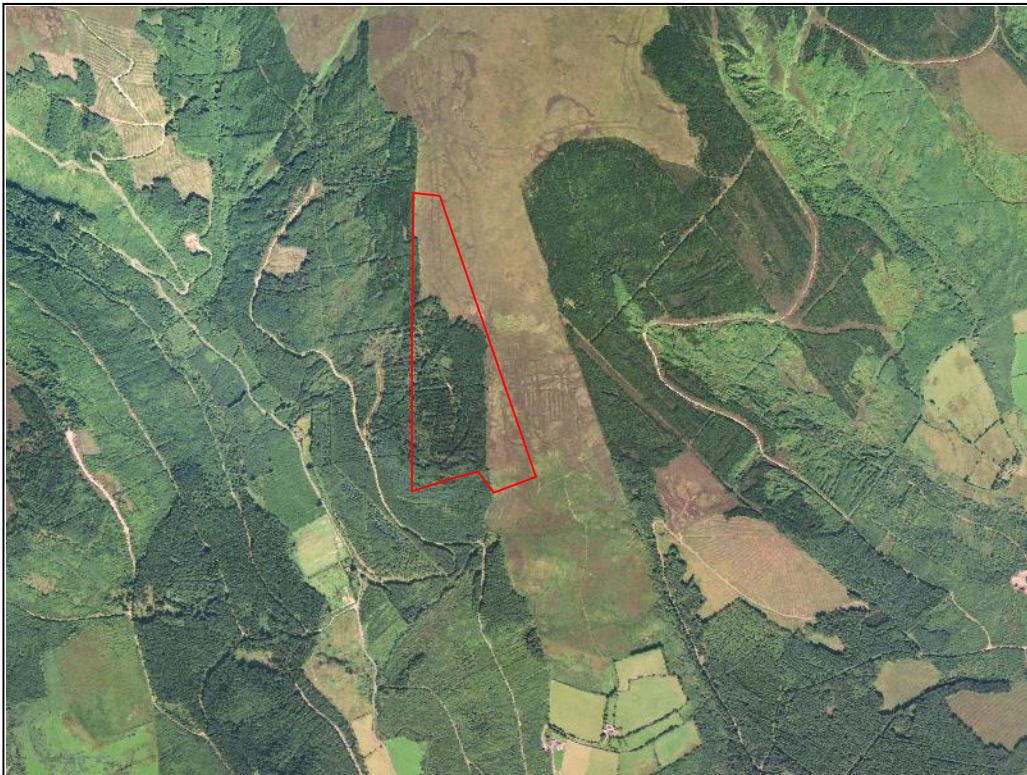
In the following pages a number of photographs are presented which illustrate the overall character of the site and the restoration work which was carried out. These include both aerial photographs, supplied by the Ordnance Survey of Ireland, and a selection of ground photographs taken by the author.



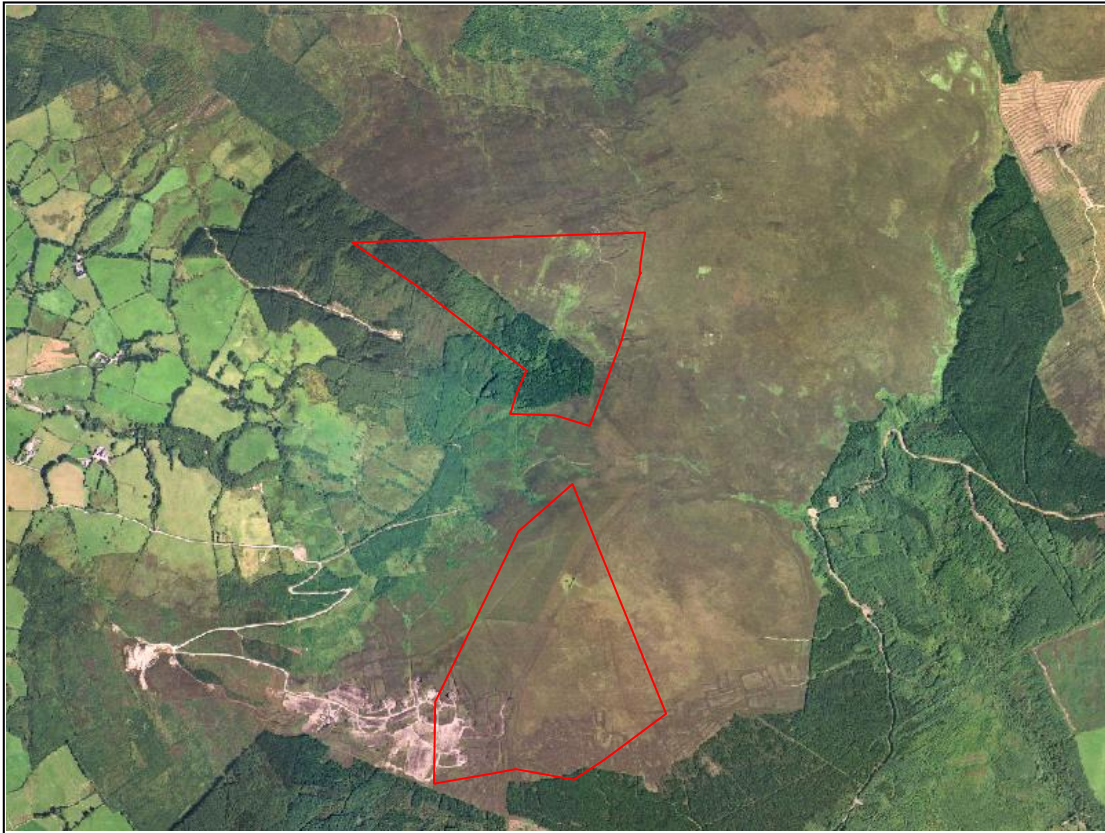
A typical view of upland blanket bog habitat at the Slieve Blooms with forestry. Although coniferous forestry has fragmented the blanket bog habitat within the Slieve Blooms the extensive summit plateau of the range still contains a large area of interconnected open blanket bog habitat.



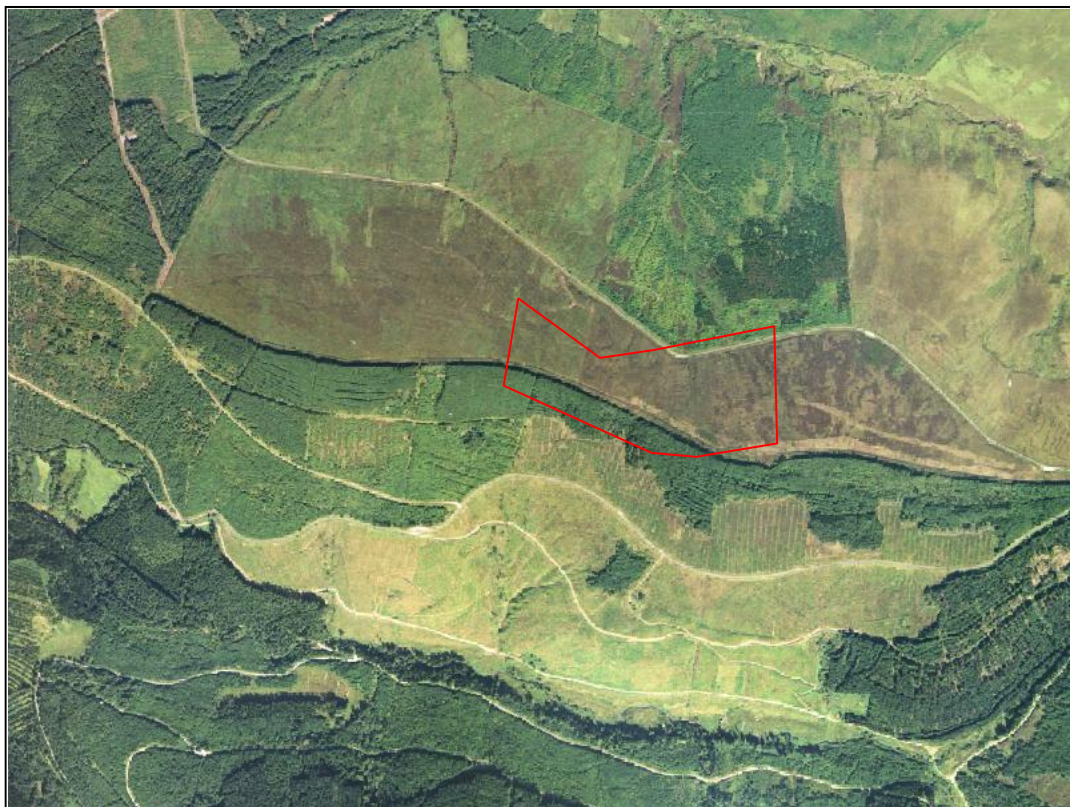
An aerial photograph of the Glendine sub-site, Slieve Blooms. Site outline in red. Photograph taken during the year 2000.



An aerial photograph of the Johnsborough sub-site, Slieve Blooms. Site outline in red. Photograph taken during the year 2000.



An aerial photograph of the Clashroe and Garranbaun sub-sites, Slieve Blooms. Site outline in red. Photograph taken during the year 2000.



An aerial photograph of the Glenletter sub-site, Slieve Blooms. Site outline in red. Photograph taken during the year 2000.



An aerial photograph of the Tulla/Crumlin and Cumber sub-sites, Slieve Blooms. Site outline in red. Photograph taken during the year 2000.



A general view of blanket bog habitat at Glendine. Note the sloping nature of the bog surface which is typical of the sub-site. *Calluna vulgaris* and *Trichophorum cespitosum* are generally dominant in the vegetation.



A view of the boardwalk running through blanket bog at Glendine.



High altitude blanket bog at Garraunbaun showing a drain blocked with a plastic piling dam.



This photograph shows the general nature of the natural regeneration within the site, i.e. small trees of Sitka spruce and lodgepole pine scattered thinly throughout blanket bog areas.



A close-up view of bog vegetation at Garraunbaun showing *Empetrum nigrum*, *Vaccinium oxycoccus* and *Andromeda polifolia* growing through a Sphagnum carpet.



At Clashroe a flush system dominated by *Molinia caerulea* occurs within the blanket bog.

4. Vegetation of the site

In general the blanket bog vegetation of the Slieve Blooms is relatively species-poor which is typical of upland blanket bog vegetation in Ireland. The main species dominating the vegetation is usually *Calluna vulgaris* and the cover of this species is particularly high in areas which have been affected by drainage as a result of peat-cutting or afforestation. Other frequent species in the vegetation include *Eriophorum vaginatum*, *Erica tetralix*, *Vaccinium myrtillus*, *Cladonia portentosa*, *Sphagnum capillifolium* and *Hypnum cupressiforme*. In deeper peat areas, where wetter conditions prevail, species such as *Empetrum nigrum*, *Trichophorum cespitosum* and *Narthecium ossifragum* are present.

In the Slieve Bloom mountain range flushed areas tend to be relatively rare and the main species is generally the grass *Molinia caerulea* which dominates to produce a species-poor flush flora.

Table 2. Vegetation at the Slieve Blooms

Vegetation type	A	A	A	B	B	B	B	C
Quadrat code	CL1	CL2	GA5	GA1	GA2	GA3	GA4	CL3
GPS Grid letter	S	S	S	S	S	S	S	S
GPS easting co-ordinate	1937	1952	1983	1984	1976	1968	1975	1963
GPS northing co-ordinate	9699	9694	9525	9586	9570	9547	9536	9680
Quadrat size (m ²)	4	4	4	4	4	4	4	4
Slope (degrees)	0-3	0	0	0-3	0	0	0	3-5
Vegetation cover (%)	100	100	100	100	100	100	100	100
Bare rock (%)	0	0	0	0	0	0	0	0
Bare soil (%)	0	0	0	0	0	0	0	0
Open water (%)	0	0	0	0	0	0	0	0
Dwarf shrub cover (%)	85	90	95	80	65	50	50	15
Herb cover (%)	15	8	15	60	55	70	70	95
Bryophyte cover (%)	90	95	80	80	85	95	90	3
Ht. of vegetation (cm)	60	45	45	25	20	25	20	30
No. of species	8	10	9	10	12	11	14	6
<i>Empetrum nigrum</i>				7	5	5	6	
<i>Trichophorum cespitosum</i>				5	7	7	7	
<i>Narthecium ossifragum</i>				4	4	5	5	
<i>Odontoschisma sphagni</i>					3	4	3	
<i>Andromeda polifolia</i>					4		4	
<i>Molinia caerulea</i>								10
<i>Calluna vulgaris</i>	9	9	10	7	4	5	4	5
<i>Cladonia portentosa</i>	4	1	3	4	4	7	6	
<i>Hypnum cupressiforme</i>	4	9	8	7		4	4	3
<i>Eriophorum vaginatum</i>	5	4	5	7		7	4	
<i>Sphagnum capillifolium</i>	10		6	7	8	8	8	
<i>Erica tetralix</i>	4			4	5	5	5	3
<i>Vaccinium myrtillus</i>		4	4	4		5	3	3
<i>Eriophorum angustifolium</i>		3			3		1	
<i>Rhytidiadelphus loreus</i>		4	4					
<i>Vaccinium oxycoccus</i>		3			5			
<i>Sphagnum tenellum</i>					4		1	
<i>Sphagnum papillosum</i>	1							

<i>Polytrichum commune</i>	1	
<i>Empetrum nigrum</i>	4	
<i>Pleurozium schreberi</i>	1	
<i>Plagiothecium undulatum</i>		1
<i>Potentilla erecta</i>		4

A = Species poor blanket bog, dominated by *Calluna vulgaris*.

B = Upland blanket bog dominated by *Trichophorum cespitosum* and *Empetrum nigrum*.

C = Bog flush dominated by *Molinia caerulea*.

5. Changes in overall vegetation/habitat cover

As a result of the relatively low impact nature of the restoration work carried out at this site there has been little change in the overall vegetation/habitat cover. The small regenerating conifers occurred scattered throughout the site and had not grown to the size where they were having a detrimental effect on the blanket bog vegetation.

6. Monitoring quadrats

No monitoring quadrats were established in this site.

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