

RESTORING ACTIVE BLANKET BOG IN IRELAND

Project reference: LIFE02NAT/IRL/8490

A REPORT ON THE RESTORATION OF PROJECT SITE No. 2. GARRANE,
CO. KERRY



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Project Site No. 2 – Garrane, Co. Kerry**1. Introduction**

Grid reference V 718 813	Elevation (m) 45	Bedrock geology Old red sandstone
SAC Name and number Killarney National Park/ Magillicuddy's Reeks/Caragh river (365)	Site area (ha) 17.9	Main restoration methods Fell to waste of conifer crop and drain-blocking
Area of conifer cover (ha) 17.5	Area of open bog/heath (ha) 0	Area of birch woodland on mineral soil (ha) 0.4
Noteworthy plant/animal species occurring <i>Carum verticillatum</i> . <i>Margaritifera margaritifera</i> recorded from adjoining river.		

Garrane is a small forestry property which lies within the Killarney National Park, MacGillycuddys' Reeks and Caragh River Catchment Special Area of Conservation and is situated some 15 kilometres southwest of Killorglin, Co. Kerry. The site adjoins the Caragh river, a well-studied river catchment which is considered to be acid-sensitive and contains a population of the rare Annex II mollusc *Margaritifera margaritifera*.

The project area consists of 17.5 hectares of conifer plantation planted on ground which comprised a mosaic of blanket bog, blanket bog flush and river floodplain habitats. The presence of old peat banks within the site suggest that a small area of the site was cut for turf in the past. On the hill slopes to the south there is a small area of broadleaved scrub, dominated by birch (*Betula pubescens*). Although the site was planted with conifers these only formed a closed canopy along the eastern and northern margins of the site. Throughout the plantation areas of blanket bog and flush vegetation still occur and this vegetation is generally dominated by purple moor-grass (*Molinia caerulea*) and bog myrtle (*Myrica gale*). The northern third of this plantation occupies the flood-plain of the adjoining Caragh river and thus is subject to regular inundation during periods of flood. The conifers in this area have grown well due to the mineral-rich nature of the alluvial soil present.

At this site the main restoration measures undertaken was the felling of the young/low-yielding conifer crop by chainsaw and the blocking of any significant artificial drains. Follow-up work included the control of unwanted shrubs of downy birch (*Betula pubescens*) and Rhododendron (*Rhododendron ponticum*).

2. Methods

Prior to the start of restoration activities at the site the habitats and vegetation occurring were surveyed and described. Habitats occurring were mapped with the aid of a vertical aerial photograph of the site taken in the year 2000 by the Ordnance Survey of Ireland. At the end of the project the habitats present were mapped with the aid of a vertical aerial photograph of the site taken in 2006. 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. Site Photographs

In order to show the restoration activities which have taken place at this site a number of photographs are presented in the following pages. These include both aerial photographs, supplied by the Ordnance Survey of Ireland, and a selection of ground photographs taken by the author.



A view of the conifer crop growing at the southern edge of the site. Note the poorly grown nature of the Sitka spruce crop. Photograph taken in March 2003.



The same view taken in March of 2007. Note the natural regeneration of birch which has occurred on the site, even after repeated removal/cutting back of the species.



Over approximately half of the site area the trees were very poorly grown with modified blanket bog vegetation, dominated by *Molinia caerulea* still present. Photograph taken in March 2003.



Along the eastern and northern margins of the site the cover of felled trees is quite heavy. It is likely that these areas will eventually develop into birch/willow scrub. Photograph taken in September 2004.



Birch seedlings growing in small clearings in felled Sitka spruce along the eastern margins of the site. Photograph taken in September 2004.



Throughout most of the site low birch shrubs are occasional. These shrubs have been felled however regeneration of birch seedlings is continuously occurring. Photograph taken in August 2004.



An aerial photograph of the Garrane site prior to restoration work taking place. Aerial photograph taken in the year 2000.



An aerial photograph of the Garrane after restoration work taking place. The site boundary is outlined in red. Aerial photograph taken in the year 2006.

4. Vegetation of the site

The vegetation of this site was previously dominated by a mixture of tall, closed-canopy coniferous plantation and blanket bog habitat with stunted conifers. The ground flora of the areas dominated by closed-canopy plantation was dominated by a thick layer of Sitka spruce needles with the main plant species present the mosses *Hypnum cupressiforme* and *Sphagnum capillifolium*. Occasional trees/low shrubs of birch (*Betula pubescens*) also occurred scattered throughout the site.

The more open areas still retained a blanket bog flora with occasional stunted spruce trees. *Molinia caerulea* was the dominant vascular plant species present with *Myrica gale*, *Erica tetralix* and *Sphagnum capillifolium* the main associates (Vegetation type A in Table 1). Some small patches of wetter bog, containing a better developed blanket bog flora (Vegetation type B in Table 1) still occur however these are rare within the site and are restricted to the south-west corner.

Table 2. Vegetation table for Garrane.

Vegetation type	A	A	A	A	A	B	B
Quadrat code	G5	G8	G1	G4	G2	G6	G3
GPS Grid letter	V	V	V	V	V	V	V
GPS easting co-ordinate	7165	7159	7164	7161	7162	7157	7161
GPS northing co-ordinate	8137	8117	8151	8137	8147	8133	8141
Quadrat size (m ²)	4	4	4	4	4	4	4
Slope (degrees)	0	0	0	0	0-3	0-5	0-5
Vegetation cover (%)	100	100	100	100	100	95	100
Bare rock (%)	0	0	0	0	0	0	0
Bare soil (%)	0	0	0	0	0	5	0
Open water (%)	0	0	0	0	0	0	0
Dwarf shrub cover (%)	15	25	20	3	45	45	40
Herb cover (%)	95	95	98	85	85	60	80
Bryophyte cover (%)	5	3	5	60	8	35	65
Ht. of vegetation (cm)	35	45	50	35	50	15	30
No. of species	5	6	11	11	10	17	18
<i>Molinia caerulea</i>	10	10	9	9	8	7	8
<i>Rhynchospora alba</i>						3	1
<i>Eriophorum angustifolium</i>					2	3	3
<i>Narthecium ossifragum</i>						3	3
<i>Calluna vulgaris</i>		3				4	
<i>Drosera rotundifolia</i>				3		1	1
<i>Sphagnum tenellum</i>						3	3
<i>Racomitrium lanuginosum</i>						6	
<i>Sphagnum papillosum</i>							5
<i>Cladonia uncialis</i>						1	
<i>Pleurozia purpurea</i>							
<i>Drosera anglica</i>						1	
<i>Drosera intermedia</i>						1	
<i>Myrica gale</i>	4	5	5		5	4	6
<i>Erica tetralix</i>	5	4			5	6	5
<i>Sphagnum capillifolium</i>		3		4			5
<i>Potentilla erecta</i>			4	3	3		1
<i>Juncus acutiflorus</i>			5		5		4
<i>Hypnum cupressiforme</i>	3			7			
<i>Odontoschisma sphagni</i>					1		4
<i>Carex panicea</i>					3		3
<i>Sphagnum palustre</i>	3						
<i>Saccogyna viticulosa</i>		1					
<i>Agrostis canina</i>			5				
<i>Calliergon cuspidatum</i>			4				
<i>Angelica sylvestris</i>			4				
<i>Senecio aquaticus</i>			3				
<i>Holcus lanatus</i>			3				
<i>Galium palustre</i>			3				
<i>Viola palustris</i>			1				
<i>Thuidium tamariscinum</i>				5			
<i>Rhytidiadelphus loreus</i>				5			
<i>Pleurozium schreberi</i>				4			
<i>Pseudoscleropodium purum</i>				3			
<i>Hedera helix</i>				1			
<i>Betula pubescens</i> (seedling)				1			
<i>Sphagnum subnitens</i>					4		
<i>Campylopus atrovirens</i>					1		
<i>Leucobryum glaucum</i>						4	
<i>Polygala serpyllifolia</i>						1	
<i>Pedicularis sylvatica</i>						1	
<i>Sphagnum recurvum</i>							7
<i>Trichophorum cespitosum</i>							4
<i>Campylopus introflexus</i>							3
<i>Juncus bulbosus</i>							3

A = Species-poor *Molinia*-dominated blanket bog

B = Typical lowland blanket bog

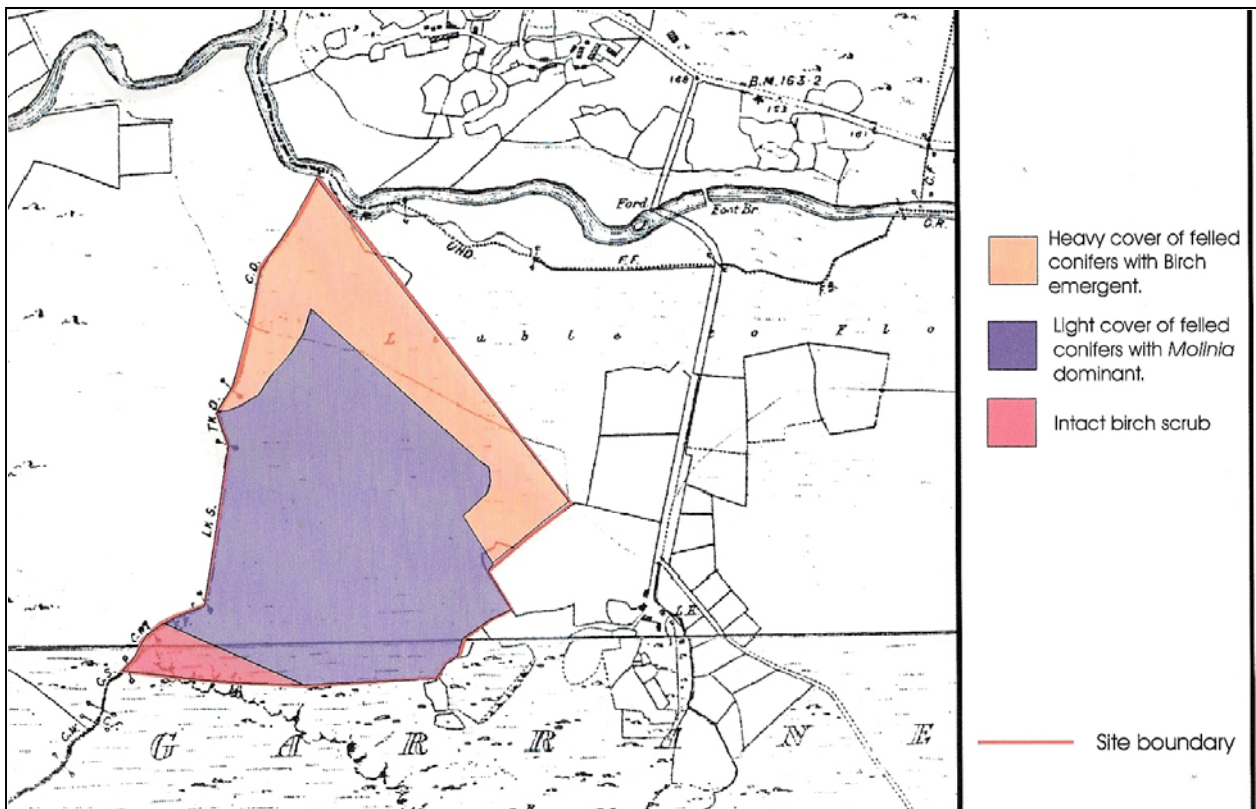
Survey conducted on the 4/9/2002

5. Changes in overall vegetation/habitat cover

Much of this site is now covered by felled conifers. The cover of felled trees along the eastern and northern margins of the site is particularly heavy with a light scattering of small felled trees elsewhere. In areas where the tree cover is heavy there is little in the way of a blanket bog ground flora developing due to shading effects and the main visible change is the occurrence of large numbers of downy birch seedlings locally. These birch seedlings will continue to grow and there is little doubt that, in the future, there will be development of birch scrub in places. Throughout this site the conditions for the spread of birch appear to be favourable and it is likely that birch scrub will develop throughout much of the site if no intervention occurs. During the lifetime of this project birch trees and seedlings were cleared by pulling and cutting however if the invasion of the species continues then it may be more practical to allow the area to develop into an area of bog woodland. Areas of bog woodland such the one that could develop here are rare in the general area and the habitat would be of high ecological interest.



A map of habitat/vegetation cover at Garrane prior to the start of restoration.



A map of habitat/vegetation cover at Garrane at the end of the restoration project.

6. Monitoring quadrats

No monitoring quadrats were set up within this site.

REFERENCES

- Curtis, T.G.F. & McGough, H.N. (1988). *The Irish Red Data Book. 1: Vascular Plants*. The Stationery Office, Dublin.
- Dahl, E. (1968). *Analytical Key to British Macrolichens* (2nd ed.). British Lichen Society, London.
- Mueller-Dombois, D. & Ellenberg, H. (1974). *Aims and Methods in Vegetation Ecology*. Wiley, New York.
- Smith, A.J.E. (2004). *The Moss Flora of Britain and Ireland* (2ND edition). University Press, Cambridge.
- Stace, C. (1997). *New Flora of the British Isles* (2ND edition). University Press, Cambridge.
- Smith, A.J.E. (1990). *The Liverworts of Britain and Ireland*. University Press, Cambridge.