RESTORING ACTIVE BLANKET BOG IN IRELAND

Project reference: LIFE02NAT/IRL/8490

A REPORT ON THE RESTORATION OF PROJECT SITE No. 6 BELLAVEENY, CO. MAYO

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Table of contents

1. Introduction

Project Site No. 6 – Bellaveeny, Co. Mayo

Grid reference F 870 035	**Elevation (m)** 80 to 480	**Bedrock geology** Schist and quartzite
SAC Name and number Owenduff/Nephin Complex (534)	**Site area (ha)** 344.3	**Main restoration methods** Fell to waste of conifer crop, wind-rowing and drain-blocking
Area of conifer cover (ha) 126.0	**Area of open bog, and rock outcrop heath (ha)** 204.7	**Area of oligotrophic lake (ha)** 13.6
Noteworthy plant/animal species occurring *Listera cordata*		

Bellaveeny lies on north-facing slopes of the Nephin Beg mountain range, approximately 7 kilometres northeast of Mulranny, Co. Mayo. It is the largest site in the project covering an area of 344 hectares, 126 hectares of which is planted mostly with lodgepole pine (*Pinus contorta*). A portion of the site lies within the Owenduff Special Area of Conservation which encompasses the catchment of the Owenduff river, one of the most natural and least disturbed acid-sensitive catchments in the country.

The project site includes the larger of two forestry plantations lying adjacent to a tributary of the Owenduff River. The SAC boundary here bisects a large conifer forest, but it follows the catchment boundary of the Owenduff to include only the forest lying within the Owenduff catchment itself. To the south of its afforested portion, the project site includes a large area of unplanted upland blanket bog, wet heath, acid grassland and corrie lakes. The largest of these lakes is Lough Anaffrin – a spectacular corrie lake surrounded by steep slopes on three sides. Most of the unplanted land within the project area is severely eroded due to the recent high intensity of sheep grazing.

The conifers which dominate the northern portions of the site have been felled and left on site while a portion of the unplanted land will be fenced in an effort to exclude sheep and thus facilitate the recovery of blanket bog and wet heath areas.

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.

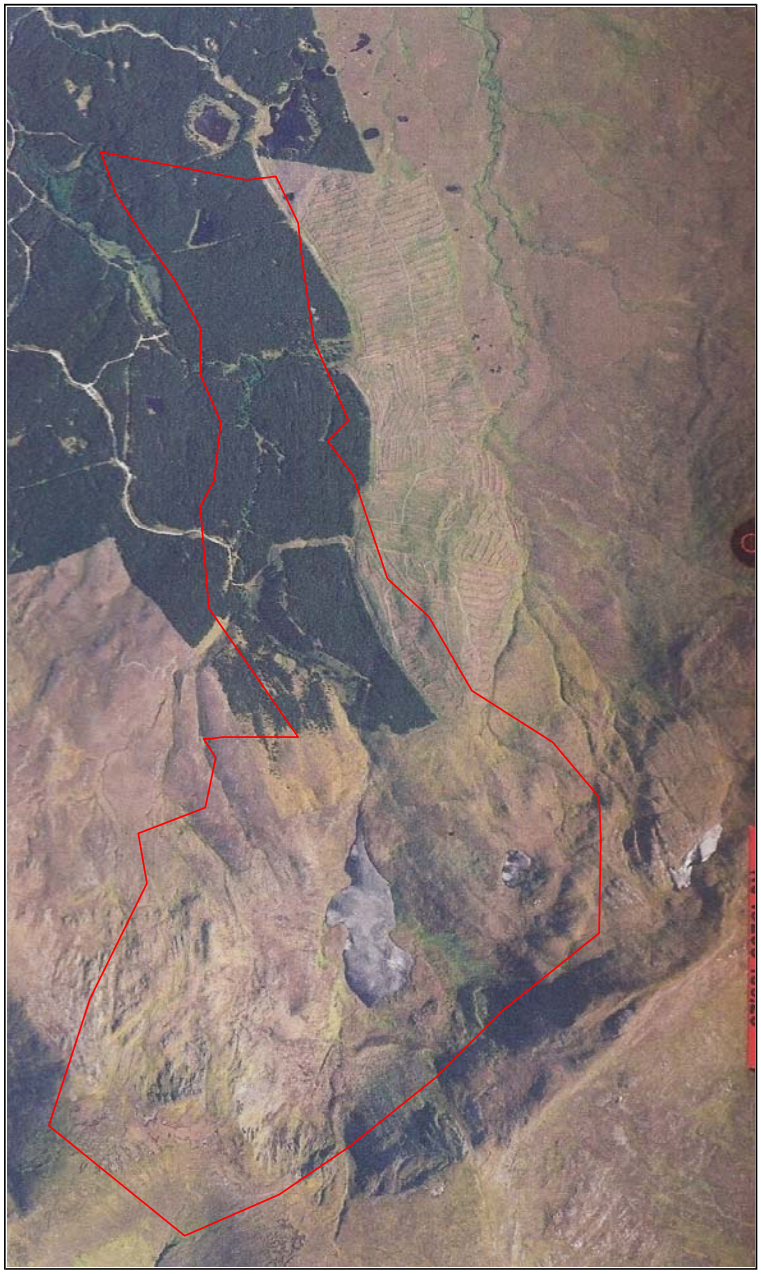
During the initial fieldwork a number of colour photographs of the site and vegetation encountered were taken with a digital camera and a selection of these are presented in this report in order to illustrate the vegetation descriptions and changes in the habitats/vegetation present over time. Mosses, 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 illustrate 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.

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



An aerial photograph of the Bellaveeny site at the end of the restoration project. The site outline is indicated in red. Photograph taken in the year 2006.

A view of the site prior to restoration taken from the middle of the site, looking in a northerly direction. Photograph taken in September 2002.

A similar view taken in July 2007 showing rows of felled pine trees.

Prior to the restoration of the site the ground layer of the pine woodland areas was dominated by a thick layer of pine needles with little bog vegetation present. Photograph taken in June 2003.

At this site there has been a very rapid increase in the cover of *Molinia caerulea* within three years of tree felling and drain blocking. Photograph taken in August 2005.

Towards the southern end of the coniferous forestry within the site there is an area of ground which is drained and is severely overgrazed by sheep. Photograph taken in September 2002.

Sphagnum regeneration in a blocked drain at Bellaveeny with occasional shoots of *Molinia caerulea*.

4. Vegetation of the Site

The following tables, 2 and 3, outline the vegetation composition of the site prior to the start of restoration work. The unplanted areas immediately upslope of the conifer plantation were dominated by drained and eroded blanket bog which are still subject to grazing by sheep. The drained and overgrazed areas are dominated by two main vegetation types namely a flushed peatland community dominated by the wetland species *Juncus bulbosus* and *Sphagnum recurvum* and a drier moss-rich community dominated by species such as *Hylocomium splendens, Hypnum cupressiforme, Pleurozium schreberi* and *Rhytidiadelphus loreus*. Much of the remainder of the open ground which dominates the south of the site is characterised by heavily eroded blanket peat in which the grass *Nardus stricta* is prominent. Other frequent species include *Juncus squarrosus, Calluna vulgaris, Agrostis canina* and *Erica cinerea*.

Prior to the felling of the conifer (Lodgepole pine) crop at this site the ground layer was dominated by a layer of pine needles along with the mosses *Hypnum cupressiforme, Sphagnum capillifolium* and *Rhytidiadelphus loreus*, accompanied by a low cover of *Molinia caerulea*.

Table 2. Vegetation table for eroding blanket bog upslope of plantation areas.

Vegetation type	A	A	A	A	A	B	B	B	B	B	B	B	C	C	C	C	C	C	
Quadrat code	B5	B7	B18	B3	B4	B10	B17	B1	B2	B6	B8	B9	B11	B12	B13	B14	B16	B15	
GPS Grid letter	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	
GPS easting co-ordinate	8741	8746	8732	8732	8738	8760	8733	8730	8732	8745	8753	8762	8762	8758	8754	8748	8739	8744	
GPS northing co-ordinate	0261	0263	0243	0258	0258	0271	0239	0256	0258	0262	0262	0266	0261	0258	0250	0244	0235	0240	
Quadrat size (m^2)	1	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
Slope (degrees)	0-5	5-10	0-3	0-5	0-5	5-10	0-5	0-5	0-5	5-10	3-5	1-3	0-5	5-10	10-20	10-20	20-30	5-10	
Vegetation cover (%)	98	100	98	95	85	98	99	100	99	98	99	100	50	25	40	25	40	80	
Bare rock (%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bare soil (%)	2	0	2	0	15	2	1	0	1	2	1	0	50	80	70	80	60	20	
Surface water (%)	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Dwarf shrub cover (%)	0	0	0	0	1	0	0	0	0	0	1	0	2	3	3	2	5	8	
Herb cover (%)	50	40	50	80	55	80	85	85	65	60	75	90	50	25	30	25	35	75	
Bryophyte cover (%)	90	95	95	80	70	80	80	75	95	85	90	80	3	1	5	1	10	55	
Ht. of vegetation (cm)	10	8	10	80	10	20	5	20	30	15	10	110	20	8	8	10	10	10	
No. of species	10	9	8	14	24	18	16	16	16	17	22	14	11	8	10	10	10	20	
Juncus bulbosus	7	6	6	4	6	2	5			3	4		3	4				5	
Sphagnum palustre	5	5		1		3	3		4										
Sphagnum recurvum	6	8	9	7															
Sphagnum auriculatum	8			6	6														
Agrostis stolonifera			5	3								5							
Juncus articulatus	1				1														
Ranunculus flammula				3															
Hylocomium splendens					4	7	6	8	7	4	4	7							
Rhytidiadelphus loreus	1				2	5	5	5	5	7	6		1	1			1	1	
Hypnum cupressiforme					5	4	5		5	6	5		3					5	
Galium saxatile		1				4	1	4	5	1	1	5							
Pleurozium schreberi					3	4	1	4	4	4	4								
Juncus effusus				8		2			7	3	5	8							
Thuidium tamariscinum						6	3	3		4		5							
Sphagnum capillifolium					4	3				4	3							4	
Rhytidiadelphus squarrosus								3	3			4							
Nardus stricta					4	3	4	7					5	4	5	5	4	6	
Calluna vulgaris											1		2	2	3	1	4	3	
Juncus squarrosus													6	3			4	3	
Erica cinerea														1	2	1	1		
Racomitrium lanuginosum															4	1		3	
Carex binervis													1			1		1	
Trichophorum cespitosum															1			5	
Eriophorum angustifolium																3		3	
Molinia caerulea	3	5	3		5	8	4		5	5	5	4	4	1	3	3	1	4	
Agrostis canina	3	3			5	5	8	6	4	7	5		4	5	5	5	5	4	
Potentilla erecta	1	1	1	1	1	1	3	2	4	3	3				1	1	3	3	
Polytrichum commune	4	5	4		5	3	4		4	4	7	3	1				5		
Carex echinata				4	4	3	1	4		4	5		3					4	
Anthoxanthum odoratum		4		3		3	4	4	3		3	5							
Campylopus atrovirens			3		3					1					1			1	
Sphagnum papillosum			5		5				5									5	
Holcus lanatus				4		2		3											
Carex nigra				3				4	3										
Diplophyllum albicans					1					1	1								
Dryopteris sp.					1					1		1							
Scapania sp.							3			4	3								

Carex panicea					3							1			4
Plagiothecium undulatum		3						1							
Erica tetralix		1													4
Deschampsia flexuosa								3						3	
Viola palustris	3														
Juncus acutiflorus	1														
Breutelia chrysocoma		3													
Odontoschisma sphagni		1													
Carex pilulifera					4										
Lophocolea bidentata					3										
Luzula multiflora						1									
Mnium hornum								3							
Cladonia portentosa								1							
Dicranum scoparium								1							
Pseudoscleropodium purum									5						
Agrostis capillaris									4						
Rumex acetosa									1						
Narthecium ossifragum													3		
Sphagnum tenellum															5

A = Flushed *Juncus bulbosus* – *Sphagnum* community
B = Moss-rich drained/eroding blanket bog
C = Eroding bog dominated by *Nardus stricta*

Date of survey = 26/8/2002

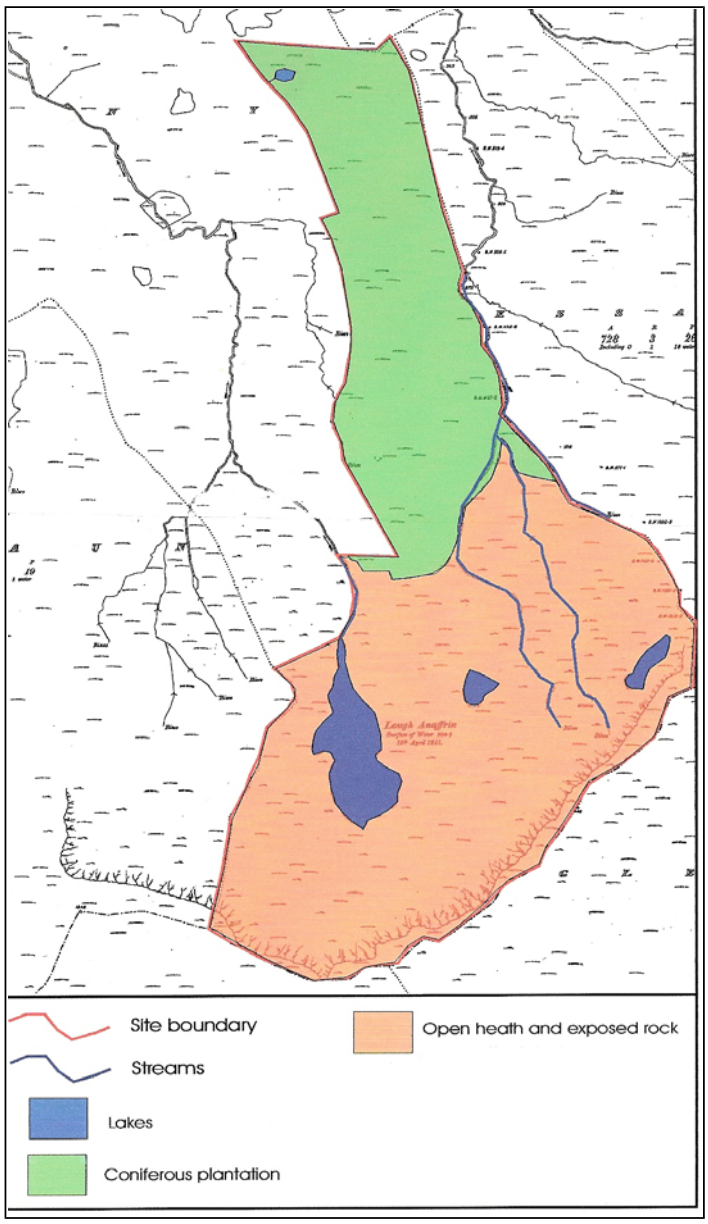
Table 3. Vegetation table for ground flora under pine plantation

Quadrat code	BW4	BW3	BW5	BW7	BW8	BW2
GPS Grid letter	F	F	F	F	F	F
GPS easting co-ordinate	8688	8695	8692	8690	-	8696
GPS northing co-ordinate	0388	0365	0399	0409	-	0337
Quadrat size (m^2)	4	4	4	4	4	4
Slope (degrees)	0	0	0	0	0	0-5
Vegetation cover (%)	30	25	20	30	50	80
Bare rock (%)	0	0	0	0	0	0
Bare soil (%)	0	0	0	0	0	0
Needle litter (%)	70	80	75	70	50	30
Dwarf shrub cover (%)	0	0	0	0	0	0
Herb cover (%)	5	5	3	10	15	25
Bryophyte cover (%)	25	25	20	25	50	80
Ht. of vegetation (cm)						
No. of species	4	6	6	8	7	13
Hypnum cupressiforme	5	5	5	4	1	5
Rhytidiadelphus loreus	5	1	3	4	6	5
Molinia caerulea	4	4	3	5	5	5
Sphagnum capillifolium			4	3	4	5
Pleurozium schreberi	3		4	3		
Hylocomium splendens				5	5	5
Thuidium tamariscinum				1	1	2
Plagiothecium undulatum		1	4			
Lophocolea bidentata		2				4
Polytrichum commune		1				1
Sphagnum palustre				1		1
Listera cordata					2	1
Dicranum scoparium						2
Dryopteris dilatata						2
Saccogyna viticulosa						1

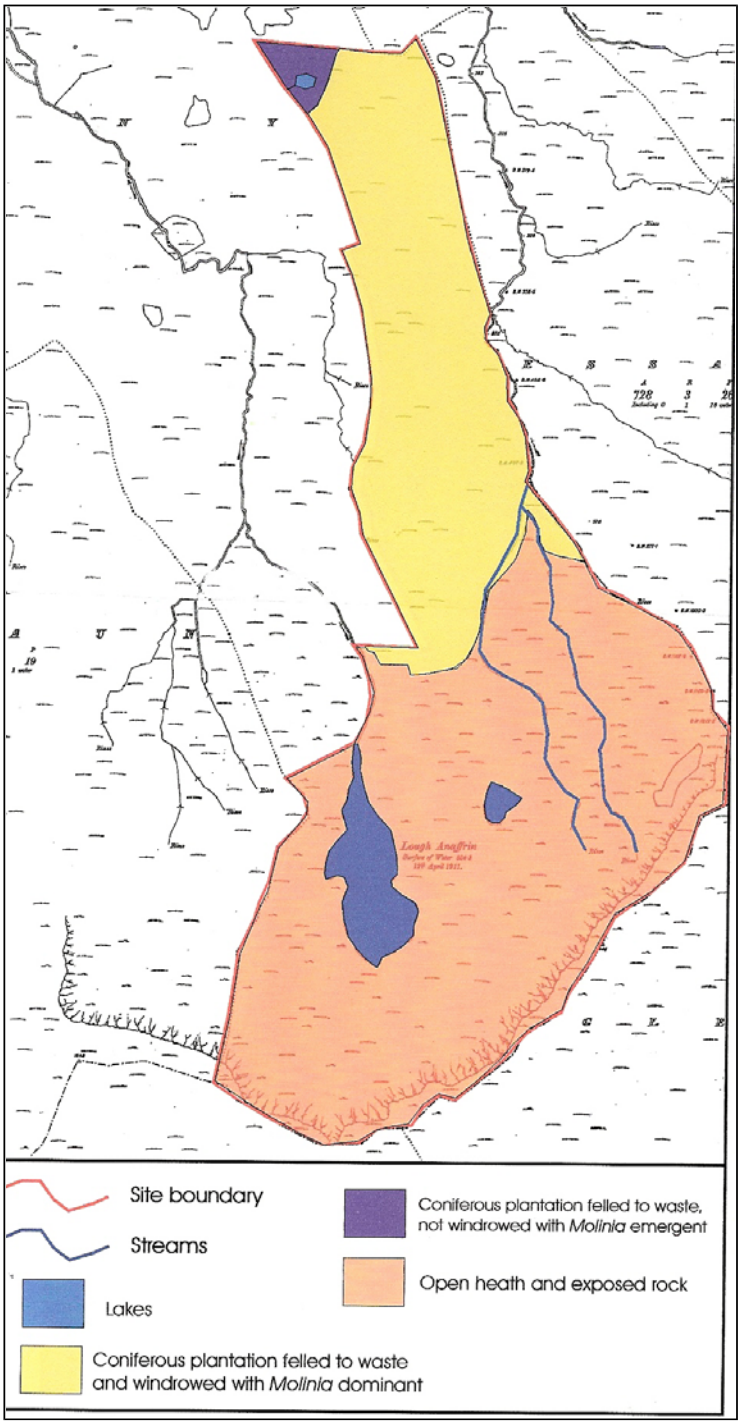
Date of survey = 8/8/2003

5. Changes in overall vegetation/habitat cover

The main vegetation/habitat change at this site is the replacement of a relatively tall lodgepole pine crop with a regenerating bog/wet heath vegetation dominated by *Molinia caerulea*. Substantial windrows of felled pine are also frequent however these windrows are getting lower every year as the wood degrades over time. There has been relatively little change in the composition and condition of the open bog areas within the site since the beginning of the project.



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



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

6. Monitoring quadrats

In the following pages the vegetation changes which have taken place within the site over the period of the restoration project are shown by means of observed changes in permanent quadrats. A total of 7 permanent quadrats were described and photographed. In order to ensure the future relocation of quadrats the corners have been marked with short sticks and a 10-figure GPS reading was also recorded. In the case of each quadrat, photographs and vegetation tables are presented. The cover of plant species within the quadrats is presented in accordance with the scale outlined in the following table.

Cover of species in quadrat	Cover in presented quadrat tables
<1%	1
1 to 5%	2
5 to 10%	3
10 to 25%	4
25% to 50%	5
50 to 75%	6
75% to 100%	7

Most of the areas previously dominated by Lodgepole pine plantation now have a high cover of the grass *Molinia caerulea* with mosses such as *Hypnum cupressiforme, Sphagnum capillifolium* and *Rhytidiadelphus loreus* also frequent. It is though likely that the southern half of the previously afforested area within this site will develop into an area of *Molinia* wet heath as this area is quite steeply sloping and the peat depth is generally less than 1 metre.

Permanent quadrat 1 – July 2004

Permanent quadrat 1 – July 2007

Site - Bellaveeny			
Perm. Quadrat No. - 1			
GPS – F 86697 04520			
Size – 8m x 8m			
Slope – 5 to 10 degrees			
Vegetation Height (cm)	20-30	40-50	40-50
Vegetation cover (%)	50	60	90
Needle litter cover (%)	60	40	5
Brash cover (%)	10	10	5
Dwarf shrub cover (%)	1	1	5
Herb cover (%)	25	40	75
Bryophyte cover (%)	40	40	75
No. of plant species	15	21	25
Survey date	16/7/2004	3/8/2005	18/7/2007
Molinia caerulea	5	5	6
Sphagnum capillifolium	4	4	4
Hypnum cupressiforme	4	4	5
Hylocomium splendens	3	3	1
Thuidium tamariscinum	3	3	1
Rhytidiadelphus loreus	3	3	3
Dicranum majus	1	-	-
Dicranum scoparium	1	1	-
Dryopteris dilatata	1	-	1
Leucobryum glaucum	1	-	-
Listera cordata	1	-	-
Pleurozium schreberi	1	2	4
Potentilla erecta	1	2	1
Sorbus aucuparia	1	1	-
Sphagnum palustre	1	2	-
Campylopus spp.		2	4
Calluna vulgaris		1	2
Pinus contorta seedlings		1 (10 counted)	-
Epilobium angustifolium		1	1
Juncus bulbosus		1	2
Polytrichum commune		1	4
Hypericum pulchrum		1	-
Poa annua		1	-
Erica tetralix		1	1
Sphagnum subnitens		1	1
Anthoxanthum odoratum			2
Agrostis sp.			2
Sphagnum cuspidatum			2
Plagiothecium undulatum			1
Erica cinerea			1
Eriophorum angustifolium			1
Juncus effusus			1
Polygala serpyllifolia			1
Holcus lanatus			1

History – Previously dominated by Lodgepole pine plantation planted in 1982. Trees were generally between 6 and 8 metres tall. Ground vegetation dominated by pine needles and scattered mosses (mainly *Hypnum cupressiforme, Rhytidiadelphus loreus* and *Sphagnum capillifolium*). Trees felled in Autumn of 2003 and subsequently windrowed.

Permanent quadrat 2 – July 2004

Permanent quadrat 2 – July 2007

Site - Bellaveeny			
Perm. Quadrat No. - 2			
GPS – F 86897 04192			
Size – 8m x 8m			
Slope – 0 degrees			
Vegetation Height (cm)	20-30	40-50	40-60
Vegetation cover (%)	60	80	95
Needle litter cover (%)	40	25	5
Brash cover (%)	5	5	5
Dwarf shrub cover (%)	1	5	5
Herb cover (%)	20	50	90
Bryophyte cover (%)	50	40	60
No. of plant species	15	21	20
Survey date	16/7/2004	3/8/2005	18/7/2007
Molinia caerulea	4	5	7
Sphagnum capillifolium	4	4	4
Rhytidiadelphus loreus	4	4	3
Hylocomium splendens	3	2	1
Sphagnum palustre	3	3	3
Polytrichum commune	3	3	4
Hypnum cupressiforme	2	2	4
Sphagnum papillosum	2	2	2
Thuidium tamariscinum	1	-	-
Dicranum scoparium	1	1	-
Pleurozium schreberi	1	1	1
Potentilla erecta	1	1	1
Odontoschisma sphagni	1	1	1
Sphagnum cuspidatum	1	2	3
Pinus contorta (seedlings)	1	1 (3 counted)	-
Calluna vulgaris		3	3
Campylopus atrovirens		1	3
Dryopteris dilatata		1	1
Erica tetralix		1	1
Juncus bulbosus		1	-
Agrostis canina		1	3
Rhynchospora alba		1	-
Sphagnum magellanicum			3
Sphagnum auriculatum			3
Eriophorum vaginatum			2

History – Previously dominated by Lodgepole pine plantation planted in 1982. Trees were generally between 6 and 8 metres tall. Ground vegetation dominated by pine needles and scattered mosses (mainly *Hypnum cupressiforme, Rhytidiadelphus loreus* and *Sphagnum capillifolium*). Trees felled in Autumn of 2003 and subsequently windrowed.

Permanent quadrat 3 – July 2004

Permanent quadrat 3 – July 2007

Site - Bellaveeny			
Perm. Quadrat No. - 3			
GPS – F 86959 03868			
Size – 8m x 8m			
Slope – 5 to 10 degrees			
Vegetation Height (cm)	30 to 40	40-50	40-50
Vegetation cover (%)	75	90	95
Needle litter cover (%)	20	10	5
Brash cover (%)	5	2	5
Dwarf shrub cover (%)	5	8	10
Herb cover (%)	60	80	90
Bryophyte cover (%)	40	40	60
No. of plant species	13	16	15
Survey date	16/7/2004	3/8/2005	18/7/2007
Molinia caerulea	6	7	7
Sphagnum capillifolium	4	4	4
Rhytidiadelphus loreus	4	3	1
Hypnum cupressiforme	4	4	4
Cladonia portentosa	3	2	3
Dicranum scoparium	2	-	-
Potentilla erecta	2	2	2
Calluna vulgaris	2	3	4
Polytrichum commune	1	1	2
Sphagnum cuspidatum	1	2	-
Pinus contorta (seedlings)	1	-	-
Dryopteris dilatata	1	1	1
Erica tetralix	1	2	2
Agrostis canina		2	3
Sphagnum palustre		1	-
Sphagnum papillosum		1	3
Eriophorum vaginatum		1	-
Erica cinerea		1	1
Campylopus sp.			3
Hylocomium splendens			2

History – Previously dominated by Lodgepole pine plantation planted in 1982. Trees were generally between 6 and 8 metres tall. Ground vegetation dominated by pine needles and scattered mosses (mainly *Hypnum cupressiforme, Rhytidiadelphus loreus* and *Sphagnum capillifolium*). Trees felled in Autumn of 2003 and subsequently windrowed.

Permanent quadrat 4 – July 2004

Permanent quadrat 4 – July 2007

Site - Bellaveeny			
Perm. Quadrat No. - 4			
GPS – F 86981 03685			
Size – 8m x 8m			
Slope – 5 degrees			
Vegetation Height (cm)	15-20	15-20	20-30
Vegetation cover (%)	20	30	80
Needle litter cover (%)	80	75	20
Brash cover (%)	5	5	5
Dwarf shrub cover (%)	0	3	3
Herb cover (%)	8	15	60
Bryophyte cover (%)	15	20	70
No. of plant species	10	15	16
Survey date	16/7/2004	3/8/2005	18/7/2007
Molinia caerulea	3	4	6
Rhytidiadelphus loreus	4	3	3
Sphagnum capillifolium	2	2	3
Hypnum cupressiforme	2	4	5
Thuidium tamariscinum	2	2	1
Dicranum scoparium	1	-	-
Potentilla erecta	1	2	1
Polytrichum commune	1	1	5
Dryopteris dilatata	1	-	2
Hylocomium splendens	1	2	2
Calluna vulgaris		2	2
Campylopus introflexus		1	5
Epilobium sp.		1	-
Erica tetralix		1	1
Aulocomium palustris		1	-
Sphagnum palustre		1	2
Polygala serpyllifolia		1	1
Agrostis sp.			2
Sphagnum cuspidatum			1

History – Previously dominated by Lodgepole pine plantation planted in 1982. Trees were generally between 6 and 8 metres tall. Ground vegetation dominated by pine needles and scattered mosses (mainly *Hypnum cupressiforme, Rhytidiadelphus loreus* and *Sphagnum capillifolium*). Trees felled in Autumn of 2003 and subsequently windrowed.

Permanent quadrat 5 – July 2004

Permanent quadrat 5 – July 2007

Site - Bellaveeny			
Perm. Quadrat No. - 5			
GPS – F 86991 03432			
Size – 8m x 8m			
Slope – 0 degrees			
Vegetation Height (cm)	20-30	30-40	30-50
Vegetation cover (%)	35	50	90
Needle litter cover (%)	60	40	5
Brash cover (%)	10	10	5
Dwarf shrub cover (%)	0	1	3
Herb cover (%)	25	40	80
Bryophyte cover (%)	30	30	80
No. of plant species	15	21	21
Date of survey	16/7/2004	3/8/2005	18/7/2007
Molinia caerulea	5	5	6
Rhytidiadelphus loreus	4	3	3
Sphagnum capillifolium	3	3	4
Hypnum cupressiforme	3	4	4
Hylocomium splendens	2	3	3
Pleurozium schreberi	2	2	1
Sphagnum papillosum	2	2	-
Potentilla erecta	1	2	2
Agrostis canina	1	2	4
Thuidium tamariscinum	1	1	1
Dicranum scoparium	1	1	1
Polytrichum commune	1	1	5
Dryopteris dilatata	1	1	1
Sphagnum palustre	1	1	2
Liverwort species	1	-	-
Calluna vulgaris		1	2
Campylopus atrovirens		1	-
Campylopus introflexus		1	5
Digitalis purpurea		1	1
Epilobium angustifolium		1	-
Epilobium sp.		1	-
Juncus bulbosus		1	1
Juncus effusus			1
Erica tetralix			1
Polygala serpyllifolia			1
Juncus squarrosus			1

History – Previously dominated by Lodgepole pine plantation planted in 1982. Trees were generally between 6 and 8 metres tall. Ground vegetation dominated by pine needles and scattered mosses (mainly *Hypnum cupressiforme, Rhytidiadelphus loreus* and *Sphagnum capillifolium*). Trees felled in Autumn of 2003 and subsequently windrowed.

Permanent quadrat 6 – August 2005

Permanent quadrat 6 – July 2007

Site - Bellaveeny		
Perm. Quadrat No. - 6		
GPS – F 87356 02373		
Size – 6m x 6m		
Slope – c.30 degrees		
Vegetation Height (cm)	20-30	20-30
Vegetation cover (%)	50	50
Bare peat cover (%)	55	50
Dwarf shrub cover (%)	5	5
Herb cover (%)	50	50
Bryophyte cover (%)	5	5
No. of plant species	16	19
Date of survey	3/8/2005	18/7/2007
Nardus stricta	4	4
Agrostis canina	4	4
Juncus squarrosus	4	4
Calluna vulgaris	3	3
Campylopus atrovirens	3	4
Tricophorum cespitosum	3	3
Molinia caerulea	3	3
Erica cinerea	2	1
Eriophorum vaginatum	2	2
Dryopteris dilatata	1	1
Narthecium ossifragum	1	1
Eriophorum angustifolium	1	1
Hypnum cupressiforme	1	1
Juncus bulbosus	1	-
Carex sp.	1	-
Potentilla erecta	1	1
Cladonia sp.		2
Racomitrium lanuginosum		1
Rhytidiadelphus loreus		1
Diplophyllum albicans		1
Dicranum scoparium		1
History – Area severely overgrazed by sheep. Fenced off in summer of 2005.		

Permanent quadrat 7 – August 2005

Permanent quadrat 7 – July 2007

Site - Bellaveeny		
Perm. Quadrat No. - 7		
GPS – F 87260 02297		
Size – 6m x 6m		
Slope – c.30 to 40 degrees		
Vegetation Height (cm)	20-30	20-30
Vegetation cover (%)	60	75
Bare peat cover (%)	50	40
Dwarf shrub cover (%)	5	5
Herb cover (%)	60	65
Bryophyte cover (%)	10	15
No. of plant species	17	
Date of survey	3/8/2005	18/7/2007
Nardus stricta	5	5
Agrostis canina	4	4
Molinia caerulea	4	4
Calluna vulgaris	3	3
Campylopus atrovirens	2	3
Erica cinerea	2	2
Eriophorum angustifolium	2	2
Tricophorum cespitosum	2	3
Polytrichum sp.	2	3
Carex panicea	1	1
Cladonia sp.	1	3
Racomitrium lanuginosum	1	2
Juncus bulbosus	1	1
Juncus squarrosus	1	1
Narthecium ossifragum	1	1
Potentilla erecta	1	1
Campylopus introflexus	1	3
Erica tetralix		1
Diplophyllum albicans		1
Pleurozia purpurea		1
Carex echinata		1
History – Area severely overgrazed by sheep. Fenced off in the summer of 2005.		

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