

RESTORING RAISED BOG IN IRELAND
Project Reference: LIFE04 NAT/IE/000121

A REPORT ON THE RESTORATION OF PROJECT SITE No. 13

MOUNT HEVEY BOG, Co. MEATH/ WESTMEATH



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Project Site No. 11 - Mount Hevey Bog, Co. Meath/ Westmeath

1. Introduction

Grid Reference IN6449 4762	Elevation (m) 75	Bedrock Geology Limestone
SAC Name and Number Mount Hevey Bog cSAC (1584)	Project Site Area (ha) 58.2	Main Restoration Methods Clear-fell mature conifer crop Fell to Waste young conifers Block Forestry drains with peat dams Block open bog drains with plastic dams Control natural regeneration
SAC Area (ha) 537		
Area of Conifer Cover (ha) 56.7	Area of Open Bog (ha) 1.5	Area of Birch Woodland (ha) 0
Noteworthy habitats/plant/animal species present		

General site description

Mount Hevey bog is a large raised bog site located approximately 3 km north-east of Kinnegad, straddling the border between counties Westmeath and Meath. Although the bog is rather narrow in the centre, it is approximately 4 kilometres long and occupies an area of 537 hectares which makes it one of the largest raised bog cSACs in the east of the country. In addition, it is estimated that the site contains a large area (63 hectares) of active raised bog, which is very wet bog with numerous *Sphagnum*-dominated pools. The Dublin to Mullingar railway line runs through the site fragmenting the high bog into 3 lobes, two small ones to the north of the railway line and one large one to the south of the line.

Much of the high bog has vegetation typical of the Midlands Raised Bog type. The vegetation consists of Ling Heather (*Calluna vulgaris*), Cotton-grasses (*Eriophorum vaginatum* and *E. angustifolium*), Bog Asphodel (*Narthecium ossifragum*), White-beaked Sedge (*Rhynchospora alba*), the midland indicator species Bog-rosemary (*Andromeda polifolia*) and the bog moss *Sphagnum magellanicum*. The wet quaking areas in the eastern section of the bog have pools that support the bog moss *Sphagnum cuspidatum* with White Beak-sedge, Cottongrasses and Ling Heather at the pool margins. The hummock/hollow complex supports a range of hummock-forming bog mosses, including *Sphagnum imbricatum* and *S. fuscum*, as well as other species such as *S. capillifolium*, *S. magellanicum* and *S. papillosum*. Other plants found in the hummock/hollow complexes are Bog-rosemary, Cross-leaved Heath (*Erica tetralix*), Deer-grass (*Trichophorum caespitosum*) and Bog Asphodel (NPWS, 2002).

In common with all raised bog sites in Ireland, most of the marginal areas of the site have been subject to peat-cutting in the past and this has resulted in the drying out of the adjacent high bog. An area of conifers has been planted on the eastern side of the bog and this has resulted in the direct loss of raised bog vegetation and is also causing the drying out of the adjacent high bog (Conaghan, 2003).

Current landuse on the site consists of limited mechanized peat-cutting, mostly on the south-eastern end of the high bog. There are areas of old peat-cutting all around the site with some very old abandoned regenerating cutover areas along the edge of the railway. The area to the east of the site has been afforested. Damaging activities associated with these activities include drainage throughout the site and burning on the high bog. These are all activities that have resulted in loss of habitat and damage to the hydrological status of the site and pose a continuing threat to its viability (NPWS, 2002).

Project Site Description (Pre-restoration)

Within the site Coillte owns areas of land (mostly planted) in the eastern end of the bog. The site was surveyed in 2003, prior to restoration, which found that the project area consists of 56.7 hectares of conifer plantation, planted on high bog and cutover. These conifers consisted largely of Lodgepole Pine (*Pinus contorta*). This site contained a wide range of forestry treatments including recently felled areas which have yet to be replanted, areas planted within the past 5 years with young trees and areas of tall, closed canopy forest close to their fell date. Along the margins of the unplanted high bog there was a substantial area of stunted Lodgepole Pine growing on wet bog, dominated by Ling Heather and a range of *Sphagnum* species. There was good potential for restoration of wet bog in this area. Much of the cSAC margins were dominated by recently planted blocks of conifers, most of which are less than 6 years old. This ground was very dry underfoot and was prone to invasion by species such as birch and bracken. There were also large areas of trees greater than 25 years old which were close to their fell date. Of particular note was 18.8 hectares of 33 year-old Lodgepole Pine, which were due for felling in 2003. Significant portions of these areas appear to have been affected by windthrow in the past and they were rapidly developing into thicket of dry birch/bramble scrub (Conaghan, 2003).

Description of bog vegetation adjoining planted areas

The bog to the west of the planted areas at Ballasport and Kilwarden is very wet and of high ecological value. Numerous pool systems are present and most of these have a good growth of the aquatic moss *Sphagnum cuspidatum*. A rather wide band of cutover, some of which is active, lies between the high bog and the forestry which runs along the southern margins of the site.

Restoration Actions

At this site the main restoration measures undertaken were the clear-felling and removal of the mature conifer crop, felling to waste of young conifers, wind-rowing of the remaining brash and blocking of forestry drains with peat dams and open bog drains with plastic dams. Follow-up work included the control of the natural regeneration of conifer seedlings and encroaching birch.

2. Methods

Prior to the start of restoration activities at the site, the habitats and vegetation occurring was surveyed and described (Conaghan, 2003). During the initial 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 (Conaghan, 2003).

During the restoration work of 2005, permanent quadrats were established on each of the vegetation types within the project site, which were monitored to record changes in vegetation over time.

3. Site Photographs

Throughout the 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. These include a selection of ground photographs taken by the Project Ecologist in order to illustrate the vegetation descriptions and changes in the habitats/vegetation present over time.

4. Vegetation of Project Site

The vegetation of the project site was previously dominated by mature, closed-canopy coniferous plantations and young coniferous plantations. The ground flora of the mature plantations was dominated by a thick layer of Lodgepole Pine needles with the main plant species present were Bracken, Bramble and the moss *Hypnum jutlandicum*. The young conifer plantations at the bog margin had a ground flora dominated by Bramble and Willow-herb, while the young plantation on the high bog supported bog vegetation of Ling Heather, Cross-leaved Heath and Hare's-tail Cottongrass with *Sphagnum* species.

5. Changes in Overall Vegetation/Habitat Cover

Much of the site is now cleared of conifers and brash. Where possible, the brash which remained after clear-felling has been wind-rowed to allow bog vegetation to re-colonise the exposed peat surface. Young trees on the high bog were felled to waste by chainsaw and left in situ. With the removal of conifers and blocking of drains on the high bog, there has been a rise in the water-table, which allows for the colonisation of bog vegetation and *Sphagnum* mosses. However regenerating birch and pine will need to be controlled, if bog vegetation is to become established. The fell to waste areas on cutover bog occur on shallow peat and will develop into wet birch woodland.

6. Vegetation Monitoring Quadrats

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. Six permanent quadrats were installed on this site, which were described and photographed to monitor changes in vegetation over time. In order to ensure the future position of quadrats the corners have been marked with short stakes and an 8-figure GPS reading was also recorded. Each 10m x10m quadrat, was photographed annually and vegetation tables are presented below.

Quadrat 1: This quadrat is located on the eastern margin of Mount Hevey and occurred within a young conifer plantation on cutover bog with a ground cover containing Bramble, Willow-herb and *Hypnum* moss. With the felling to waste of the conifers, it can be seen that Birch and Ling Heather cover increased, but due to the dry nature of this area, *Sphagnum* moss is absent. Over time, this dry bog margin will develop into birch woodland.

Mount Hevey Quadrat 1

Area: 10 x 10m

Location: 10m South W4

Grid Ref: N6705 4761

Altitude: 68m

Bog Type: Cutaway

Ecotope: NA

Slope: Flat

Aspect: NA

Landuse: Forestry

Management: Clearfell

Date	05/08/2005	28/07/2006	10/08/2007	24/07/2008
Firmness	Soft	Dry	Firm	Firm
Drains	Yes	Yes	Yes	Yes
Canopy Cover %	0	0	50	70
Canopy Height	0	0	1	2
Vegetation Cover %	80	85	100	90
Vegetation Height (m)	50	150	60	50
Dwarf Shrub Cover %	2	5	5	20
Herb Cover %	75	80	95	70
Bryophyte Cover %	5	10	30	30
Sphagnum cover %	0	0	0	0
Open Water %	0	0	0	0
Brash cover %	15	10	10	10
Pine Needle cover %	3	0	0	0
Pine Needle Depth cm	1	0	0	0
Bare Peat %	2	5	0	0
Species number	8	8	6	8
<i>Betula pubescens</i>	1	5	50	80
<i>Rubus spp</i>	20	35	30	20
<i>Lonicaria periclymenum</i>	2	5		
<i>Juncus spp</i>	1	1		5
<i>Molinia caerulea</i>				5
<i>Pteridium spp</i>	5	10	5	10
<i>Epiolobium spp</i>	50	35	10	10
<i>Calluna vulgaris</i>	2	5	5	20
<i>Hypnum jutlandicum</i>	5	10	30	30

Mount Hevey Quadrat 1, 2005



Mount Hevey Quadrat 1, 2008



Quadrat 2: This quadrat is located on the south-east margin of Mount Hevey and occurred within a mature conifer plantation with a ground cover containing Ling Heather, Willow-herb and *Hypnum* moss. With the clear-felling of the conifers and blocking of drains, it can be seen that Birch, Bramble, Ling Heather and Cotton-grass cover increased along with an increase in *Sphagnum* moss cover. Over time, this wet bog margin will develop into wet birch woodland with some areas dominated by bog vegetation.

Mount Hevey Quadrat 2

Area: 10 x 10m

Location: 10m South W5

Grid Ref: N6391 4749

Altitude: 79m

Bog Type: High bog

Ecotope: NA

Slope: Flat

Aspect: NA

Landuse: Forestry

Management: Clearfell

Date	05/08/2005	28/07/2006	10/08/2007	24/07/2008
Firmness	Soft	Firm	Soft	Soft
Drains	Yes	Yes	Yes	Yes/blocked
Canopy Cover %	5	0	25	20
Canopy Height		0	2	1.5
Vegetation Cover %	65	50	70	70
Vegetation Height (m)		100	50	50
Dwarf Shrub Cover %	5	10	5	20
Herb Cover %	40	40	45	45
Bryophyte Cover %	20	40	75	70
Sphagnum cover %	6	15	50	35
Open Water %	0	0	10	5
Brash cover %	25	40	20	20
Pine Needle cover %	5	5	0	5
Pine Needle Depth cm	1	5	0	5
Bare Peat %	0	5	0	0
Species number	11	13	17	17
<i>Pinus contorta</i>	1	1	3	5
<i>Betula pubescens</i>	4	15	25	25
<i>Ilex aquilinum</i>		1		
<i>Rubus spp</i>	1	10	10	15
<i>Lonicaria periclymenum</i>				1
<i>Holcus lanatus</i>	1			
<i>Pteridium spp</i>	5	5	2	1
<i>Epiolobium spp</i>	20	20	3	5
<i>Calluna vulgaris</i>	5	10	5	15
<i>Erica tetralix</i>				5
<i>Eriophorium vaginatum</i>	1	1	10	10
<i>E. angustifolium</i>			5	5
<i>Campylopus atroverins</i>			5	5
<i>Hypnum jutlandicum</i>	15	15	10	25
<i>Polytricum commune</i>		5	5	5
<i>Sphagnum recurvum</i>	1		5	20
<i>S cuspidatum</i>			5	5
<i>S. capillifolium</i>	5	5	15	5
<i>S. papillosum</i>			10	
<i>S. subnitens</i>		5	10	5
<i>S. magellanicum</i>		5	5	

Mount Hevey Quadrat 2, 2005



Mount Hevey Quadrat 2, 2008



Quadrat 3: This quadrat was located in a mature conifer plantation on the eastern high bog of Mount Hevey and occurred within closed canopy plantation with a ground cover containing Ling Heather, Bramble, Willow-herb and *Hypnum* moss. With the felling to waste of the conifers, it can be seen that Birch and Ling Heather cover increased along with *Sphagnum* moss cover. Over time, with the removal of the regenerating birch this high bog area may develop raised bog habitat.

Mount Hevey Quadrat 3

Area: 10 x 10m **Location:** Between W1 and W2 **Grid Ref:** N6374 4760 **Altitude:** 69m
Bog Type: High bog **Ecotope:** NA **Slope:** Flat **Aspect:** NA
Landuse: Forestry **Management:** Clearfell

Date	05/08/2005	28/07/2006	10/08/2007	24/07/2008
Firmness	Dry	Dry	Soft	Soft
Drains	Yes	Yes	Yes	Yes
Canopy Cover %	3	0	20	25
Canopy Height		0	2	2.5
Vegetation Cover %	72	75	60	65
Vegetation Height (m)	50	100	50	50
Dwarf Shrub Cover %	10	15	25	25
Herb Cover %	42	60	35	40
Bryophyte Cover %	20	50	45	55
Sphagnum cover %	10	20	30	30
Open Water %	1	0	5	0
Brash cover %	15	20	30	25
Pine Needle cover %	12	3	5	5
Pine Needle Depth cm	5	10	5	5
Bare Peat %	1	2	0	1
Species number	9	12	15	15
<i>Pinus contorta</i>	1	5	5	10
<i>Betula pubescens</i>	2	15	20	25
<i>Rubus spp</i>	10	5	10	10
<i>Pteridium spp</i>	2	5	3	2
<i>Epiobium spp</i>	30	30	20	10
<i>Calluna vulgaris</i>	10	15	20	20
<i>Erica tetralix</i>			5	5
<i>Eriophorium vaginatum</i>			2	5
<i>E. angustifolium</i>				3
<i>Campylopus atroverins</i>		5		
<i>Hypnum jutlandicum</i>	10	20	5	15
<i>Polytricum commune</i>	1	5	3	5
<i>Dicranium spp</i>		1	2	2
<i>Sphagnum recurvum</i>				5
<i>S cuspidatum</i>			5	
<i>S. capillifolium</i>	10	5	10	
<i>S. subnitens</i>			5	15
<i>S. magellanicum</i>		15	10	15

Mount Hevey Quadrat 3, 2005



Mount Hevey Quadrat 3, 2008



Quadrat 4: This quadrat was located within a young conifer plantation on high bog to the west of the project area. The ground cover is dominated by bog vegetation of Ling Heather, Cross-leaved Heath and Hare's-tail Cotton-grass with the midland indicator species Bog-rosemary and Cranberry. There is also a high cover of *Sphagnum* mosses. With the felling to waste of the conifers, the bog vegetation will recover and over time, this high bog area will develop active raised bog habitat.

Mount Hevey Quadrat 4

Area: 10 x 10m

Location: 50m East W3

Grid Ref: N6355 4760

Altitude: 73m

Bog Type: High bog

Ecotope: Sub-marg.

Slope: Flat

Aspect: NA

Landuse: Forestry

Management: Fell to Waste

Date	05/08/2005	28/07/2006	10/08/2007	24/07/2008
Firmness	Very Soft	Firm	Soft	Soft
Drains	Yes	Yes	Yes	Yes
Canopy Cover %	40	0	0	0
Canopy Height	2	0	0	0
Vegetation Cover %	100	100	80	85
Vegetation Height (m)	60	60	60	75
Dwarf Shrub Cover %	50	70	55	50
Herb Cover %	20	20	40	35
Bryophyte Cover %	60	40	55	55
Sphagnum cover %	40	30	25	35
Open Water %	0	0	0	0
Brash cover %	0	20	10	10
Pine Needle cover %	0	0	5	5
Pine Needle Depth cm	0	0	5	1
Bare Peat %	1	0	0	1
Species number	13	14	12	15
<i>Pinus contorta</i>	40	1		
<i>Betula pubescens</i>	1	1	2	2
<i>Salix</i> spp.		1		
<i>Epiobium</i> spp				1
<i>Calluna vulgaris</i>	40	60	45	40
<i>Erica tetralix</i>	10	10	5	10
<i>Eriophorium vaginatum</i>	10	10	15	15
<i>E. angustifolium</i>				1
<i>Andromeda polifolia</i>	5	5	10	5
<i>Vaccinium oxycoccos</i>	5	5	10	10
<i>Cladonia portentosa</i>		10	10	20
<i>C. fleurkiana</i>		1	1	
<i>C. uncialis</i>	10			1
<i>C. pixidata</i>	1			
<i>Hypnum jutlandicum</i>	10	5	20	20
<i>Polytricum commune</i>				5
<i>Dicranium</i> spp	10	5	10	5
<i>S. capillifolium</i>	20	20	20	20
<i>S. subnitens</i>	20	10	5	5

Mount Hevey Quadrat 4, 2005



Mount Hevey Quadrat 4, 2008



Quadrat 5: This quadrat was located on the western margin of the young conifer plantation on high bog. The ground cover was dominated by Ling Heather and Hare's-tail cotton-grass with abundant *Sphagnum* moss. With the felling to waste of the conifers, the bog vegetation will recover and over time, this high bog area will develop active raised bog habitat.

Mount Hevey Quadrat 5

Area: 10 x 10m

Location: 50m West W3

Grid Ref: N6341 4756

Altitude: 74m

Bog Type: High bog

Ecotope: Sub-marg.

Slope: Flat

Aspect: NA

Landuse: Forestry

Management: Fell to Waste

Date	05/08/2005	28/07/2006	10/08/2007	24/07/2008
Firmness	Very Soft	Soft	Firm	Soft
Drains	Yes	Yes	Yes	Yes
Canopy Cover %	10	0	0	0
Canopy Height	1	0	0	0
Vegetation Cover %	100	100	100	95
Vegetation Height (m)	50	50	30	50
Dwarf Shrub Cover %	60	60	50	60
Herb Cover %	40	37	45	35
Bryophyte Cover %	80	50	65	80
Sphagnum cover %	75	40	50	60
Open Water %	0	0	5	0
Brash cover %	1	3	5	5
Pine Needle cover %	0	0	0	0
Pine Needle Depth cm	0	0	0	0
Bare Peat %	0	0	0	0
Species number	14	14	14	15
<i>Pinus contorta</i>	9			
<i>Betula pubescens</i>	1	2	2	1
<i>Calluna vulgaris</i>	55	50	40	50
<i>Erica tetralix</i>	5	10	10	10
<i>Trichophorum caespitosum</i>				5
<i>Eriophorum vaginatum</i>	28	30	35	20
<i>Rhynchospora alba</i>				1
<i>Andromeda polifolia</i>	5	3	2	2
<i>Drosera rotundifolia</i>	1	1		1
<i>Vaccinium oxycoccos</i>	5	3	5	5
<i>Cladonia portentosa</i>	5	10	10	20
<i>C. introflexus</i>		1		
<i>Hypnum jutlandicum</i>	3	10	10	20
<i>Polytricum commune</i>			3	
<i>Dicranium spp</i>	2	1	2	1
<i>S. cuspidatum</i>			5	
<i>S. capillifolium</i>	50	30	30	30
<i>S. papillosum</i>	5			
<i>S. subnitens</i>	20	5	10	20
<i>S. magellanicum</i>		5	5	10

Mount Hevey Quadrat 5, 2005



Mount Hevey Quadrat 5, 2008



Quadrat 6: This quadrat is located on the open bog to the west of the project area at Mount Hevey Bog. It occurs on active raised bog habitat dominated by Ling Heather, Cross-leaved Heath, Bog Asphodel, Hare's-tail Cotton-grass and White-beaked sedge. The midland indicator species Bog-rosemary and Cranberry also occur along with abundant *Sphagnum* moss. This quadrat details the bog vegetation present on active raised bog habitat and describes the ideal vegetation for the restoration sites.

Mount Hevey Quadrat 6

Area: 10 x 10m

Bog Type: High bog

Landuse: Unplanted

Location: 10m East W7

Ecotope: Sub-central

Management: Non-intervention

Grid Ref: N6333 4758

Slope: Slight

Altitude: 71m

Aspect: North

Date	24/07/2008
Firmness	V. Soft/Quaking
Drains	No
Canopy Cover %	0
Canopy Height	0
Vegetation Cover %	95
Vegetation Height (m)	30
Dwarf Shrub Cover %	50
Herb Cover %	45
Bryophyte Cover %	75
Sphagnum cover %	65
Open Water %	0
Brash cover %	1
Pine Needle cover %	0
Pine Needle Depth cm	0
Bare Peat %	5
Species number	18
<i>Calluna vulgaris</i>	40
<i>Erica tetralix</i>	10
<i>Narthecium ossifragum</i>	15
<i>Trichophorum caespitosum</i>	5
<i>Eriophorum vaginatum</i>	10
<i>Rhynchospora alba</i>	10
<i>Andromeda polifolia</i>	1
<i>Drosera rotundifolia</i>	1
<i>D. anglica</i>	2
<i>Vaccinium oxycoccus</i>	1
<i>Cladonia portentosa</i>	10
<i>Hypnum jutlandicum</i>	10
<i>Polytricum commune</i>	1
<i>S cuspidatum</i>	5
<i>S. auriculatum</i>	5
<i>S. capillifolium</i>	20
<i>S. subnitens</i>	10
<i>S. magellanicum</i>	25

Mount Hevey Quadrat 6, 2008



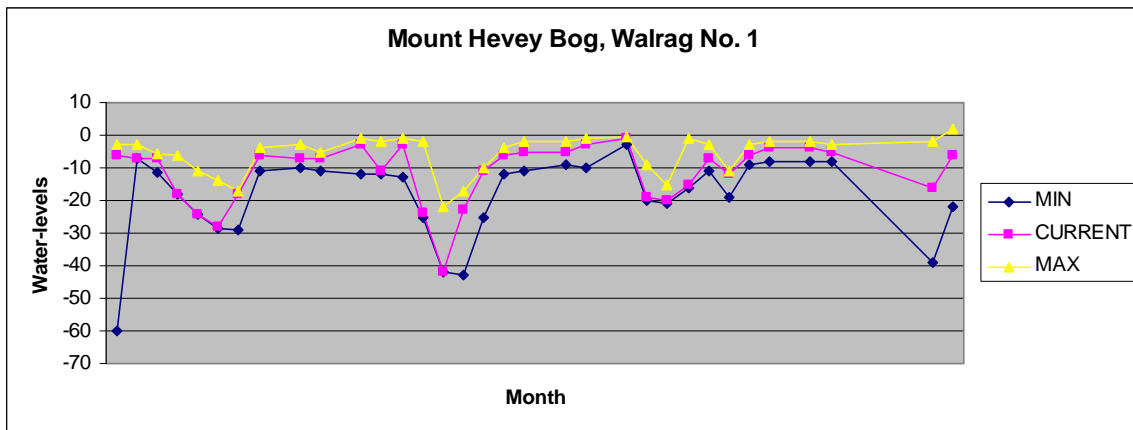
7. Changes in Water-levels

During restoration, Walrags were installed throughout the project site to record any changes in water-levels, due to tree removal and drain blocking. Initially, water-levels were found to be up to **70cm** below the surface in the conifer plantation, while the open bog areas had water-levels close to the surface. With the removal of conifers and drain-blocking, there was a rise in the water-table in the conifer plantation on the high bog project and the water-table remains close to the bog surface throughout most of the year. However there was little rise in water-levels in marginal cutover areas, which will revert to wet birch woodland.

8. Hydrological Monitoring (Walrag) Graphs

During the clear-felling operation, eight Walrags were installed on this site to record the changes in water-levels. The rise in water-levels is clearly seen in the following graphs.

Mount Hevey Bog Walrag 1: Clear-felled Conifer Plantation on High Bog. (Water-levels decline in summer months. Water-levels have been raised post restoration*)



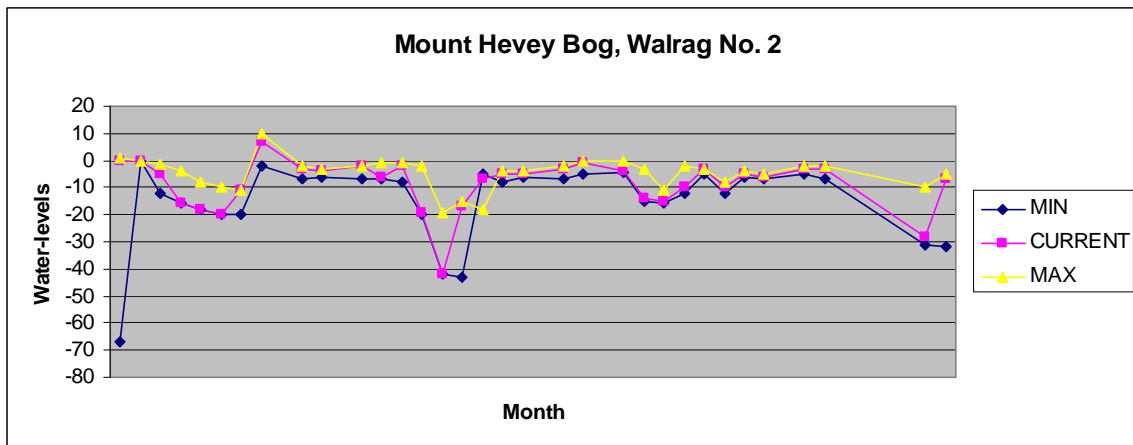
May 2005*Clearfell

May 2006

May 2007 *Drain-blocking

Aug 2008

Mount Hevey Bog Walrag 2: Clear-felled Conifer Plantation on High Bog. (Water-levels decline in summer months. Water-levels have been raised post restoration*)



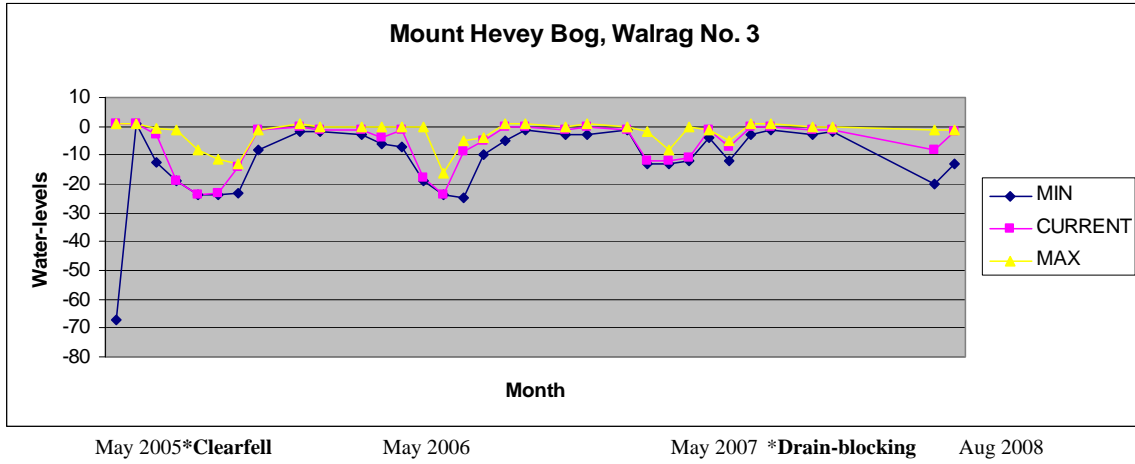
May 2005*Clearfell

May 2006

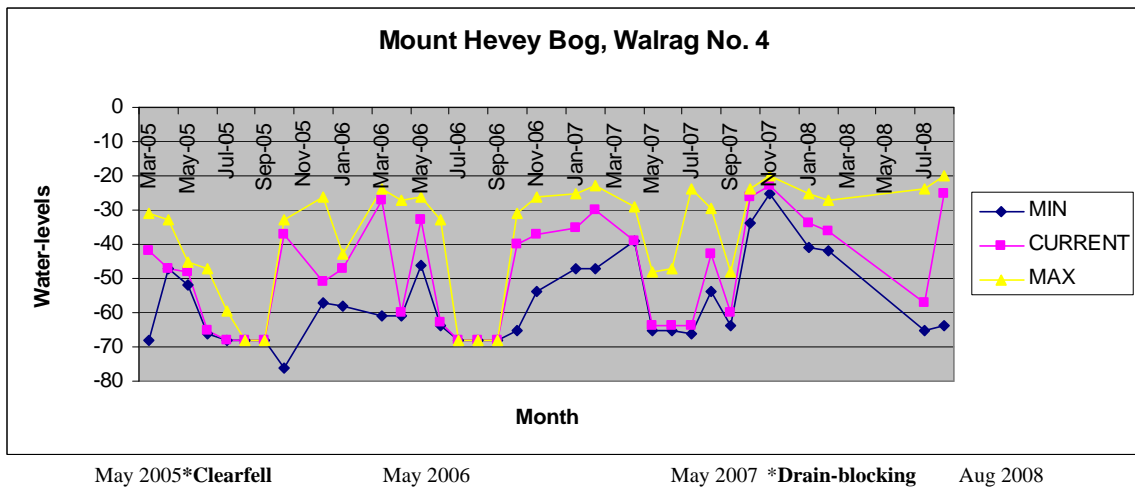
May 2007 *Drain-blocking

Aug 2008

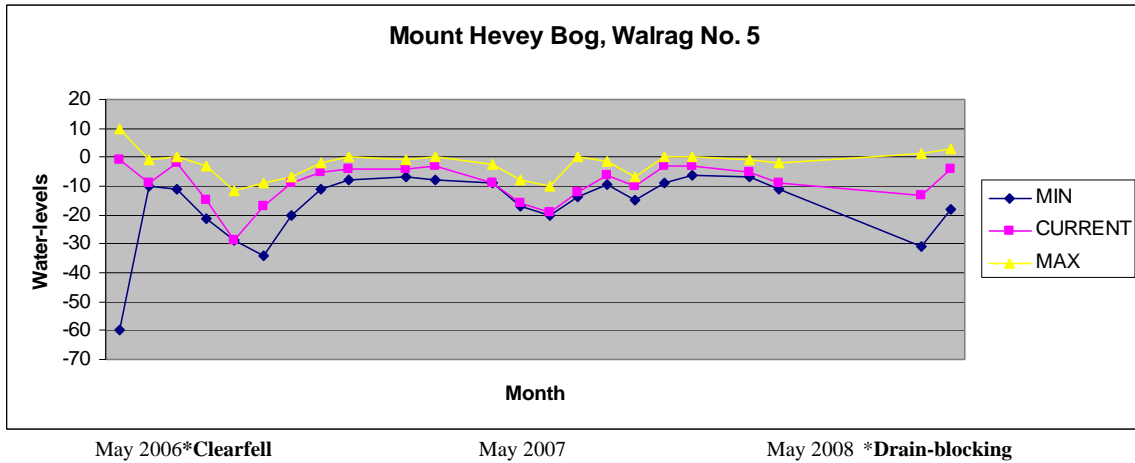
Mount Hevey Bog Walrag 3: Open Canopy Conifer Plantation on High Bog. (Decline in water-levels in summer months before tree-felling. Water-levels have been raised post restoration*)



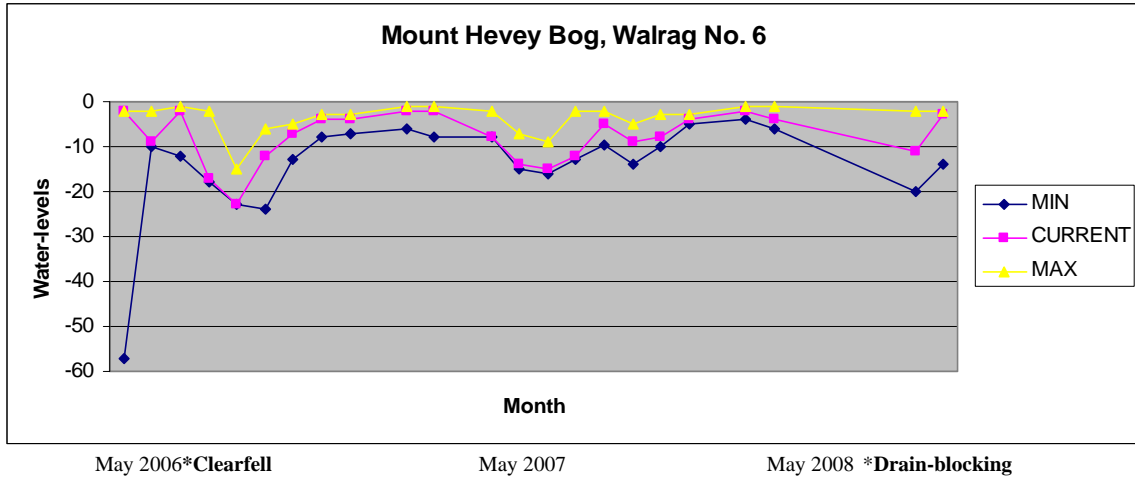
Mount Hevey Bog Walrag 4: Clearfelled Conifer Plantation on Cutover Bog. (Large decline in water-levels during summer months. Water-levels remain variable post restoration* due shallow peat substrate)



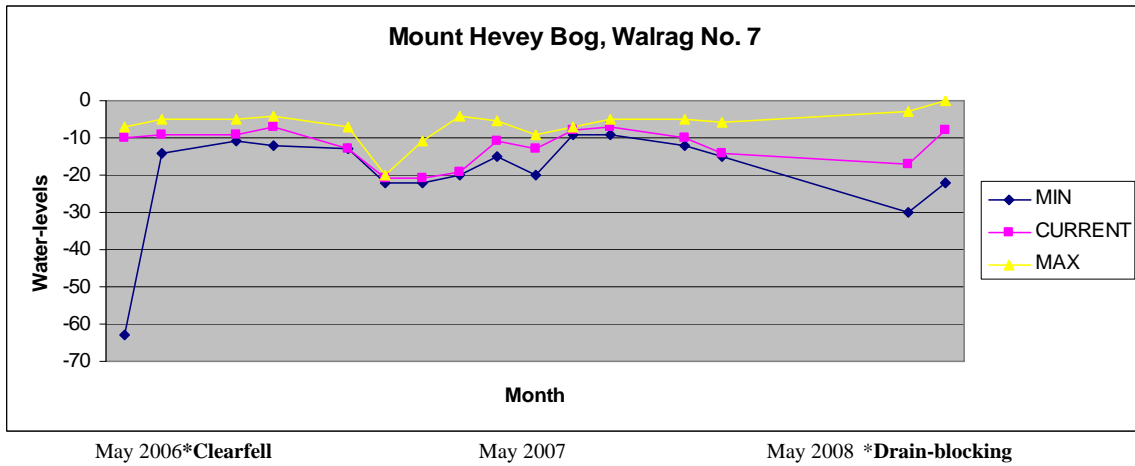
Mount Hevey Bog Walrag 5: Clear-felled Conifer Plantation on High Bog. (Water-levels decline in summer months. Water-levels have been raised post restoration*)



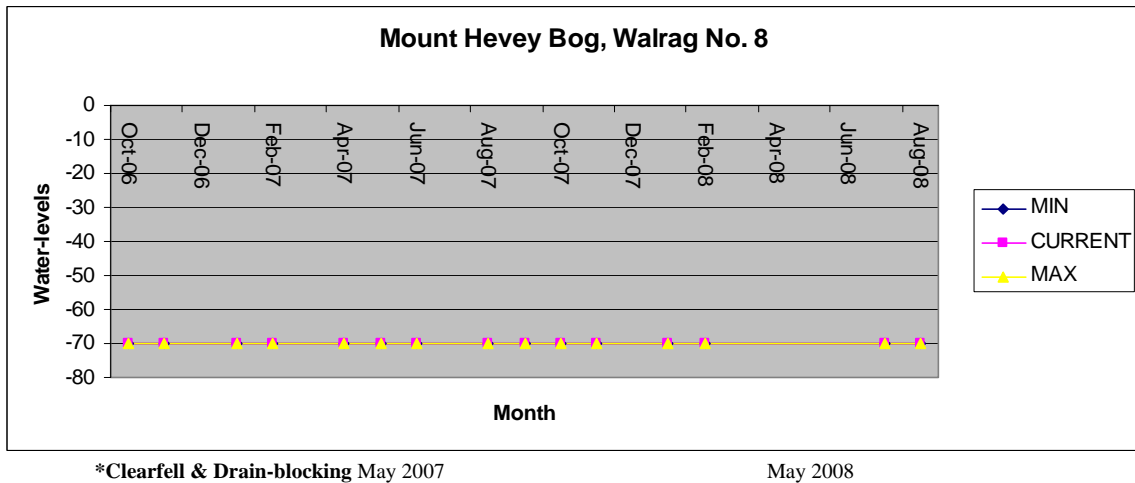
Mount Hevey Bog Walrag 6: Open Canopy Conifer Plantation on High Bog. (Decline in water-levels in summer months before tree-felling. Water-levels have been raised post restoration*)



Mount Hevey Bog Walrag 7: Open High Bog - Active. (Slight decline in water-levels during summer months, but within 10 cm of surface for most of the year).



Mount Hevey Bog Walrag 8: Clearfelled Conifer Plantation on Cutover Bog. Water-levels remain far below the surface post restoration* due to shallow peat substrate)



*Clearfell & Drain-blocking May 2007

May 2008

9. Conclusion

This project site contained a number of habitat types, which have a wide range of restoration potential. The fell to waste areas on the high bog will support active raised bog habitat. The clear-fell area on the high bog may support raised bog habitat, if the encroaching birch is controlled. Otherwise wet birch woodland will dominate this area. The fell to waste on cutover is very dry and should be allowed to revert to a birch woodland margin to the raised bog.

This is an important site for raised bog conservation. The open bog areas adjoining the forestry in the east of the site are wet at present and the removal of trees and blocking of drains will further improve the hydrology of these areas. It is likely that many of the previously afforested areas within this site will be difficult to re-wet sufficiently in order to achieve bog re-growth (Conaghan, 2003).

10. References

- Brooks, S. (2005). *Assessment of Project Sites, Restoring Raised Bog in Ireland*. Coillte LIFE Nature Project. Peatland Consulting
- Conaghan, J. (2003). *Raised Bog Ecological Report*. Coillte
- Curtis, T.G.F. & McGough, H.N. (1988). *The Irish Red Data Book. 1: Vascular Plants*. The Stationery Office, Dublin.
- NPWS Site Synopsis