Favourable Condition of Blanket Bog on Peak District SSSIs

Richard Pollitt – Lead Adviser, Conservation & Land Management, Dark and South West Peak

Definitions

SSSI – Site of Special Scientific Interest – statutory site, notified under UK law with legal protection for the interest features, In this case The Dark Peak SSSI

The Site bit is a geographically defined space – a field for instance, but here c32,000ha of bog, heath, woodland and grassland.

Scientific Interest is a feature that can be described and appraised – such as a hay meadow grassland, or as here numerous habitats and many species and some geodiversity

Special – relative status, the best in a geographic zone

More definitions

Favourable Condition

- Is achieved when the targets in the conservation objectives for the condition of the feature are met

Such as…

- 6 or more indicator species will be found in 90% of representative samples across the feature

Blanket Bog

- Blanket bog is a collective term for extensive rain fed, deep upland peatland over 40cm in depth on flat or sloping ground and the range of vegetation types it can support

Designated Special Interest Feature - Bogs

Bogs – Active	**Blanket bog & valley bog (upland).**	**7130 – Blanket bog.** **(Priority habitat only when active).**	**M19b - *Calluna vulgaris* - *Eriophorum vaginatum* blanket mire, *Empetrum nigrum* ssp. *nigrum* sub-community.**	**Moderately diverse blanket bog.** **(See Audit Trail note 27).**
				Species-poor blanket bog (intermediate between M19b/M20). (See Audit Trail notes 4 & 24).
			M20 - Eriophorum vaginatum blanket mire.	Cotton-grass moorland.
			M25 Molinia caerulea – Potentilla erecta mire on deep peat (> 50 cm).	***Molinia* blanket bog.** (Has an affinity to M25 mire).
		7150 Depressions on peat substrates of the Rhynchosporion.	***M3 Eriophorum angustifolium bog pool community.***	Species-poor bog pools and wet hollows.

BLANKET BOG – active. **M19b moderately diverse blanket bog. Deep peat with a seasonally wet surface (but can be quite dry in summer).**	Maintain in actively peat-forming state. **Maintain or enhance the higher plant and bryophyte flora, particularly peat-forming Sphagnum species.** **Protect peat resource from wildfire.**
BLANKET BOG – active Species-poor blanket bog (M19/M20) Intact or partly eroded deep peat with a variably wet surface, and occasional to frequent gullies or drains. Supports species-poor vegetation	Maintain / restore high water table. Increase the cover and variety of Sphagnum species. Reduce the extent of bare and eroding ground. Protect peat carbon.
BLANKET BOG – active M20 cotton-grass moorland A very widespread blanket bog vegetation type in the Dark Peak. Usually on the higher plateaus	Maintain or enhance the higher plant and bryophyte flora, particularly peat-forming Sphagnum species. Reduce extent of bare / eroding ground. Protect peat carbon.
BLANKET BOG – Inactive Dry blanket bog with heather. Particularly abundant on lower altitude sloping moorland plateaus, where deep deposits of dry peat are often heavily gullied	Enhance the structural diversity of the plant cover, to include all growth stages of heather. Increase overall wetness of the feature. Protect the existing bryophyte, lichen & litter layer. Protect sensitive features and wetter areas from burning
BLANKET BOG – Inactive Bare peat.Extensive sheet erosion of peat surface on previously deep peat, resulting in the near total loss of vegetation.	Increase overall wetness of the feature. Reduce the extent of bare and eroding ground. Return to actively peat-forming state

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BLANKET BOG – Inactive **Dry blanket bog with heather.** **Particularly abundant on lower altitude sloping moorland plateaus, where deep deposits of dry peat are often heavily gullied**	**Enhance the structural diversity of the plant cover, to include all growth stages of heather.** **Increase overall wetness of the feature.** **Protect the existing bryophyte & lichen layer.** **Protect sensitive features and wetter areas from burning**
BLANKET BOG – Inactive Bare peat.Extensive sheet erosion of peat surface on previously deep peat, resulting in the near total loss of vegetation.	Increase overall wetness of the feature. Reduce the extent of bare and eroding ground. Return to actively peat-forming state

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BLANKET BOG – Inactive **Bare peat.Extensive sheet erosion of peat surface on previously deep peat, resulting in the near total loss of vegetation.**	**Increase overall wetness of the feature.** **Reduce the extent of bare and eroding ground.** **Return to actively peat-forming state**

Notified feature (including any specific type)	Description	Objectives	Management	Attributes used for condition assessment	Variations from CSM
BLANKET BOG – active **M20 cotton-grass moorland** **Assemblage of breeding birds: Upland moorland and grassland with water bodies.** **Curlew Numenius arquata** **Dunlin Calidris alpine** **Golden Plover Pluvialis apricaria** **Merlin Falco columbarius.** **Peregrine Falco peregrinus.** **Short-eared owl Asio flammeus** **Cloudberry Rubus chamaemorus** **Bog rosemary Andromeda polifolia** **Labrador tea Ledum palustre** **See Audit Trail notes 1, 2, 4, 6 & 15**	M20 Eriophorum vaginatum blanket mire. A very widespread blanket bog vegetation type in the Dark Peak. Usually on the higher plateaus with a very wet surface (wet or damp in summer) and scattered pools, and often associated with fairly intact or only partly eroded deep peat. It supports a much impoverished blanket bog community, which is dominated almost exclusively by hare's-tail cotton-grass, but with frequent common cotton-grass, and scattered crowberry, bilberry and wavy hair-grass. Cloudberry is locally abundant, and Sphagnum extremely rare. Very rarely supports small patches of Labrador tea. Likely to be actively peat-forming. Provides breeding & feeding habitat for bird species of the upland assemblage.	1. Maintain in actively peat-forming state. 2. Maintain or enhance the higher plant and bryophyte flora, particularly peat-forming Sphagnum species. 3. Reduce extent of bare / eroding ground. 4. Protect peat carbon. 5. Protect peat resource from wildfire. 6. Maintain or enhance breeding and feeding habitat for upland breeding bird assemblage and individual notified upland breeding bird species. 7. Maintain / restore high water table. 8. Increase the cover and variety of Sphagnum species. 9. Increase the cover of Erica tetralix. 10. Maintain presence of cloudberry in units where it occurs, through tailored objectives. 11. No mandatory objectives for bog rosemary, but should aim to maintain presence in all units where it is known to occur. 12. No mandatory objectives for Labrador tea, but should aim to maintain presence in all units where it is known to occur.	1. Reduce grazing intensity (for maintenance) typically to about 0.5 ewes / ha, or lower in winter. Determined on a unit-by-unit basis. 2. Develop a fire plan, to safeguard against wildfire. 3. Carry out targeted blocking and damming in headwater gullies, grips and drains. 4. Undertake re-vegetation in areas where bare peat is a prominent feature. In the short term this may involve a non-bog 'nurse' crop, but the long term aim will be to restore typical bog vegetation. 5. Consider constructing sediment traps in larger gullies. 6. Consider seeding Erica tetralix and other appropriate dwarf shrubs directly into sward. (Note that the outcome of conservation management should not lead to a demand for burning management). 7. Consider translocation of Sphagnum species into suitable areas.	CSM upland bird assemblage. CSM blanket bog – modified form. Note that achieving these interim targets indicates unfavourable recovering <u>not</u> favourable condition.	**See interim targets below**

CSM Interim Targets – providing evidence of recovery

Criteria feature	Attribute term in guidance	Measure	Site-Specific Target (relates to numbered targets on CA form)	Comments	Use for CA?
Blanket bog & valley bog (upland). **Interim Target 1** **See Audit Trail note 5**	Vegetation diversity.	Assess by field survey using structured walk.	1) At least 4 indicator species per 4m^2. Sphagnum fallax scores as one regardless of whether other Sphagnum species are absent.	This is an interim target, and should be reassessed after 6 years.	Yes.
Interim Target 2 **See Audit Trail note 7**	Vegetation diversity: cover of indicator species.	Assess by field survey using structured walk.	2) At least 50% of vegetation cover should consist of at least 3 indicator species. Sphagnum cover may consist only of S. fallax. Eriophorum vaginatum or Calluna vulgaris can exceed 75% of the vegetation cover	Assessed at 4m^2. This is an interim target, and should be reassessed after 6 years.	Yes.
Interim Target 3 **See Audit Trail note 8**	**Physical structure: indicators of active drainage and / or ground disturbance due to herbivore and human activity.**	**Assess by field survey using structured walk.**	**13) Less than 10% of the total feature area should show signs of drainage, resulting from ditches or heavy trampling or tracking.** **A sample point should pass if there is evidence of gully or grip blocking at or on route to a stop.**	**Assessed against visual estimate for as much of the feature as is visible while standing at a sample location, and also on route between sample stops. Assume a typical moor grip affects a strip of vegetation totalling 10m wide. Assume failure if any doubt about the cause of active drainage. This is an interim target, and should**	Yes.

Feature Sub-type cotton-grass moorland

- M20 *Eriophorum vaginatum* blanket mire.
- A very widespread blanket bog vegetation type in the Dark Peak. Usually on the higher plateaus with a very wet surface (wet or damp in summer) and scattered pools, and often associated with fairly intact or only partly eroded deep peat. It supports a much impoverished blanket bog community, which is dominated almost exclusively by hare's-tail cotton-grass, but with frequent common cotton-grass, and scattered crowberry, bilberry and wavy hair-grass.

Objectives

- Maintain in actively peat-forming state.
- Maintain or enhance the higher plant and bryophyte flora, particularly peat-forming *Sphagnum* species.
- Reduce extent of bare / eroding ground.
- Protect peat carbon.
- Protect peat resource from wildfire.
- Maintain or enhance breeding and feeding habitat for upland breeding bird assemblage and individual notified upland breeding bird species.
- Maintain / restore high water table.
- Increase the cover and variety of *Sphagnum* species.
- Increase the cover of *Erica tetralix*.

Management

- Reduce grazing intensity (for maintenance) typically to about 0.5 ewes / ha, or lower in winter. Develop a fire plan, to safeguard against wildfire.
- Carry out targeted blocking and damming in headwater gullies, grips and drains.
- Undertake re-vegetation in areas where bare peat is a prominent feature. In the short term this may involve a non-bog ‘nurse’ crop, but the long term aim will be to restore typical bog vegetation.
- Consider constructing sediment traps in larger gullies.
- Consider seeding *Erica tetralix* and other appropriate dwarf shrubs directly into sward. (Note that the outcome of conservation management should not lead to a demand for burning management).
- Consider translocation of *Sphagnum* species into suitable areas

How do we decide if a feature is in favourable or unfavourable state?

- For each interest feature a small number of attributes have been chosen that describe its condition, and targets are set for each attribute.
- Attributes must be quantifiable and measurable.
- Habitat attributes may include extent, floristic composition, vegetation structure, and physical characteristics.
- **It is desirable for the same suite of attributes to be used for each interest feature across the UK.**
- Assessment of condition is against pre-set targets for the feature on that site.
- Favourable condition is defined by setting broad targets for each attribute of the interest feature.
- Targets should describe the desired state of an interest feature.
- Targets should reflect geographical variation and local distinctiveness - they will often be influenced by site-specific factors.

Common Standards for Monitoring Blanket Bog

Attribute	Target
Extent of feature	No loss
Vegetation – indicator species	At least 6 indicator species (i.sp.) present
Vegetation – cover of indicators	At least 50% comprise at least 3 i.sp. No single i.sp > 75% cover
Vegetation – other species	<1% non-native, <10% scattered scrub/trees, <1% selected 'invasives'
Vegetation – effects of grazing	<33% shoots browsed
Vegetation - disturbance	No sign of burning into peat/moss/lichen
Physical structure – peat erosion	Deposition/regrowth > erosion/loss
Physical structure - drainage	<10% damaged through drainage
Physical structure - disturbance	Trampling or tracking

Site name:	Management Unit:	Date:	Surveyor:

Variants:
(a) Moderately diverse M19b (b) Species-poor blanket bog
(c) Cotton-grass moorland
(d) Molinia blanket bog: where bog restoration is attempted, monitor using all targets (see notes for Targets 1, 2 & 13). (Where bird interest is priority, monitor using Targets 8-13).
(e) Dry blanket bog (heather) (f) Dry blanket bog (bilberry/crowberry)
(g) Bare peat: Targets 2, 10, 12 & 13
(h) Mineral soil exposed by peat loss: Targets 2, 10, 12 & 13

Comments (estimate extent of variants within unit if possible):

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Table 1. Indicator Spp: *Andromeda polifolia, Arctostaphylos* spp., *Betula nana, Carex bigelowii, Calluna Vulgaris, Cornus suecica, Drosera* spp., *Erica* spp., *Empetrum nigrum, Eriophorum angustifolium, Eriophorum vaginatum, Menythanes trifoliata, Myrica gale, Narthecium ossifragum,* Non-crustose lichens, *Pleurocarpus* mosses, *Racomitrium lanuginosum, Rubus chamaerous, Rhynchospora alba, Sphagnum* spp., *Trichophorum cespitosum, Vaccinium* spp.

Attributes	Targets	Stop	1	2	3	4	5	6	7	8	9	10	Comments
	Record which variant (a to h) you think it is for each stop here:--												
Feature Extent	No measurable decline												Assess at whole feature
Vegetation Diversity:	1) Record number of indicator species from Table 1 above. (Targets differ according to variant – see comments column)												Assessed at 4m² **Variant (a):** At least 6 indicators, *Sphagnum fallax* scores zero unless with other *Sphagnum* spp. **Variants b), c) & f):** At least 4 indicator species per 4m²; **Variants d) & e):** at least 3 indicator species per 4m²; *Sphagnum fallax* scores as one regardless of whether other *Sphagnum* species are absent.

Enter species recorded in 1 above and estimate % cover: (include Acrocarpous mosses collectively exc. Polytrichum alpestre)

1	2	3	4	5	6	7	8	9	10

Cover of indicator species	2) **Variants (a) – (f):** 50% or more of vegetation cover should consist of 3 or more indicator species from Table 1 (see comments column for modification for variants).* **Variants (g) & (h):** replace the above target for '90% or more of samples show evidence of re-vegetation with any native dwarf-shrub or herbaceous species.	*										Assessed at 4m² **Variant (a):** *Sphagnum* cover should not consist only of *S. fallax*, & any one of *E. vaginatum, Ericaceous* spp., or *Trichophorum* should not individually exceed 75% of the vegetation cover. **Variants (b) – (h):** *Sphagnum* cover may consist only of *S. fallax*, and *E. vaginatum* or *C. vulgaris* may exceed 75% cover. (****record whichever is most extensive**)
		**												
Enter species recorded in (3) above:														
Cover of other species	3) Less than 1% of vegetation cover should be made up of non-native species.			%		c	o	v	e	r			Targets 3, 4, 5 - Assessed against visual estimate for as much of feature as is visible while standing at a sample location.	
	4) Less than 10% of vegetation cover should be made up of a **scattered** canopy of native trees and shrubs.			%		c	o	v	e	r				
	5) Less than 1% of vegetation cover should consist collectively of *A. capillaris, H. lanatus, P. australis, P. aquilinum, R. repens.*	Q		%		c	o	v	e	r			Assess at feature level Assess at 4m²	
		F		%		c	o	v	e	r				

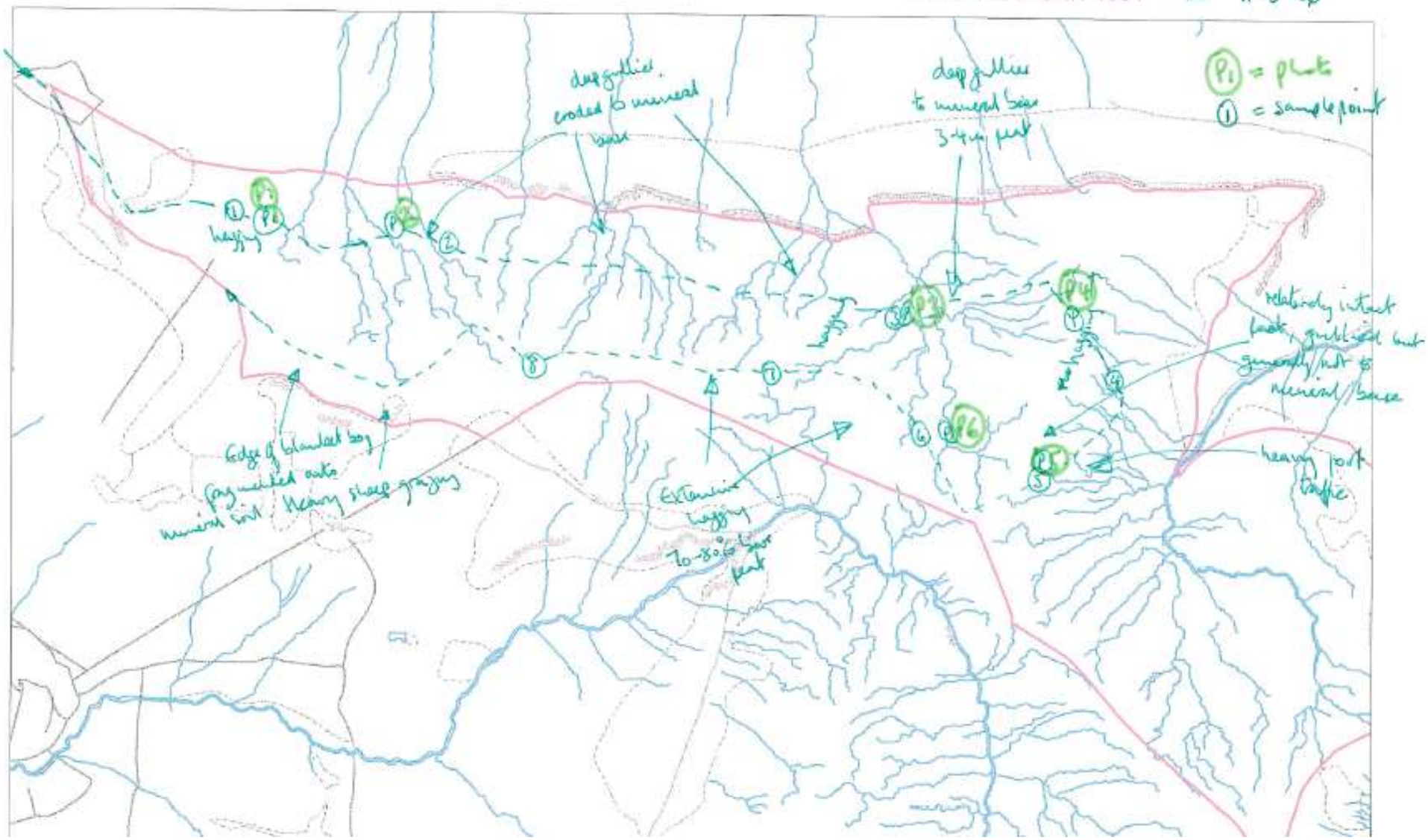
P1 = plot
1 = sample point
deep gullies eroded to mineral base
deep gullies to mineral base 3-4m peat
logging
Edge of blanket bog fragmented onto mineral soil
Heavy sheep grazing
Extensive logging 70-80cm peat
relatively intact bank, gullied but generally not to mineral base
heavy forest traffic

Table 1. Indicator Spp: *Andromeda polifolia, Arctostaphylos* spp., *Betula nana, Carex bigelowii, Calluna Vulgaris, Cornus suecica, Drosera* sp *Empetrum nigrum, Eriophorum angustifolium, Eriophorum vaginatum, Menythanes trifoliate, Myrica gale, Narthecium ossifragum,* Non-crustos *chamaerous, Rhynchospora alba, Sphagnum* spp., *Trichophorum cespitosum, Vaccinium* spp. V.m. V.v-i

Attributes	Targets	Stop	1	2	3	4	5	6	7	8	9	10
Feature Extent	No measurable decline											
Vegetation Composition: Diversity	1) At least 6 indicator Spp. for blanket bog.		X	X	X	X	X	X	X	X	X	✓
	2) At least 3 indicator Spp. for Valley bogs. See Table 1											
Enter species recorded in 1 or 2 above:												
			1 Eq 30 Vm 80 Ev 20 Moss 40	2 Eq 20 Vm 30 Ev 70 En 5	3 Eq 40 Vm 75 Ev 10 En 30 Moss 40	4 Eq 30 Vm 40 Ev 10 En 50 Moss 20	5 Eq 60 Vm 50 Ev 40 En 30		6 Eq 30 Vm 10 Ev 20 En 80		7 Eq 30 Vm Ev 1 En Moss 5	
Cover of indicator species	3) At least 50% of vegetation cover should consist of at least 3 indicator species. See Table 1		X Vm >75	✓	✓	✓	✓	X En >75	✓	✓	✓	✓
Enter species recorded in (3) above:												
Cover of other species	4) Less than 1% of vegetation cover should be made up of non-native species.		✓ 0	✓ 0	✓ 0	✓ 0	✓ 0	✓ 0	✓ 0	✓ 0	✓ 0	✓ 0
	5) Less than 10% of vegetation cover should be made up of a scattered canopy of trees and shrubs [ ]. (exclude *Betula nana* and *Myrica gale*).		✓ 0	✓ 0	✓ 0	✓ 0	✓ 0	✓ 0	✓ 0	✓ 0	✓ 0	✓ 0
	6) Less than 1% of vegetation cover should consist of, collectively, *A.capillaris* [ ], *H.lanatus* [ ], *P.australis* [ ], *P.aquilinum* [ ], *R.repens* [ ].		✓ 0	✓ 0	✓ 0	✓ 0	✓ 0	✓ 0	✓ 0	✓ 0	✓ 0	✓ 0
Vegetation Structure: Indicators of browsing	7) Less than 33% of the shoots of dwarf-shrub species collectively (excluding Betula nana and Myrica gale), should show signs of browsing [ ].		F 90%	F 75%	✓ 33%	✓ 25%	F 50%	*	F 50%	F 60%	✓ 30%	F 50%
	8) In pioneer stage regrowth, or where there is *Betula nana* or											

Attributes	Targets	Stop	1	2	3	4	5	6	7	8	9	10
Indicators of disturbance	9) There should be no observable signs of burning into the moss, liverwort or lichen layer or exposure of peat surface due to burning. **See Qualifier**.		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	10) There should be no signs of burning or other disturbance (e.g. mowing) in the sensitive areas. See **Table 2**		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Physical Structure Drainage & Drying out	11) Less than 10% of the total feature area, should show signs of drainage, resulting from ditches or heavy trampling or tracking [ ].		X gullier	✓ gullier	X gullier	X gullier	X →	X	X	X	X	X
Peat Erosion	12) The area of eroding peat or mineral soil should be less than the area of re-deposition and re-vegetation within the feature.		X	X	X	X	X	X	X	X	X	X
Indicators of ground disturbance due to herbivore and human activity.	13) Less than 10% of the *Sphagnum* cover should be crushed, broken, and/or pulled-up [ ].		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	14) Less than 10% of the ground cover should be disturbed bare ground* [ ].		✓	✓	✓	✓	X	✓	✓	✓	✓	✓
	15) There should be no patches greater than 100m^2 of either intensely disturbed bare ground* or bare peat with a hard, rubbery or ashed surface [ ].		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 2. Areas very sensitive to disturbance


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Variable	Measure	Target	Stop readings									
Extent of feature	Area in hectares	There should be no measurable decline in the area of the feature.										
Cover of bare ground	Percent cover	Less than 10%. [4m2 Quadrat]	5	15	15	20	0	0	0	0	0	
Cover of native trees and scrub species	Percent cover	Less than 10% of vegetation cover should be made up of scattered native trees and scrub. Excluding Dwarf Birch and Bog-myrtle. [Visable feature]	0	0	0	0	0	1	0	0	0	
Cover of negative indicator species (all)	Percent cover	Less than 1% of vegetation cover should consist of negative indicators. [4m2 Quadrat & visable feature]	0	0	0	0	0	0	0	0	0	
Bracken - *Pteridium aquilinum*, **Common Bent** - *Agrostis capillaris*, **Common reed** - *Phragmites australis*, **Creeping Buttercup** - *Ranunculus repens*, **Yorkshire-fog** - *Holcus*												
Cover of non-native vegetation (all)	Percent cover	Less than 1% of vegetation cover should be made up of non-native species. [Visable feature]	0	0	0	0	0	0	0	0	0	
Presence of drainage	Yes or No	area, should show signs of active drainage, resulting from ditches or heavy trampling or tracking. [Visable feature]	Y	Y	Y	Y	Y	Y	N	Y	Y	
Presence of specific species	Yes or No	Sphagnum cover should not consist only of Sphagnum fallax (S. recurvum p.p.). [4m2 Quadrat]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Presence/evidence of erosion	Yes or No	The extent of eroding peat should be less than the extent of stable re-deposited peat and new growth of bog vegetation within the feature. [Visable feature]	Y	Y	Y	Y	Y	Y	N	Y	Y	

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