CUILCAGH MOUNTAIN SAC
UK0016603

CONSERVATION OBJECTIVES

Document Details

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Version	Date	Summary of Changes	Initials
V1.0	June 2013	Internal working document	PC
V2.0	2015	Complete review	RMK
V2.0	01.04.2015	Effective date of Version 2	PC
V2.1	18.10.2017	Removed wording '*excluding recently burnt areas*' from bare peat target in all relevant Annex tables	PMC

1. INTRODUCTION

EU Member States have a clear responsibility under the Habitats and Birds Directives[1] to ensure that all habitats and species of Community Interest are maintained or restored to Favourable Conservation Status (FCS). Natura 2000 sites have a crucial role to play in achieving this overall objective since they are the most important core sites for these species and habitats. Each site must therefore be managed in a way that ensures it contributes as effectively as possible to helping the species and habitats for which it has been designated reach a favourable conservation status within the EU.

To ensure that each Natura 2000 site contributes fully to reaching this overall target of FCS, it is important to set clear conservation objectives for each individual site. These should define the desired state, within that particular site, of each of the species and habitat types for which the site was designated.

Once a site has been included in the Natura 2000 network, Member States are required to implement, on each site, the necessary conservation measures which correspond to the ecological requirements of the protected habitat types and species of Community Interest present, according to Article 6.1 of the Habitats Directive. They must also prevent any damaging activities that could significantly disturb those species and habitats (Article 6.2) and to protect the site from new potentially damaging plans and projects likely to have a significant effect on a Natura 2000 site (Article 6.3, 6.4).

Conservation measures can include both site-specific measures (i.e. management actions and/or management restrictions) and horizontal measures that apply to many Natura 2000 sites over a larger area (e.g. measures to reduce nitrate pollution or to regulate hunting or resource use).

In Northern Ireland, Natura 2000 sites are usually underpinned by the designation of an Area of Special Scientific Interest (ASSI) under the Environment (NI) Order 2002 (as amended).

[1] 92/43/EEC and 2009/147/EC (codified version of Directive 9/409/EEC as amended)

2. ROLE OF CONSERVATION OBJECTIVES

Conservation Objectives have a role in

- Conservation Planning and Management – guide management of sites, to maintain or restore the habitats and species in favourable condition

- Assessing Plans and Projects, as required under Article 6(3) of the Habitats Directive - Habitats Regulations Assessments (HRA) are required to assess proposed plans and projects in light of the site's conservation objectives.

- Monitoring and Reporting – Provide the basis for assessing the condition of a feature, the factors that affect it and the actions required.

3. DEFINITION OF FAVOURABLE CONSERVATION STATUS

Favourable Conservation Status is defined in Articles 1(e) and 1(i) of the Habitats Directive:

The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- Its natural range and areas it covers within that range are stable or increasing, and
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable as defined in Article 1(i).

For species, favourable conservation status is defined in Article 1(i) as when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and;
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and;
- there is, and will probably continue to be, a sufficiently large habitat to maintain its population on a long term basis.

3.1 DEFINITION OF FAVOURABLE CONDITION

Favourable Condition is defined as "**the target condition for an interest feature in terms of the abundance, distribution and/or quality of that feature within the site**".

The standards for favourable condition (Common Standards) have been developed by JNCC and are applied throughout the UK. Achieving Favourable Condition on individual sites will make an important contribution to achieving Favourable Conservation Status across the Natura 2000 network.

4. SITE INFORMATION

COUNTY: FERMANAGH

GRID REFERENCE: H087275

AREA: 2744.45 ha

5. SUMMARY SITE DESCRIPTION

Cuilcagh Mountain SAC occurs in the south-west of Fermanagh and north-west of Cavan and extends to an altitude of 665m. It is an important upland area with a wide variety of interests, including habitats, species and geology. The area is the second largest expanse of intact blanket bog in Northern Ireland, with a wide range of characteristic structural features and vegetation communities. The bog itself has several pool systems which, in conjunction with Lough Atona, represent one of the best examples of dystrophic lakes and ponds in NI. On the summit ridge, there is an expanse of the scarce *Racomitrium* alpine heath. The diverse mosaic of habitats includes scattered wet and dry heath, the steep north-facing siliceous scarp slope with its scree and boulderfield, and occasional *Sesleria caerulea* dominated limestone grassland and pavement on the lower slopes.

The SAC contains important geological and physiographical Earth Science features, including the only Gritstone edge and pavement in Northern Ireland. The complete Carboniferous Leitrim Group is represented, with its inherent stratigraphy including important fossiliferous sequences; this extended stratigraphy is of international significance. There are numerous examples of active weathering, pseudo-karst processes within the peat and of karst geomorphology.

The list of rare and notable species includes bryophytes (e.g. *Bazzania tricrenata*, *Dicranum scottianum*, and *Marsupella sphacelata*) and higher plants (e.g. *Salix herbacea*, *Diphasiastrum alpinum*, *Carex bigelowii* and *Asplenium viride*). Lough

Atona contains notable invertebrates (e.g. *Gyrinus natator* and *Glaenocorisa propinqua*). The site is also important for breeding birds, especially Golden Plover *Pluvialis apricaria* and Merlin *Falco columbarius*.

Further details of the site are contained in the ASSI Citation and Views About Management statement, which are available on the NIEA website (www.doeni.gov.uk/niea).

5.1 BOUNDARY RATIONALE

The SAC/ASSI boundary was drawn to encompass the intact blanket bog (and any land deemed to be essential to the hydrological integrity of this), in addition to transitions to semi-natural habitats. The most intensively cut-over land has generally been excluded. Most of the SAC/ASSI area is bounded by natural or man-made features (streams, gullies, actively cut-over bog and farm fences) with the border to the west and south.

6. SAC SELECTION FEATURES

Feature Type	Feature	Global Status	Size/ extent/ pop
Habitat	Active blanket bog	B	1339.5ha
Habitat	Natural dystrophic lakes and ponds	C	3.5ha
Habitat	Northern Atlantic wet heath with *Erica tetralix*	C	500.1ha
Habitat	European dry heaths	C	236.74ha
Habitat	Alpine and Boreal heaths	C	20.87ha
Habitat	Siliceous scree of the montane to snow levels (*Androsacetalia alpinae and Caleopsietalia ladani*)	C	25.94ha
Habitat	Siliceous rocky slopes with chasmophytic vegetation	C	9ha
Habitat	Limestone pavements	D	5ha
Habitat	Semi-natural dry grasslands and scrubland facies:on calcareous substrates (*Festuco-Brometalia*)	D	3ha

Table 1. List of SAC selection features. Those with global status A-C will be referred to in ANNEX I.

The global status is an expert judgement of the overall value of the site for the conservation of the relevant Annex I habitat. Sites have been graded A, B or C - in the UK these gradings have been interpreted as follows:

A - Sites holding outstanding examples of the habitat in a European context.

B - Sites holding excellent stands of the habitat, significantly above the threshold for SSSI/ASSI notification but of somewhat lower value than grade A sites.

C - Examples of the habitat which are of at least national interest (i.e. usually above the thresholdfor SSSI/ASSI notification on terrestrial sites) but not significantly above this. These habitats are not the primary reason for SACs being selected.

D - Habitat present but not of sufficient extent or quality to merit listing as SAC feature.

There is therefore a distinction between the principal features for which sites have been selected (those graded A or B) and those which are only of secondary interest (those graded C). This is a useful distinction but it is important to note that all three grades are qualifying SAC interest features.

Click here to go to the Natura 2000 Standard Data Form for Cuilcagh Mountain SAC.

6.1 ASSI SELECTION FEATURES

Cuilcagh Mountain ASSI

Feature Type	Feature	Size/ extent/ pop
Habitat	Blanket Bog	1339.5 ha
Habitat	Dystrophic Lakes	3.5 ha
Habitat	Wet Heath	500.1 ha
Habitat	Dry Heath	236.74 ha
Habitat	Montane Heath	20.87 ha
Habitat	Inland Rock	34.8 ha
Earth science	Carboniferous stratigraphy - Cuilcagh Mountain – 9 sub-sites defined	
Earth science	Carboniferous stratigraphy – Carrickmacsparrow	
Earth science	Carboniferous stratigraphy – Aghatirourke	
Earth science	Karst geomorphology - Dooneen Karren	
Earth science	Karst geomorphology - Legacurragh Karren	
Earth science	Karst geomorphology - Polltullyard-Tullynakeeragh	
Species	Higher Plant and Bryophyte assemblages	
Species	Breeding Golden Plover	
Species	Invertebrate assemblage	

Table 2. List of ASSI features.

7. CONSERVATION OBJECTIVES

The *Conservation Objective* for this site is:

To maintain (or restore where appropriate) the

- Active Blanket Bog
- Natural dystrophic lakes and ponds
- Northern Atlantic wet heath with *Erica tetralix*
- European dry heaths
- Alpine and Boreal heaths
- Siliceous scree of the montane to snow levels (*Androsacetalia alpinae and Caleopsietalia ladani*)
- Siliceous rocky slopes with chasmophytic vegetation

to favourable condition.

For each SAC feature, there are a number of component objectives which are outlined in the table below. These include a series of attributes, measures and targets which form the basis of *Condition Assessment*. The results of this will determine whether the feature is in favourable condition or not. The feature attributes and measures are found in the attached annex.

8. SAC SELECTION FEATURE OBJECTIVE REQUIREMENTS

Feature	Global Status	Component Objective
Active blanket bog	B	Maintain the extent of intact blanket bog and actively regenerating blanket bog vegetation.
		Maintain the hydrology of the intact blanket bog peat mass.
		Maintain and enhance the quality of the blanket bog vegetation, including its structure and the presence of notable species.
		Seek to expand the extent of actively regenerating blanket bog vegetation into degraded (non-active) areas of cut-over bog.
		Maintain the diversity and quality of other habitats of conservation interest, especially where these exhibit natural transition to the blanket bog.
		Seek nature conservation management over suitable areas immediately outside the SAC where there may be the potential for blanket bog rehabilitation.
Natural dystrophic lakes and ponds	B	Maintain the extent of naturally dystrophic lakes and ponds – i.e. pool complexes within the blanket bog and Loughs Atona and Aleim.
		Maintain the open water area of ponds and lakes.
		Maintain the water chemistry and water levels – i.e. water poor in plant nutrients and levels not to fluctuate outside normal limits.
		Maintain characteristic aquatic vegetation (mainly *Sphagnum* species)
Northern Atlantic wet heath with *Erica tetralix*	C	Maintain the extent of Northern Atlantic wet heath vegetation.
		Maintain and enhance the quality of the existing wet heathland.
		Seek to expand the extent of the wet heath communities into degraded areas of species poor, wet acid grassland.
		Maintain the diversity and quality of other habitats of conservation interest, especially where these exhibit natural transition to the Northern Atlantic wet heath.
		Seek nature conservation management over suitable areas immediately outside the SAC where there may be the potential for wet heath rehabilitation.

European dry heaths	C	Maintain the extent of European dry heath vegetation.
		Maintain and enhance the quality of the European dry heath community types.
		Seek to expand the extent of the dry heath communities into degraded areas of species poor, dry acid grassland.
		Maintain the diversity and quality of other habitats of conservation interest, especially where these exhibit natural transition to the dry heath.
		Seek nature conservation management over suitable areas immediately outside the SAC where there may be the potential for dry heath rehabilitation.
Alpine and Boreal heaths	C	Maintain the extent of alpine and boreal heath vegetation.
		Maintain and enhance the quality of the existing alpine and boreal heaths.
		Seek to expand the extent of the alpine and boreal heath communities into degraded areas of species poor acid grassland.
		Maintain the diversity and quality of other habitats of conservation interest, especially where these exhibit natural transition to the alpine and boreal heaths.
Siliceous scree of the montane to snow levels (*Androsacetalia alpinae and Caleopsietalia ladani*)	C	Maintain the extent of siliceous scree (partially vegetated siliceous scree).
		Maintain and enhance the quality of the siliceous scree community types.
		Maintain the diversity and quality of other habitats of conservation interest, especially where these exhibit natural transition to the siliceous scree.
Siliceous rocky slopes with chasmophytic vegetation	C	Maintain the extent of the siliceous rocky slopes with chasmophytic vegetation.
		Maintain the diversity and quality of other habitats of conservation interest, especially where these exhibit natural transition to the siliceous rocky slopes.

9. ASSI FEATURE OBJECTIVE REQUIREMENTS

Feature	Component Objective
Blanket Bog	See SAC Selection Feature Objective Requirements table.
Dystrophic Lakes	See SAC Selection Feature Objective Requirements table.
Wet Heath	See SAC Selection Feature Objective Requirements table.
Dry Heath	See SAC Selection Feature Objective Requirements table.
Montane Heath	See SAC Selection Feature Objective Requirements table.
Inland Rock	See SAC Selection Feature Objective Requirements table.
Carboniferous stratigraphy	Maintain extent and quality of exposure, together with access to the feature subject to natural processes – Cuilcagh (9 sub-sites), Carrickmacsparrow, Aghatirourke
Karst geomorphology	Maintain extent and quality of features, together with the active processes influencing their development - Dooneen Karren, Legacurragh Karren, Polltullyard-Tullynakeeragh
Higher plant and Bryophyte assemblages	Maintain and where possible enhance the populations of notable plants and bryophytes.
Breeding Golden Plover	Maintain and where possible enhance the populations of breeding Golden Plovers
Invertebrate Assemblage	To be Finalised.

10. MANAGEMENT CONSIDERATIONS

Ownership

The whole SAC is within DARD's West Fermanagh and Erne Lakelands ESA. Forest Service owns several hundred hectares at Aghatirourke Forest Nature Reserve (695ha), which stretches from the Florencecourt National Trust property to the summit of Cuilcagh Mountain, and includes a stretch of the Ulster Way. Fermanagh District Council leases land in the north of the SAC, which forms part of the Cuilcagh Mountain Park. Grazing here is generally let to the owners. Over the area as a whole, there are more than 20 private owners/occupiers in addition to a number of turbary rights holders. Some parts of the site are grazed as common land.

Because of the range of habitat types within the Cuilcagh Mountain SAC there is some potential for a conflict of interest between objectives. It may not be possible to maintain <u>all</u> habitats in favourable condition (e.g. potential conflict between blanket bog and Golden Plover). Priority should be given to SAC features.

11. MAIN THREATS, PRESSURES AND ACTIVITIES WITH IMPACTS ON THE SITE

Both on-site and off-site activities can potentially affect SAC/ASSI features. The list below is not exhaustive, but deals with the most <u>likely</u> factors that are either affecting Cuilcagh Mountain, or could affect it in the future.

Although Active Blanket Bog, Natural dystrophic lakes and ponds, Northern Atlantic wet heath with *Erica tetralix,* European dry heaths, Alpine and Boreal heaths, Siliceous scree of the montane to snow levels (*Androsacetalia alpinae and Caleopsietalia ladani*) and Siliceous rocky slopes with chasmophytic vegetation are the qualifying SAC features, factors affecting ASSI features are also considered.

NOTE - Carrying out <u>any</u> of the Notifiable Operations listed in the ASSI schedule could affect the site.

Peat Cutting

The blanket bog on Cuilcagh has been extensively hand cut for turf. Many of the old hand cuttings now support actively regenerating bog vegetation. More recently, mechanised peat cutting has encroached onto the intact surface in some areas. Peat cutting by any method is a particularly damaging activity, and extrusion cutting can have profound effects upon peat ecology and hydrology. Extensive peat extraction and associated drainage results in increased runoff of water and sediments along the channels and the local water catchments, which in

turn can lead to blockages, changes in flow patterns and damage to underground drainage systems.

The most severely drained and cutover blanket peats around the periphery of Cuilcagh Mountain have been excluded from the SAC. Although mechanised peat extraction has now been stopped, occasional small incidents of illegal encroachment by mechanical peat extraction have taken place. The aim should be for no peat cutting within the SAC.
ACTION: No peat cutting within the SAC.

Burning
There is evidence of regular burning over much of the site. Whether this is an agricultural management practice or an incidental effect of turf cutting is unknown. Excessive burning of bog and heath tends to reduce the cover of *Sphagnum* mosses and ericaceous species, and increase the proportion of graminoids especially *Molinia caerulea* and *Trichophorum cespitosum*. In addition, structural diversity is reduced.

Blanket bog and wet heath should generally not be burnt under any circumstances. In some circumstances it is appropriate to burn dry heath. This should not be carried out more than once every 12-20 years, not at all in areas where the gradient is > 25^{o}, as this may result in erosion, and should only be carried out under controlled conditions. On Cuilcagh any proposal to burn dry heath should be carefully scrutinised to avoid its potential spread onto blanket bog.
ACTION : No burning within the SAC

Drainage
Drains are associated with many of the peat cuttings around the periphery of the SAC and many continue to carry water off the peat mass at an accelerated rate. These drains are clear both on the ground and on aerial photographs.

Hydrological surveys have been carried out on Cuilcagh Mountain to establish water movement over, under and through the peat. The main aim of this work has been to predict water flow through the Marble Arch Show Caves, where the increased risk of flash flooding must be controlled for the health and safety of visitors to the cave system.

In addition to drainage associated with peat cutting, recent " moor gripping" has taken place in one of the land-holdings. All major drains should be identified and blocked where it is feasible and safe to do so.

Note that drainage works outside of the site's boundaries could potentially impact upon the bog's hydrology.
ACTION: Block active drains where appropriate.

Grazing

Over-grazing can result in changes in the range and proportions of plant species, particularly a decline in dwarf shrubs. Severe overgrazing leads to trampling and poaching. The resultant bare areas of peat are then exposed to erosion. The timing of grazing and the type of stock and are also important factors. Winter grazing is most likely to result in erosion effects, whilst autumn grazing can cause great damage to *Calluna vulgaris*.

Sheep are generally more selective grazers than cattle, and can cause more significant changes in vegetation composition and structure. However, because they are lighter, they tend to cause less physical damage, particularly on wet, peaty soils. Some areas of blanket bog to the east of the SAC are grazed by cattle, with localised poaching. The bulk of the area is grazed by sheep, however, and the pattern and intensity of grazing within different management units appears to be quite variable. Although some of the blanket bog and heath communities retain a high cover of dwarf-shrub species and appear to be stocked at a reasonable level, other areas have suffered severe damage from poaching and over-grazing by sheep.

Under-grazing, or the cessation of grazing, can result in vegetation change on heathland, leading to a prevalence of over-mature and degenerate *Calluna vulgaris* and the encroachment of scrub. This is not currently an issue on Cuilcagh.

ACTION: Where they are present, fences around the periphery of the SAC should be maintained to prevent sheep outside the area straying into the SAC. Current grazing levels should be identified for each management unit. Liaise with local landowners and DARD to set appropriate grazing levels for habitat types within the SAC.

Supplementary feeding

This can cause localised overgrazing and poaching damage. It should never take place on blanket bog and ideally should be avoided throughout the SAC. If this not a practical option, stock-feeding should be confined to less sensitive areas, e.g. hard-standings and tracks.

ACTION: Ensure any supplementary feeding is restricted to field units outside the boundary of the site, if at all possible. If supplementary feeding does take place within the site it should be carefully controlled and monitored.

Vehicle use and Recreational activities

Regular use of any part of the area could lead to local vegetation loss and structural damage to the fragile peat soils, which may result in significant erosion, particularly on slopes. The use of four-wheel drive vehicles along regular routes is clearly apparent, both on the ground and on aerial photographs. Some control of this activity is needed.

The Ulster Way crosses the site, and part of the SAC has recently been designated as 'Cuilcagh Mountain Park'. The resultant increase in public access also has the potential to cause damage. Wetter peats and *Sphagnum* hummocks are vulnerable to treading by both livestock and hikers, while the summit heaths dominated by *Racomitrium* are particularly fragile. Other recreational activities such as climbing and caving could affect cliffs, screes, rocky slopes and underground features. Recreational use should be monitored to ensure that features are not affected.

ACTION: Liaise with local landowners to ensure minimal use of ATVs for checking and gathering livestock and no recreational use within the SAC. Maintain fences to prevent unauthorised vehicular access. Liaise with local Council to ensure that footpaths are clearly sign-posted and avoid sensitive areas, especially within the designated Park area.

Fly-tipping.

Fly-tipping is unsightly and although it is generally a localised problem that is unlikely to have a major impact on the area as a whole, it should be discouraged. Dumping of waste and dead animals into cave systems is a more serious issue. There have been some very localised incidences of fly-tipping around the periphery of the site and associated with past peat cutting. There is also a potential litter problem from public access.

ACTION: Remove all evidence of past fly-tipping. If localised fly-tipping does occur, it should be removed as soon as possible to help prevent any further incidences of dumping.

Application of fertiliser/slurry/manure/sewage sludge

The SAC contains a variety of habitats, most of which are nutrient-poor and vulnerable to nutrient enrichment. The application of <u>any</u> fertiliser, manure or slurry to these habitats would be very damaging, but is unlikely, given the remote nature of the area.

Action: Although unlikely, ensure there are no nutrient applications of any kind, especially near water-bodies. Liaise with local landowners to prevent the discharge of any slurries onto the site.

Afforestation

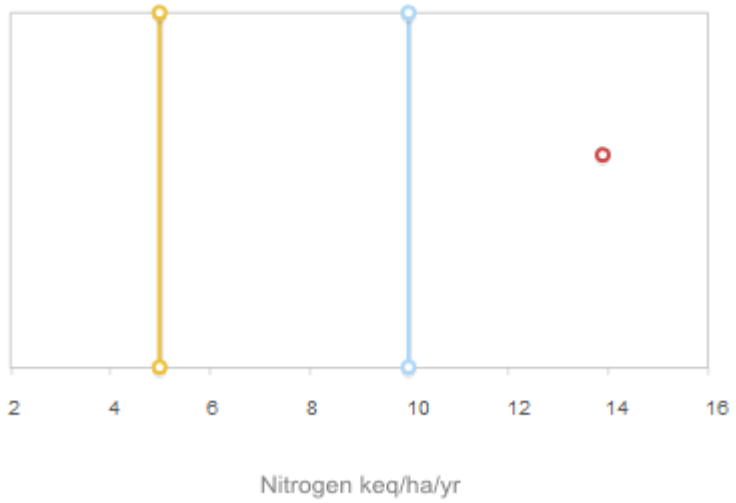
Trees cause hydrological and physiological changes to soils and the resultant shading can severely affect the vegetation. Tree planting should be avoided.

Action: Afforestation is highly unlikely as FS guidelines would preclude direct planting or grant-aid for planting within the SAC.

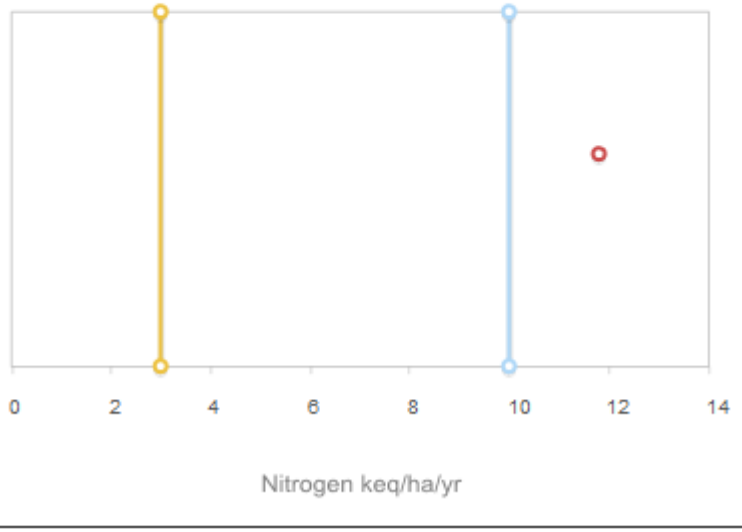
Nitrogen Deposition

Excess nitrogen deposition can favour the growth of competitive plants and lead to changes in ecosystem structure or function and to a reduction in biodiversity. National scale studies show the potential adverse effects of excess nitrogen on natural and semi-natural habitats to be widespread across the UK. Lower and upper critical loads have been calculated for Cuilcagh Mountain SAC habitats.

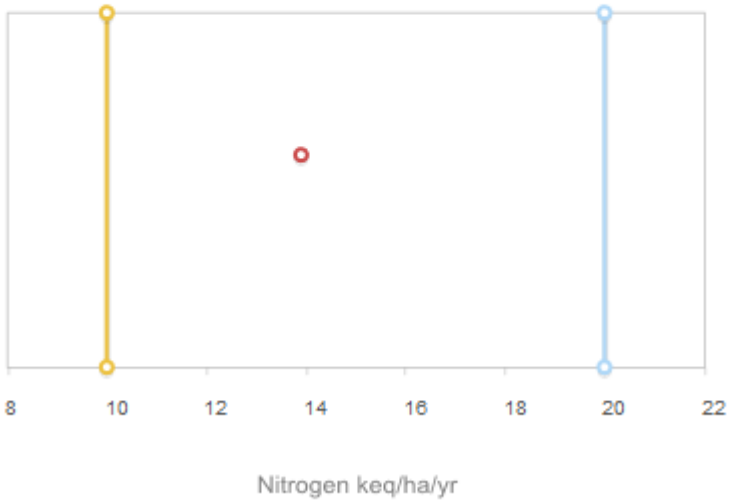
Feature: Blanket bogs (* if active bog)
Critical Load Class: Raised and blanket bogs
Critical Loads (kg N/ha/yr): 5-10
Nitrogen Deposition (kg N/ha/yr):
Maximum: 13.9 Minimum: 8.7 Average: 10.9



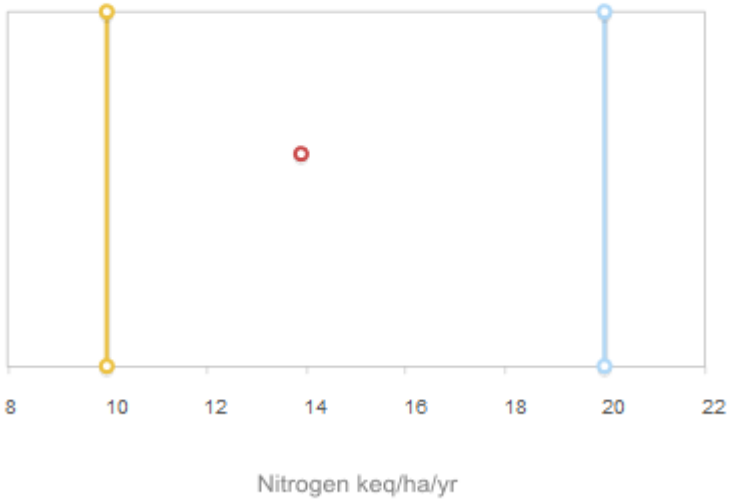
Feature: Natural dystrophic lakes and ponds
Critical Load Class: Permanent dystrophic lakes, ponds and pools
Critical Loads (kg N/ha/yr): 3-10
Nitrogen Deposition (kg N/ha/yr):
Maximum: 11.8 Minimum: 6.7 Average: 10.7



Feature: Northern Atlantic wet heaths with Erica tetralix
Critical Load Class: Northern wet heath: Erica tetralix dominated wet heath
Critical Loads (kg N/ha/yr): 10-20
Nitrogen Deposition (kg N/ha/yr):
Maximum: 13.9 Minimum: 8.7 Average: 10.9



Feature: European dry heaths
Critical Load Class: Dry heaths
Critical Loads (kg N/ha/yr): 10-20
Nitrogen Deposition (kg N/ha/yr):
Maximum: 13.9 Minimum: 8.7 Average: 10.9



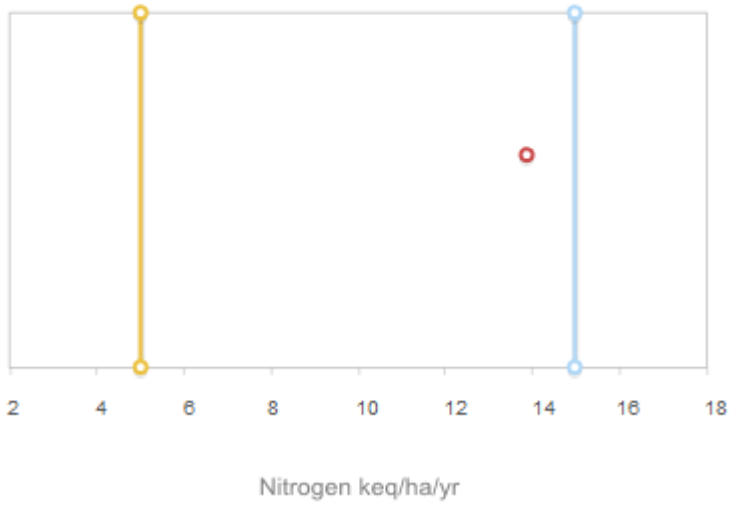
Feature: Alpine and Boreal heaths

Critical Load Class: Arctic, alpine and subalpine scrub habitats

Critical Loads (kg N/ha/yr): 5-15

Nitrogen Deposition (kg N/ha/yr):

Maximum: 13.9 Minimum: 8.7 Average: 10.9



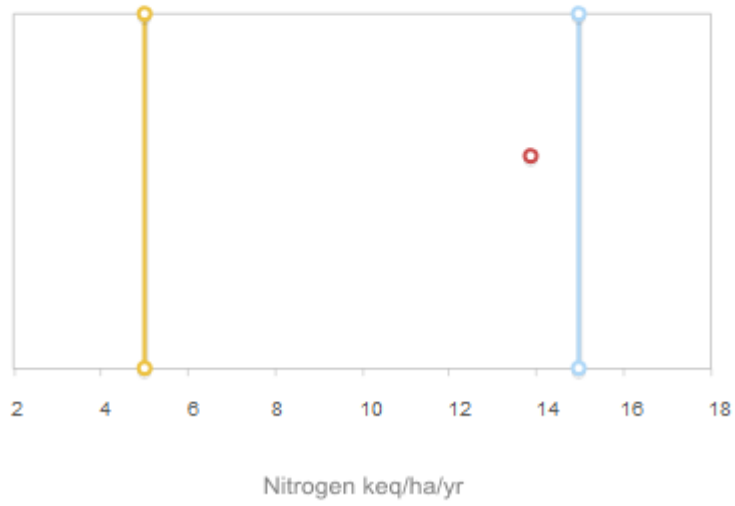
Feature: Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)

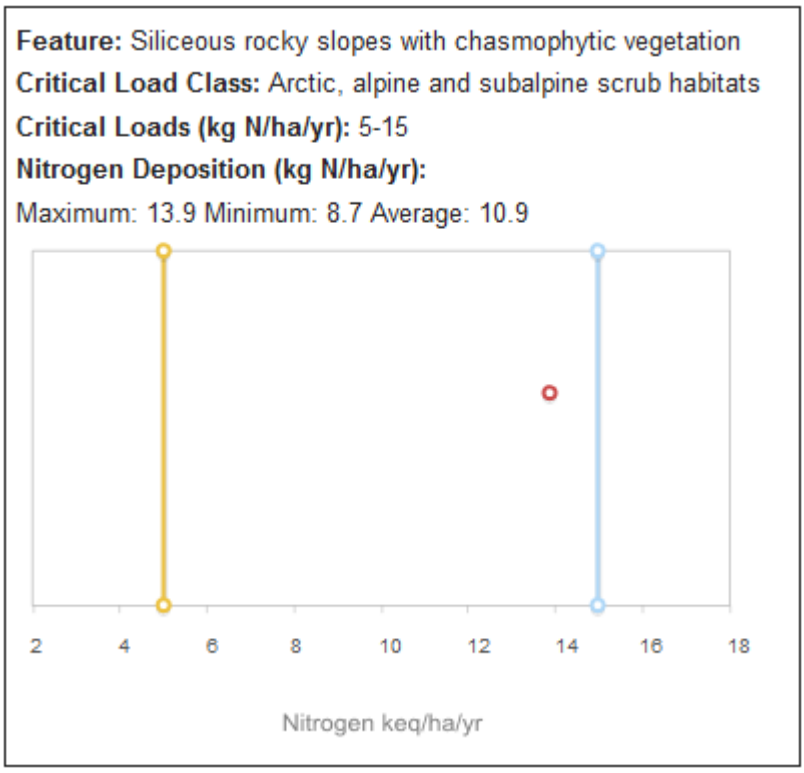
Critical Load Class: Arctic, alpine and subalpine scrub habitats

Critical Loads (kg N/ha/yr): 5-15

Nitrogen Deposition (kg N/ha/yr):

Maximum: 13.9 Minimum: 8.7 Average: 10.9





(Source: Air Pollution Information System (APIS) website- www.apis.ac.uk)

ACTION: Seek to maintain or where necessary, restore concentrations and deposition of air pollutants to at or below the site-relevant critical load.

Changes to surrounding land use

Any changes in local land-use e.g. drainage, road improvements, afforestation, agricultural intensification and development, may be detrimental to the SAC.

Action: Reduce the risk of surrounding agricultural intensification by encouraging the adjacent owner/occupiers to enter into agri-environment schemes. Use Habitats Regulations Assessments (HRAs), through the planning process, to minimise any development risks adjacent to the SAC.

Climate Change

Northern Ireland faces changes to its climate over the next century. Indications are that we will face hotter, drier summers, warmer winters and more frequent extreme weather events.

ACTION: When developing SAC management plans, the likely future impacts of climate change should be considered and appropriate changes made.

12. MONITORING

Monitoring of SACs takes place on using two monitoring techniques.

Site Integrity Monitoring (SIM) is carried out to ensure compliance with the ASSI/ SAC Schedule. The most likely processes of change will either be picked up by SIM (e.g. dumping, burning, turf cutting, grazing etc.) or will be comparatively slow (e.g. gradual degradation of the bog and associated habitats through desiccation).

These longer-term changes will be picked up by monitoring of the feature via **Site Condition Assessment** - this is carried out on a rolling basis to pick up subtle changes in the condition of the feature.

The method for Site Condition Assessment was agreed by the relevant JNCC-led Lead Co-ordination Network although the methodology has been modified to reflect individual site attributes in Northern Ireland.

12.1 MONITORING SUMMARY

1. *Monitor the integrity of the site (SIM or Compliance Monitoring)*
Complete boundary survey to ensure that the fencing, where present is still intact. Ensure that there has been no peat cutting, moor-gripping, dumping or inappropriate burning carried out within the SAC boundary. Evaluating stocking densities would also be desirable. This SIM should be carried out once a year.

2. Monitor the condition of the site (Condition Assessment)
Monitor the key attributes for all the SAC features. This will detect if the features are in favourable condition or not. See Annex I.

The favourable condition table provided in Annex 1 is intended to supplement the conservation objectives only in relation to management of established and ongoing activities and future reporting requirements on monitoring condition of the site and its features. It does not by itself provide a comprehensive basis on which to assess plans and projects, but it does provide a basis to inform the scope and nature of any Habitats Regulations Assessment (HRA) that may be needed. It should be noted that completion of a HRA is a separate activity to condition monitoring, requiring consideration of issues specific to individual plans or projects.

13. REFERENCES

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ANNEX 1

Feature 1 (SAC) - Active blanket bog (Status B)

(* = primary attribute. One failure among primary attributes = unfavourable condition)

Attributes	Targets	Method of Assessment	Comments
* Area of blanket bog and upland raised mire (ha)	Maintain the extent of the intact bog surface at 1339.5ha.	Visual estimate in 2x2 m plots and across the blanket bog using a combination of aerial photographs, SIM and Condition Assessment structured walk.	The blanket bog communities include M17 – *Scirpus cespitosus Eriophorum vaginatum* blanket mire, M18 – *Sphagnum papillosum* raised and blanket mire and M19 *Calluna vulgaris - Eriophorum vaginatum* blanket mire.
* Area of mosaic communities and associated habitats	Maintain associated mosaic communities and habitats (wet heath, dry heath, upland fen, etc)	Visual estimate across the SAC using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Repeat monitoring using condition assessment, SIM, and aerial photographs should indicate whether mosaics and associated habitats have changed or been lost.
* Pool/hummock system extent and complexity	The extent and complexity of pool and hummock systems at least maintained. Differentiation of *Sphagnum* species should be recorded with *S. cuspidatum* or *S. auriculatum* in the pools and *S.*	The extent of pool and hummock systems should be monitored using a combination of aerial photographs and SIM.	The extent of pool and hummock systems should be monitored using a combination of aerial photographs and Condition Assessment.

	papillosum and S. *capillifolium* forming the lawns and hummocks.		
Dwarf-shrub Height (cm)	Average ericoid height should be 15-30cm.	Visual estimate in 2x2 m plots.	On some areas of blanket bog, the dwarf-shrub height will largely reflect recent management patterns. However, on largely undisturbed sites with minimal or no grazing, dwarf shrubs should display no apparent growth forms with a fairly uniform height between 15-30cm.
* Bare Peat, or ground covered by algal mats (%)	Bare peat etc should occupy less than 2% of the intact blanket bog surface overall.	Visual estimate in 2x2 m plots.	Bare peat, or bare ground carpeted by *Polytrichum* spp., *Campylopus* spp. crust forming lichens or algal mats can occur as a consequence of peat cutting or excessive burning and/or grazing. Bare ground here represents bare peat etc. within the blanket bog vegetation rather than naturally eroded surfaces where bare ground forms a natural part of the erosion feature.
* *Sphagnum* cover/ abundance (% cover and frequency) Active Peat Formation (DAFOR)	*Sphagnum* moss species should have a minimum cover of 25% over at least 66% of the intact blanket bog surface. Thick, hummock forming species of sphagnum should be at least occasional. Species present should include a mixture of both thin species: - *S. capillifolium* and *S. tenellum* and the thick hummock forming species*:* - *S.*	Visual estimate in 2x2 m plots.	A constant *Sphagnum* moss cover is indicative of active peat formation and is dependent on the maintenance of a high water table. *Sphagnum* moss is therefore used to measure the hydrological integrity of the blanket bog surface.

	papillosum and *S. magellanicum* at least occasional over the surface.		
* Ericaceous Cover (%)	Ericoid cover frequent over the surface of the intact blanket bog. Dwarf-shrub cover greater than 33%. Less than 33% is only acceptable in wetter areas where *Narthecium ossifragum* or *Sphagnum* spp. are abundant and forming lawns.	Visual estimate in 2x2 m plots.	Ericoid (dwarf-shrub species) include *Calluna vulgaris*, *Erica tetralix*, *E. cinerea*, *Myrica gale*, *Vaccinium myrtillis and Empetrum nigrum*.
* Ericoid diversity (DAFOR)	At least two species of dwarf-shrub should be widespread and frequent. Where three or more species are present, but only one frequent and widespread, the abundance of the less abundant species may be combined and treated as if they are a single species.	Visual estimate in 2x2 m plots.	A mono-dominant sward of *Calluna vulgaris* may suggest that the surface of the intact bog is drying out – i.e. the water table is too low beneath the surface of the bog.
* Scrub/tree encroachment on any active peat surface (DAFOR)	Scrub/tree encroachment should be no more than rare on the intact bog surface, or in the actively regenerating cutover areas.	Visual estimate in 2x2 m plots.	Scrub encroachment should be checked using a combination of aerial photographs and Condition Assessment. Invasive exotic species such as *Rhododendron ponticum* should be removed immediately.
* Erosion Features associated with human impacts (% and DAFOR)	No gully erosion or bare peat associated with more concentrated human impacts (eg drainage, peat extraction,	Visual estimate in 2x2 m plots.	The extent of man induced erosion should be monitored using a combination of aerial photographs and Condition Assessment. Erosion is a natural feature of blanket bog, particularly marginal fretting

	ATV tracks or recreational activities). Man induced/enhanced erosion should occupy less than 2% of the total area of blanket bog other than very localised instances.		on breaks of slope. However, where natural erosion is exacerbated by human activity, the bog will not be in favourable condition, except where such erosion is very limited in nature.
* Graminoid Cover (%)	Total cover of graminoids should not exceed 50%, unless dominated by *Molinia caerulea* forming even swards over waterlogged areas with *Sphagnum* moss cover greater than 25%.	Visual estimate in 2x2 m plots.	Include true grasses, sedges, and rushes in this assessment. *Eriophorum vaginatum*, *Trichophorum cespitosum*, *Deschampsia flexuosa*, *Juncus squarrosus* or other graminoids (except *Molinia* in some instances) should not dominate over other species.
* Management – Peat extraction	No evidence of unconsented active peat extraction.	Visual estimate in 2x2 m plots.	In some instances areas of cut peat can re-vegetate with good blanket bog vegetation which meets the attributes for favourable condition.
* Management - Grazing (%)	Signs of moderate or heavy grazing by cattle or sheep should occupy less than 5% of the blanket bog vegetation within any grazing unit.	Visual estimate in 2x2 m plots.	The frequency of droppings, the extent of poaching and the presence of grazing induced *Calluna vulgaris* growth forms indicate moderate and heavy grazing where any one of the above is recorded as more than occasional.
Molinia caerulea Cover (%)	Where *Molinia caerulea* cover is greater than 50%, it should form an even (not tussocky) sward in waterlogged conditions with *Sphagnum* moss cover greater than 25%.	Visual estimate in 2x2 m plots.	*Molinia caerulea* only occurs as a natural component of the bog vegetation in the extreme west of Northern Ireland where the climate is generally warmer and wetter i.e. more oceanic.
Presence of rare or scarce species specific to the site.	*Sphagnum imbricatum* and *Sphagnum fuscum*, where they have been recorded, should	Visual estimate in 2x2 m plots.	If these species are not recorded on any one visit, it does not automatically make the SAC unfavourable.

	remain at least present along the length of each of the w-walks.		

Frequency -
1-20% = Rare
21-40% = Occasional
41- 60% = Frequent
> 60% = Constant

ANNEX I

Feature 2 (SAC) – Natural Dystrophic Lakes and Pools (Status C)

(* = primary attribute. One failure among primary attribute = unfavourable condition)

Attributes	Measure	Target	Comment
Extent	Assessment against baseline map. Aerial photographs may be used.	No loss of extent of standing water	This attribute is to assess changes caused by active management, such as infilling or channel diversion. Changes due to drying out or successional change are covered under other attributes.
***Composition of macrophyte community**	Characteristic species composition	i). No loss of characteristic species present at the site (see Box 5)	In the UK dystrophic lakes are widespread in the north west and scarce in the south. These systems most often occur on blanket bog and may include isolated seasonal pools, random collections of irregularly shaped waters and ordered linear or concentric arrays of pools and small lochs. Dystrophic pools may also be found on raised bogs situated mainly on plains and valley bottoms. The water usually has a high humic acid content and is usually stained brown through exposure to peat. Some dystrophic lakes are completely devoid of all macrophytes, while others may be completely dominated by bryophytes. This does not necessarily indicate unfavourable condition. With increasing diversity the characteristic species are usually *Drepanocladus fluitans* and/or *Juncus bulbosus* as submerged macrophytes, with *Sphagnum* communities present around the edge or in the littoral zone. *Menyanthes trifoliata, Potamogeton polygonifolius* and *Nymphaea alba* may also be present and at richer sites, *Utricularia minor* and *Nuphar lutea.*

Attributes	Measure	Target	Comment
			There may be valid reasons why a characteristic species is not present at a site (such as biogeographic range or isolation from source populations) which need to be considered when applying targets to an individual site. As this interest feature covers a floristic range it is essential to establish which community type represents the feature for the site in question. If algal growth is excessive, check for inputs of point or diffuse sources of pollution. If mire communities surround the site, the mire vegetation will turn green in the presence of fertilisers. Increased growth of *Sphagnum* may indicate the occurrence of artificial acidification. Turbid water conditions can also give blue-green algae a competitive advantage in the phytoplankton, where artificial nutrient enrichment is taking place. *Juncus bulbosus* var. *fluitans* can naturally grow as the dominant plant i.e. > 40% cover in depths up to 1.75 m, and is not necessarily an indicator of a site in unfavourable condition.
	Negative indicator species	Non-native species should be absent or present at low frequency	Introduced species should be identified. A number of non-natives have such invasive potential that they should be assessed separately. Species of particular concern are: *Crassula helmsii*, *Hydrocotyle ranunculoides*, *Myriophyllum aquaticum* and *Azolla filiculoides*. If any of these species are present, a water body should be considered as being in unfavourable condition. **This list is not exhaustive and should be updated as new threats become**

Attributes	Measure	Target	Comment
			apparent. Colonisation since the previous field visit by *Elodea nuttallii* or *Elodea canadensis* at >5% frequency is indicative of unfavourable condition, as is dominance of naturalised non-native species, such as *E. canadensis*. Occurrence of such species, at >40% frequency in unproductive waters, is indicative of unfavourable condition. Excessive growths of filamentous algae on lake substrate or macrophytes are indicative of nutrient enrichment. Increased filamentous green algae may also indicate the occurrence of artificial acidification.
***Macrophyte community structure**	Distribution Extent Structure	Characteristic zones of vegetation should be present. Maximum depth distribution should be maintained. Maintain at least the present structure.	Zonation , depth distribution and structure will be site specific. Colonisation at depth may be limited by poor light penetration or unsuitable sediment type. Where present, well defined hydroseres should be maintained.
***Water quality**	Water Chemistry	Maintain dystrophic conditions The pH/ANC, and nutrient levels (P and N)	As a guide Stable nutrient levels: TP target/limit: Dystrophic = 10 $\mu g\ L^{-1}$ Stable pH values: pH < 5.0 Adequate dissolved O_2 (>5 $\mu g\ L^{-1}$)

Attributes	Measure	Target	Comment
		should be stable and appropriate to the lake type Adequate dissolved oxygen levels for health of characteristic fauna. No excessive growth of cyanobacteria or green algae.	Water should be acid and poor in available nutrients. It should be stained by dissolved humic material, and will usually be visibly brown. As there is a wide clinal range of community types embraced by this feature, the acceptable range of chemical conditions (especially total P, other P fractions, pH/ANC, and where appropriate NO_3-N,) should be set for individual SAC lakes, from recent or historical water chemistry data. Acceptable ranges of values for each variable should be established. See main text. Mean annual TP concentrations (based on at least quarterly measurements), or spring TP levels, should meet the targets appropriate for the lake type documented in the guidance, unless site-specific targets are available. If palaeolimnological techniques or hindcast modelling have been employed to reconstruct natural background TP concentrations for a particular lake these can be used to set targets, although it may be necessary to accept a small deviation from these background conditions. Alternatively, historical water chemistry data may exist for individual lakes. Where existing, site-specific TP concentrations are consistently lower than the standard appropriate for the habitat type, a lower target should be applied to prevent deterioration from current status.

Attributes	Measure	Target	Comment
			Phosphorus and nitrogen values can be very variable, P is often in excess and plant development is limited by unavailability of N in the peat. Check for changes in catchment land-use in catchment causing diffuse pollution and/or siltation and check point sources of pollution. Aerially applied agro-chemicals have a high potential to change plant communities, and move them out of favourable condition. Other methodologies involving trophic scoring can contribute to the assessment of favourable condition. As a guide, pH < 5.00. Note that where water column pH is 4.5 or less, alkalinity will be 0. Levels of dissolved oxygen should support the invertebrate and vertebrate taxa associated with this lake type. There should be no evidence of excessive blue-green or green algal blooms.
Hydrology	Hydrological regime	No deterioration in hydrological regime compared to the baseline.	Natural flushing rate and seasonal pattern of fluctuation need to be considered. Maintain flushing rate of system.

Attributes	Measure	Target	Comment
			Modifications of inflows and outlets (where present), the creation of outlets, or changes in hydrology from flood control regimes, abstraction, peat harvesting and gravel removal, can lead to unnatural changes in lake levels.
Lake substrate character	Shore line and substrate	Maintain the natural shoreline of the lake. Maintain natural and characteristic substrate for lake type.	Sediment quality and quantity when enriched can cause excessive growths of *Juncus bulbosus* var. *fluitans* or growths of algae.
Sediment	Sediment Load	Maintain natural sediment load	Increases in siltation could result from increased lake productivity, changes in catchment land-use (particularly over-grazing, peat harvesting), lake level fluctuations, climatic fluctuations or changes in sewage treatment.
Indicators of local distinctiveness	Maintain distinctive elements (e.g. rare plant or invertebrate species, habitat features) at current extent/levels and/or in current locations.		This attribute is intended to cover any site-specific aspects of this habitat feature (forming part of the reason for notification) which are not covered adequately by the previous attributes, or by separate guidance (e.g. for notified species features). For species of local distinctiveness, which are documented on citations, or for which records are held for individual lakes, references such as LACON (Palmer, in prep.) should be consulted for current lists of species rare in the constituent countries of GB, and in EA and SEPA areas. For "notable" species (e.g. nationally scarce plants), it is not intended that a target is set for detailed species monitoring. It is intended that a rapid indication of presence/absence and /or approximate extent should be provided. Allowing for natural

Attributes	Measure	Target	Comment
			fluctuations in population size. The same approach applies to "notable" habitats.

Aspects of environmental disturbance to be noted as an accompaniment to assessing condition: Natural dystrophic lakes and ponds

Objective	Specified assessment method (if appropriate)	Comment
No introduction of non-native plants Minimal negative impact from artificial structures No peat cutting within the vicinity of the water body Direct application of lime to the water column as an acidification amelioration strategy should not be carried out		Artificial structures could include dams. Catchment area changes affecting the lake, such as land drainage and infrastructure schemes, should be considered. Efforts should be directed towards reducing atmospheric emissions and implementing catchment management strategies, especially in relation to coniferous forestry

Box 5. Characteristic species of natural dystrophic lakes and ponds

Characteristic species	Associates
Utricularia spp.	*Sparganium angustifolium*
Sphagnum spp.	*Eleogiton fluitans*
Juncus bulbosus	*Drepanocladus spp.*
Nymphaea alba	
Menyanthes trifoliata	
Potamogeton polygonifolius	

ANNEX I

Feature 3 (SAC) – Northern Atlantic wet heath with *Erica tetralix* (Status C)

(* = primary attribute. One failure among primary attribute = unfavourable condition)

Attributes	Targets	Method of Assessment	Comments
* Area of wet heath	Maintain the extent of wet heath at 500.1ha.	Visual estimate in 2x2 m plots and across the wet heath using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Any loss of wet heath, or fragmentation of this habitat is unacceptable. Note that it may be possible to extend wet heath communities, provided this is into degraded areas and does not encroach into other habitats of scientific interest.
* Heath community diversity	Maintain the presence of the wet heath community M15 as established at base line survey.	Visual estimate in 2x2 m plots.	Repeat monitoring of plots using GPS should indicate whether wet heath communities have changed or been lost.
* Area of mosaic communities and associated semi-natural habitats	Maintain associated mosaic communities and semi-natural habitats.	Visual estimate in 2x2 m plots and across the ASSI using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Repeat monitoring of plots using GPS should indicate whether mosaics and associated habitats have changed or been lost.

Dwarf-shrub height	Average ericoid height should be 15–35cm with at least 25% of the wet heath in the late mature/degenerate growth phase (greater than 35cm).	Visual estimate in 2x2 m plots.	On some areas of wet heath (especially on gentle slopes), the ericoid age structure will largely reflect recent burning patterns. However, in wet heath, burning should only be carried out in exceptional circumstances. Heather height reflects the age structure of the Heather.
* Bare peat, or ground covered by algal mats (% cover)	Bare peat etc. should occupy less than 2% of the wet heath surface overall.	Visual estimate in 2x2 m plots.	Bare peat or peat carpeted by *Polytrichum* spp., *Campylopus* spp. crust forming lichens or algal mats can occur as a consequence of excessive burning and/or grazing. Bare peat here represents bare peat etc. within the wet heath vegetation.
* Ericaceous cover (% cover)	Dwarf-shrub cover should be maintained between 50–75%	Visual estimate in 2x2 m plots.	Although dominated by dwarf shrubs, the sward should be composed of a variety of higher plants and bryophytes.
* Ericoid diversity	At least two species of dwarf-shrub at least present in 90% of plots.	Visual estimate in 2x2 m plots.	Ericoid (dwarf-shrub species) include *Calluna vulgaris*, *Erica tetralix*, *Empetrum nigrum* and *Myrica gale*.
* Cover of graminoids (% cover)	Total graminoid cover should be less than 50%.	Visual estimate in 2x2 m plots.	Include true grasses, sedges, and rushes in this assessment. *Molionia caerulea, Trichophorum cespitosum, Deschampsia flexuosa*, *Juncus squarrosus* or other graminoids should not dominate over other species. Localised *Schoenus nigricans* flushes should not be included in this habitat assessment.
* Bryophyte cover and frequency of *Sphagnum* mosses (%	Mean bryophyte cover (excluding *Polytrichum* spp. and *Campylopus* spp. on bare	Visual estimate in 2x2 m plots.	Bryophytes should include a range of pleurocarpus species forming patches below, or in more open swards beneath the dwarf-shrubs as well as

cover and DAFOR)	ground) should be at least 25%. *Sphagnum* moss species should be at least frequent throughout the moss layer. At least frequent is equivalent to greater than 41% occurrence in recorded plots.		*Sphagnum* moss species.
* Frequency and % cover of scrub/tree encroachment on wet heath communities (DAFOR and % cover)	Scrub/tree encroachment should be no more than rare over the wet heath community. Mean cover should be less than 2%. No more than rare is equivalent to less than 20% occurrence in recorded plots.	Visual estimate within a 10 m radius of plots and across the feature using a combination of aerial photographs and Condition Assessment structured walk.	Scrub encroachment should be checked using a combination of aerial photographs and Condition Assessment. Invasive exotic species such as *Rhododendron ponticum* should be removed immediately.
* Frequency and cover of undesirable agricultural grasses and weeds (DAFOR and % cover)	None of the following should be more than rare: *Cirsium arvense, C. vulgare, Senecio jacobaea, Urtica dioica, Plantago major, Phleum pratense, Trifolium repens, Holcus lanatus* and *Lolium perenne*. No more than rare is equivalent to less than 20% occurrence in recorded plots.	Visual estimate in 2x2 m plot.	

	Combined mean cover of agricultural grasses and weeds less than 1%.		
* Management - Grazing (% cover)	Signs of moderate or heavy grazing should occupy less than 5% of the wet heath vegetation. The frequency of droppings, the extent of poaching, uprooting of dwarf shrubs and invasion by *Juncus squarrosus* etc. indicate moderate and heavy grazing where any one of the above is recorded as more than occasional.	Visual estimate in 2x2 m plots.	
* Management - Burning (% cover)	Signs of recent burning should occupy less than 5% of the wet heath vegetation. Recent burning is represented by areas burnt within the last two years.	Visual estimate in 2x2 m plots and across the feature using a combination of aerial photographs, SIM and Condition Assessment structured walk.	

Frequency and cover of erosion features associated with human impacts (DAFOR and % cover)	No gully erosion, bare peat or rock associated with more concentrated human impacts (ATV tracks or recreational activities). Man induced/enhanced erosion should occupy less than 2% of the total area of wet heath other than very localised instances.	Visual estimate in 2x2 m plots.	The extent of man induced erosion should be monitored using a combination of aerial photographs and Condition Assessment. Erosion is a natural feature of high mountain slopes. However, where natural erosion is exacerbated by human activity, mainly hill walking, the heath will not be in favourable condition, except where such erosion is very limited in nature.
Herb diversity	Herbs (excluding negative indicators) at least frequent. At least frequent is equivalent to greater than 41% occurrence in recorded plots.	Visual estimate in 2x2 m plots.	Wet heaths tend to be dominated by dwarf-shrubs and graminoids; however, some herbs should be present in most plots (albeit at a low cover).

Frequency -
1-20% = Rare
21-40% = Occasional
41- 60% = Frequent
> 60% = Constant

ANNEX I

Feature 4 (SAC) – European dry heaths (Status C)

(* = primary attribute. One failure among primary attribute = unfavourable condition)

Attributes	Targets	Method of Assessment	Comments
* Area of dry heath	Maintain the extent of dry heath at 236.74ha.	Visual estimate in 2x2 m plots and across the dry heath using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Note that it may be possible to extend dry heath communities, provided this is into degraded areas and does not encroach into other habitats of scientific interest.
* Heath community diversity	Maintain the presence of the dry heath communities H7, H8, H10 etc. as established at base line survey.	Visual estimate in 2x2 m plots.	Repeat monitoring of plots using GPS should indicate whether dry heath communities have changed or been lost.
* Area of mosaic communities and associated semi-natural habitats	Maintain associated mosaic communities and semi-natural habitats.	Visual estimate in 2x2 m plots and across the ASSI using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Repeat monitoring of plots using GPS should indicate whether mosaics and associated habitats have changed or been lost.
Dwarf-shrub height	Average ericoid height should be 15–35cm with at least 25% of the dry heath in the	Visual estimate in 2x2 m plots.	On some areas of dry heath (especially on gentle slopes), the ericoid age structure will largely reflect recent burning patterns. However, in dry heath,

	late mature/degenerate growth phase (greater than 35cm).		burning should only be carried out occasionally under carefully controlled and monitored circumstances. A varied heather age structure is reflected in the height of heather.
* Bare peat, or ground covered by algal mats (% cover)	Bare peat etc. should occupy less than 2% of the dry heath surface overall.	Visual estimate in 2x2 m plots.	Bare peat (NOT exposed rock) or peat carpeted by *Polytrichum* spp., *Campylopus* spp. crust forming lichens or algal mats can occur as a consequence of constant burning and/or grazing. Bare peat here represents bare peat etc. within the dry vegetation rather than naturally eroded surfaces where exposed rock can form a natural part of the dry heath community.
* Ericaceous cover (% cover)	Dwarf-shrub cover should be greater than 75% over at least 75% of the dry heath community; and Mean dwarf-shrub cover should be greater than 75%	Visual estimate in 2x2 m plots.	
* Ericoid diversity	At least two species of dwarf-shrub at least present in 90% of plots.	Visual estimate in 2x2 m plots.	Ericoid (dwarf-shrub species) include *Calluna vulgaris*, *E. cinerea*, *Vaccinium myrtillis*, *Erica tetralix*, *Ulex gallii*, *Empetrum nigrum* and *Myrica gale*.
* Cover of *Ulex gallii* (% cover)	*Ulex gallii* cover should be less than 50% in plots within H8 stands.	Visual estimate in 2x2 m plots.	Mean percentage cover should be assessed for stands of H8 only – i.e. exclude plots in other heath communities from the calculations. Stands of H8 are generally restricted to the south-east of Northern Ireland.
* Cover of graminoids (% cover)	Total graminoid cover should be less than 33%.	Visual estimate in 2x2 m plots.	Include true grasses, sedges, and rushes in this assessment. *Nardus stricta, Deschampsia flexuosa*, *Juncus squarrosus* or other graminoids should not

			dominate over other species.
* Frequency and % cover of bryophytes and bushy lichens (esp *Cladonia* spp.) (DAFOR and % cover)	Bryophytes (excluding *Polytrichum* spp. and *Campylopus* spp. on bare ground) and/or Cladonia species should be at least frequent. At least frequent is equivalent to greater than 41% occurrence in recorded plots. Combined mean cover should be greater than 5%.	Visual estimate in 2x2 m plots.	Generally only bryophytes (mosses and liverworts) figure in this assessment, but occasionally bushy lichens can also be a prominent feature of the dry heath vegetation.
* Frequency and % cover of scrub/tree encroachment on dry heath communities (DAFOR and % cover)	Scrub/tree encroachment should be no more than occasional over the dry heath community. No more than occasional is equivalent to less than 40% occurrence in recoded plots Mean cover should be less than 5%.	Visual estimate within a 10 m radius of plots and across the feature using a combination of aerial photographs and Condition Assessment structured walk.	Scrub encroachment should be checked using a combination of aerial photographs and Condition Assessment. Include invasive alien species in addition to *Betula pubescens, Prunus spinosa, Rubus* spp. Invasive exotic species such as *Rhododendron ponticum* should be removed immediately. Exclude *Ulex europaeus* (see below)
* Cover of Gorse *Ulex europaeus* (% cover)	Gorse (*Ulex europaeus)* cover should be less than 5%.	Visual estimate in 2x2 m plots and across the feature using a	Although a natural component of heath communities, Gorse can become invasive under both low and high grazing pressures.

	During repeat surveys, Gorse cover should not exceed that of the baseline survey.	combination of aerial photographs and Condition Assessment structured walk.	It is important to assess whether the relative quantities present in the site are increasing.
* Cover of Bracken (*Pteridium aquilinum*) encroachment (% cover)	Bracken cover less than 10% in dense canopy. During repeat surveys, Bracken cover should not exceed that of the baseline survey.	Visual estimate in 2x2 m plots and across the feature using a combination of aerial photographs and Condition Assessment structured walk.	Although a natural component of heath communities, Bracken can become invasive under both low and high grazing pressures. It is important to assess whether the relative quantities present in the site are increasing.
* Frequency and cover of undesirable agricultural grasses and weeds (DAFOR and % cover)	None of the following should be more than rare: *Cirsium arvense, C. vulgare, Senecio jacobaea, Urtica dioica, Plantago major, Phleum pratense, Trifolium repens, Holcus lanatus* and *Lolium perenne* No more than rare is equivalent to less than 20% occurrence in recorded plots. Combined mean cover of agricultural grasses and weeds less than 1%.	Visual estimate in 2x2 m plot.	

* Management - Grazing (% cover)	Signs of moderate or heavy grazing should occupy less than 5% of the dry heath vegetation. The frequency of droppings, the extent of poaching, uprooting of dwarf shrubs and invasion by *Juncus squarrosus* etc. indicate moderate and heavy grazing where any one of the above is recorded as more than occasional.	Visual estimate in 2x2 m plots.	
* Management - Burning (% cover)	Signs of recent burning should occupy less than 5% of the dry heath vegetation. Recent burning is represented by areas burnt within the last two years.	Visual estimate in 2x2 m plots and across feature using a combination of aerial photographs, SIM and Condition Assessment structured walk.	
Frequency and cover of erosion features associated with human impacts. (DAFOR and % cover)	No gully erosion or bare rock associated with more concentrated human impacts (ATV tracks or recreational activities). Man induced/enhanced erosion	Visual estimate in 2x2 m plots.	The extent of man induced erosion should be monitored using a combination of aerial photographs and Condition Assessment. Erosion is a natural feature of high mountain slopes. However, where natural erosion is exacerbated by human activity, mainly hill walking, the heath will not be in favourable condition,

	should occupy less than 2% of the total area of dry heath other than very localised instances.		except where such erosion is very limited in nature.
Herb diversity	Herbs (excluding negative indicators) at least frequent. At least frequent is equivalent to greater than 41% occurrence in recorded plots.	Visual estimate in 2x2 m plots.	

Frequency -
1-20% = Rare
21-40% = Occasional
41- 60% = Frequent
> 60% = Constant

ANNEX I

Feature 5 (SAC) – Alpine and Boreal heaths (Status C)

(* = primary attribute. One failure among primary attribute = unfavourable condition)

Attributes	Targets	Method of Assessment	Comments
Area of montane heath (ha)	Maintain the extent of montane heath communities at a minimum of 20.87ha. These communities include H14 – *Calluna vulgaris-Racomitrium lanuginosum* heath and wind-pruned H10b - *Calluna vulgaris-Erica tetralix* heath (*Racomitrium* sub-community).	Visual estimate in 2x2 m plots and across the montane heath using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Difficult to measure exactly; summit ridge is c. 30 ha in extent, but includes significant area of eroding blanket bog. Some higher level heath communities on slopes below summit may also conform to the type. Any loss or fragmentation of this habitat is unacceptable. It is probably not possible to extend montane heath communities beyond their current range at Cuilcagh – i.e. no obvious areas where the habitat has been lost through damaging activities.
Ericoid Height (cm)	Average ericoid height should be 5 –10 cm.	Visual estimate in 2x2 m plots.	Dwarf-shrubs should be low growing (usually prostrate or semi-prostrate.
Bare Peat, or ground covered by algal mats (% and DAFOR)	Patches of bare ground greater than 10cm across in sheltered areas should be more or less absent.	Visual estimate in 2x2 m plots.	Bare peat or peat carpeted by *Polytrichum* spp., *Campylopus* spp. crust forming lichens or algal mats can occur as a consequence of excessive grazing.
Ericaceous Cover (%)	Dwarf-shrub cover should be greater than 60%.	Visual estimate in 2x2 m plots.	The sward should be composed of a low growing (and usually prostrate or semi-prostrate) dwarf-shrub in combination with abundant mosses and lichens.

Mean Cover of dwarf-shrubs/ *Racomitrium lanuginosum* and robust lichens. (%)	The collective cover of dwarf-shrubs, *Racomitrium lanuginosum* and robust lichens should compose at least 90% of total vegetation cover.	Visual estimate in 2x2 m plots.	Characteristic species include a dominance of dwarf-shrubs with mosses, mainly *Racomitrium lanuginosum,* and robust lichens. The low-growing dwarf-shrub mat is dominated by *Calluna vulgaris* with *Erica tetralix*, *E. cinerea*, *Vaccinium myrtillis*, *Empetrum nigrum*, *V. vitis-idea*, etc.
Racomitrium lanuginosum (DAFOR)	*Racomitrium lanuginosum* to be constant and forming patches below, or in more open swards beneath the dwarf-shrubs.	Visual estimate in 2x2 m plots.	*Racomitrium lanuginosum* should form a major part of the ground cover for the vegetation to be in favourable condition.
Fine-leaved grass/*Galium saxatile/Potentilla erecta* Cover (%)	The collective cover of fine-leaved grasses, *Galium saxatile* and *Potentilla erecta* should not exceed 10%.	Visual estimate in 2x2 m plots.	Grasses to include *Deschampsia flexuosa* and *Festuca ovina/vivipara*.
Management - Grazing (% cover)	Signs of moderate or heavy grazing should occupy less than 5% of the montane heath vegetation.	Visual estimate in 2x2 m plots.	The frequency of droppings, the extent of poaching, uprooting of dwarf shrubs and invasion by *Juncus squarrosus* etc. indicate moderate and heavy grazing where any one of the above is recorded as more than occasional.
Management - Burning (% cover)	Signs of recent burning should occupy less than 5% of the montane heath vegetation.	Visual estimate in 2x2 m plots and within wider vicinity of the plot; in addition, across feature using a combination of aerial photographs,	Recent burning is represented by areas burnt within the last two years.

		SIM and Condition Assessment structured walk.	
Erosion Features associated with human impacts (% and DAFOR)	No bare rock or bare peat associated with more concentrated human impacts (ATV tracks or recreational activities). Man induced/enhanced erosion should occupy less than 2% of the total area of montane heath, other than very localised instances.	Visual estimate in 2x2 m plots and within wider vicinity of the plot; in addition, across feature using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Erosion is a natural feature of high mountain slopes. However, where natural erosion is exacerbated by human activity, mainly hill walking, the heath will not be in favourable condition, except where such erosion is very limited in nature.

Frequency -
1-20% = Rare
21-40% = Occasional
41- 60% = Frequent
> 60% = Constant

ANNEX I

Feature 6 (SAC) – Siliceous scree of the montane to snow levels (*Androsacetalia alpinae and Caleopsietalia ladani*) (Status C)

(* = primary attribute. One failure among primary attribute = unfavourable condition)

Attributes	Targets	Method of Assessment	Comments
Area of siliceous scree	Maintain the extent of siliceous scree at 25.94ha. The montane acid scree communities include U21 - (*Cryptogramma crispa-Deschampsia flexuosa* community).	Visual estimate in 2x2 m plots and across the siliceous scree using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Note that it may be possible to extend siliceous scree communities, provided this is into degraded areas and does not encroach into other habitats of scientific interest.
Indicators of current grazing	At least 33% of ground cover should be free from overgrowth by vascular plants Less than 50% of live leaves (forbs) and/or the shoots (dwarf-shrubs) should show signs of having been grazed or browsed.	Targets assessed against visual estimate for as much of the feature as is visible while standing at a sample location.	
Non-native species	Less than 1% of vegetation cover should be made up of	Target assessed against visual	

	non-native species.	estimate for as much of the feature as is visible while standing at a sample location.	
Cover of Bracken, tress and scrub	Less than 25% of the ground cover should be made up of bracken, trees and shrubs.	Target assessed against visual estimate for as much of the feature as is visible while standing at a sample location.	
Cover of agricultural weeds	Less than 1% of vegetation cover should consist of, collectively, *Cirsium arvense, Cirsium vulgare, Pteridium aquilinum,* large docks (excluding *Rumex acetosa*), *Rubus fruticosus, Senecio jacobaea, Urtica dioica*	Target assessed against visual estimate for as much of the feature as is visible while standing at a sample location.	
Physical structure — indicators of ground disturbance due to herbivore and human activity.	Less than 10% of the *ground* cover should be disturbed by human or animal paths, scree running, or vehicles.	Target assessed against visual estimate for as much of the feature as is visible while standing at a sample location.	The nature of the scree – i.e. large, block scree – more or less precludes recreational use, and appears to discourage most of the grazing animals.

Frequency -
1-20% = Rare
21-40% = Occasional
41- 60% = Frequent
> 60% = Constant

ANNEX I

Feature 7 (SAC) – Siliceous rocky slopes with chasmophytic vegetation (Status C)

(* = primary attribute. One failure among primary attribute = unfavourable condition)

Attributes	Targets	Method of Assessment	Comments
Area of siliceous rocky slopes	Maintain the extent of siliceous rocky slopes at 9ha.These cliff face communities include U21 - (*Cryptogramma crispa-Deschampsia flexuosa* community).	Visual estimate in 2x2 m plots and across the siliceous rocky slopes using a combination of aerial photographs, SIM and Condition Assessment structured walk.	
Indicators of current grazing	Less than 50% of live leaves (forbs) or the shoots (dwarf-shrubs) should show signs of having been grazed or browsed.	Target assessed against visual estimate for as much of the feature as is visible while standing at a sample location.	
Non-native species	Less than 1% of vegetation cover should be made up of non-native species.	Target assessed against visual estimate for as much of the feature as is visible while standing at a sample location.	

Cover of Bracken, tress and scrub	Less than 25% of the ground cover should be made up of bracken, trees and shrubs.	Target assessed against visual estimate for as much of the feature as is visible while standing at a sample location.	

Frequency -
1-20% = Rare
21-40% = Occasional
41- 60% = Frequent
> 60% = Constant