

BEN WYVIS SPECIAL AREA OF CONSERVATION (SAC)

CONSERVATION ADVICE PACKAGE



Image: Ben Wyvis ©PW/NatureScot

Site Details

Site name:	Ben Wyvis
Map:	https://sitelink.nature.scot/site/8205
Location:	Highlands and Islands
Site code:	UK0012950
Area (ha):	5,385.22
Date designated:	17 March 2005

Qualifying features

Qualifying feature	Assessed condition	SCM visit date	UK overall Conservation Status
Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels	Favourable Maintained	15 June 2010	Unfavourable - Bad
Dry heaths	Unfavourable Recovering	25 June 2013	Unfavourable - Bad
Alpine and subalpine heaths	Unfavourable Recovering	24 June 2013	Unfavourable - Bad
Montane acid grasslands	Favourable Recovered	31 August 2013	Unfavourable - Bad
Tall herb communities	Favourable Maintained	28 August 2004	Unfavourable - Bad
Blanket bog*	Favourable Recovered	25 June 2013	Unfavourable - Bad
Acidic scree	Favourable Maintained	7 August 2003	Unfavourable - Inadequate
Plants in crevices on acid rocks	Favourable Maintained	31 August 2013	Unfavourable - Inadequate

Notes:

Assessed Condition refers to the condition of the SAC feature assessed at a site level as part of NatureScot's [Site Condition Monitoring \(SCM\)](#) programme.

Conservation status is the overall condition of the feature throughout its range within the UK as reported to the European Commission under Article 17 of the Habitats Directive in 2019.

*Denotes an Annex I priority habitat

Other overlapping Protected Areas:

Ben Wyvis SSSI and Ben Wyvis SPA.

Further information on these protected areas can be found on [SiteLink](#).

Key factors affecting the qualifying features

[Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels](#)

This habitat type comprises oligotrophic (nutrient-poor) lochs at Ben Wyvis. The dominant substrates of oligotrophic waters are silt, sand, gravel, stones and boulders. The clear soft water, which characterises this habitat type, contains low to moderate levels of plant nutrients and supports characteristic assemblages of plant species. The vegetation community is characterised by amphibious short perennial vegetation the marginal components of which can be exposed on the loch shores during summer.

Key management issues include changes to hydrology, invasive non-native species, surface water pollution and air pollution.

[Dry heaths](#)

Dry heaths occur on freely-draining, acidic to almost neutral soils with generally low nutrient content. At Ben Wyvis the habitat is generally found on steep ground above the blanket bog but below the subalpine heaths and the summit grasslands. Ericaceous dwarf-shrubs dominate the vegetation but all heaths vary in their flora and fauna according to climate, altitude, aspect, soil conditions (especially base-status and drainage), maritime influence, and grazing and burning intensity.

Nearly all dry heath is semi-natural, being derived from woodland through a long history of grazing and burning. At Ben Wyvis dry heaths are managed as extensive grazing for livestock (sheep, cattle and deer) and for nature conservation. Additional influences are tracks and paths that can cause fragmentation, degradation and erosion. Other key management issues include forestry, problematic native and non-native species and renewable energy proposals. The feature was last assessed in 2013 as being in unfavourable recovering condition due to heavy grazing pressure, particularly on the slopes above Loch Glass and to the west of Tom a Choinneach, although grazing and trampling impacts have reduced in recent years with a Section 7 agreement in place to prevent damage from deer.

[Alpine and subalpine heaths](#)

Alpine and subalpine heaths occur on acid rocks on mountains, below the summit grasslands, on exposed lower slopes and on sheltered ridges. Exposure or snow-lie, which suppress the growth of dwarf-shrubs, also favour the growth of characteristic lichens and bryophytes. Alpine heaths develop above the natural altitudinal tree-line. Boreal heaths develop below the tree-line in gaps among scrubby high-altitude woods or as replacements for those subalpine woods lost due to grazing and burning. On lower slopes, subalpine heaths may grade into floristically-similar European dry heaths.

Alpine and subalpine heaths that are rich in bryophytes and also juniper-rich heaths are particularly susceptible to disturbance, especially by fire. Similarly, lichen-rich

heaths are susceptible to damage by fire or trampling. Rocky ground can be important in protecting heaths from fire.

The key issue leading to unfavourable condition of the habitat at Ben Wyvis is the nature and extent of browsing particularly from deer and historically sheep, although there is evidence that grazing and trampling impacts are reducing with a Section 7 agreement in place to prevent damage from deer. There is no longer sheep grazing on the SAC. Some damage to alpine heath has been noted from tracked vehicles along the ridgeline.

Montane acid grasslands

Montane acid grasslands are the most extensive type of vegetation in the high mountain zone, i.e. above an altitude of about 750 m. It characteristically covers large areas over summit plateaux and the tops of the higher summits and ridges. Ben Wyvis has one of the longest continuous tracts of this habitat in the UK of almost a mile. The habitat comprises a range of grassland types whose composition is influenced by contrasting extremes of exposure and snow-lie.

The habitat is vulnerable to nutrient inputs and physical damage such as occur due to dunging and urination by grazing animals, acid deposition, human and animal trampling, skiing and use of all-terrain vehicles. At Ben Wyvis the habitat has been affected by excessive grazing in the past, although the removal of sheep grazing and review of deer management under a Section 7 agreement has addressed this and the feature is now considered to be in favourable condition. Trampling from hill walkers along the popular summit route is causing localised damage to this habitat.

Tall herb communities

Tall herb communities are found on inaccessible, ungrazed upland cliff ledges, occasionally extending on to open ground, and is restricted to base-rich substrates and somewhat sheltered situations. It provides a refuge for rare, grazing-sensitive, montane plants. The most extensive, accessible area of this feature is at the Coire Lochan.

Variation within the habitat type is related chiefly to geographical position, altitude, and soil conditions and rock type.

Key management issues include ensuring only low/no grazing from domestic stock and deer and invasion by other species

Blanket bogs

Blanket bogs are found in areas of moderate to high rainfall and a low level of evapotranspiration, allowing peat to develop over large expanses of undulating ground. At Ben Wyvis this tends to be on the lower ground. Blanket bogs are considered active when they are supporting a significant area of vegetation that is peat-forming. This is a Habitats Directive Priority habitat.

Key management issues include over-grazing, aspects of red deer pressure, burning, energy use, changes in the hydrology, non-native species, abiotic natural

changes, air pollution, infrastructure development and outdoor recreation. At Ben Wyvis the habitat has been affected by trampling and locally high levels of browsing in the past, although the removal of sheep grazing and review of deer management under a Section 7 agreement has addressed this and the feature is now considered to be in favourable condition.

[Acidic scree](#)

Scree habitats consist of rock fragments covering the frost-shattered summits of mountains or accumulating on slopes below cliffs. Scree is intrinsically unstable and rocks will frequently move meaning that this habitat is vulnerable to disturbance naturally. Acidic screes are made up of siliceous rocks such as quartzite, granite and sandstone; at Ben Wyvis the underlying bedrock is Moine schist.

[Plants in crevices on acid rocks](#)

The chasmophytic (grows in the crevices of rocks) vegetation that colonises siliceous (silica based, acidic) rock faces and is widespread in upland areas. The plants in crevices are found in harsh and sometimes extreme conditions with limited soil development, but where there is some shelter and moisture, and so plants are sparse and scattered. Chasmophytic plant species are adapted to the stresses of drought and low nutrient availability. They can be sensitive to overgrazing and trampling although many sites are protected by inaccessibility.

Further information about this SAC's protected habitats can be found on the [JNCC website](#).

Conservation Priorities

Blanket bog is a Habitats Directive Priority Habitat. Appropriate management of this habitat should therefore have priority, followed by features that are in unfavourable condition, if any conflict between management of different habitats or species were to arise. In practice, there is unlikely to be any conflict between management of the differing features of Ben Wyvis SAC. Habitat and species distribution is mainly determined by environmental conditions and all features listed above would benefit from a low herbivore population in the wider area.

This SAC overlaps with Ben Wyvis SPA. Any management of the SAC, or assessment of plans or projects, will also need to take account of the all of the SPA features.

Conservation Objectives

Overarching Conservation Objectives for all habitat features

1. To ensure that the qualifying features of Ben Wyvis SAC are in favourable condition and make an appropriate contribution to achieving favourable conservation status.

Favourable Conservation Status (FCS) is considered at a European biogeographic level. When determining whether management measures may be required to ensure that the conservation objectives for this site are achieved, the focus should be on maintaining or restoring the contribution that this site makes to FCS.

When carrying out appraisals of plans and projects against these conservation objectives, it is not necessary to understand the status of the feature in other SACs in this biogeographic region. The purpose of the appraisal should be to understand whether the integrity of the site (see objective 2) would be maintained. If this is the case, then its contribution to FCS across the Atlantic Biogeographic Region will continue to be met. Further details on how these appraisals should be carried out in relation to maintaining site integrity is provided by objective 2 (including parts a, b and c). If broader information on the feature is available then it should be used to provide context to the site-based appraisal.

Note that “appropriate” within this part of the conservation objectives is included to indicate that the contribution to FCS varies from site to site and feature to feature.

2. To ensure that the integrity of Ben Wyvis SAC is restored by meeting objectives 2a, 2b and 2c for each qualifying feature

The aim at this SAC is to maintain, or where appropriate restore, the protected habitats in a favourable condition as a contribution to their wider conservation status. Therefore any impacts on the objectives shown in 2a, 2b, or 2c below must not persist so that they prevent the achievement of this overall aim. When carrying out appraisals of plans or projects the focus should be on restoring site integrity, specifically by meeting the objectives outlined in 2a, 2b and 2c. If these are met then site integrity will be restored. Note that not all of these will be relevant for every activity being considered. Any impacts on the objectives shown in 2a, 2b or 2c below must not persist so that they prevent the restoration of site integrity. Temporary impacts on these objectives resulting from plans or projects can only be permitted where they do not prevent the ability of a feature to recover and there is certainty that the features will be able to quickly recover.

This objective recognises that the qualifying habitats are exposed to a wide range of drivers of change. Some of these are natural and are not a direct result of human influences. Such changes in the habitats' extent, distribution or condition within the site which are brought about by natural processes, directly or indirectly, are normally considered compatible with the site's conservation objectives. An exception to this is when the favourable condition of a habitat is dependent on halting or managing natural succession. An assessment of whether a change is natural or anthropogenic, or a combination of both, will need to be looked at on a case by case basis.

Conservation Objectives for Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea [H3130] (Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels)

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2a. Maintain the extent and distribution of the habitat within the site

The extent of Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels habitat feature has been estimated at 27ha.

The area figure has been taken from the Standard Data Form. Fundamentally there should be no measurable net reduction the extent of the habitat and, most importantly, its distribution throughout the site and the number of sites should be maintained.

This should include the total surface area, depth of water and type and distribution of loch substrate sediments.

This conservation objective is considered to be met if the conditions to ensure the habitats' long-term existence are in place.

2b. Maintain the structure, function and supporting processes of the habitat

The structure and function of lochs are strongly influenced by activities within their catchment. Changes in land management or development can affect the integrity of the feature which will manifest itself in changes to the loch.

Physical Attributes

-Surface Area

Changes to surface area can indicate pressures on the structure and function of lochs. The surface area of a loch may fluctuate slightly naturally. However changes to surface area and the associated change to depth can adversely affect the character of the loch, particularly the edge vegetation. Artificial fluctuations to depth found in controlled water bodies such as reservoirs can adversely affect the vegetation.

Changes to the surface area may also indicate a number of pressures such as abstraction, regulation, construction, excessive sediment deposition and natural succession which may occur in the catchment.

-Hydrological regime

The hydrology of the loch affects both water level fluctuations and annual and within year flushing patterns. Flushing is important as it is strongly related to dilution and removal of nutrients and plankton. Changes to the flushing pattern can be caused by factors similar to those affecting area; abstraction, regulation, construction, excessive sediment deposition and natural succession which may occur in the catchment.

-Loch substrate character

The type and distribution of sediment particles within a loch will affect the biology of the loch and the availability of habitats. Changes to the substrate character may also be indicative of changes to the area and hydrological regime. Reduction in area or flushing may affect the substrate character as finer sediments become trapped if there is increased input of leaf-litter from scrub encroachment.

-Natural sediment load

Accumulation of nutrient-rich sediment may have a strong effect on the water quality and biology of the loch. Increases in sediment loading may result from both changes in land management practice in the catchment or on the shoreline and short term events such as construction. Evidence is growing that an increase in storm events associated with climate change may increase the amount of sediment deposited in lochs.

-Connectivity between the loch and the surrounding area

While a loch is often perceived as a discrete entity the connections between it and the surrounding area are vital to its functioning as part of a natural system. These natural connections can be reduced or changed by, for example, hard engineering works on the shoreline or loch bed and anything that impedes the exchange of water either on the surface or with the underlying water table.

Water Quality

-Dissolved Oxygen

Oxygen is vital to respiration. An artificially high biomass caused by increased loadings of organic matter or algal blooms can create a heavy demand which causes low levels of dissolved oxygen. Dissolved oxygen is likely to be lowest in July and August. The target is dissolved oxygen >7.0mg/l for lochs classified as at Good Ecological Status (GES) under the Water framework Directive (WFD) or >9.0 Mg/l for lochs classified as High Ecological Status (HES) during July and August.

-pH

This influences many of the chemical processes in lochs such as the binding of phosphorus. Artificial changes through eutrophication or acidification can therefore have a significant effect. Oligotrophic lochs should have pH of 5.5 to 7 and Mesotrophic 6.5 to 8

-Chlorophyll a

Chlorophyll a is a good measure for phytoplankton abundance. Phytoplankton is an important part of the processes of a loch ecosystem affecting light penetration and oxygen demand. A high biomass is usually associated with nutrient enrichment and sedimentation of organic matter. Target Chlorophyll a can be calculated for each loch based on site specific targets related to alkalinity and depth. Where a site is in favourable condition current Chlorophyll a can be used to set a baseline.

-Total Phosphorus

Phosphorus is one of the main nutrients required for plant growth and there is strong correlation between TP concentration and phytoplankton biomass. The target for TP is based on an annual mean; for deeper lochs (mean depth >3m) 15ugP/l maximum annual mean TP, very shallow (Mean depth <3m) 20ugP/l. Site specific targets may also be set where there are good records.

-Total Nitrogen

Nitrogen is the other main nutrient important in loch ecosystems. It is generally less likely to be limiting than phosphorus because of the ability of some organisms to fix Nitrogen from the atmosphere. The target for all lochs is that Annual Mean Total Nitrogen should not exceed 1.5mg/l. with no deterioration from baseline. For N limited lochs consideration may be given to setting site based targets.

2c. Maintain the distribution and viability of typical species of the habitat

Typical species of oligotrophic lochs on Ben Wyvis;

Juncus bulbosus

Bulbous rush

Isoetes lacustris

lake quillwort

<i>Littorella uniflora</i>	shoreweed
<i>Lobelia dortmanna</i>	water lobelia
<i>Myriophyllum alterniflorum</i>	alternate water-milfoil
<i>Subularia aquatica</i>	awwort
<i>Sparganium angustifolium</i>	Floating bur reed

The viability of the characteristic species is determined by water quality and other conditions that support the plant community such as water clarity. Loss or reduction in frequency of species may therefore be an indicator of deteriorating or changing water quality or some other adverse impact.

Non-native species can have direct effects upon the natural plant communities through competition. They may also have more subtle effects as the niche they fill is different and this may directly or indirectly affect the rest of the ecosystem. A list of high impact species has been agreed as part of the Water Framework Directive. Other species that may also affect the integrity of the site include *Elodea nutallii*, *E.canadensis* and *Crassula helmsii*.

Filamentous algae are indicative of high nutrient levels. This can create dense blankets reducing light and which can cause problems when they die and decay.

[Conservation Objectives for European dry heaths \[H4030\]](#)

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2a. Maintain the extent and distribution of the habitat within the site

Maintain (or restore where necessary) to approximately **754** ha. The area figure has been taken from the Standard Data Form, and is an estimate based on the fact that European dry heaths can form complex mosaics with habitats such as grasslands, wet heaths and bogs. However there should be no measurable net reduction in the extent of the habitat and its distribution throughout the site.

The habitat is found on freely-drained, nutrient-poor, acidic soils. This can determine the extent and distribution of the habitat throughout the SAC, although it is also dependant on heathland management to maintain its extent including:

- appropriate level of grazing and muirburn.
- avoidance of any loss of habitat through increased extent of successional or adjacent natural habitats, afforestation or invasion by alien species.
- avoidance of negative effects of access and recreation

2b. Restore the structure, function and supporting processes of the habitat

Maintaining dry heath is a fine balance between degrading to grasslands as a result of intensive management, and succession to scrub or woodland from too low a level of browsing, grazing or burning. On Ben Wyvis SAC red deer are the main herbivores on dry heath. Appropriate management of their numbers and distribution across the site is important to maintain dry heath habitat whilst preventing habitat degradation from under/overgrazing or trampling. Currently, burning is not used as a management tool, although the site has been burnt historically.

The objectives for restoring dry heath on this site are to:

- restore the height structure of the vegetation by reducing grazing/browsing by red deer and sheep so that less than 1/3 of the last complete growing season's shoots of dwarf-shrub species show signs of browsing.
- restore the ground cover structure of the heath by reducing trampling by red deer and sheep so that less than 10% of ground cover is disturbed bare ground (with an emphasis on 'disturbed' rather than 'bare').

Additional objectives for the structure of the habitat are:

- 25-90% of vegetation should be dwarf shrub heath species. Heather *Calluna vulgaris* should remain the dominant species and should be present in all phases of growth (pioneer, building, mature and degenerative) to provide a wide range of ecological variety and conservation benefit to a variety of species.
- Current levels of disturbed bare ground should not be increased. Activities that might cause an increase include excessive use of vehicles, introducing heavier livestock such as cattle or increasing use of the habitat by red deer and sheep.
- Cover by species that are not typical of this habitat should not increase. Examples of inappropriate species are bracken, trees and non-native species.
- Any burning on Ben Wyvis SAC should follow the Muirburn Code to avoid damage to the structure, function and supporting processes of dry heath.

2c. Maintain the distribution and viability of typical species of the habitat

The dry heath at Ben Wyvis SAC is dominated by heather *Calluna vulgaris*, blaeberry *Vaccinium myrtillus* and crowberry *Empetrum nigrum* with some bearberry *Arctostaphylos uva-ursi*.

In addition, typical, associated birds of upland heaths are red grouse *Lagopus l. scotica*, golden plover *Pluvialis apricaria*, hen harriers *Circus cyaneus*, merlin *Falco columbarius* and golden eagle *Aquila chrysaetos*.

This habitat is important for maintaining populations of red deer *Cervus elaphus* on this site, although the deer themselves are not a feature of the site. High levels of herbivore use can damage dry heath, but a low level of grazing and browsing is necessary to maintain this habitat.

[Conservation Objectives for Alpine and Boreal heaths \[H4060\] \(Alpine and subalpine heaths\)](#)

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2a. Maintain the extent and distribution of Alpine and Boreal heaths within the site

Maintain (or restore where necessary) to approximately 539 ha. The area figure for this SAC has been taken from the Standard Data Form, and is an estimate based on the fact that both Alpine and Boreal heaths can grade into other heath types, especially the latter into floristically-similar European dry heaths. However there should be no measurable net reduction in the extent of the habitat and its distribution throughout the site.

Alpine and subalpine heaths are generally found on on acid rocks on mountains, both on exposed lower summits and ridges and on sheltered slopes where the dominant plants can cope with harsh climatic conditions such as high winds and prolonged snow cover. These conditions will largely determine the extent and distribution of the habitats throughout the SAC, although the habitats' long-term existence will also be affected by:

- an appropriate level of grazing and muirburn
- habitat loss through increased extent of adjacent natural habitats, afforestation or invasion by alien species
- The effects of access and recreation

2b. Restore the structure, function and supporting processes of the Alpine and subalpine heath

Alpine and subalpine heaths are climax vegetation in exposed and extreme conditions which result in slow growth; they are therefore very sensitive to disturbance and are slow to recover.

As with several other habitats at Ben Wyvis, maintaining Alpine and subalpine heaths is a fine balance between degrading to grasslands (which tends to happen if grazing/browsing and burning levels are too high) and succession to scrub/ woodland/ dense juniper thicket (which happens if browsing/grazing is too low).

On Ben Wyvis SAC red deer are the main herbivores on alpine and subalpine heaths. The predominant requirement for restoring alpine and subalpine heaths is managing appropriate levels of browsing and trampling by deer, which allows typical plants (listed in 2c) to grow and set seed. In popular walking areas bare ground can be disturbed by human trampling. Recreation management might be necessary if excessive trampling is affecting the structure and function of the habitat.

Additional objectives for the structure of the habitat are:

- Bracken *Pteridium aquilinum* should be kept to less than 10% of the ground cover.
- Less than 10% of the ground cover should be disturbed bare ground (the emphasis is on 'disturbed' rather than 'bare'.)

Alpine and subalpine heath should not be burnt to avoid damage to the structure, function and supporting processes of this habitat.

2c. Maintain the distribution and viability of typical species of the habitat

In Ben Wyvis SAC Alpine heath is scattered across the broad summit plateau of Ben Wyvis range, from Glas Leathad Mor and Rock Hill to Glas Leathad Beag. This is a common habitat across the plateau areas where it is largely represented by communities dominated by heather (*Calluna vulgaris*), reindeer lichen (*Cladonia arbuscula*) and the moss *Racomitrium lanuginosum* on the exposed tops. Heaths dominated by blaeberry (*Vaccinium myrtillus*) are also recorded on steeper, exposed ground around the sides of the plateau ridge. On less-exposed, more sheltered ground at the lower altitudinal range of the habitat, *Calluna* generally dominates. *Calluna* is usually accompanied by other dwarf-shrubs, such as blaeberry, bell heather *Erica cinerea*, bearberry *Arctostaphylos uva-ursi* and crowberry *E. nigrum* ssp. *nigrum*. There is quite a lot of transitional vegetation between alpine heath and montane acid grassland.

In some stands of Alpine and Boreal heaths the action of solifluction (by creating unstable soils, which provide more plant nutrients and maintain open conditions) favours the growth of certain plants. These include mountain everlasting *Antennaria dioica*, carnation sedge *Carex panicea*, pill sedge *C. pilulifera*, sea plantain *Plantago maritima*, fir clubmoss *Huperzia selago* and viviparous sheep's-fescue *Festuca vivipara*, enriching the flora of the heaths.

Typical associated vertebrates of these high habitats are the mammals red deer (*Cervus elaphus*) and mountain hares (*Lepus timidus*) and the birds ptarmigan (*Lagopus muta*), dotterel (*Charadrius morinellus*), golden eagle (*Aquila chrysaetos*) and, on a very localised basis, snow bunting (*Plectrophenax nivalis*).

Conservation Objectives for Siliceous alpine and boreal grasslands [H6150] (Montane acid grasslands)

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2a. Maintain the extent and distribution of the habitat within the site

Maintain to approximately 862 ha.

The area figure has been taken from the Standard Data Form, and is an estimate based on the amount and complex, yet often limited, mosaic of several different high altitude communities. Fundamentally however there should be no measurable net reduction the extent of the habitat and its distribution throughout the site.

Factors at the global/national level that may affect Montane acid grasslands' extent over the site may be linked to climate change, reduced snow cover and, atmospheric acid deposition.

This conservation objective is considered to be met if the conditions to ensure the habitats' long-term existence are in place.

2b. Maintain the structure, function and supporting processes of the habitat

Whilst these grasslands are some of the very few predominantly near-natural habitats remaining in the UK, they are very sensitive to changes in current pressures, especially grazing and nutrient input. Excessive grazing, and the associated manuring, may favour grasses over bryophytes.

Appropriate levels of grazing/browsing are needed to allow survival of component species of the habitat and to maintain its structure, throughout the site. This should be achieved by continuing a low level of grazing by sheep and red deer that allows typical plants (listed in 2c) to grow and set seed.

Less than 10% of the ground cover should be disturbed bare ground (the emphasis is on 'disturbed' rather than 'bare'.)

Montane acid grasslands should not be burnt to avoid damage to the structure, function and supporting processes of this habitat.

2c. Maintain the distribution and viability of typical species of the habitat

There are multiple NVC communities that can be form Montane acid grassland habitat. These vary geographically with the relevant types for this site listed below:

Carex – Racomitrium moss-heath occurs on windswept ground blown clear of snow during winter, and is the most extensive sub-type of the habitat across most of the UK. Ben Wyvis SAC is home to the largest continuous tract of this sub-type in the UK, covering almost the whole of the summit plateau. This moss heath is dominated by mixtures of stiff sedge (*Carex bigelowii*), wooly hair moss (*Racomitrium lanuginosum*), lichens *Cladonia* spp and dwarf-shrubs such as *Vaccinium uliginosum*, crowberry (*Empetrum nigrum* sbsp

hermaphroditum) and cowberry (*Vaccinium vitis-idaea*). *Nardus stricta* dominated grasslands are more frequent on slopes or in less exposed locations and are typically dominated by mat grass (*Nardus stricta*) with *Carex bigelowii*, *Racomitrium lanuginosum* and some alpine lady's mantle (*Alchemilla alpine*) and then to *Carex* – *Polytrichum* sedge-heath where snow-lie is more prolonged. The longest lying snow-beds (*Polytrichum* – *Kiaeria* snow-bed, *Salix* – *Racomitrium* snow-bed and *Alchemilla* – *Sibbaldia* dwarf-herb community) are dominated by mosses and hardy herbs. These communities occur around the edges of high plateaux on steep slopes where a snow cornice develops in high corries or in gullies where deep snow accumulates and although these are represented on Ben Wyvis SAC, they are small in extent. They can also occur in snow hollows on the highest summits.

Typically associated species of this habitat in the summer include an important breeding population of dotterel which breeds in the moss-rich habitats of the plateau. Dotterel are a feature of the Ben Wyvis SPA.

[Conservation Objectives for Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels \[H6430\] \(Tall herb communities\)](#)

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2a. Maintain the extent and distribution of the habitat within the site

Maintain to approximately 5 ha.

The area figure has been taken from the Standard Data Form, and is an estimate based on the amount and complex, yet often limited, mosaic of several different high altitude communities. Fundamentally however there should be no measurable net reduction in the extent of the habitat and its distribution throughout the site. Where possible opportunity should be taken to restore and/or extend this habitat.

This conservation objective is considered to be met if the conditions to ensure the habitats' long-term existence are in place.

2b. Maintain the structure, function and supporting processes of the habitat

The extreme sensitivity of this habitat to grazing pressure is responsible for its scarcity. Whilst this habitat would have once been more abundant it is now largely confined to areas inaccessible to grazers. Direct management of grazing pressure has the ability to restore or extend this scarce habitat. Introduction of additional grazing pressure, especially from highly agile species such as goats, has the ability to cause major losses.

The following conditions should be met when grazing/browsing is low enough to allow survival of component species of the habitat and to maintain the habitat's structure:

- At least 50% of tall herb stems should be more than 20 cm tall, or there should be few observable signs of grazing on tall herbs or ferns, and most tall herb species should be flowering or showing signs of being able to flower.
- Less than 50% of live flowering shoots of indicator tall herbs (see below in section 2c for list) should show evidence of grazing.

The structure of this habitat can also be impacted by succession from tall-herb communities to woodland.

The following conditions should be met when appropriate levels of disturbance are in place, to allow for survival of component species of the habitat throughout the site:

- Less than 25% of the ground cover, of each patch or stand, should be disturbed bare ground*.
- Over the whole feature scanned from sample locations, less than 10% of the ground cover should be disturbed bare ground*. Assessed against the aggregate of visual estimates for as much of the feature as is visible while standing at all sample locations.

* The emphasis is on 'disturbed' rather than 'bare'. Exclude distinct and clearly defined paths or tracks.

Tall herb communities should not be burnt to avoid damage to the structure, function and supporting processes of this habitat.

2c. Maintain, or where appropriate restore, the distribution and viability of typical species of the habitat

This is a species-rich habitat characterised by an abundance of tall, broad-leaved herbs, most of which are otherwise rare in the uplands owing to their sensitivity to grazing. It corresponds to NVC type *Luzula sylvatica* – *Geum rivale* tall-herb community that is made up of lady's-mantles (*Alchemilla* sp), wild angelica (*Angelica sylvestris*), water avens (*Geum rivale*), great wood-rush (*Luzula sylvatica*), mountain sorrel (*Oxyria digyna*), Stone bramble (*Rubus saxatilis*), common sorrel (*Rumex acetosa*), roseroot (*Sedum rosea*), goldenrod (*Solidago virgaurea*), devil's-bit scabious (*Succisa pratensis*), and globe-flower (*Troillius eurpoeus*).

Agile herbivores, such as goats, should not be introduced to this site as they would be likely to damage this habitat.

[Conservation Objectives for Blanket bog \[7130\]](#)

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2a. Maintain the extent and distribution of blanket bog within the site

Blanket bog typically covers very large areas, forming complex mosaics with other wetland habitats as well as heath and grass habitats in drier areas. There should be no measurable net reduction in the extent of the habitat on the site such that the area of blanket bog is maintained (or restored where necessary) to approximately 2822 ha.

2b. Maintain the structure, function and supporting processes of the habitat

The predominant requirement for blanket bog is to be actively forming peat, a process that relies on peat-forming species having suitable conditions to maintain growth. Blanket bog that is degraded through damage or drying is likely to resume active peat-forming function following suitable restoration. A covering of 'active' peat-forming vegetation will protect the peat surface and will be more resilient to climate change.

Blanket bog habitat requires a high water table, and so maintaining appropriate hydrology for blanket bog is critical. This will depend on management to prevent or reduce detrimental effects of drainage, including in the wider surrounding area and potentially at a distance from the habitat.

The objectives for maintaining blanket bog on Ben Wyvis SAC are to:

- maintain the height structure of the vegetation by setting grazing/browsing by red deer and livestock so that less than 1/3 of the last complete growing season's shoots of dwarf-shrub species (collectively but excluding dwarf birch *Betula nana* and bog myrtle *Myrica gale*) show signs of browsing.
- maintain the ground cover structure of the bog by reducing trampling by red deer and sheep so that less than 10% of ground cover is disturbed bare ground (with an emphasis on 'disturbed' rather than 'bare') or where more than 10% of the *Sphagnum* moss is crushed or pulled up.

Additional objectives for the structure of the habitat are:

- Current levels of disturbed bare ground should not be increased. Activities that might cause an increase include excessive use of vehicles (including ATVs), introducing heavier livestock such as cattle or increasing use of the habitat by red deer.
- Cover by species that are not typical of this habitat should not increase. Examples of inappropriate species are bracken, trees and non-native species.
- Active drainage should be minimised. No new drains should be dug and existing ones should be blocked.

Blanket bog should not be burnt as fire damages the structure, function and supporting processes of this habitat and is contrary to the Muirburn Code.

2c. Maintain the distribution and viability of typical species of the habitat

Typical species include the important peat-forming species, such as bog-mosses *Sphagnum* species and cotton grasses *Eriophorum spp.*, or purple moor-grass *Molinia caerulea* in certain circumstances, together with heather *Calluna vulgaris* and other ericaceous species and forbs such as bog asphodel (*Narthecium ossifragu*) and the carnivorous sundews (*Drosera spp.*).

Other typical species include:

<i>Arctostaphylos spp</i>	
<i>Betula nana</i>	dwarf birch
<i>Carex bigelowii</i>	stiff sedge
<i>Cornus suecica</i>	dwarf cornel
<i>Erica spp.</i>	heaths
<i>Empetrum nigrum</i>	crowberry
<i>Menyanthes trifoliata</i>	bogbean
<i>Myrica gale</i>	sweet gale
Non-crustose lichens	(lichens)
Pleurocarpous mosses	(mosses)
<i>Racomitrium lanuginosum</i>	wooly hair moss
<i>Rubus chamaemorus</i>	cloudberry
<i>Rhynchospora alba</i>	white beak-sedge
<i>Trichophorum cespitosum</i>	deer grass
<i>Vaccinium spp</i>	

Conservation measures should aim to maintain conditions suitable for these species. All characteristic bog species rely on a high water table, and are likely to benefit from measures to improve the bog's hydrological integrity, principally by damming of artificial drainage. Healthy bog vegetation relies on light to moderate grazing by livestock and/or

wild herbivores, sufficient to maintain a diverse open structure but without causing surface damage/erosion or loss of more grazing-sensitive species.

This habitat supports populations of red deer *Cervus elaphus* on this site. Whilst high levels of herbivore use can be damaging, a low level of browsing and trampling is necessary to maintain this habitat. In addition, typically associated birds include red grouse (*Lagopus l. scotica*), golden plover (*Pluvialis apricaria*), dunlin (*Calidris alpina schinzii*), greenshank (*Tringa nebularia*), golden eagle (*Aquila chrysaetos*), merlin (*Falco columbarius*) and hen harrier (*Circus cyaneus*).

[Conservation Objectives for Siliceous scree of the montane to snow levels \(*Androsacetalia alpinae* and *Galeopsietalia ladanii*\) \[H8110\] Acidic scree](#)

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2a. Maintain the extent and distribution of the habitat within the site

The extent of the acidic scree feature has been estimated at 43ha (area stated on the Standard Data Form). This should be maintained.

However, due to the localised and fragmentary nature of this habitat current baseline estimates may not be very precise and any changes in extent estimates as a result of new survey may not represent real change but greater precision. On Ben Wyvis SAC this habitat is closely associated with plants in crevices on acidic rock where the same rock type is also found forming the scree.

2b. Maintain the structure, function and supporting processes of the habitat

Scree is intrinsically unstable and rocks will frequently move so this habitat is vulnerable to disturbance naturally.

Additional disturbance may be seen through herbivore grazing, trampling and recreation activities. There is also the possibility of colonisation, particularly of more stable scree, by other species, including trees and scrub where there are seed sources.

Inappropriate grazing regimes have the potential to harm this feature through over-grazing and trampling damage.

2c. Maintain the distribution and viability of typical species of the habitat

This habitat may be colonised by a range of pioneer species. It also provides shelter for many species sensitive to frost such as parsley fern *Cryptogramma crispera*, species requiring a humid microclimate such as Wilson's filmy-fern *Hymenophyllum wilsonii*, and species sensitive to grazing such as stone bramble *Rubus saxatilis*. It is important for its rich fern flora and act as refugia for a number of rare species.

Excessive grazing/browsing/trampling by deer and/or livestock can contribute to a deterioration in the habitat structure, having harmful effects on the typical species. This habitat is also very sensitive to burning.

Colonisation or shading of this habitat by bracken, tree growth and/or woodland expansion can reduce or eliminate cover of indicator species, including bryophytes.

Trampling from walkers can contribute to a deterioration in the habitat structure, having harmful effects on the typical species.

[Conservation Objectives for Siliceous rocky slopes with chasmophytic vegetation \[H8220\] \(Plants in crevices on acid rocks\)](#)

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2a. Maintain the extent and distribution of the habitat within the site

The extent of the plants in crevices on acid rocks feature has been estimated at 22ha (area stated on the Standard Data Form). This should be maintained.

However, due to the localised and fragmentary nature of this habitat current baseline estimates may not be very precise and any changes in extent estimates as a result of new survey may not represent real change but greater precision. On Ben Wyvis SAC this habitat is closely associated with acidic scree where the same rock type is also found forming the scree.

2b. Maintain the structure, function and supporting processes of the habitat

This habitat is found in harsh and sometimes extreme conditions with limited soil development, but where there is some shelter and moisture, and so plants are sparse and scattered. Chasmophytic plant species are adapted to the stresses of drought.

Colonisation or shading of this habitat by vigorous native species, such as bracken, tree growth or invasive non-native species can reduce or eliminate cover of typical species including bryophytes.

Inappropriate grazing regimes have the potential to harm this feature through over-grazing and trampling damage. However, some examples of this habitat are protected from herbivores by inaccessibility.

2c. Maintain the distribution and viability of typical species of the habitat

This habitat typically comprises mixtures of a limited number of species, most of which may also occur in other adjacent habitats, with mosses and ferns often prominent. There are no indicator species for this habitat.

Excessive grazing/browsing/trampling by deer and/or livestock can contribute to a deterioration in the habitat structure, having harmful effects on the typical species, therefore herbivore densities need to be appropriate to help maintain the habitat.

Colonisation or shading of this habitat by bracken, tree growth and/or woodland expansion can reduce or eliminate cover of indicator species, including bryophytes.

This habitat is very sensitive to burning which should be avoided in these areas.

Trampling from walkers can contribute to a deterioration in the habitat structure, having harmful effects on the typical species.

Conservation Measures

Ben Wyvis is notified as a Site of Special Scientific Interest and management changes described on the list of Operations Requiring Consent must have prior consent from SNH (NatureScot).

Current and recommended management for Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels

Issue	Measure	Responsible party
Abstraction	Ensure timing and volume of abstraction is not damaging through discussions with regulator. Ensure that drought plans adequately address the interests of the site.	SEPA Scottish Water
Afforestation	Ensure that additional woodland planting is not beyond the carrying capacity of the catchment and that design and management strictly follow the guidelines	Land Manager Funding Authority
Enrichment	Ensure no adverse impacts from diffuse or point sources	Land Manager SEPA
Sediment	Avoid damaging ATV use, especially near lochs, that can lead to bare peat which can increase sedimentation in the lochs.	Land Manager
Grazing and Trampling	Ensure deer and livestock levels are sufficiently low to avoid poaching of edges and peat erosion. Avoid related activities such as supplementary feeding and fencing close to lochs	Land Manager
Development	Ensure any development proposals do not adversely affect the site.	Land Manager Local Authority NatureScot
Invasive species	Maintain surveillance for invasive species and agree action with regulator. All anglers and other water users should follow the "Check, Clean, Dry" biosecurity procedures to prevent introduction of non-native species.	SEPA NatureScot

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Current and recommended management for

European dry heaths

Alpine and subalpine heaths

Montane acid grasslands

Blanket bog

Issue	Measure	Responsible party
Herbivore Impacts (grazing and trampling)	The main herbivore on the SAC is red deer, which range across the site. As a guide to achieving the correct balance the herbivore impact on the features should be	Land manager, Deer Management Group

	<p>mostly 'low' based on the NatureScot Herbivore Impact Assessment Process.</p> <p>Herbivore Impact Assessment in 2019 concluded that grazing impacts were generally low or moderate, and that impacts have decreased in recent years.</p>	
Supplementary feeding of deer	If any supplementary feeding is proposed within or close to the site, NatureScot advice should be sought on how to avoid localised damage to habitats that could be caused by concentrated trampling or dunging.	Land managers, NatureScot, Deer Management Group
Nutrient input (dunging)	Livestock and deer management should avoid encouraging large numbers of animals to concentrate in small areas as the dung can cause significant nutrient enrichment and consequent habitat change, particularly on the higher altitude habitats.	Land manager
Muirburn	Any burning should be carried out in accordance with the Muirburn Code, avoiding burning in sensitive areas.	Land manager
Vehicle tracks	Avoid using ATVs or other vehicles in a way that damages habitats and leads to an increase in exposed bare soil. Vehicle use should be entirely avoided in areas where the vegetation is still recovering from past vehicle damage. Any vehicles driven on these habitats should have low ground pressure and avoid breaking through the vegetation by avoiding soft wet ground or sharp turns.	Land Manager
Access tracks	No new access tracks should be created. Existing tracks should be maintained within their existing footprint and without having significant effects on the surrounding hydrology. Use of drainage ditches should be minimised in flatter areas. Culverts should be used to allow streams to pass underneath existing tracks or paths. In steeper areas, water should be diverted from existing paths and tracks at regular intervals	Land manager (Recreation interests)
Erosion	Activities that might cause erosion should be avoided. Areas of current erosion should be left undisturbed until the vegetation has recovered.	Land manager
Drainage	No new drains should be dug and natural hydrology should be restored by blocking existing drains. Re-profiling of hags and gullies in peatland would be beneficial where they are not re-vegetating naturally	Land manager Funding authority

Afforestation	Afforestation should be restricted to appropriate areas to avoid compromising the integrity of the protected habitats. Non-native tree saplings have regenerated on the SAC in some areas, and it would be beneficial to remove these before they establish.	Land manager Funding authority
Non-native and invasive species	Alien and invasive species should not be introduced to the site. Non-native trees have been recorded regenerating on the SAC from neighbouring forestry. These should be controlled to prevent establishment.	Land manager SISI (NatureScot)
Recreation	The mountains within the site attract hillwalkers in large numbers especially on access paths. Hillwalkers cause some trampling and erosion, especially along the summit ridge where braiding of the path has occurred. Further restoration and information for walkers is required. Dogs that are not under close control also have the potential to impact protected breeding birds. .	Land manager, Local authority, NatureScot

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Current and recommended management for Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels

Issue	Measure	Responsible party
Grazing	The extreme sensitivity of this habitat to grazing pressure means this habitat requires very low grazing and trampling impacts. Grazing will be from red deer (although limited through inaccessibility). Currently deer are managed on the SAC to maintain sustainable levels. Targeted culls near to sensitive habitats are beneficial. Agile herbivores, such as feral goats, should not be introduced to the site.	Land manager Deer Management Group
Conversion to woodland	Ensure colonisation or shading of this habitat by woodland expansion or bracken is minimal to maintain cover of the typical species, including bryophytes.	Land manager SISI (NatureScot)
Muirburn	These habitats are very sensitive to burning and should not be burnt.	Land manager

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Current and recommended management for

Acidic scree

Plants in crevices on acid rocks

Issue	Measure	Responsible party
Herbivore impacts (grazing and trampling)	Red deer are the main herbivore on higher parts of the site. These habitats benefit from very low levels of grazing and browsing, so stocking levels by both deer and livestock should be kept very low. Currently deer are managed on the SAC to maintain sustainable levels. Targeted culls near to sensitive habitats are beneficial. Agile herbivores (such as goats) should not be introduced to the site.	Land managers, NatureScot, Deer Management Groups
Colonisation and/or shading by native and/or non-native species	Ensure colonisation or shading of this habitat by tree growth; woodland expansion; bracken; is minimal to maintain cover of the typical species, including bryophytes.	Land Managers, NatureScot
Habitat Management	Habitats are managed through deer management and the North Ross Deer Management Group have a Deer Management Plan. Part of the SAC is managed as an NNR which has a specific NNR Management Plan.	NatureScot, landowners, land managers.
Recreation activity	By its very nature these habitats are difficult to walk over. Ensure trampling by walkers is minimal to maintain cover of typical species.	Land owners, land managers.

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