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Scotland's Nature Agency
Buidheann Nàdair na h-Alba

BEN HEASGARNICH SPECIAL AREA OF CONSERVATION (SAC)

CONSERVATION ADVICE PACKAGE

Photo: Ruth Maier

Site Details

Site name:	Ben Heasgarnich
Map:	https://sitelink.nature.scot/site/8201
Location:	Eastern Scotland, Highlands and Islands
Site code:	UK0012901
Area (ha):	2,783.72
Date designated:	17 March 2005

Qualifying features

Qualifying feature	Assessed condition	SCM visit date	UK overall Conservation Status
Mountain willow scrub	Unfavourable Recovering	17 September 2010	Unfavourable - Bad
Montane acid grasslands	Favourable Recovered	15 July 2014	Unfavourable - Bad
Alpine and subalpine calcareous grasslands	Unfavourable Recovering	17 September 2010	Unfavourable - Bad
Species-rich grassland with mat-grass in upland areas	Unfavourable Recovering	17 September 2010	Unfavourable - Bad
Tall herb communities	Unfavourable Recovering	1 July 2014	Unfavourable - Bad
Base-rich fens	Unfavourable Recovering	1 July 2014	Unfavourable - Bad
High-altitude plant communities associated with areas of water seepage	Unfavourable Recovering	10 July 2014	Unfavourable - Bad
Plants in crevices on acid rocks	Favourable Maintained	1 July 2014	Unfavourable - Bad
Plants in crevices on base-rich rocks	Favourable Maintained	2 September 2004	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.

Other overlapping Protected Areas:

Ben Heasgarnich SSSI

Key factors affecting the qualifying features

Mountain willow scrub

Mountain willow scrub is the UK's highest-altitude shrubby vegetation, occurring on moist, relatively base-rich soils in rocky situations on mountains. It is predominantly a natural habitat, with succession prevented by the harsh climate at the high altitudes at which it is found. It tends to be associated with the more sheltered areas of the upper subalpine and low alpine zones of mountains, and there may be a positive association with moderately late snow-lie.

Ben Heasgarnich is one of four sites selected for this feature in the Breadalbane Hills of the southern Highlands and represents Sub-Arctic *Salix* spp. scrub up to high altitude (950 m) on highly to moderately calcareous schist. W20 *Salix lapponum* – *Luzula sylvatica* scrub is widely-developed on the site, although it is virtually confined to crags and rock ledges, where the individual colonies of willows are small. The most abundant willow species are downy willow *Salix lapponum*, mountain willow *S. arbuscula*, whortle-leaved willow *S. myrsinites* and net-leaved willow *S. reticulata*. The scrub is associated with a rich flora of tall herbs and with stands of Alpine and subalpine calcareous grasslands.

Stands of *Salix* scrub survive on ungrazed ledges and, more rarely, on lightly grazed, steep rocky slopes or boulder fields, occurring only as small, discrete stands or more scattered bushes. The largest continuous stand of this habitat type is about 0.5ha in extent located on the north-facing slopes of Coire Sheasgarnaich most other stands are much smaller.

When mountain willow scrub within the site was last assessed through NatureScot's Site Conditioning Monitoring (SCM) programme, it was found to be in unfavourable recovering condition. This was due to issues with overgrazing.

The key management issues for this habitat is grazing pressure; particularly through sheep and to a lesser extent deer, this is believed to have reduced and restricted its occurrence. However in recent years grazing pressure has reduced through voluntary stock reduction, with shorter summer grazing and off-wintering. Muirburn also has the ability to have serious negative impacts on this habitat, but is not practiced on this SAC.

Further information about mountain willow scrub habitat can be found here.

Montane acid grasslands

Montane acid grassland are the most extensive type of vegetation in the high mountain zone, i.e. above an altitude of about 750 m. It characteristically forms large continuous tracts, covering summit plateau and the tops of the higher summits and ridges. The habitat comprises a range of grassland types whose composition is influenced by contrasting extremes of exposure and snow-lie. At Ben Heasgarnich SAC this habitat is extensive along all the main ridges within the site.

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.

When this habitat was last assessed through NatureScot's SCM programme, it was found to be in favourable condition. Grazing was found to be highest in the moss-heath areas and could have been a future concern, however through voluntary stock reduction as mentioned above this potential issue on the habitat is being addressed.

Further information about Montane acid grassland can be found here.

Alpine and subalpine calcareous grasslands

The habitat occurs on lime-rich soils and consists of short, often grazed, species-rich mixtures of arctic-alpine cushion herbs, grasses and sedges across a broad range of altitudes. This is one of the most important upland habitats in the UK for rare arctic-alpine plants and other rare montane or northern plants and animals, including the endemic Scottish primrose *Primula scotica*.

At high altitude such as at Ben Heasgarnich the grasslands are maintained by the harsh climate, though grazing may also alter species composition.

The habitat at this sites when last assessed was found to be in an unfavourable condition. The issues affecting this habitat at the time were over grazing and trampling however, through voluntary stock reduction as mentioned above this potential issue on the habitat is being addressed.

Further information about Alpine and subalpine calcareous grasslands can be found here.

Species-rich grasslands with mat-grass in upland areas

Species-rich grassland with mat-grass in upland areas tend to develop where there is flushing through base-rich strata on siliceous bedrock. Ben Heasgarnich has an extensive area of species-rich *Nardus* grassland with one of the most species-rich and diverse examples of high-altitude grassland in the UK.

This habitat is particularly susceptible to changed nutrient status eg agricultural improvement, burning, over and under-grazing, forestry, air pollution and damage from recreational pressure. The habitat is currently in unfavourable condition as assessed through NatureScot's SCM programme, the issues affecting this habitat at the time were over grazing and trampling. However, through voluntary stock reduction as mentioned above this potential issue on the habitat is being addressed.

Further information about Species-rich *Nardus* grasslands can be found here.

Tall herb communities

Tall herb communities habitat at Ben Heasgarnich is widespread but patchy within the site. It is largely restricted to steep cliffs and often inaccessible cliff ledges, and provides a refuge for rare, grazing-sensitive, montane plants.

At the last assessment of the tall herb communities at Ben Heasgarnich it was found to be in an unfavourable condition. The issues affecting this habitat at the time were over grazing and trampling. However, through voluntary stock reduction as mentioned above this potential issue on the habitat is being addressed.

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

Further information about Tall-herb communities can be found here.

Base-rich fens

Base-rich fen consists of a complex assemblage of vegetation types characteristic of sites where there is tufa and/or peat formation with a high water table and a calcareous base-rich water supply. At Ben Heasgarnich, base rich fens are frequently found in calcareous grasslands, widespread throughout the SAC with the greatest extents found at Allt Challium, Sron nan Eun.

At the last assessment of this habitat found it to be in unfavourable condition. This is primarily due to the trampling by deer and livestock. However, through voluntary stock reduction as mentioned above this potential issue on the habitat is being addressed.

Further information about base rich fens can be found here.

High altitude plant communities associated with areas of water seepage

High-altitude plant communities associated with areas of water seepage is a type of flush mire that occurs only at high altitude. The characteristic plant communities colonise open substrates that are constantly flushed by surface seepage of cold, base-rich water. They are amongst the few remaining natural plant communities in the UK and are maintained by harsh climatic and soil conditions. These alpine flushes are widespread but local within the site, found in all parts, and mostly above 750 metres.

The vegetation consists of mixtures of small sedges, rushes, small herbs and bryophytes, and includes many arctic-alpine species.

Key factors affecting this habitat include inappropriate levels of grazing by deer and livestock and atmospheric pollution adding nitrogen. At Ben Heasgarnich the habitat is in unfavourable condition due to the impact of trampling on the flushes, although this is expected to decrease as herbivore numbers also decrease.

Further information about High altitude plant communities associated with water seepage habitat can be found here.

Plants in crevices on acid rocks

Chasmophytic (grows in the crevices of rocks) vegetation consists of plant communities that colonise the cracks and fissures of rock faces and is widespread in upland areas but is localised and fragmentary in its occurrence. The type of plant community that develops is largely determined by the base-status of the rock face. Siliceous communities develop on acid rocks. It can be sensitive to overgrazing and

trampling. Most of the bare rock within this site shows at least moderate signs of base-enrichment and true siliceous rock is scarce.

The habitat at Ben Heasgarnich has been assessed to be in favourable condition. The herbivore impacts on this habitat are limited due to its inaccessibility.

A fuller account of the habitat can be found here.

Plants in crevices on base-rich rocks

Chasmophytic (grows in the crevices of rocks) vegetation consists of plant communities that colonise the cracks and fissures of rock faces and is widespread in upland areas but is localised and fragmentary in its occurrence. The type of plant community that develops is largely determined by the base-status of the rock face. Calcareous sub-types develop on lime-rich rocks such as limestone and calcareous schists. A fuller account of the habitat can be found here.

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 but can be sensitive to overgrazing and trampling although many sites are protected by inaccessibility. The base-richness of calcareous rocks may encourage competition from more vigorous native species, or non-native invasives.

At Ben Heasgarnich the calcareous rocky slopes that are associated with this habitat are widespread throughout the site, although the chasmophytic community is limited in extent to inaccessible ledges and crags. When this habitat was last assessed at Ben Heasgarnich it was found to be in favourable condition. The herbivore impacts on this habitat are limited due to its inaccessibility.

Conservation Priorities

The current management regime at Ben Heasgarnich is benefitting all of the qualifying interests of the site, all have been assessed as in either a Favourable or Unfavourable Recovering condition. The stock reduction and current grazing regime has seen a positive change across the site. Providing all qualifying interests the ideal management however is difficult and those in Unfavourable Recovering condition may not improve to the extent desired without detrimental impacts to other features. In situations like this where features have different management requirements, a pragmatic approach to management is required to ensure that most of the features, or those which are most sensitive to unfavourable management, are maintained in favourable condition. The management required may need to be cyclical, on a very long-term basis and it may not be possible to achieve favourable condition for every feature at the same point in time.

Species-rich grassland with mat-grass in upland areas and high-altitude plant communities associated with areas of water seepage are both priority habitats under the Habitats Directive. Management of the site should rank these above the remaining qualifying interests, with Mountain willow scrub, Alpine and subalpine

calcareous grasslands, and Tall herb communities ranking next as they are also the primary reason for site selection.

A further reduction in grazing pressure from livestock and higher deer control, which would improve the mountain willow scrub habitat would need careful monitoring as this could negatively impact habitats that are vulnerable to under grazing.

Conservation Objectives

Overarching Conservation Objectives for all features

1. To ensure that the qualifying features of Ben Heasgarnich 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 improving 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 Heasgarnich SAC is restored by meeting objectives 2a, 2b and 2c for each qualifying feature.
The aim at this SAC is to restore the protected habitats to 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 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 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 Sub-Arctic *Salix* spp. Scrub [H4080] (Mountain willow scrub)

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

Maintain the extent of existing mountain willow scrub at Ben Heasgarnich. There is no baseline area figure in the Standard Data Form, the habitat is limited in extent and survives on ungrazed ledges on steep rocky slopes or boulder fields, occurring only as small discrete stands or more scattered bushes (0.5ha or smaller). On Ben Heasgarnich this habitat is widely found across the SAC where suitable inaccessible cliff ledges exist. The densest concentration of scrub is located on the north-facing slopes of Coire Sheasgarnaich but is also located on Creag Mhor and Sròn nan Eun.

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

This habitat is the UK's highest-altitude shrubby vegetation, occurring on moist, relatively base-rich soils in rocky situations on mountains. The willow scrub survives on ungrazed ledges and, more rarely, on lightly grazed, steep rocky slopes or boulder fields.

However, over-grazing/browsing is believed to have reduced and restricted the occurrence of this habitat and excessive trampling can also damage the habitat. At Ben Heasgarnich its continued future is precarious, since it is confined to often unstable rock ledges and reproducing populations are very small, isolated, and of uncertain long-term viability. The populations are now very small and do not reproduce well, so even with reduced grazing pressure, recovery is uncertain and may require planting interventions.

Where grazing/browsing occurs it should be of a level where distinct browse lines or shaping of the canopy (topiary-like effects) does not occur.

Where appropriate levels of grazing/browsing are in place to allow survival of component species of the habitat the structure, throughout the site, should meet the following conditions:

- At least 25% of vegetation cover should consist of the indicator arctic-alpine willow spp.: *Salix lapponum*, *S. myrsinites*, *S .arbuscula* and/or *S. lanata*.
- At least 1 bush of each of the indicator arctic-alpine willow spp. present should be producing seed.
- At least as many young arctic-alpine willow plants should be present as dead or dying plants.
- The height, or length, of at least 50% of willow stems should be at least 40 cm.
- Restored stands that are accessible to grazing animals (no such stands are currently present) should have less than 33% of recent growth browsed.

Additional objectives for the structure of the habitat are:

- The area of disturbed bare ground should not increase. The causes of increased bare ground may include an increase in grazing, trampling by animals and people, or a change in livestock where cattle are introduced.
- Encroachment by non-native plants or atypical plants such as bracken and birch scrub should not occur
- This habitat is very sensitive to muirburn and should be avoided in these areas.

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

This habitat at Ben Heasgarnich consists of a mixture of willow species which have arctic-alpine and arctic-subarctic distributions in Europe. The indicator sub-arctic species are:

Salix lapponum	downy willow
S. myrsinites	whortle-leaved willow
S. arbuscula	mountain willow
S. lanata.	woolly willow
S. reticulate	net-leaved willow

As willows are dioecious (having separate male and female individuals) in order to maintain a viable population it is important that there is a suitably large population size with both male and female plants present, and may require management interventions such as fencing and or planting.

The willows grow among a rich mixture of dwarf shrubs, grasses, rushes and broad-leaved herbs, such as:

Vaccinium myrtillus	blaeberry
Deschampsia cespitosa	tufted hair-grass
Luzula sylvatica	great wood-rush
Alchemilla alpina	Alpine lady's-mantle

Since this habitat is small and fragmented and generally occurs within a wider landscape-scale, maintenance of the typical species will need to be managed as part of the wider site management.

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

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

Maintain at approximately 512ha.

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.

At Ben Heasgarnich Montane acid grasslands, whilst extensive in area, are largely restricted to the upper slopes and ridges around Ben Heasgarnich, Creag Mhor and Sròn nan Eun

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. All of which would favour more vigorous species and warmer mountain summits would see a change in plant composition associated with lower altitudes.

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 to grow and

set seed.

In addition, less than 10% of the ground cover should be disturbed bare ground other than
a) distinct and clearly defined paths and tracks (exclude constructed tracks) across the feature or,
b) diffuse/scattered disturbance of the ground, not on clearly defined paths or tracks.

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

Maintain the conditions for the typical species and communities that make up these montane habitats

At Ben Heasgarnich the montane acid grassland is extensive along all the main ridges within the site. The main NVC community is U10 *Carex bigelowii – Racomitrium lanuginosum* moss-heath, and U10c, the species-rich *Silene acaulis* sub-community is abundant on Ben Heasgarnich itself. In more sheltered locations on the sides of the ridge and in snowbed hollows there is U7 *Nardus stricta – Carex bigelowii* grass-heath.

The number of sub-types in the habitat results in a spectrum of specialised plants, the actual species in any one dependent upon the specific topography where the community occurs.

Carex – Racomitrium moss-heath occurs on windswept ground blown clear of snow during winter in the most exposed areas, Where snow-lie builds up, such moss-heath gives way initially to *Nardus – Carex* grass-heath, and then to *Carex – Polytrichum* sedge-heath where snow-lie is more prolonged.

List of typical and/or notable species

Alchemilla alpina	Alpine lady's mantle
Carex bigelowii	Stiff sedge
Cetraria islandica	Iceland Moss
Cladonia arbuscula	Reindeer lichen
Cladonia uncialis	
Dicranum fuscescens	Dusky fork-moss
Empetrum nigrum	Crowberry
Gnaphalium supinum	Dwarf cudweed
Juncus trifidus	Highland / three-leaved rush
Kiaeria starkei	Starke's fork moss
Nardus stricta	Mat grass
Polytrichum alpinum	Alpine haircap
Ptilidium ciliare	Ciliated fringewort
Racomitrium lanuginosum	Woolly fringe-moss
Rhytidiadelphus loreus	Little shaggy-moss
Rubus chamaemorus	Cloudberry
Salix herbacea	Dwarf willow
Sibbaldia procumbens	creeping sibbaldia
Vaccinium myrtillus	European blueberry

The positive management required to promote montane communities should be focused on continuing light grazing on graminoid dominated communities, and preventing damage from excessive grazing. Larger scale conservation measures to reduce nitrogen deposition and climate change will also reduce the loss of these fragile montane acid grassland

communities.

This habitat is important for maintaining populations of red deer *Cervus elaphus* and mountain hares *Lepus timidus* on this site. Typical fauna on this site also includes as well as golden eagle *Aquila chrysaetos* and peregrine falcon *Falco peregrinus.*

Conservation Objectives for Alpine and subalpine calcareous grasslands [H6170]

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

Alpine and subalpine calcareous grasslands occur on lime-rich soils and is widespread but local within the site. Found at upper elevations, mostly above 750m and often associated with calcareous cliffs, it is considered to be one of the best areas in the United Kingdom for this habitat.

The objective is to maintain the extent of the habitat to approximately 6.12ha. 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.

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

Whilst these grasslands, especially the *Dryas octopetala – Silene acaulis* ledge community, are amongst the most near-natural habitats remaining in the UK, they are very sensitive to under-grazing, over–grazing, trampling damage and encroachment of trees and scrub. Inappropriate grazing may facilitate creation of a grass sward.

This community requires a low to moderate grazing regime to restore the species composition, although this habitat is in close proximity to other SAC habitats that require no or low grazing and this needs careful management to prevent deterioration of habitats more sensitive to grazing.

A distinctive characteristic of this habitat is the high proportion of dwarf forbs to grasses accompanied by a relatively high proportion of mosses in the sward. Where appropriate levels of grazing occur habitat structure should meet the below criteria:

- At least 50% of live leaves and/or flowering shoots of vascular plants should be more than 20 cm above the ground.
- Less than 10% of vegetation cover should be made up of bracken and/or scattered native trees and scrub.
- Less than 10% of ground cover should be disturbed bare ground

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

At high altitudes the habitat type occurs in two forms with a much larger assemblage of arctic-alpine species. NVC communities found at Ben Heasgarnich are CG12 *Festuca ovina – Alchemilla alpina – Silene acaulis* dwarf-herb community on high corrie slopes. There are also some well-developed areas of high-altitude CG14 *Dryas octopetala – Silene acaulis* ledge community on steep, rocky slopes.

The habitat type supports an outstanding arctic-alpine flora, with many rare species, including:

Cerastium alpinum	alpine mouse-ear
Draba incana,	hoary whitlowgrass
Minuartia sedoides	cyphel

Carex capillaris	hair sedge

At higher altitudes there is a greater representation of arctic-alpine plants and this habitat grades into alpine and subalpine calcareous grasslands. Floristically richer areas develop where there is a concentration of base-rich or calcareous strata.

The main concerns in management that affect the quality and extent of the habitat are under-grazing, over–grazing, trampling damage and encroachment of trees and scrub. Inappropriate grazing may lead to a grass dominated sward.

Conservation Objectives for Species-rich *Nardus* grassland, on siliceous substrates in mountain areas [H6230] (Species-rich grasslands with mat-grass in upland areas)

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

Maintain approximately 58.46 ha.

The area figure has been taken from the Standard Data Form, and is an estimate based on the fact that Species-rich *Nardus* grasslands can grade into sub-maritime, Alpine and subalpine calcareous grasslands or, next to limestone areas, form transitions to Semi-natural dry grasslands and scrubland on calcareous substrates. However there should be no measurable net reduction in the extent of the habitat.

The qualifying interest at Ben Heasgarnich can be found in are extensive stands on Creag na h-Achlarich, on Sail Dubh and on the southeast side of Sron nan Eun. More fragmented stands are found on most other cliffs slopes.

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

Maintaining Species-rich Nardus grasslands in upland areas is mainly reliant on appropriate levels of grazing. Reduction in grazing may cause a change towards tall herb communities or, at higher altitudes, towards *Dryas octopetala* vegetation. Overgrazing may cause increase in unpalatable species i.e. *Prunella vulgaris, Cirsium* spp and mosses and local trampling to communities with *Lolium, Plantago* and *Poa*.

The primary attributes affecting the habitat type are appropriate grazing by deer and livestock, this habitat requires a varied grazing regime that will allow the associated flora to grow and set seed avoiding overgrazing and trampling but also avoiding under grazing which can lead to a litter layer which would impact the diversity of the habitat.

Secondary attributes that require to be met to maintain the structure of the habitat are:

- Bracken *Pteridium aquilinum* and trees/scrub should be kept to less than 5% of the ground cover.
- Less than 5% of the ground cover should be disturbed bare ground (the emphasis is on ‘disturbed’ rather than ‘bare’.)
- Litter layer should not exceed 10% of the ground cover.

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

Ben Heasgarnich has an extensive area of species-rich *Nardus* grassland with one of the most species-rich and diverse example of high-altitude grassland in the UK. It comprise a mixture of CG11 (*Festuca ovina-Agrostis capillaris-Alchemilla alpina* grass-heath), CG10 (*Festuca ovina-Agrostis capillaris-Thymus polytrichus* grassland*)*. U17 *Luzula sylvatica – Geum rivale* tall-herb vegetation community, though, due to the often calcareous nature of

the rocks there are also frequently small pockets of the OV39 *Asplenium trichomanes – Asplenium ruta-muraria* community consisting of small patches of ferns and calcareous bryophytes.

The main species present included in these NVC communities present at Ben Heasgarnich include:

Thymus polytrichus	thyme
Agrostis canina	brown bent
Anthoxanthum odoratum	sweet vernal grass
Galium saxatile	heath bedstraw
Prunella vulgaris	self-heal
Linum catharticum	purging flax
Campanula rotundifolia	harebell
Plantago lanceolata	ribwort plantain
Alchemilla glabra	smooth lady's-mantle

The site also includes a rich arctic-alpine flora such as;

Alchemilla filicaulis	hairy lady's-mantle
Persicaria vivipara	alpine bistort
Carex vaginata	sheathed sedge
Carex capillaris	hair-like sedge

There are transitions to floristically-rich Alpine and subalpine calcareous grasslands.

These *Nardus*-rich grasslands are notable for supporting a large population of the mountain ringlet butterfly *Erebia epiphron.* Red deer (*Cervus elaphus*) and mountain hare (*Lepus timidus*) are also noted as being located in this habitat.

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

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

Maintain approximately 11.13ha of habitat at Ben Heasgarnich.

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. Estimating cover can be difficult for this community as its niche is within steep rocky areas where access can be limited. Fundamentally, however the habitat extent should be restored and its distribution throughout the site.

2b. Restore 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. . A further reduction of grazing pressure has the ability to restore or extend this scarce habitat.

Where appropriate levels of grazing/browsing are in place to allow survival of component species of the habitat the structure, throughout the site, should meet the following conditions:

- 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 3 for list) should show evidence of grazing.

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

Where appropriate levels of disturbance are in place, that allow for survival of component species of the habitat, throughout the site, then the following conditions should be met:

- 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 5% of the ground cover should be disturbed bare ground*.

* The emphasis is on 'disturbed' rather than 'bare'.

Furthermore, muirburn negatively impacts upon this habitat type.

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

The Tall herb communities habitat is a species-rich habitat corresponding to NVC type *Luzula sylvatica – Geum rivale* tall-herb community. At Ben Heasgarnich the tall herb communities habitat is widespread but patchy, largely restricted to steep cliffs and often inaccessible cliff ledges and crags There are extensive stands on Creag na h-Achlarich, on Sail Dubh and on the southeast side of Sron nan Eun. More fragmented stands are found on most other cliffs slopes. All belong to the U17 *Luzula sylvatica – Geum rivale* tall-herb vegetation community, though, due to the often calcareous nature of the rocks there are also frequently small pockets of the OV39 *Asplenium trichomanes – Asplenium ruta-muraria* community consisting of small patches of ferns and calcareous bryophytes.

It is characterised by species-rich mix of tall, broad-leaved herbs, most of which are otherwise rare in the uplands owing to their sensitivity to grazing.

In summary typical species for Tall-herb communities at Ben Heasgarnich are:

Deschampsia cespitosa	tufted hairgrass
Angelica sylvestris	wild angelica
Rhodiola rosea	Rose root
Festuca ovina	sheep fescue
Hylocomium splendens	mountain fern mos
Alchemilla glabra	smooth lady's mantle
Bryum pseudotriquetrum	marsh bryum
Chrysosplenium oppositifolium	opposite-leaved golden-saxifrage
Alchemilla alpina	alpine lady's mantle
Vaccinium myrtillus	blaeberry
Anthoxanthum odoratum	sweet vernal grass

Conservation Objectives for Alkaline fens [H7230] (Base-rich fens)

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

Maintain the extent of existing base-rich fen to 21.16ha at Ben Heasgarnich.

However, due to the small 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. At Ben Heasgarnich, base rich fens are frequently found in calcareous grasslands, widespread throughout the SAC with the greatest extents found at Allt Challium, Sron nan Eun.

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

This habitat is found where there are base rich springs or seepages, on both peat and mineral soils. It can be found up to moderate altitudes, but generally below 600 m. Tufa deposition may sometimes occur.

At Ben Heasgarnich, the base rich fens have a typically patchy vegetation cover dominated by sedges and mosses. The insectivorous butterwort (*Pinguicula vulgaris*) is also common.

Grazing at low levels can be beneficial in helping to maintain species-richness and in preventing succession. Avoiding over-grazing and excessive poaching is essential detrimental which can result in damage to the fragile tufa formations and/or result in disturbed bare ground.

The current level of grazing is appropriate for this feature, but the impacts of any changes in stocking densities or local deer populations should be monitored.

Less than 5% of the ground cover, of whole feature should be disturbed bare ground.

This habitat is very sensitive to muirburn and should be avoided in these areas.

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

At Ben Heasgarnich the core vegetation of this habitat is short sedge mire (mire with low-growing sedge vegetation) of the following NVC types:

- M9 *Carex rostrata – Calliergon cuspidatum/giganteum* mire;
- M10 *Carex dioica – Pinguicula vulgaris* mire, and
- M13 *Schoenus nigricans – Juncus subnodulosus* mire community.

For the base-rich fen on this site the relevant NVC type and indicator species are:

M9

This habitat is rich in brown mosses; bottle sedge *Carex rostrate;* bogbean *Menyanthes trifoliate;* marsh cinquefoil *Potentilla palustris*

M10

This habitat is more diverse being found at a lower altitude species include a number of Brown mosses and

Briza media	quaking grass
Carex dioica	dioecious sedge
Carex flacca	glaucous sedge
Carex hostiana	tawny sedge

Carex viridula	yellow sedge
Carex panacea	carnation sedge
Carex pulicaris	flea sedge
Juncus articulates	jointed rush
Linum catharticum	fairy flax
Pinguicula vulgaris	common butterwort
Primula farinose	birdseye primrose
Selaginella selaginoides	lesser clubmoss
Triglochin palustris	marsh arrow-grass

M13

Brown mosses and*;*

Anagallis tenella	chaffweed
Angelica sylvestris	wild angelica
Carex panacea	carnation sedge
Circium palustre	marsh thistle
Juncus subnodulousus	blunt-flowered rush
Mentha aquatic	water mint
Schoenus nigricans	black-bog rush

Excessive grazing/browsing/trampling by deer and/or livestock can contribute to a deterioration in the habitat structure, leading to a reduction or loss in the typical/indicator species for this habitat and should be only be done in a controlled, appropriate manner that helps restore the habitat.

Conservation Objectives for Alpine pioneer formations of the *Caricion bicoloris-atrofuscae* [H7240] (High altitude plant communities associated with areas of water seepage)

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

Maintain the extent of existing High-altitude plant communities associated with areas of water seepage at 21.16ha.

However, this habitat is fragmented and usually forms mosaics and complex transitions to other upland habitat types, 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 Heasgarnich this habitat is located on the higher slopes and the vegetation communities contain higher altitude species

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

This habitat is maintained by harsh climatic and soil conditions. There is variation in this habitat because of differences in altitude, geographic location, length of snow-lie, nature of the substrate, and the amount of water flushing the communities.

Over-grazing and excessive poaching/trampling can be detrimental to this habitat as the flora in its communities are fragile and recovery from such damage is slow.

Disturbed bare ground should therefore be minimal with little active drainage, resulting from ditches or heavy trampling or tracking. When the condition of this habitat was last assessed, it was found to be in unfavourable condition as trampling by deer was found to be an issue particularly amongst the unnamed cliffs above Glas Leathad on the south west section of the SAC above Allt Challuim.

Grazing at Ben Heasgarnich is now considered appropriate to this feature and will result in restoring the extent and condition of the qualifying feature.

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

High-altitude mires are frequent on Ben Heasgarnich and include both open and closed types of mire, M11 *Carex demissa - Saxifraga aizoides* and M12 *Carex saxatilis* respectively. Rarer species present include:

Carex atrofusca	scorched alpine-sedge
Kobresia simpliciuscula	false sedge
Equisetum variegatum	variegated horsetail
Juncus castaneus	chestnut rush
J. biglumis.	two-flowered rush

Excessive grazing/browsing/trampling by deer and/or livestock can contribute to a reduction or loss in typical species. Work aimed at reducing the impacts of deer and livestock will therefore help to restore the viability of the typical species of the habitat.

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

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 18.65. This should be maintained.

However, due to the localised and fragmentary nature of this habitat current baseline estimates may not be accurate new survey may not represent real change but greater precision.

At Ben Heasgarnich this habitat is found in cliff faces and individual and is also closely associated with acidic scree where the same rock type is also found forming the scree, and/or plants in crevices on base-rich rocks where calcareous bands of rock are found within siliceous rock.

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

This habitat fragmented across Ben Heasgarnich its associated flora are adapted to harsh and sometimes extreme conditions including drought with limited soil.

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. In order to maintain good habitat condition less than 10% of ground cover should be made up of bracken and/or scattered native trees and scrub.

Inappropriate grazing regimes have the potential to harm this feature through over-grazing and trampling damage. However, at Ben Heasgarnich this habitat is largely protected due to its inaccessibility by deer and sheep.

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

At Ben Heasgarnich there are extensive calcareous schist outcrops with a wide range of characteristic chasmophytic plant species. Of particular interest is the very rare high-altitude crevice flora, which includes species such as:

Cystopteris montana	mountain bladder-fern
Woodsia ilvensis	oblong woodsia
Draba norvegica.	rock whitlow grass
Deschampsia flexuosa	wavy hair-grass
Huperzia selago	fir clubmoss
Veronica alpine	alpine speedwell

And bryophytes *Amphidium mougeotii* and *Racomitrium* spp.

This is one of the most important sites in the UK for arctic-alpine flora because of the number of rare species present.

The level of grazing and browsing at Ben Heasgarnich is appropriate for this feature to allow for continued distribution and viability of these species within the site.

Conservation Objectives for Calcareous rocky slopes with chasmophytic vegetation [H8210] (Plants in crevices on base-rich rocks)

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

The extent of the plants in crevices on base-rich rocks feature has been estimated at 55.67ha. 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 Heasgarnich this habitat is found on cliffs and ledges across the SAC and is also closely associated with base-rich scree where the same rock type is also found forming the scree, and/or plants in crevices on acid rocks where calcareous bands of rock are found within siliceous rock.

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.

However, the base-richness of calcareous rocks may encourage competition from more vigorous native species, such as bracken and/or scattered native trees or scrub; or non-native invasives. Colonisation or shading of this habitat by vigorous native species, tree growth or invasive non-native species can reduce or eliminate cover of indicator species.

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 grazing as it is generally located in inaccessible areas.

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

Plants in crevices on base-rich rocks is characterised by the presence of bryophytes such as Tortella tortuosa, Anoectangium aestivum and Ctenidium molluscum.

Associated vascular plants include:

Cystopteris fragilis	brittle bladder-fern
Asplenium viride	green spleenwort
Poa glauca	glaucous meadow-grass

However, floristic variation within the habitat type is influenced by geographical location, altitude and rock type.

At Ben Heasgarnich typical species for this habitat includes *Carex – Racomitrium and Juncus- Racomitrium* (in the most exposed locations) moss-heath occurs on windswept ground, blown clear of snow during winter. Where snow-lie builds up, *Carex - Racomitrium* moss-heath gives way initially to *Nardus – Carex* grass-heath, 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 on the edges of high plateaux or near summits, where deep snow accumulates. The *Alchemilla – Sibbaldia* dwarf-herb community occurs where there is base-rich flushing.

Heavy grazing by livestock and/or deer can lead to damage to the structure of this habitat, management of these impacts needs careful management and monitoring to ensure the habitat is maintained on site.

Typical fauna in this habitat includes a range breeding waders, mountain hare (*Lepus timidus*) red deer (Cervus elaphus), golden eagle (*Aquila chrysaetos*) peregrine falcon (*Falco peregrinus*) and ptarmigan (*Lagopus muta*).

Conservation Measures

Ben Heasgarnich SAC 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 all habitats

Issue	Measure	Responsible party
Herbivore impacts (grazing and trampling)	Ensure that herbivore impacts primarily by sheep but also deer on the feature are 'low' based on the FCS/SNH Herbivore Impact Assessment Process to prevent browsing and/or loss of typical species. Stock reduction and overwintering of livestock can be achieved through SRDP, and deer management through Breadalbane DMG	Land managers, NatureScot, Deer Management Groups
Muirburn	Any burning should be managed to avoid sensitive habitats.	Land managers
Recreation activity	Ensure trampling by walkers is minimal to maintain cover of typical species.	Land owners, land managers.

Colonisation and/or shading by native and/or non-native species [eg bracken, trees] - Calcareous rocky slopes with chasmophytic vegetation	Ensure colonisation or shading of this habitat by tree growth; woodland expansion; bracken; invasive non-natives is low level and scattered to maintain cover of indicator species, including bryophytes.	Land managers, NatureScot
Research and monitoring	HIAs and Site Condition Monitoring for condition and population status to identify emerging impacts on the habitat and their causes, in order to understand the long-term issues, and to inform future management of the habitat.	NatureScot

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