MOFFAT HILLS
SPECIAL AREA OF CONSERVATION (SAC)

CONSERVATION ADVICE PACKAGE

Image: NatureScot

Site Details

Site name:	Moffat Hills
Map:	https://sitelink.nature.scot/site/8317
Location:	South West Scotland
Site code:	UK0030208
Area (ha):	2,881.72
Date designated:	17 March 2005

Qualifying features

Qualifying feature	SCM assessed condition on this site	SCM visit date	UK overall Conservation Status
Dry heaths (European dry heaths) [H4030]	Unfavourable Declining	11 September 2005	Unfavourable - Bad
Alpine and subalpine heaths (Alpine and Boreal heaths) [H4060]	Unfavourable Declining	29 August 2005	Unfavourable - Bad
Montane acid grasslands (Siliceous alpine and boreal grasslands) [H6150]	Unfavourable No change	8 August 2013	Unfavourable - Bad
Tall herb communities (Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels) [H6430]	Favourable Maintained	8 August 2013	Unfavourable - Bad
Blanket bog [7130]*	Unfavourable Declining	11 September 2005	Unfavourable - Bad
Acidic scree (Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [H8110]	Unfavourable No change	11 September 2005	Unfavourable - Inadequate
Plants in crevices on acid rocks (Siliceous rocky slopes with chasmophytic vegetation) [H8220]	Favourable Maintained	8 August 2013	Unfavourable - Bad
Plants in crevices on base-rich rocks (Calcareous rocky slopes with chasmophytic vegetation) [H8210]	Unfavourable No change	11 September 2005	Unfavourable - Inadequate

Notes:
Assessed condition refers to the condition of the SAC feature assessed at a site level as part of SNH'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.
* Indicates a Habitats Directive Priority Habitat

Other overlapping Protected Areas:

Moffat Hills Site of Special Scientific Interest (SSSI)

Key factors affecting the qualifying features

Roughly three-quarters of the site is now managed principally for nature conservation. National Trust for Scotland (NTS) manage visitor engagement on their Grey Mare's Tail Reserve, with recreation access by visitors to the waterfall, they also manage a more extensive area of the Moffat Hills. Borders Forest Trust (BFT) manage a woodland restoration project at Carrifan. The project aim is to create a natural woodland mosaic including much open ground, respecting the qualifying habitats that are present.

Dry heaths

Dry heaths occur on freely-draining, acidic to almost neutral soils with generally low nutrient content on this site. Ericaceous dwarf-shrubs dominate the vegetation, but all heaths vary in their flora and fauna according to altitude, aspect, soil conditions (especially base-status and drainage), maritime influence, and grazing and burning intensity.

The dry heaths are managed as extensive grazing for livestock (sheep); feral goats and deer are also present, and the key management issues affecting this habitat are the nature and extent of grazing/browsing and trampling by livestock. Other key factors currently (or potentially) affecting this habitat include loss of habitat to commercial forestry, problematic native and non-native species, recreational impacts, and renewable energy proposals.

This feature has been assessed through NatureScot's Site Condition Monitoring programme as being in unfavourable declining condition at this SAC due to the effects of grazing/browsing by sheep and feral goats (which has removed too much growth from dwarf shrubs such as heather), trampling by sheep (which has led to creation of too much bare, disturbed ground), and burning. Management of this habitat is usually achieved by manipulation of the grazing type, timing, intensity and frequency. Additional influences are tracks and paths that can cause fragmentation, degradation and erosion.

Further information about dry heath can be found here.

Alpine and subalpine heaths

Alpine and subalpine heaths are found on Coomb Craig and Rough Craigs just below White Coomb, on the south-west facing slopes of Under Saddle Yoke and on the top of Nether Coomb Craig. Exposure or snow-lie suppresses the growth of dwarf-shrubs and favours growth of characteristic lichens and bryophytes. Alpine

heaths are climax vegetation that develops above the natural altitudinal tree-line. Subalpine heaths develop on lower slopes, where they merge gradually into dry heaths at lower altitude.

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, although rocky ground can be important in protecting heaths from fire.

On the Moffat Hills alpine and subalpine heaths are on the southern edge of their range and are the best examples in the Southern Uplands. The habitat is more commonly found further north and west, so their presence here represents an outlier of the main concentration of the habitat.

The key management issues affecting this habitat are the nature and extent of grazing/browsing by livestock and possible climate change due to this sites geographical location and relatively low maximum altitude (822m or roughly 2700ft). Only a small increase in temperature would facilitate invasion by species previously restricted to lower altitudes

Other key factors that could potentially affect this habitat include invasive native and non-native species, dunging, atmospheric nutrient deposition, trampling from livestock and recreational pressure.

This feature has been assessed through NatureScot's Site Condition Monitoring programme as being in unfavourable declining condition at this SAC due to the effects of grazing/browsing by sheep and feral goats (which has removed too much growth from dwarf shrubs such as heather).

Further information about alpine and subalpine heaths can be found here.

Montane acid grassland

On the Moffat Hills this habitat occurs on the summits of Carrifran Gans and White Coomb. There are smaller stands on Lochcraig Head, in the upper corrie between there and Firthhope Rig and on Carrifran Gans.

The key management issues are the nature and extent of browsing and grazing by livestock (feral goats are also present). Other key factors currently (or potentially) affecting this habitat include burning, non-native species, and air pollution from the intensively managed and fertilised fields on the low ground to the west and south-west (upwind) of the high ground.The habitat is vulnerable to nutrient inputs and physical damage including dunging and urination by grazing animals, deposition of pollutants, human and animal trampling and use of all-terrain vehicles.

This feature has been assessed through NatureScot's Site Condition Monitoring programme as being in unfavourable no change condition at this SAC due to the effects of grazing/browsing by sheep (feral goats) and too high a cover of grasses and small herbs in the moss sward.

Further information about montane acid grassland can be found here.

Tall herb communities

Tall herb communities are prevalent on part of the site, notably where grazing has been excluded and /or is inaccessible to livestock and wild herbivores. Management of the site is less likely to impact on this habitat, which although restricted across this site and elsewhere in the Southern Uplands, has significant protection on the Carrifran section of the SAC due to its management for conservation. The habitat provides a refuge for rare, grazing-sensitive, montane plants.

Key management issues include ensuring only low/no grazing by any herbivore.

Further information about tall herb communities can be found here.

Blanket bogs

This Habitats Directive priority habitat is found in areas of moderate to high rainfall with a low level of evapotranspiration allowing peat to develop over large expanses of undulating ground. Blanket bogs are considered active when they are supporting a significant area of vegetation that is peat-forming.

Blanket bog is the only qualifying priority habitat for the site and is widespread covering the tops of most of the higher gently sloping hills and the floors of some of the corries.

Management issues are related to the nature and extent of grazing/browsing and trampling, burning, changes in the hydrology, non-native species, abiotic natural changes, air pollution, infrastructure development and recreation.

This feature has been assessed through NatureScot's Site Condition Monitoring programme as being in unfavourable declining condition at this SAC due to the effects of grazing/browsing by sheep (feral goats) on dwarf-shrub shoots, the area of eroding peat exceeded the area of redeposition/revegetation and the cover or presence of indicator species not meeting the requirements. Historic erosion and herbivore impacts have resulted in alternative plant communicates not indicative of the feature and further contributing to drying of the habitat. In addition the extensive burning regime carried out on the hills of Bell Craig to Mid Rig is probably detrimental to the blanket bog habitat present on these hills.

A Conservation Action Plan under the Collaborative Action for the Natura Network (CANN) project has been written for the blanket bog habitat on Moffat Hills.

Further information about blanket bog can be found here.

Acidic scree

In the Moffat Hills, acidic (siliceous) scree is present at the base of most of the crags and along the steep south-east facing slopes where Tail Burn enters Moffat Dale. It is particularly abundant at the head of Black Hope and below the crags on the west side of the valley as well as below the crags that surround Loch Skene. Scree is intrinsically unstable and rocks will frequently move meaning that this habitat is naturally vulnerable to disturbance. Acidic scree is made up of siliceous rocks such

as quartzite, granite and sandstone. They may occur at any altitude, but screes in the lowlands are excluded from the Annex I definition.

The key issues affecting this habitat are the nature and extent of grazing/browsing and trampling by animals and people.

This feature has been assessed through NatureScot's Site Condition Monitoring programme as being in unfavourable no change condition at this SAC due to the effects of grazing/browsing by sheep and goats, with goats accessing the steep slopes where sheep would not normally graze. Trampling by sheep and/or goat has also created paths, disturbing the scree.

Further information about acidic scree can be found here.

Plants in crevices on acid rocks

The chasmophytic (grows in the crevices of rocks) vegetation that colonises siliceous (silica based, acidic) rocks is widespread in upland areas on Moffat Hills SAC. The plants in crevices are found in harsh and sometimes extreme conditions with limited soil development, but where there is some shelter and moisture in rock crevices 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.

The key management issues affecting this habitat are the nature and extent of grazing/browsing and trampling and presence of non-native invasive species.

Further information about plants in crevices on acid rocks can be found here.

Plants in crevices on base-rich rocks

This plant community is found in crevices on base-rich rock such as limestone and calcareous schists where there is some shelter and moisture. Plants tend to be sparse and scattered due to the limited soil development and harsh and sometimes extreme conditions. Chasmophytic plant species such as these (which grow in the crevices of rocks) are adapted to the stresses of drought but can be sensitive to overgrazing and trampling, although many sites are protected by their inaccessibility. The base-richness of calcareous rocks may encourage competition from more vigorous native species, or non-native invasives such as New Zealand willowherb *Epilobium brunnescens,* which has the potential to progressively out-compete the typical species of this habitat.

The key management issues affecting this habitat are the nature and extent of grazing/browsing and trampling by sheep and feral goats as well as the presence of non-native invasive species.

This feature has been assessed through NatureScot's Site Condition Monitoring programme as being in unfavourable no change condition at this SAC due to the lack of sufficient indicator species being found. The highly scattered locations of the indicator species on the rock outcrops is felt to be responsible for this. Information on the locations where scarce calcicolous arctic-alpine plants have been recorded on the Moffat Hills is necessary to target future survey/monitoring.

Further information about plants in crevices on base-rich rocks can be found here.

Conservation Priorities

Blanket bog is a Habitats Directive priority habitat, and montane and subalpine heath and montane acid grassland are the two habitats which were the primary reason for site selection. Appropriate management of these habitats should therefore generally have priority, followed by any features in unfavourable condition, if any conflict between management of different habitats were to arise. However, the impact of any proposed management measure on all the qualifying features should first be considered as part of a Habitats Regulations Appraisal.

In practice, there is unlikely to be any conflict between management of the differing features of Moffat Hills SAC. Habitat and species distribution is mainly determined by environmental conditions and all qualifying SAC features would benefit from a low herbivore impacts in the wider area.

Conservation Objectives for all features on Moffat Hills SAC

1. To ensure that the qualifying features of Moffat Hills 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, band 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 Moffat Hills SAC is restored and by meeting objectives 2a, 2b and 2c for each qualifying feature.
The aim at this SAC is to maintain or restore all the qualifying habitats in a favourable condition as a contribution to their wider conservation status. Therefore any impacts to 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 dry heath (European dry heaths)

2a. Restore the extent and distribution of dry heath within the site

Restore dry heath to a minimum area of approximately 450 ha within the SAC. The area figure has been taken from the Standard Data Form, and is an estimate based on the fact that dry heaths can form complex mosaics with habitats such as acid grasslands, wet heaths and bogs.

There should be no measurable net reduction in the extent of the habitat and its distribution throughout the site. The extent and distribution of the habitat throughout the site should therefore be restored.

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:

- Limited muirburn carried out in accordance with the Muirburn Code
- Light levels of grazing by livestock (sheep and to a limited degree, cattle), feral goats and deer. The extent and structure of dry heath at Moffat Hills is currently affected by sheep and feral goats.
- Avoidance of loss of habitat through increased extent of successional (trees and scrub) habitats, afforestation or invasion by non-native invasive species.
- Avoidance of negative effects of access and recreation activities.

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

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

Maintaining dry heath is a fine balance between degrading to grasslands as a result of intensive management, and succession to scrub from too low a level of browsing, grazing or burning. The more important requirement is that grazing levels are low enough to prevent degrading to grassland as a result of intensive management. Sheep are the main herbivores on this site, and appropriate management of their numbers and distribution across the site is important to maintain dry heath habitat and to prevent habitat degradation from overgrazing or trampling. Hares are also present here, but their population size is small enough that they do not have a detrimental effect on the dry heath habitat. The north eastern part of the site is relatively lightly grazed by sheep, feral goats

and deer. Until recently, the whole of the south western half of the site used to be widely grazed by sheep, goats, deer and, to a limited degree, cattle, and the combined grazing pressure was locally heavy. The feral goats are having a detrimental effect on some areas of the dry heath habitat.

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

- restore the height structure of the vegetation by keeping grazing/browsing by sheep, cattle and feral goats low so that less than1/3 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.
- restore the ground cover structure of the heath by minimising trampling by sheep and cattle 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, or increasing use of the habitat by sheep, cattle and feral goats.
- Cover by species that are not typical of this habitat should not increase. Examples of inappropriate species are bracken and non-native species.
- Any burning on Moffat Hills SAC should follow the Muirburn Code to avoid damage to the structure, function and supporting processes of dry heath. Intense burning regimes have previously damaged some areas of dry heath (on the hills of Bell Craig to Mid Rig), burning as a management tool for the site has now not been used for several years.

2c. Restore the distribution and viability of typical species of the dry heath.

The vast majority of dry heath on the site consists of *Calluna vulgaris-Vaccinium myrtillus* heath (H12). On the rockier, steeper slopes the typical sub-community of *Calluna vulgaris-Erica cinerea* heath (H10a) is also present, while the upper parts of steep slopes on most of the hills have stands of *Vaccinium myrtillus-Deschampsia flexuosa* heath (H18).

There should be no loss or significant decline in the distribution or abundance of these species.

This habitat is used for livestock grazing (sheep and to a limited degree, cattle). Feral goats and deer are also present. High levels of herbivore use could damage dry heath, but a low level of grazing and browsing is necessary to maintain this habitat. To restore the dry heaths habitat a reduced sheep stocking density is now managed through the owners entering into SRDP, AECS Contracts and Management Agreements with NatureScot. A feral goat management plan has been created and agreed with the key stakeholders with the aim of reducing damage to features, whilst recognising their cultural heritage and enabling opportunities for viewing large herbivores for visitors to the site.

Since 2000, large grazing animals have been progressively excluded from the catchment of the Carrifran Burn, which has been enclosed by a deer fence as part of a project of woodland restoration, so that this valley and parts of the surrounding hills are now effectively ungrazed. Although there has been tree planting over much of the lower ground within the valley, the important upland habitats will remain unplanted and are generally expected to benefit from the cessation of grazing. Nevertheless, there is evidence of the

negative effects of overgrazing, particularly in the SW quarter of the site, and it is principally to address this a general review of management is considered appropriate.

Burning should no longer/not take place in sensitive areas, notably on steep slopes, in areas of uneven-aged *Calluna* and in wet hollows. Some areas of dry heath have probably been lost to acid grassland due to burning, combined with high levels of grazing by sheep.

In addition, dry heath is important for breeding merlin, short-eared owl and hen harrier.

Conservation Objectives for alpine and subalpine heaths (alpine and boreal heaths)

2a. Restore the extent and distribution of alpine and subalpine heaths within the site

Restore to approximately 11.53 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 subalpine heaths can grade into other heath types, especially the latter into floristically-similar dry heaths. Modest changes in the area of Alpine and subalpine heaths assessed by future surveys may therefore represent changes in survey accuracy rather than change in habitat area.

The overarching objective is for there to be no measurable net reduction in the distribution of alpine and subalpine heaths throughout the site or the combined extent of alpine and subalpine heaths together with dry heath.

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

- Grazing levels.
- Habitat loss through increased extent of adjacent natural habitats, afforestation or invasion by invasive non-native species.
- The effects of access and recreation.
- Atmospheric nutrient and pollutant deposition.

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

2b. Restore the structure, function and supporting processes of alpine and subalpine heaths

Alpine and subalpine heaths are climax vegetation in exposed and extreme conditions on this site. This results in slow growth of plants which are slow to recover from any disturbance.

As with several other habitats at Moffat Hills, maintaining alpine and subalpine heaths is a fine balance between degrading to grasslands (which tends to happen if grazing/browsing levels are too high) and succession to scrub (which happens if browsing/grazing is too low). At Moffat Hills, typical heath species composition should be restored by avoiding overgrazing by sheep as well as feral goats and allowing typical plants (listed in 2c) to grow and set seed.

NatureScot's Site condition Monitoring has recorded undesirable grassland species within this habitat, with sample points showing more than a third of the dwarf-shrub shoots as being browsed. Grazing should be only be done in a controlled, sustainable manner.

To restore the alpine and subalpine heath habitats, a reduced sheep stocking density is now managed through the owners entering into SRDP, AECS Contracts and Management Agreements with NatureScot.

Deer and hares are also present. The low population of hare is considered to be unlikely to have a detrimental effect on the habitat.

Recreational pressure is an issue at this site and is largely hill walking; this is well managed although an increase in visitor pressure has been noted in the Loch Skeen to Mid Craig area of the National Trust for Scotland Reserve at Grey Mare's Tail.

Alpine and subalpine heath should not be burnt. 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').

2c. Restore the distribution and viability of typical species of alpine and subalpine heaths

The dominant plants are dwarf-shrubs of heather *Calluna vulgaris*, bilberry *Vaccinium myrtillus* or juniper *Juniperus communis*, which are low-growing or prostrate owing to exposure to high winds or prolonged snow cover at moderately high altitudes.

The predominant Alpine heath NVC type on the Moffat Hills is

- *Calluna vulgaris - Vaccinium myrtillus* heath H12.

Typical species found here include:
Calluna vulgaris, Carex bigelowii, C. pilulifera, Vaccinium myrtillus, V. vitis-idaea, Empetrum nigrum, Polytrichum alpinum, Hypnum jutlandicum and *Rhytidiadelphus loreus.*

The subalpine heath NVC types present on the Moffat Hills are

- *Calluna vulgaris – Erica cinerea* heath H10
- *Calluna vulgaris – Vaccinium myrtillus* heath H12
- *Vaccinium myrtillus – Deschampsia flexuosa* heath H18
- *Calluna vulgaris – Vaccinium myrtillus – Sphagnum capillifolium* heath H21

Typical species found include:
Dwarf shrubs*, Calluna vulgaris, Erica cinerea, Empetrum nigrum,* and *Vaccinium myrtillus.*
Grasses and sedges *Festuca ovina, Deschampsia flexuosa, Agrostis capillaris* and *Anthoxanthum odoratum*, *Carex binervis, C. panicea* and *C.pilulifera*

Small herbs *Potentilla erecta, Galium saxatile, Viola riviniana* and *Campanula rotundifolia.*

Bryophytes *Racomitrium lanuginosum, Hylocomium splendens, Hypnum jutlandicum, Rhytidiadelphus loreus* and *Pleurozium schreberi.*

There should be no loss or significant decline in the distribution or abundance of these species.

On the Moffat Hills alpine and subalpine heaths are on the southern edge of their range with lichen cover being relatively low.

An appropriate level of grazing is needed to maintain this habitat. Most of the grazing on Moffat Hills SAC is by sheep. Overgrazing has occurred, but a reduced sheep stocking density is now managed through the owners entering into SRDP, AECS Contracts and Management Agreements with NatureScot. A feral goat management plan has been agreed with key stakeholders, with the aim of reducing damage to features whilst recognising their cultural heritage and enabling opportunities for visitors to the site to view these animals. Typical associated vertebrates of the high habitats at the Moffat Hills SAC are the mammals roe deer *(Capreolus capreolus)* mountain hare (*Lepus timidus*) and feral goat *(Capra hircus)* and the birds curlew *(Numenius arquata)*, skylark *(Alauda arvensis)* and meadow pipit*. (Anthus pratensis).*

Conservation Objectives for montane acid grasslands (Siliceous alpine and boreal grasslands)

2a. Restore the extent and distribution of the montane acid grasslands within the site

Restore the habitat extent to approximately 35ha. 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.

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

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

2b. Restore the structure, function and supporting processes of montane acid grasslands

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 throughout the site and to restore its structure. Some overgrazing has been recorded on this habitat. However, the SCM report for the whole SAC states a general improvement in the condition of the vegetation since 2005. A reduced sheep stocking density is now managed through the owners entering into SRDP, AECS Contracts and Management Agreements with NatureScot.

The level of grazing by sheep and feral goats should allow typical plants (listed in 2c) to grow and set seed. Mountain hares are also present, but due to their relatively small population, they currently have little effect on montane acid grasslands.

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. Restore the distribution and viability of typical species of the montane acid grasslands
There are multiple NVC communities that can form montane acid grassland habitat. 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. The Montane acid grassland found in the Moffat Hills SAC is described by the following NVC plant communities: • *Carex bigelowii - Racomitrium lanuginosum* moss heath U10 • *Nardus stricta - Carex bigelowii* grassland U7 *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. 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. On Moffat Hills the U10 heaths vary from very open, grassy communities with a very thin layer of *Racomitrium* to deep, soft, continuous carpets of the moss. Grasses and herbs are more common in than in more typical Highland examples of U10. Typical species of montane acid grassland include: Woolly hair moss *(Racomitrium lanuginosum),* stiff sedge *(Carex bigelowii*), alpine lady's mantle *(Alchemilla alpina),* mat-grass *(Nardus stricta),* fir clubmoss *(Huperzia selago),* alpine clubmoss (*Diphasiastrum alpinum)* and dwarf willow (*Salix herbacea).* High levels of herbivore use can be damaging, but a low level of grazing and browsing is necessary to maintain this habitat. A reduced sheep stocking density is now managed through the owners entering into SRDP, AECS Contracts and Management Agreements with NatureScot. A feral goat management plan has been agreed with key stakeholders, with the aim of reducing damage to features whilst recognising their cultural heritage and enabling opportunities for visitors to the site to view these animals. There is no easy way to reduce the proportion of grasses and increase the proportion of *Racomitrium* in these grassy summit heaths. A complete reduction in grazing can lead to the grasses growing away more strongly and taking over the vegetation, converting it from a moss heath to an acid grassland. This, indeed, has already happened at one of the sample points within the ungrazed Carrifran catchment. A reduction in summer grazing, rather than a complete removal of grazing, would seem the safest option. This habitat is important for breeding hen harrier and merlin.

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

2a. Maintain the extent and distribution of the tall herb communities within the site
Maintain approximately 0.58ha tall herb communities. The area figure has been taken from the Standard Data Form, and is an estimate based on this habitat often being small and fragmented. 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 as it has typically been limited by grazing pressure.

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

2b. Maintain the structure, function and supporting processes of the tall herb communities

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. Additional grazing pressure, especially from highly agile species such as feral goats, has the ability to cause major losses. Direct management of grazing pressure has the ability to restore or extend this scarce habitat.

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 structure of the habitat:

- 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. This is not happening at Moffat Hills at present, but if it were to happen in future it could be controlled by additional grazing. In Carrifran Glen, grazing by sheep and goats was removed in 2000 and 2004 respectively. Although this projects aim is to create a natural woodland mosaic, it is to include much open ground and will respect the habitats that are present.

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 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, as this can damage the structure, function and supporting processes of this habitat.

2c. Maintain the distribution and viability of typical species of the tall herb communities

This is a species-rich habitat corresponding to NVC type U17 *Luzula sylvatica – Geum rivale* tall-herb community that is found on un-grazed cliffs and rock ledges.

This habitat is characterised by the abundance of a species-rich mix of tall, broad-leaved herbs, most of which are otherwise rare at Moffat Hills owing to their sensitivity to grazing.

Management should be the continuation of low/no grazing by any herbivore, including feral goats. A feral goat management plan has been agreed with key stakeholders, with the aim of reducing damage to features whilst recognising their cultural heritage and enabling opportunities for visitors to the site to view these animals.

Those found at this SAC include:

Luzula sylvatica, Deschampsia cespitosa, Carex demissa, C. panicea, Dryopteris dilatata, D. filix-mas, Sedum rosea, Alchemilla glabra,, Angelica sylvestris, Cirsium helenioides, Filipendula ulmaria, Geum rivale, Valeriana officinalis, Geranium sylvaticum, Trollius europaeus, Crepis paludosa, Succisa pratensis and *Ranunculus acris,* and smaller plants such as *Saxifraga stellaris, Thymus polytrichus, Thalictrum alpinum, Saussurea alpina, Selaginella selaginoides, Oxyria digyna, Persicaria vivipara, Rhinanthus minor, Galium boreale* and *Primula vulgaris.* The rare *Carex atrata* and *C. capillaris* can also be found.

Conservation Objectives for blanket bog

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

There should be no measurable net reduction in the extent of the habitat on the site such that the area of blanket bog is restored to approximately 377.51 ha

Blanket bog typically covers very large areas, forming complex mosaics with other wetland habitats as well as heath and grass habitats in drier areas.

Modest changes in the area of blanket bog assessed by future surveys may represent changes in survey accuracy rather than change in habitat area.

The overarching objective is for there to be no measurable net reduction in the distribution of blanket bog throughout the site or the combined extent of qualifying habitats in the blanket bog heath/grassland mosaic.

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

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

The predominant requirement for blanket bog is to be <u>actively</u> 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. Ditch blocking and peat stabilisation work was undertaken at Little Firthhope in 2014/15 by the Borders Forest Trust with Peatland Action support. Follow up work is required to further reduce water movement and peat erosion; this is on steeper ground and therefore more difficult to manage. There have been difficulties with the availability of suitable contractors and the Peatland Action funding has been deferred for these follow up works. All other areas of blanket bog in need of restoration have been identified and actions planned or remedial works are in place.

The objectives for restoring blanket bog on Moffat Hills SAC are to:

- Restore the height structure of the vegetation by keeping grazing/browsing by sheep and feral goats low 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.
- Restore the ground cover structure of the bog by minimising trampling by 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.
- Restore any significant areas of currently eroding peat by re-establish peat-forming vegetation. Exposed peat haggs at Rotten Bottom have recovered by the removal of grazing pressures without additional intervention. This has been followed up with advice from the Crichton Carbon Centre which confirmed no further action is required.

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, introducing heavier livestock such as cattle or increasing use of the habitat by sheep.
- Cover by species that are not typical of this habitat should not increase. Examples of inappropriate species are bracken 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. Burning as a management tool on the Moffat Hills has now not been used for several years following previous extensive burning regimes, carried out on the hills of Bell Craig to Mid Rig, which were probably detrimental to the blanket bog habitat.

The intensity of grazing by sheep varies considerably across the site, with the highest levels of grazing occurring in Black Hope and the ground to the south-east of the A708. In complete contrast, there is intended to be no grazing by large herbivores within the Carrifran valley, which has been fenced-off to promote woodland regeneration, and, at present, this is possibly having a positive effect on the blanket bog. The Borders Forest Trust have been managing roe deer in Carrifran with a corresponding positive impact across other parts of the site where control is limited or absent. A reduced sheep stocking density is now managed through the owners entering into SRDP, AECS Contracts and Management Agreements with NatureScot.

Grazing by goats occurs on the National Trust for Scotland property and they may be having a detrimental effect where sheep would not normally graze. A feral goat management plan has been created and agreed with the key stakeholders with the aim of reducing damage to features, whilst recognising their cultural heritage and enabling opportunities for viewing large herbivores for visitors to the site. No control is currently taking place other than by exclusion from parts of the site. The current population, distribution and impacts on the blanket bog feature are currently also unknown.

2c. Restore the distribution and viability of typical species of the blanket bog

Blanket bog habitat in the Moffat Hills SAC mostly corresponds to NVC type *Calluna vulgaris - Eriophorum vaginatum* mire community M19. There is also *Trichophorum germanicum - Eriophorum vaginatum* bog M17 with small areas of the *Erica tetralix - Sphagnum capillifolium* community M18 and *Eriophorum vaginatum* bog M20 in the north of the site.

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 ossifragum* and sundews *Drosera spp*. Grasses include *Nardus stricta, Agrostis capillaris* and *Festuca vivipara.* Also present is *Rubus chamaemorus*.

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 and erosion gullies. Areas of blanket bog in need of restoration on Moffat Hills have been identified and actions planned or remedial works are in place.

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. A reduced sheep stocking density is now managed through the owners entering into SRDP, AECS Contracts and Management Agreements with NatureScot. A feral goat management plan has been created and agreed. Borders Forest Trust manage roe deer in Carrifran.

In addition, dunlin, golden plover, hen harrier, merlin, peregrine and short-eared owl depend upon this habitat for breeding and foraging.

Conservation Objectives for acidic scree (Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*)

2a. Maintain the extent and distribution of the acidic scree within the site

The extent of the acidic scree feature has been estimated at 34.58 ha. This should be maintained.

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 Moffat Hills SAC this habitat can be found on the steep slopes of Lochcraig Head, Bran Law, Upper Tarnberry and Gupe Crag. It is closely associated with plants in crevices on acidic rock, where the same rock types form scree.

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

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

Scree is intrinsically unstable and rocks will frequently move so this habitat is naturally adapted to a certain level of disturbance due to rock movement and grazing/browsing which prevents colonisation by trees and scrub (where there are seed sources and the climate allows).

Acidic scree can be vulnerable to excessive disturbance. Inappropriate grazing regimes have the potential to harm this feature through over-grazing and trampling damage. Sheep and feral goats are the main herbivores on Moffat Hills SAC. Inaccessibility means that they have limited effects on larger, steeper areas of acidic scree habitat, particularly where there are larger boulders. However sheep and goats can reach smaller patches of acidic scree where it occurs in a mosaic with grassland or heath. Mountain hares are also present, but due to their relatively small population, they currently have little effect on this habitat. Goats are highly agile herbivores and can damage this habitat. Additional

disturbance may be seen through trampling. NatureScot's Site Condition Monitoring programme found 10% of the feature was disturbed due to sheep and/or goat paths. Typically between 20% and 50% of the scree was disturbed. The screes that were affected were those composed of relatively small clasts – screes made up of larger rocks were less prone to this type of disturbance.

A reduced sheep stocking density is now managed through the owners entering into SRDP, AECS Contracts and Management Agreements with NatureScot. A feral goat management plan has been created and agreed.

There is also the possibility of colonisation, particularly of more stable scree, by other species, including trees and scrub where there are seed sources.

Colonisation or shading of this habitat by bracken, tree growth and/or woodland expansion should be avoided as this can reduce or eliminate cover of indicator species, including bryophytes. This issue can develop to be a problem where grazing is absent.

Fire is unlikely to spread easily in this habitat due to the sparse vegetation and rocky ground, however acidic scree should not be burnt to avoid damage to the structure, function and supporting processes of this habitat.

Trampling from walkers can contribute to deterioration in the habitat structure by moving stones more frequently than plants are able to recolonise the disturbed ground, which is exacerbated if walkers deliberately slide down the scree slopes.

2c. Restore the distribution and viability of typical species of the acidic scree

This habitat is characterised by large areas of stone scree with little soil or vegetation. The flora is mostly important for Atlantic bryophytes and crustose lichens. It is colonised by a small number of pioneer species which are able to tolerate the harsh conditions but are not able to grow in other places because they are sensitive to grazing and not able to compete with more vigorous plants. It is important for its rich fern flora and provides shelter for many species sensitive to frost such as parsley fern *Cryptogramma crispa* and species requiring a humid microclimate such as Wilson's filmy-fern *Hymenophyllum wilsonii*. Species sensitive to grazing such as stone bramble *Rubus saxatilis* find a refuge here. It is important for its rich fern flora and can act as refugia for rare plant species.

Excessive grazing/browsing/trampling (path formation) by feral goats and/or sheep can contribute to a deterioration in the habitat structure, having harmful effects on the typical species.

A reduced sheep stocking density is now managed through the owners entering into SRDP, AECS Contracts and Management Agreements with NatureScot. A feral goat management plan has been agreed with key stakeholders with the aim of reducing damage to features, whilst recognising their cultural heritage and enabling opportunities for visitors to the site to view these animals.

Typical species found in this habitat are given in the paragraphs above.

Conservation Objectives for plants in crevices on acid rocks (Siliceous rocky slopes with chasmophytic vegetation)

2a. Maintain the extent and distribution of the plants in crevices on acid rocks within the site
This is a widespread and common habitat in the Moffat Hills SAC. The extent of the plants in crevices on acid rocks feature has been estimated at 31.7 ha. This should be maintained. 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. Acid rock is common throughout Moffat Hills SAC with this habitat found on its larger crags, outcrops and ledges. It 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 the siliceous (acid) rock. This conservation objective is considered to be met if the conditions to ensure the long-term existence of the habitat are in place.

2b. Maintain the structure, function and supporting processes of the plants in crevices on acid rocks
This habitat is found in harsh and sometimes extreme conditions with limited soil development. Plants are sparse and scattered and often limited to where there is some shelter and moisture. Some of the plant species that grow mainly in crevices in rocks 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 should be avoided as this could reduce or eliminate cover of typical species, including bryophytes. This habitat is not particularly attractive to grazing/browsing animals such as sheep as the vegetation is sparse and inaccessible due to the rocky ground. However, it is sensitive to over-grazing and trampling damage. Agile herbivores such as goats can damage this habitat. A feral goat management plan has been agreed with key stakeholders. The removal of sheep and goat grazing pressure in Carrifran Glen in 2000 and 2004 is allowing the establishment of vascular plants on scree. Were such a grazing pressure change to happen elsewhere on Moffat Hills, this could negatively influence the plants in crevices on acid rocks feature. Trampling from walkers can contribute to deterioration in the habitat structure, having harmful effects on the typical species. On Moffat Hills there is little evidence of human disturbance and sheep and goat tracks generally hold to areas of bare rock. Fire is unlikely to spread easily in this habitat due to the sparse vegetation and rocky ground, however it should not be burnt to avoid damage to the structure, function and supporting processes of plants in crevice on acid rocks.

2c. Maintain the distribution and viability of typical species of the plants in crevices on acid rocks
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.

The most common communities found on the larger ledges are *Calluna-Erica* dry heath H10, *Calluna-Vaccinium* dry heath H12, *Calluna-Vaccinium—Sphagnum* damp heath H21 and *Trichophorum-Erica* wet heath M15.

Excessive grazing/browsing/trampling by sheep and feral goats can contribute to a deterioration in the habitat structure, having harmful effects on the typical species. Herbivore numbers should be controlled to an appropriate (low) level that helps to maintain the habitat by preventing colonisation or shading of this habitat by bracken, tree growth and/or woodland expansion. Shading can reduce or eliminate cover of indicator species, including bryophytes. A reduced sheep stocking density is now managed through the owners entering into SRDP, AECS Contracts and Management Agreements with NatureScot.

This habitat is very sensitive to muirburn, and it 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 Objectives for plants in crevices on base-rich rocks (Calcareous rocky slopes with chasmophytic vegetation)

2a. Maintain the extent and distribution of the plants in crevices on base-rich rocks within the site

The extent of the plants in crevices on base-rich rocks feature has not been estimated. Small, highly localised calcareous bands of rock are found within the acidic rocks throughout the site and it is within these that the habitat is located.

NatureScot's Site Condition Monitoring programme found this habitat to be in unfavourable no change condition at this SAC due to the lack of sufficient indicator species being found. This is thought to be due to the highly scattered locations of the indicator species on the rock outcrops. Although the habitat is not specifically mapped, the locations of scarce calcicolous arctic-alpine plants are recorded by botanists, and this could usefully be collated to inform future monitoring. Relevant locations to survey include Nether Coomb Craig, Black Craig, Grey Mare's Tail, Midlaw Burn; White Coomb, Dob's Linn and the corrie headwalls above Loch Skeen.

This habitat consists largely of ferns and mosses growing out of crevices and cracks in calcareous rocks and is often in a mosaic with two structurally similar habitats that form on more siliceous rock types (plants in crevices on acid rocks and acidic scree).

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

2b. Restore the structure, function and supporting processes of the plants in crevices on base-rich rocks

Plants in crevices on base-rich rocks should be restored on Moffat Hills by:

- Mapping locations where scarce calcicolous arctic-alpine plants have been recorded on the Moffat Hills to target future survey and monitoring
- Survey for the presence of the non-native plant New Zealand willowherb *Epilobium brunnescens* and removal it if found, as it has the potential to progressively out-compete the typical species of this habitat.

For further details, see Objective 2b for 'plants in crevices on acid rocks'.

2c. Restore the distribution and viability of typical species of the plants in crevices on base-rich rocks

This habitat is characterised by the presence of bryophytes such as frizzled crisp moss *Tortella tortuosa*; summer moss *Anoectangium aestivum* and chalk comb-moss *Ctenidium molluscum*. Associated vascular plants include brittle bladder-fern *Cystopteris fragilis* and green spleenwort *Asplenium viride*.

Excessive grazing/browsing/trampling by sheep and feral goats can contribute to a deterioration in the habitat structure, having harmful effects on the typical species, and should be only be done in a controlled, appropriate manner that helps maintain the habitat. A reduced sheep stocking density is now managed through the owners entering into SRDP, AECS Contracts and Management Agreements with NatureScot. A feral goat management plan is in place

Typical species for this habitat on this site include: black spleenwort *Asplenium adiantum-nigrum;* maidenhair spleenwort *Asplenium trichomanes;* green spleenwort *Asplenium viride;* hair sedge *Carex capillaris;* flea sedge *Carex pulicaris;* brittle bladder-fern *Cystopteris fragilis;* common rock-rose *Helianthemum nummularium;* hawkweed spp *Hieracium spp.;* alpine bistort *Persicaria vivipara;* hard shield fern *Polystichum aculeatum;* holly fern *P. lonchitis;* soft shield fern *P. setiferum;* purple saxifrage *Saxifraga oppositifolia;* lesser clubmoss *Selaginella selaginoides;* alpine meadow-rue *Thalictrum alpinum;* wild thyme *Thymus polytrichus.*

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

Conservation Measures

Moffat Hills SAC is notified as a Site of Special Scientific Interest and management changes described on the SSSI list of Operations Requiring Consent must have prior consent from Scottish Natural Heritage (operating as NatureScot).

Current and recommended management for:

- **dry heaths**
- **alpine and subalpine heaths**
- **montane acid grasslands**

Issue	Measure	Responsible party
Grazing by livestock & grazing levels	Management of grazing, and reduction in winter grazing are required**.** Grazing by livestock should be low enough to avoid damage through trampling and overgrazing, but sufficient to maintain an open vegetation structure and prevent encroachment of trees and scrub.	Land managers, NatureScot SGRPID
Grazing by deer and feral goats	The local deer management group manages the deer population.	Land managers, NatureScot

	A feral goat management plan is in place to address localised issues.	
Muirburn	Any muirburn must be guided by the Muirburn Code avoiding burning in sensitive areas. Alpine and subalpine heaths should **not** be burnt.	Land managers, NatureScot
Vehicle tracks	Maintain existing tracks. ATVs should vary routes used across the habitat to avoid damage by creating new tracks.	Land Managers
Access tracks	Maintain existing tracks for recreational users.	Land managers
Erosion	Peatland restoration work is being undertaken through NatureScot PeatlandACTION.	Land managers
Drainage	Peatland restoration work is being undertaken through NatureScot PeatlandACTION.	Land managers, NatureScot
Recreation	Although there are several walking routes across the site, recreational pressure is not high.	Land managers, Dumfries and Galloway Council

Current and recommended management for tall herb communities

Issue	**Measure**	**Responsible party**
Grazing by livestock & grazing levels	This habitat is inaccessible to livestock, so grazing by livestock should be absent.	Land managers, NatureScot SGRPID
Grazing by feral goats	This habitat is accessible to feral goats. A management plan is in place to address localised issues.	Land managers, NatureScot
Muirburn	Muirburn of this habitat should be avoided.	Land managers, NatureScot

Current and recommended management for blanket bog
(A Conservation Action Plan under the Collaborative Action for the Natura Network (CANN) project has been written for the blanket bog habitat on Moffat Hills. It contains significant details on measures to positively manage blanket bog).

Issue	**Measure**	**Responsible party**
Grazing by livestock & grazing levels	Management of grazing, and reduction in winter grazing are required**.** Grazing by livestock should be low enough to avoid damage through trampling and overgrazing, but sufficient to maintain an open vegetation structure and	Land managers, NatureScot SGRPID

	prevent encroachment of trees and scrub.	
Grazing by deer and feral goats	The local deer management group manages the deer population. A feral goat management plan is in place to address localised issues.	Land managers, NatureScot
Hydrology	Peatland restoration work such as drain blocking, re-profiling of hags and gullies and maintenance of existing dams is being undertaken through NatureScot PeatlandACTION.	Land managers, NatureScot
Muirburn	Any burning to be carried out in accordance with the Muirburn Code, and avoid burning in sensitive areas.	Land managers, NatureScot
Woodland expansion	The ongoing Carrifran woodland restoration project is carried out in discussion with NatureScot.	Land owner, land manager Funding authority
Habitat damage	Avoid activities such as ATV use that can damage the habitat and lead to an increase in exposed bare peat.	Land managers, Dumfries and Galloway Council, NatureScot

Current and recommended management for

- **acidic scree**
- **plants in crevices on acid rocks**
- **plants in crevices on base-rich rocks**

Issue	**Measure**	**Responsible party**
Grazing by livestock & grazing levels	Grazing by livestock should be low enough to avoid disturbance by trampling and damage by overgrazing, but sufficient to maintain an open scree habitat and prevent encroachment of trees and scrub.	Land managers, NatureScot SGRPID
Grazing by deer and feral goats	The local deer management group manages the deer population. A feral goat management plan is in place to address localised issues.	Land managers, NatureScot

Current and recommended management for all habitats

Issue	**Measure**	**Responsible party**
Habitat Management	Maintain relevant management plans and update as required to ensure that any issues affecting the qualifying features are being addressed: National Trust for Scotland (NTS) Grey Mare's Tail Nature Reserve Borders Forest Trust (BFT) Carrifran Wildwood project	NTS, BFT, NatureScot

Research and monitoring	To identify emerging impacts on the habitats and their causes, in order to understand the long term issues, and to inform future management of the habitat across Scotland.	NatureScot, Academic institutes

Contact details:
NatureScot
Greystone Park
55-57 Moffat Road
Dumfries
DG1 1NP

Tel: 01738 458 683

Southern_Scotland@nature.scot

Approved on 3 September 2021by:

Ben Ross	**Denise Reed**
Head of Protected Areas & Nature Reserves	Area Manager Tayside & Grampian