

## **DOGDEN MOSS SPECIAL AREA OF CONSERVATION (SAC)**

### **CONSERVATION ADVICE PACKAGE**



Dogden Moss, showing one of the shallow, vegetated drainage channels ©NatureScot

## Site Details

Site name:	Dogden Moss
Map:	<a href="https://sitelink.nature.scot/site/8241">https://sitelink.nature.scot/site/8241</a>
Location:	South Eastern Scotland
Site code:	UK0030136
Area (ha):	156.36
Date designated:	17 March 2005

## Qualifying features

Qualifying feature	SCM assessed condition	SCM visit date	UK overall Conservation Status
Active raised bog [H7110]*	Favourable Maintained	6 October 2010	Unfavourable-Bad

### 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.

\* Habitats Directive priority habitat

## Overlapping Protected Areas

The SAC sits within the western part of the larger [Greenlaw Moor Site of Special Scientific Interest \(SSSI\)](#).

## Key factors affecting the qualifying feature

### Active raised bog

Raised bogs are slow-growing, entirely rain-fed, nutrient-poor ecosystems, raised above the surrounding mineral soil, and formed and maintained by waterlogging of an area.

Such bogs survive because water losses are matched or exceeded by regular precipitation inputs. In good conditions they remain waterlogged despite sometimes being several metres above the surrounding land. The bog grows over time as vegetation dies off and the remains partially decompose and accumulate.

Sphagnum mosses are the main bog-forming plant species on most bogs. They are unable to survive unless they lie close to the water table. This means the living growing surface of the bog is closely tied to the shape of the water table within the bog, and the low levels of nutrients that exist.

These bogs can be very sensitive to any changes in their hydrological conditions. Such changes can include: alterations to the acidic conditions (typically a weakening of the acidity) that the vegetation communities need to persist, physical damage to their structure, especially to their surface layers; and changes to water levels through alterations to drainage and climatic changes.

### Dogden Moss

Dogden Moss lies in an upland, rather than the more typical lowland, setting and is one of the few raised bogs of significant extent in south-east Scotland. Although classed as being in Favourable Condition, ditches have been created in Dogden Moss in the past. A series of drainage lines can be seen on aerial images crossing the site from northwest to south east at 20 – 35m intervals. The majority of ditches appear to be shallow or have re-vegetated, however many are still active. This has caused the edge of the bog to become dryer, with a consequent increase in the amount of heather and decrease in *Sphagnum* species. Most of these ditches were dammed in 2018, funded through the Agri-Environment Climate Scheme.

There is some evidence of small scale peat cutting in the past, mostly in the south east of the site. Peat cutting has not been carried out in recent times.

The site has been grazed by sheep under various agri-environment schemes since 2007. These schemes maintain summer stock densities at an acceptable level, the site being grazed in conjunction with neighbouring land.

Further information on this habitat can be found on the [JNCC website](#).

### **Conservation Objectives for active raised bogs**

<b>1. To ensure that the qualifying feature of Dogden Moss SAC is in favourable condition and makes an appropriate contribution to achieving favourable conservation status</b>
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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.
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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.
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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 Dogden Moss SAC is maintained by meeting objectives 2a, 2b and 2c**

The aim at this SAC is to maintain the active raised bog in a favourable condition as a contribution to its 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 maintaining site integrity, specifically by meeting the objectives outlined in 2a, 2b and 2c. If these objectives are met then site integrity will be maintained. Note that not all of these objectives 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 maintenance 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 habitat is 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 habitat’s 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.

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

There should be no reduction in the extent and distribution of raised bog habitat within the site. The overall extent and distribution of the active raised bog should be maintained at 148.53 ha. Extent and distribution can be impacted primarily by changes in hydrology on, and near to, the site.

Scrub and trees can alter the hydrology by drawing up additional water from the peat and lowering the water table. Anthropogenic actions to increase drainage away from the bog and / or lagg fen can cause changes in the extent and distribution of the qualifying habitat within the site by altering the local hydrology.

Most ditches were dammed in 2018 to reduce water loss from the site. Grazing levels have been managed since 2007 to control woody vegetation and maintain an open aspect. These management elements should maintain the extent and distribution of the raised bog.

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

The slow formation of raised bogs, and their typical domed shape, means they rely heavily on specific hydrological conditions (as mentioned below) to occur, and then be maintained. The sensitivity of the raised bog to hydrological changes means there should be no modification of any features, both within and outwith the site, that may negatively change the hydrology of the site (for example by the digging or deepening of ditches, or excessive vehicle usage).

Artificial drains should be blocked, or natural vegetation growth be allowed to block the drains. No new drains should be installed. This will help the bog to function naturally and actively grow.

Ditch digging and peat cutting were carried out in the past, but such operations have not

been active on the site in recent times and would not be permitted. Most ditches were dammed in 2018 to reduce water loss and maintain the hydrological character of the habitat.

Active raised bogs typically display a distinctive micro-topography, with patterns of hummocks and hollows rich in Sphagnum mosses and other peat forming species. This habitat structure should be maintained. Any increases in drainage can cause deterioration in the bog's mosaic of habitats through drying out and shrinkage of the peat. Burning and vehicle use can impair the topography, natural functions and processes of the raised bog habitat. Excessive trampling and inappropriate grazing regimes can also contribute to a deterioration in the habitat structure.

The Bedshiel Kaims (a 5 km long esker immediately north of the SAC) is a key landform for maintaining the structure and function of the raised bog as it constrains drainage from the bog to the north of the site. The integrity of this feature must be maintained in order to prevent significant water loss. Hydrological conditions that sustain the raised bog and allow continued peat formation should be maintained.

Inappropriate grazing regimes have the potential to harm this site through over or under-grazing. Grazing with the right numbers and type of stock will cause tall heather, shrubs and rushes to be trampled and lightly browsed, allowing Sphagnum moss to colonise underneath. Where possible it is preferable to graze the bog in association with adjacent drier land. Grazing levels should be carefully considered to ensure the maintenance of vegetation communities and bog structure and function across the whole site.

The bog has been grazed appropriately since at least 2007, funded by various agri-environment schemes and as part of a much wider grazing area. At date of publication up to 120 ewes grazed 278 ha from May to October (inclusive). Dogden Moss SAC is part of this grazing area, although sheep only tend to venture onto the bog in dry summers. This grazing regime has helped to maintain the site in good condition.

Burning can destroy areas of habitat leading to drying out, unwanted exposed peat, possibly encouraging unwelcome grass species, and altering the chemistry in its vicinity. There is no tradition of burning on the site.

Raised bogs are naturally very poor in terms of nutrients (oligotrophic), and as a result are usually very acidic. The bog-forming plant species are well-adapted for, and require these nutrient conditions. Altering this (usually through inputs of additional nutrients, including from aerial deposition of nitrogen) can have a serious deteriorating effect on the raised bog and its floral communities. In the long term nutrient enrichment would favour the growth of dwarf shrub species and grasses over the bog-building Sphagnum mosses. The critical load for nitrogen for this habitat is 5 kg/ha/yr. The very low nutrient levels and pH that exist naturally in raised bogs should be maintained.

The Air Pollution Information System ([www.apis.ac.uk/src1](http://www.apis.ac.uk/src1)) identified a three year average nitrogen deposition rate for Dogden Moss of 13.4 kg N/ha/yr between 2015-17. Dogden Moss is likely, therefore, to experience some level of eutrophication. Maintaining an appropriate grazing regime should help off-set impacts of that nutrient addition, but site monitoring should also verify that favourable condition is maintained.

To help maintain ecological conditions appropriate to a raised bog, trees and scrub should be no more than occasional on the bog. Trees and scrub can cause the habitat to dry out through transpiration. The likelihood of the establishment of scrub or non-native invasive species on the bog surface is increased where the hydrology has already been compromised by drainage, planting or peat cutting.

Scrub is currently very sparse on Dogden Moss. Damming and grazing regimes should help maintain this scenario.

The lagg fen is a component of the raised bog. It supports the raised bog and acts in part as a buffer. The maintenance of the lagg fen is therefore important in maintaining the structure and function of the raised bog. Most of the lagg fen around Dogden Moss is within the SAC but some areas appear to spread beyond the boundary, albeit still within Greenlaw Moor SSSI. Maintaining the hydrological and ecological qualities of adjacent habitat will help maintain the qualities of the SAC itself.

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

The typical species, and those which are key for the active raised bog, are those that have a role as the main bog-builders. These are mainly Sphagnum species, and especially include;

<i>Sphagnum capillifolium</i>	red bog-moss
<i>S.papillosum</i>	papillose bog-moss
<i>S.magellanicum</i>	magellanic bog-moss
<i>S. cuspidatum</i>	feathery bog-moss (in pools)

Other characteristic bog species such as cotton grasses (*Eriophorum* spp.), heather (*Calluna vulgaris*) and other ericaceous plants, and the carnivorous sundews (*Drosera* spp.) should also be considered typical species.

Cranberry (*Vaccinium oxycoccus*) occurs frequently on Dogden Moss and a number of regionally rare bryophytes are also found including slender cow-horn bog-moss (*Sphagnum subsecundum*), 'peat moss' (*Sphagnum imbricatum sensu lato*), waved fork-moss (*Dicranum bergeri*) and brocade moss (*Hypnum imponens*).

The floral distribution within the raised bog habitat, and its continued viability, relies heavily on the presence of small variations in height above the water table across hummocks and hollows of the bog. This creates a complex mosaic of miniature bog habitats. Therefore site hydrology (including water levels and drainage) is crucial in sustaining this mosaic and floral distribution.

Excessive trampling, and inappropriate grazing regimes can contribute to deterioration in the habitat structure, having harmful effects on the typical species, and should only be done in a controlled, appropriate manner that helps maintain the habitat. Grazing has been managed through various agri-environment schemes since 2007.

Alterations to the acidic conditions through nutrient enrichment should be avoided, in order to protect the species integrity of the site.

## **Conservation Measures**

Dogden Moss SAC is also notified as part of the Greenlaw Moor Site of Special Scientific Interest, and management changes described on the list of Operations Requiring Consent must receive prior consent from SNH (NatureScot).

## Current and recommended management for active raised bogs

Issue	Measure	Responsible party
Habitat Management	Scrub was removed in 2016. Monitor regeneration of scrub and remove seedlings as needed.	Land owners, Land managers, NatureScot
Habitat Management	Dams were installed on most active ditches in summer 2018. Complete the installation of dams on Dogden Moss and monitor their effectiveness through vegetation change.	Land owners, Land managers, NatureScot
Habitat management	Investigate whether installation of new dams outwith the SAC would enhance water retention on site, e.g. on tributaries of the Fangrist Burn.	Land owners, Land managers, NatureScot
Habitat Management	Maintain the integrity of the Bedshiel Kaims to ensure natural water retention within the SAC	Land owners, Land managers, NatureScot
Grazing management	Maintain current grazing regime of up to 120 ewes across 278 ha between May and October (inclusive). Monitor vegetation and adapt grazing regime as needed.	Land owners, Land managers, NatureScot
Peatland Management Funding	Support positive practical management through 'Peatland Action' funding, or successor funding mechanisms.	Land owners, Land managers

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