



European Site Conservation Objectives: supplementary advice on conserving and restoring site features

**Ford Moss Special Area of Conservation (SAC)
Site Code: UK0030151**



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About this document

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to Ford Moss SAC. This advice should therefore be read together with the SAC Conservation Objectives available [here](#).

You should use the Conservation Objectives, this Supplementary Advice and any case-specific advice given by Natural England when developing, proposing or assessing an activity, plan or project that may affect this site.

This Supplementary Advice to the Conservation Objectives presents attributes which are ecological characteristics of the designated species and habitats within a site. The listed attributes are considered to be those that best describe the site's ecological integrity and which, if safeguarded, will enable achievement of the Conservation Objectives. Each attribute has a target which is either quantified or qualitative depending on the available evidence. The target identifies as far as possible the desired state to be achieved for the attribute.

The tables provided below bring together the findings of the best available scientific evidence relating to the site's qualifying features, which may be updated or supplemented in further publications from Natural England and other sources. The local evidence used in preparing this supplementary advice has been cited. The references to the national evidence used are available on request. Where evidence and references have not been indicated, Natural England has applied ecological knowledge and expert judgement. You may decide to use other additional sources of information.

In many cases, the attribute targets shown in the tables indicate whether the current objective is to 'maintain' or 'restore' the attribute. This is based on the best available information, including that gathered during monitoring of the feature's current condition. As new information on feature condition becomes available, this will be added so that the advice remains up to date.

The targets given for each attribute do not represent thresholds to assess the significance of any given impact in Habitats Regulations Assessments. You will need to assess this on a case-by-case basis using the most current information available.

Some, but not all, of these attributes can also be used for regular monitoring of the actual condition of the designated features. The attributes selected for monitoring the features, and the standards used to assess their condition, are listed in separate monitoring documents, which will be available from Natural England.

These tables do not give advice about SSSI features or other legally protected species which may also be present within the European Site.

If you have any comments or queries about this Supplementary Advice document please contact your local Natural England adviser or email HDIRConservationObjectivesNE@naturalengland.org.uk

About this site

European Site information

Name of European Site	Ford Moss Special Area of Conservation (SAC)
Location	Northumberland
Site Map	The designated boundary of this site can be viewed here on the MAGiC website
Designation Date	1 ST April 2005
Qualifying Features	See section below
Designation Area	61.14 ha
Designation Changes	None
Feature Condition Status	Details of the feature condition assessments made at this site can be found using Natural England's Designated Sites System
Names of component Sites of Special Scientific Interest (SSSIs)	Ford Moss SSSI
Relationship with other European or International Site designations	N/A

Site background and geography

Ford Moss is an active lowland raised bog of approximately 46 ha in north-east Northumberland, occupying a shallow basin in undulating country, underlain by Carboniferous Limestone. The peat is largely dependent on rainfall for its supply of water and nutrients.

Typical bog communities are present, though they have been degraded to some extent from past attempts at drainage together with burning and grazing. Large areas are dominated by heather *Calluna vulgaris*, hare's tail cotton grass *Eriophorum vaginatum* and cross-leaved heath *Erica tetralix*. In the wet, southeast corner, good examples of bog moss (*Sphagnum* spp. chiefly *S. palustre*, *S. Papillosum*, *S. cuspidatum* and *S. recurvum* carpet) occur and the insectivorous round-leaved sundew *Drosera rotundifolia* also grows here. Cranberry *Vaccinium oxycoccos* forms extensive mats over the bog, which is also a habitat for the locally rare white sedge *Carex curta*. Around the edge of the moss there are stands of bog myrtle *Myrica gale*, another rare plant and a speciality of the moss.

Woodland around the margins of the site contains stands of mature oak *Quercus robur*, Scots pine *Pinus sylvestris*, birch *Betula* spp. and willow carr *Salix atrocinera* and *S. fragilis*. The pine woodland supports populations of chickweed wintergreen *Trientalis europaea*.

Ford Moss is an important habitat for many bird species, with resident populations of heron *Ardea cinerea*, common snipe *Gallinago gallinago*, Jack snipe *Lymnocyrtes minimus*, woodcock *Scolopax rusticola*, teal *Anas crecca*, and reed bunting *Emberiza schoeniclus*. Woodland habitats support breeding populations of buzzard *Buteo buteo*, goshawk *Accipiter gentilis*, tawny owl *Strix aluco*, barn owl *Tyto alba*, raven *Corvus corax* and great spotted woodpecker *Dendrocopos major*. Featured mammals are the red squirrel *Sciurus vulgaris*, pipistrelle bat *Pipistrellus* spp. and badger *Meles meles*.

There is also an important reptile presence with reported populations of common lizard *Zootoca vivipara* and adder *Vipera berus*.

The bog is further of interest for its populations of butterfly and moth including Small Copper *Lycaena phlaeas*, Orange Tip *Anthocharis cardamines*, Muslin footman *Nudaria mundana* and Scalloped Hook Tip *Falcaria lacertinaria*.

Ford Moss SAC is part of the National Character Area for the Cheviot Fringe ([NE438](#)).

On its periphery, the site has important industrial archaeology which reflects the fact that the site has been undermined for coal in the 18th Century which may or may not have impact on the bog.

About the qualifying features of the SAC

The following section gives you additional, site-specific information about this SAC's qualifying features. These are the natural habitats and/or species for which this SAC has been designated.

Qualifying habitats:

- **H7110. Active raised bogs* (priority feature)**

Active raised bogs are peat-forming ecosystems that have developed during thousands of years of peat accumulation, to such an extent that the depth of peat isolates them from the influence of groundwater. Typically, lowland raised bogs form a raised dome of peat irrigated solely by rainfall. Such rainwater-fed ecosystems are very acid and poor in plant nutrients and typically support a restricted range of species, some of which are otherwise abundant only in the cooler and wetter uplands of the UK. In line with the Interpretation manual of European habitats (European Commission DG Environment 1999), 'active' is defined as 'supporting a significant area of vegetation that is normally peat-forming'. Such vegetation includes plants such as the bog-mosses *Sphagnum* spp., cottongrasses *Eriophorum* spp., heather *Calluna vulgaris* and other ericaceous plants, and the carnivorous sundews *Drosera* spp. Under some circumstances purple moor-grass *Molinia caerulea* is also peat-forming.

Within the raised bog ecosystem the bog surface typically displays a distinctive microtopography, with patterns of hummocks and hollows rich in *Sphagnum* and other peat-forming species. Around bog pools there may sometimes be patches of H7150 Depressions on peat substrates of the Rhynchosporion. Classical descriptions of the ecosystem show raised bogs as having a discrete lens-shaped dome of peat with flat or imperceptibly sloping topography with a halo of fen vegetation in the zone where water draining the bog meets that from adjoining mineral soils. This is known as the lagg. A characteristic of the lagg zone is that normally it has more available plant nutrients, is more alkaline and hence shows greater species diversity, with a preponderance of sedge *Carex* spp. As a result of peat-digging and other activities, no example of raised bog that conforms exactly to this model is now known in Europe. Attention has been paid to ensure that sites with remnant lagg vegetation have been selected.

The principal NVC types found on the active raised bogs within Ford Moss SAC are:

M18 *Erica tetralix* – *Sphagnum papillosum* raised and blanket mire

M19 *Calluna vulgaris* – *Eriophorum vaginatum* blanket mire

In addition within Ford Moss M25 - *Molinia caerulea* - *Potentilla erecta* mire is also found.

Ford Moss is a largely intact 46 ha bog in undulating topography in the rain-shadow of the Cheviot Hills. Although partially drained, the re-wetted surface contains many waterlogged areas with species typical of peat-formation. Thus, although there are drier purple moor-grass *Molinia caerulea*-dominated parts, it is considered to be predominantly active raised bog. There is a 12 m depth of peat within the confining basin. The vegetation includes species of raised bog as well as poor-fen, which is also indicated in places by the presence of white sedge *Carex curta* where water runs into the bog from the surrounding slopes.

Qualifying Species:

None

Table 1: Supplementary Advice for Qualifying Features: H7110. Active raised bogs *

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Extent and distribution of the feature	Extent of the feature within the site	Maintain the total extent of active raised bog to a baseline value of 24.2 hectares	There should be no measurable reduction (excluding any trivial loss) in the extent and area of this feature, and in some cases, the full extent of the feature may need to be restored. The baseline-value of extent given has been generated using data gathered from the listed site-based surveys. Area measurements given may be approximate depending on the methods, age and accuracy of data collection, and as a result this value may be updated in future to reflect more accurate information. The extent of an Annex I habitat feature covers the sum extent of all of the component vegetation communities present and may include transitions and mosaics with other closely-associated habitat features. Where a feature is susceptible to natural dynamic processes, there may be acceptable variations in its extent through natural fluctuations. Where a reduction in the extent of a feature is considered necessary to meet the Conservation Objective for another Annex I feature, Natural England will advise on this on a case-by-case basis. For this feature, the term 'Bog' is taken here to be the peat deposit together with typical bog vegetation, irrespective of the precise nature and condition of that vegetation. 'Lagg fen' comprises both peat deposit and vegetation, irrespective of nature and condition. „Bog“ is taken here to be the peat deposit together with typical bog vegetation, irrespective of the precise nature and condition of that vegetation. Lagg fen“ comprises both peat deposit and vegetation, irrespective of nature and condition.	Hedley. S. 1995. CORDATA Phase 1 Habitat Survey- Ford Moss SSSI. Available form Natural England on request. This attribute will be periodically monitored as part of Natural England's site condition assessments and recorded within Ford Moss Favourable Condition Table (Final Version, 2013). JNCC. 2005. Natura 2000 Standard data form Available here Natural England, 2007. Definition of favourable condition – Ford Moss SSSI (Final). Available on request from Natural England
Extent and distribution of the feature	Spatial distribution of the feature within the site	Maintain the distribution and configuration of the active raised bog, including where applicable its component vegetation types, across the site	A contraction in the range, or geographic spread, of the feature (and its component vegetation and typical species, plus transitional communities) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes.	Hedley. S. 1995. CORDATA Phase 1 Habitat Survey- Ford Moss SSSI. Available form Natural England on request.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			This may also reduce and break up the continuity of a habitat within a site and how well its typical species are able to move around the site to occupy and use habitat. Such fragmentation can impact on their viability and the wider ecological composition of the Annex I habitat. Smaller fragments of habitat can typically support smaller and more isolated populations which are more vulnerable to extinction. These fragments also have a greater amount of open edge habitat which will differ in the amount of light, temperature, wind, and even noise that it receives compared to its interior. These conditions may not be suitable for some of the typical and more specialist species associated with the Annex I habitat feature. Within Ford Moss SAC, H7110 Active raised bogs is located in the middle of the site, surrounded by woodland and acid grassland/ rush pasture.	
Structure and function (including its typical species)	Vegetation community composition	Ensure the component vegetation communities of the active raised bog are referable to and characterised by the following National Vegetation Classification types: M18 <i>Erica tetralix</i> – <i>Sphagnum papillosum</i> raised and blanket mire M19 <i>Calluna vulgaris</i> – <i>Eriophorum vaginatum</i> blanket mire In addition within Ford Moss bog area there is: M25 - <i>Molinia caerulea</i> - <i>Potentilla erecta</i> mire.	This Annex I feature may comprise a number of characteristic but different, naturally occurring vegetation types, which will depend on the geographical location of the site, altitude, aspect, soil conditions (especially base-status and drainage), any maritime influence and grazing intensity and management. Maintaining or restoring these distinctive vegetation types, and the range of types as appropriate, will be important to sustaining the overall habitat feature. Some Sphagnum should be scattered across all bog areas. Bog-myrtle <i>Myrica Gale</i> (rare in Northumberland) is also a valuable feature of Ford Moss SAC.	This attribute will be periodically monitored as part of Natural England's site condition assessments
Structure and function (including its	Structural diversity	Restore the full range of typical structural features associated with active raised bog at this site,	Active raised bogs in particular show varying degrees of structural variation and surface patterning reflecting hydrological gradations (which may be natural or the result of	This attribute will be periodically monitored as part of Natural England's site condition

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
typical species)		e.g. vegetation cover, surface patterning and hydrological zonations	previous damage). These can occur at macro and micro scales across the habitat and include alternative aquatic and terrestrial surface features, such as pools and hummocks, and terrestrial features such as ridges and hollows. These features will support distinctive patterns of bog vegetation, and so will be sensitive to changes in topography and hydrology. These can be modified or disrupted by activities such as drainage, burning, grazing, vehicular access and peat digging. The species diversity is still relatively poor on the open mire. However, the area of dense heather is decreasing with sphagnum species increasingly common.	assessments
Structure and function (including its typical species)	Invasive, non-native and/or introduced species	Ensure invasive and introduced non-native species are either rare or absent, but if present are causing minimal damage to the active raised bog.	Invasive or introduced non-native species can be a serious potential threat to the structure and function of these habitats, because they are able to exclude, damage or suppress the growth of their associated typical species, reduce structural diversity of the habitat and prevent the natural regeneration of characteristic site-native species. Once established, the measures to control such species may also impact negatively on the features of interest (e.g. use of broad spectrum pesticides). There should be no more than 1% cover of the following on the bog surface Common reed <i>Phragmites australis</i>, Reed canary grass <i>Phalaris arundinacea</i>, Great Manna Grass <i>Glyceria maxima</i>, Hairy willowherb <i>Epilobium hirsutum</i>, Common stinging nettle <i>Urtica dioica</i>, Bracken <i>Pteridium aquilinum</i>, Bramble <i>Rubus fruticosus</i>, Soft rush <i>Juncus effusus</i>, Tufted hairgrass <i>Deschampsia cespitosa</i>, thistles <i>Cirsium</i> spp. There is a small area of rhododendron on the site which is being controlled by the estate. Nonetheless, it will be important to continue monitoring for the presence of rhododendron and continue control measures if found. Further, areas to the North of the site have weed migrants from the crop fields on the North West corner, which need to be	This attribute will be periodically monitored as part of Natural England's site condition assessments Natural England. 2014. Ford Moss SAC Site Improvement Plan.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			monitored and controlled as necessary. Birch and scots pine seeds into the open area of mire and this requires appropriate management as and when it is required.	
Structure and function (including its typical species)	Supporting off-site habitat	Maintain the extent, quality and spatial configuration of land or habitat surrounding or adjacent to the site which is known to support active raised bog.	The structure and function of the qualifying habitat, including its typical species, may rely upon the continued presence of areas which surround and are outside of the designated site boundary. Changes in surrounding land-use may adversely (directly/indirectly) affect the functioning of the feature and its component species. This supporting habitat may be critical to the typical species of the feature to support their feeding, breeding, roosting, population dynamics ('metapopulations'), pollination or to prevent/reduce/absorb damaging impacts from adjacent land uses e.g. pesticide drift, nutrient enrichment. For this feature the protection and management of peripheral peat and the land immediately around the peat body will be of critical functional importance to the restoration or maintenance of the hydrology of active bog and its management must also be compatible with long-term maintenance of the bog.	
Structure and function (including its typical species)	Hydrology	At a site, unit and/or catchment level (as necessary, restore natural hydrological processes to provide the conditions necessary to sustain the active raised bog within the site	Defining and maintaining the appropriate hydrological regime is a key step in moving towards achieving the conservation objectives for this site and sustaining this feature. Changes in source, depth, duration, frequency, magnitude and timing of water supply can have significant implications for the assemblage of characteristic plants and animals present. This target is generic and further site-specific investigations may be required to fully inform conservation measures and/or the likelihood of impacts. Because of the historic artificial drainage system and potential hydrological changes due to abandoned mine working in the area, hydrological restoration may only be partially successful for this SAC. However, funding has been in place to allow blocking of some of the existing drains on site. However, monitoring to establish repair work necessary or missed drains	Natural England. 2003. Water Table Monitoring Project– Ford Moss cSAC. Available from Natural England. Natural England. 2015b. Ford Moss SSSI Condition Report, Available from Natural England. Natural England. 2014. Ford Moss SAC Site Improvement Plan.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			should be ongoing until vegetation has fully established. In addition, the location of the bog in the drier, eastern part of the country leaves it vulnerable to climatic shifts in precipitation which will lead to vegetation change. Nonetheless, there is still a seasonal drop in the water table during a typical summer which may create conditions that allow the establishment of tree and shrub communities. This should be monitored and controlled as required. Consideration of impact of fact the bog was coal mined in the 18th Century and possible links to underground workings which could if works on the outlet stream from the old workings impact on the hydrology & surface structure if water is released from the flood tunnels under the mire.	
Structure and function (including its typical species)	Water chemistry	Maintain the surface water and groundwater supporting the hydrology of the rain-fed bog at a low nutrient status.	This habitat type is predominantly rain-fed and should be naturally low in nutrients to sustain its characteristic bog communities and associated typical species. Any sources of water which contributes to supporting the bog habitat, including the margins of the bog and the lagg (the peripheral zone around the bog), should similarly be lacking in nutrients.	
Structure and function (including its typical species)	Soils, substrate and nutrient cycling	Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, to within typical values for the habitat.	Soil is the foundation of basic ecosystem function and a vital part of the natural environment. Its properties strongly influence the colonisation, growth and distribution of those plant species which together form vegetation types, and therefore provides a habitat used by a wide range of organisms. Soil biodiversity has a vital role to recycle organic matter. Changes to natural soil properties may therefore affect the ecological structure, function and processes associated with this Annex I feature.	
Structure and function (including its typical species)	Adaptation and resilience	Maintain the ability of the active raised bog, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the site	This recognises the increasing likelihood of natural habitat features to absorb or adapt to wider environmental changes. Resilience may be described as the ability of an ecological system to cope with, and adapt to environmental stress and change whilst retaining the same basic structure and ways of functioning.	Natural England, 2015a. Climate Change Theme Plan and supporting National Biodiversity Climate Change Vulnerability assessments ('NBCCVAs') for SACs and SPAs in England [Available at

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			Such environmental changes may include changes in sea levels, precipitation and temperature for example, which are likely to affect the extent, distribution, composition and functioning of a feature within a site. The vulnerability and response of features to such changes will vary. Using best available information, any necessary or likely adaptation or adjustment by the feature and its management in response to actual or expected climatic change should be allowed for, as far as practicable, in order to ensure the feature's long-term viability.	http://publications.naturalengland.org.uk/publication/4954594591375360].
Supporting processes (on which the feature relies)	Air quality	Restore as necessary, the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk).	This habitat type is considered sensitive to changes in air quality. Exceedance of these critical values for air pollutants may modify the chemical status of its substrate, accelerating or damaging plant growth, altering its vegetation structure and composition and causing the loss of sensitive typical species associated with it. Critical Loads and Levels are recognised thresholds below which such harmful effects on sensitive UK habitats will not occur to a significant level, according to current levels of scientific understanding. There are critical levels for ammonia (NH₃), oxides of nitrogen (NO_x) and sulphur dioxide (SO₂), and critical loads for nutrient nitrogen deposition and acid deposition. There are currently no critical loads or levels for other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a case-by-case basis. Ground level ozone is regionally important as a toxic air pollutant but flux-based critical levels for the protection of semi-natural habitats are still under development. It is recognised that achieving this target may be subject to the development, availability and effectiveness of abatement technology and measures to tackle diffuse air pollution, within realistic timescales.	More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool on the Air Pollution Information System .
Supporting processes	Functional connectivity	Maintain and where necessary restore the overall extent, quality	This recognises the potential need at this site to maintain or restore the connectivity of the site to its wider landscape in	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
(on which the feature relies)	with wider landscape	and function of any supporting features within the local landscape which provide a critical functional connection with the site	order to meet the conservation objectives. These connections may take the form of landscape features, such as habitat patches, hedges, watercourses and verges, outside of the designated site boundary which are either important for the migration, dispersal and genetic exchange of those typical species closely associated with qualifying Annex I habitat features of the site. These features may also be important to the operation of the supporting ecological processes on which the designated site and its features may rely. In most cases increasing actual and functional landscape-scale connectivity would be beneficial. Where there is a lack of detailed knowledge of the connectivity requirements of the qualifying feature, Natural England will advise as to whether these are applicable on a case by case basis.	
Supporting processes (on which the feature relies)	Conservation measures	Restore the management measures (either within and/or outside the site boundary as appropriate) which are necessary to restore the structure, functions and supporting processes associated with the active raised bog.	Active and ongoing conservation management is needed to protect, maintain or restore this feature at this site. Further details about the necessary conservation measures for this site can be provided by contacting Natural England. This information will typically be found within, where applicable, supporting documents such as Natura 2000 Site Improvement Plan, Site Management Strategies or Plans, the Views about Management Statement for the underpinning SSSI and/or management agreements. The SAC is currently under Agreement and management in place to restore the bog. Scrub encroachment by birch is currently kept in check through occasional scrub control and by very low levels of grazing by Exmoor ponies. Although improvements in the hydrology of the site should reduce the ability for trees to regenerate. Due to past drainage of the bog and historic mining activities, tree communities, particularly <i>birch Betula sp.</i> and pine <i>Pinus sylvestris</i> have established on the bog. The pine and birch should not be allowed to extend beyond its present extent. Bracken <i>Pteridium aquilinum</i> encroachment is also a concern	Natural England. 2015b. Ford Moss SSSI Condition Report, Available on request. Natural England. 2014. Ford Moss SAC Site Improvement Plan.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			on the drier areas of the bog. However, the level of Pine is be subject to further consultation as the nearby Notification of Bewick & Beanley SSSI raised the challenge that was originally suggested by A Lunn “Northumberland New Naturalist Series that the W18 <i>Pinus sylvestris</i> – <i>Hylocomium splendens</i> woodland community may be present as a native community in Northumberland. This site will be one which will be used for a PhD study into this possibility.	
Version Control: N/A				
Variations from national feature-framework of integrity-guidance: N/A				