

SITE NOTIFIED TO THE SECRETARY OF STATE ON 22 DECEMBER 1999

COUNTIES: DERBYSHIRE,
SOUTH YORKSHIRE

SITE NAME: EASTERN PEAK DISTRICT
MOORS

DISTRICT: DERBYSHIRE DALES, NORTH EAST DERBYSHIRE,
SHEFFIELD CITY COUNCIL

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the
Wildlife and Countryside Act, 1981, (as amended).

Local Planning Authority: PEAK DISTRICT NATIONAL PARK
AUTHORITY, Derbyshire County Council, Derbyshire Dales District Council,
North East Derbyshire District Council, Sheffield City Council

National Grid Reference: SK 270770

Ordnance Survey Sheets 1:50,000: 119, 110

1:10000: SK 37 SW, SK 29 SW,
SK 28 NW, SK 27 NW,
SK 28 SW, SK 27 SW,
SK 28 NE, SK 27 NE,
SK 28 SE, SK 27 SE,
SK 36 NW, SK 26 NW,
SK 26 NE

Area: 8094.39 (ha.) 20001 .58 (ac.)

Date Notified (Under 1949 Act):	Eastern Moors 1964	Date of Last Revision:	1972
	Hallam Moors 1955		1972
	Houndkirk Moor 1972		1972

Date Notified (Under 1981 Act)	Eastern Moors 1986	Date of Last Revision:	1998
	Hallam Moors 1987		
	Houndkirk Moor 1985		

Other Information:

Site incorporates the former SSSIs known as: Eastern Moors, Hallam Moors and Houndkirk Moor. Site includes new Geological Conservation Review sites known as: Hathersage Moor and Burbage Brook. Site boundary has been modified by major extension.

Description and Reasons for Notification:

The Eastern Peak District Moors lie to the immediate south of the more extensive and higher Dark Peak moorlands and to the east of the central limestone dome of the White Peak from which they are separated by the valley of the river Derwent. They form the eastern fringe of the Peak District National Park on the south-eastern extremity of the Pennine moorlands.

Sheffield and Chesterfield lie only a few kilometres to the east and one of the main trans-Pennine roads from Manchester forms the northern boundary of the site. Unlike the extensive and largely continuous moorlands of the Dark Peak, the Eastern Peak District Moors are criss crossed by many minor roads that break the site into a number of individually named and separately managed moors.

The Eastern Peak District Moors have formed on the grits, shales, sandstones and mudstones of the Millstone Grit series. The whole area is part of the Pennines anticline. The rocks slope gently towards the east, but abrupt faults or downfolds in the strata combined with weathering have left vertical cliff faces or 'edges' up to 20

m high along many kilometres on the west of the site. The northern and central areas are drained by the Burbage, Bar and Leach Brooks which cut westwards through the edges to flow into the River Derwent. The southern end of the site is drained by several smaller streams that flow eastward into the River Don.

In places, such as on Houndkirk Moor, the site overlies glacial head material on Chatsworth Grits. The springs that well up from these strata appear to have more nutrients than similar springs rising further on to the gritstone massif. On the higher northern half of the site the gritstone is overlain by blanket peat, formed since the last glaciation.

Heather moor predominates throughout and is used for grouse shooting and hill sheep farming. This reflects the poor soils and harsh climate, though rainfall here is lower than on the Leek Moors SSSI to the west of the Peak District, with which this site forms an interesting comparison.

The Eastern Peak District Moors are of special interest for their breeding birds, upland vegetation, lower plants, invertebrates and geological features. The combination of blanket bog, wet and dry heaths, acid grasslands and small flushes, together with gritstone edges, cliffs and boulder slopes, streams and moorland reservoirs, and fringing woodland represents the full range of upland vegetation characteristic of the South Pennines and supports several important species assemblages.

The site has good populations or in some cases the only population of several regionally scarce higher plants and animals, including species at the edge of their national range. The site also provides important habitat for lower plants, including several nationally notable species. It has some of the best localities for lichens on millstone grits and peat in the Peak District and the woodland on the moorland edge supports a good assemblage of bryophytes. The moorland and moorland edge mosaic supports a diverse assemblage of insects including many that are nationally scarce.

The upland breeding bird assemblage is of great regional importance and contributes significantly to national importance of the South Pennines. The site supports most of the upland breeding birds found in the region. Some parts of the site are particularly diverse holding many species at high numbers, and overall there is a nationally important number of breeding merlin (1.5–2.4% of the British population), a species listed in the European Commission Birds Directive as requiring special conservation measures. The site is also important for certain over-wintering and passage birds.

Many physical features of the Eastern Peak District Moors are of geological interest and three such localities of special interest are described under the heading 'Geology'.

Vegetation

Blanket bog vegetation dominated solely by hare's-tail cottongrass does occur on most of the larger northern moorland blocks of the Eastern Peak District Moors, but unlike elsewhere in the Peak District, it does not usually represent a large proportion of the overall bog habitat. More usually, the blanket bog vegetation dominated by variable proportions of heather *Calluna vulgaris* and cottongrasses and, on some moors, purple moor-grass *Molinia caerulea*, with few other higher plants and only small amounts of bog moss *Sphagnum* species. Heather dominates in most stands, particularly on the higher blanket bogs of the north. Hare's-tail cottongrass *Eriophorum vaginatum* is usually present throughout but rarely achieves co-dominance and most stands have smaller amounts of common cottongrass *Eriophorum angustifolium*. Dwarf shrubs other than heather are less

common. Bilberry *Vaccinium myrtillus* and crowberry *Empetrum nigrum* are the commonest associates, with occasionally cross-leaved heath *Erica tetralix* and cowberry *Vaccinium vitis-idaea*. On the central moors, particularly Big Moor, Totley Moor and Ramsley Moor, purple moor-grass becomes more prevalent and forms a mosaic with heather.

In some regularly burnt stands, heather attains complete dominance over large areas as a low dense mat of building-phase plants and the vegetation grades into heathland. Less regularly burnt or unburnt stands show more diversity with occasional sedges and grasses and patches of bog moss *Sphagnum* species. Some stands also contain regionally uncommon plants such as cranberry *Vaccinium oxycoccus*, deergrass *Scirpus cespitosus*, sundew *Drosera rotundifolia*, and on Hallam Moors, cloudberry *Rubus chamaemorus*, an arctic-alpine species at the south-eastern limits of its British distribution. There are old records of bog-rosemary *Andromeda polifolia*, a local rarity.

In common with other Peak District moorlands, the blanket bogs of the Eastern Peak District Moors are poor in lower plants sensitive to atmospheric pollution, but bog mosses *Sphagnum* species do occur in localised areas on the wetter and unburnt peats. Abundant remains near the surface of the peats of Hallam Moors suggest their former presence until comparatively recent times. The blanket bogs of the Eastern Peak District Moors, in particular Ringinglow bog, are interesting in that they do not show the erosion features that are present over much of the Pennine moorlands. They have been studied over 40 years and have provided important information on vegetation change and evidence in comparative studies of blanket bog degradation over recent centuries.

The vegetation of the lower moorland areas displays the full range of acidophilous dwarf shrub heath and acid grassland found in the region. Heather dominates over large areas on most moorland blocks, usually on mineral soils, but in places extending onto drier thin peat on the margins of blanket bog. A more varied structure has developed with stands of tall mature heather and other dwarf shrubs in those few areas, mostly on steep slopes and gritstone edges, where the vegetation has been less frequently burnt or not burnt at all.

Wavy hair-grass *Deschampsia flexuosa* is usually present, occasionally becoming co-dominant and in places the heath vegetation gives way to grassland. In a few areas, particularly the central moors, purple moor-grass is a significant component. Variable amounts of other dwarf shrubs may be found beneath the heather. Bilberry is present on many sites, but is usually abundant only around boulder slopes or gritstone edges. Crowberry is less frequent but in some locations, usually the most heavily-grazed, is locally dominant. Cowberry and bell heather *Erica cinerea*, a local plant in the Peak District, occur in small amounts on a few moors. The nationally restricted hybrid bilberry *Vaccinium x intermedium* is present at several locations.

Small stands of wet heath can be found on gently sloping areas of peat on the margins of the blanket bog, or in small basins in the peat on some moors in the south of the site. Dominated by cross-leaved heath with variable amounts of heather and purple moor grass, wet heath often has a cranberry creeping over a carpet of mosses, with occasional sundew or deergrass.

Heavier grazing around the margins of many moors has replaced heathland with some form of acid grassland. These unenclosed grasslands are, on the whole, species-poor and many are dominated by a single grass such as mat grass *Nardus stricta* or wavy hair-grass. More interesting examples contain varying amounts dwarf shrubs and are transitional to heath. Large areas of grassland across the central moors and smaller areas elsewhere, are dominated by purple moor-grass.

Generally rank and tussocky, these grasslands are probably derived from wet heath and contain few other species except for small amounts of hare's-tail cottongrass and occasionally common cottongrass or thinly growing dwarf shrubs.

A few examples of 'species-rich' grassland do occur. These are generally enclosed hay meadows on the moorland edge. Principal grasses include crested dog's-tail *Cynosurus cristatus* and red fescue *Festuca rubra* along with common bent *Agrostis capillaris* and sweet vernal grass *Anthoxanthum odoratum* and herbs are abundant. Meadows around Moscar are particularly diverse and include acidic species such as field woodrush *Luzula campestris*, autumn hawkbit *Leontodon autumnalis* and bitter vetch *Lathyrus montanus* together with calcicoles such as fairy flax *Linum catharticum* and glaucous sedge *Carex flacca*.

Small mires and flushes are the most botanically rich communities in the Eastern Peak District Moors. Several different types are found, including most of those characteristic of the South Pennines. Widespread and occurring on every moorland block, flushes often form narrow ribbons of vegetation, barely more than a few metres wide, following lines of seepage or water flow, with occasional larger stands showing more variation including transitions into surrounding drier rush pasture on mineral soils or blanket bog vegetation on peat.

The most common type of flush is usually small and characterised by dense rushes, usually soft rush *Juncus effusus* or occasionally sharp-flowered rush *J. acutiflorus*, over a dense carpet of bog moss. Other plants are usually few but can include marsh pennywort *Hydrocotyle vulgaris*, marsh violet *Viola palustris* or tormentil *Potentilla erecta*. The lower reaches of some flushes are enriched by 'poor-fen' species such as marsh thistle *Cirsium palustre*, lesser spearwort *Ranunculus flammula*, greater bird's-foot trefoil *Lotus uliginosus*, ragged robin *Lychnis flos-cuculi* and marsh bedstraw *Galium palustre*. Larger flushes typically have a mosaic of very different vegetation types including shorter vegetation, dominated by a mixture of common cottongrass and small sedges, typically star sedge *Carex echinata*, carnation sedge *C. panicea*, large yellow sedge *C. demissa* and common sedge *C. nigra*. Large patches of bog asphodel *Narthecium ossifragum* and cranberry creeping over dense mats of bog moss add colour and interest. Many of the flushes are species-rich and the best examples hold several regionally uncommon species including cranberry, butterwort *Pinguicula vulgaris*, white sedge *Carex curta*, sundew, bog pimpernel *Anagallis tennella*, and lesser skullcap *Scutellaria minor*, a species near the north eastern limit of its range in Britain. Flush complexes on Houndkirk Moor support a few plants of chickweed wintergreen *Trientalis europaea*, the only South Pennine site for this northern plant. A few isolated flushes with narrow runnels of flowing water have a distinct vegetation in which bog pondweed *Potamogeton polygonifolius* is the dominant feature. Untypically, hare's-tail cottongrass forms stands within the wetter parts of many flushes giving vegetation transitional to blanket bog, and cross-leaved heath occurs on some flatter sites giving similarities to wet heath.

The locally uncommon bottle sedge *Carex rostrata* dominated mire occurs in small areas on only Big Moor, Leash Fen and Hallam Moors.

Sessile oak *Quercus petraea* and silver birch *Betula pendula* woodland is widely distributed throughout the site, mostly on the steeper slopes and gritstone edges. Generally open to grazing, most stands have a depleted field layer and poor regeneration of canopy trees. The sub-storey characteristically includes rowan *Sorbus aucuparia* and holly *Ilex aquifolium* over a ground flora of wavy-hair grass and bilberry, which in sheltered conditions often develops into large bushes, and at some sites buckler fern *Dryopteris dilatata* or the locally uncommon cow-wheat *Melampyrum pratense*. Deeper slightly damper soils on the lower slopes extending into valley bottoms, support wood-sorrel *Oxalis acetosella* and even bluebells

Hyacinthoides non-scripta. Many stands have a scattering of introduced species, including beech *Fagus sylvatica*, sweet chestnut *Castanea sativa* and conifers sometimes with regenerating Scots pine *Pinus sylvestris*.

Alder *Alnus glutinosa* with grey willow *Salix cinerea* and downy birch *Betula pubescens* forms small stands of wet woodland in flushed areas on the sides of some larger cloughs. The ground flora includes marsh thistle, creeping buttercup *Ranunculus repens*, yellow pimpernel *Lysimachia nemorum*, opposite-leaved golden-saxifrage *Chrysosplenium oppositifolium* and bog mosses *Sphagnum* spp. Unlike drier woods, the wet ground conditions deter livestock and natural regeneration can be reasonably good.

As with the rest of the South Pennines, the bog and flush flora of the open moorland is bryologically degraded, though a number of locally scarce species of moss and liverwort do occur in sheltered localities on gritstone edges and boulders, and along stream sides. The rocky woods and streams below the edges are of much greater significance providing conditions for a rich bryophyte flora with many species characteristic of long woodland cover and several 'sub-Atlantic' and western species, including nationally scarce liverworts, such as *Barbilopozia atlantica* and *Calypogeia integristipula*.

The Eastern Peak District Moors have some of the best localities for lichens on millstone grits and peat in the Peak District. The only local gritstone locality for *Cetraria islandica* and both local sites for *Umbilicaria torrefacta*, lichens at their southern limits in the Pennines, are found here. *Umbilicaria deusta*, a nationally scarce lichen, can be found on damp boulders along Burbage brook and *Cladonia fragilissima*, a lichen of restricted national and perhaps global distribution, occurs at many localities in acid grassland across the moors.

Birds

The blanket bogs of the Eastern Peak District Moors support good numbers of breeding golden plover *Pluvialis apricaria* and curlew *Numenius arquata*, with occasional pairs of dunlin *Calidris alpina* and redshank *Tringa totanus* on the wettest sites such as Ringinglow Bog. Meadow pipits *Anthus pratensis* are the commonest passerine throughout the area and, together with other small song birds, form the staple prey of merlin *Falco columbarius*.

Areas of heath and acid grassland below the blanket bog support nationally important numbers of breeding merlin (1.5--2.4% of the British population), as well as breeding curlew, red grouse, and a small and fluctuating population of short-eared owl *Asio flammeus*. In common with other moorlands in the South Pennines, breeding merlin have increased over recent years. They nest in stands of old leggy heather, often near the heads of valleys, where they can command a view over the surrounding moorland. Stonechat *Saxicola torquata*, a rare breeding bird in the Peak District, has started to breed in recent years on the dry heaths. Wetter areas of rough grazing support breeding snipe *Gallinago gallinago*, lapwing *Vanellus vanellus* and a large population of reed bunting *Emberiza schoeniclus*. A few pairs of twite *Carduelis flavirostris*, a species on the south eastern extremity of its breeding range in Britain, may still breed on the heath, bracken and grass areas, though their numbers have declined in recent years.

The gritstone edges, with their associated boulder strewn slopes and bracken, support wheatear *Oenanthe oenanthe*, good numbers of ring ouzel *Turdus torquatus* – though these are probably declining in areas well used by the public – and a large population of whinchat *Saxicola rubetra*, which appear to be associated with bracken heaths.

The wooded fringe to the Eastern Peak District Moors supports good numbers of woodland and woodland edge birds such as tree pipit *Anthus trivialis* and redstart *Phoenicurus phoenicurus*. Nightjars *Caprimulgus europaeus* have bred in the recent past, but their numbers have declined generally in recent years. Stands of trees on the moor also provide nest sites for other raptors.

The moorlands are drained by natural streams, which together with the moorland reservoirs provide habitat for small populations of waterside birds. A few pairs of grey wagtail *Motacilla cinerea* breed on the streams, whilst common sandpiper *Actitis hypoleucos*, little ringed plover *Charadrius dubius* and occasionally teal *Anas crecca* breed on the small upland reservoirs.

Hen harrier *Circus cyaneus* and merlin hunt over the moors during the winter and small flocks of snow bunting *Plectrophenax nivalis* and dotterel *Charadrius morinellus* are occasionally noted on passage. When the reservoirs are drawn down in the autumn they attract migratory waders and during the winter they support a significant population of goosander *Mergus merganser*.

Other Animals

The moors are not particularly rich in amphibians or reptiles, but they do support the only area in the Peak District where adders *Vipera berus* are regularly found.

The invertebrate fauna has not been studied in detail, except for a few sites, notably Leash Fen and Lucas Moss on Big Moor. Recording has begun to reveal a rich and varied upland fauna, with many notable species across a wide range of taxa. The site has a particularly good beetle fauna with seven nationally scarce terrestrial beetles and four nationally scarce water beetles and very many species of local interest recorded. Good numbers of craneflies, including several local and four nationally scarce species have been recorded from different localities and habitats. Two nationally scarce hover flies have been recorded, one from the wooded edge of Hathersage Moor and the other from Leash Fen, where several species of local interest have also been recorded. Other nationally scarce species include a weevil, a sawfly and two dung flies. Large numbers of spiders, including many of local interest have been found in both open moorland and wooded habitats. Moorland pools and streams provide habitat for up to eight species of breeding dragonfly, including the only known breeding site in Derbyshire for the golden-ringed dragonfly *Cordulegaster boltonii*.

Geology

Flandrian peat deposits at **Leash Fen** provide an important pollen record of the vegetational history and environmental changes which have taken place in this area during the past 4,500 years. It provides evidence for the forest history of the area, the initiation of peat growth and subsequent vegetation changes. Nine radiocarbon dates provide a geochronometric framework for the history of deforestation and episodes of vegetation clearance over this period.

Hathersage Moor shows the Upper Carboniferous, Chatsworth Grit Formation in its fullest development, together with a shale containing an Upper Marsdenian fossil fauna.

Approximately 100 metres of sandstones, interbedded with marine or brackish shales in the lower horizons are exposed. The Chatsworth Grit is one of the best known examples of the type of sheet delta deposit that characterises the Millstone Grit in Northern England. The Chatsworth Grit consists of two major sandstone units. A lower one characterised by fine-grained flaggy sandstones with thin shale units, and an upper unit which is fine grained at the base, but coarsens upwards into coarse-grained sandstones and conglomerates showing large-scale cross-bedding.

The lower tier of the sandstones (15 metres in thickness) is considered to represent deposits formed by a delta mouth bar. Similar depositional conditions persisted into the basal part of the upper tier of the sandstones (80 metres thick), however, the coarser-grained cross-bedded sandstones and conglomerates are considered to represent the remains of distributary channels which migrated seaward as the delta was built up.

The shales near the base of the sandstone sequence contain a fossil fauna consisting of the goniatite *Verneuilites sigma* and the bivalve *Posidonia cf. insignis*. The presence of this goniatite indicates that the shales belong to the youngest part of the Marsdenian Stage; constraining the date of the development of the delta complex.

Burbage Brook is a key site for the study of upland periglacial landforms. The valley contains a number of well known tors which were used by D L Linton to illustrate his classic theory of tor formation. Additional geomorphological highlights of the site include escarpments, structural benches, solifluxion deposits, weathering features, blockfields, blockslopes, a variety of slope forms, and a Devensian late-glacial soil. This variety of landforms and deposits and their clearly demonstrated relationships provides an exceptionally compact and comprehensive assemblage of geomorphological features that are representative of old upland areas with a long and complex evolution, including prolonged exposure to periglacial rather than glacial processes during the late Pleistocene.

The site has also served as a field laboratory for the testing of a number of early studies of slope evolution and slope-forming processes. Some of the first attempts to provide an accurate method of mapping the morphology of slopes were also carried out in this valley and adjacent ones.