

Welcome to the Moors for the Future Partnership's guide to the landscape features of the Peak District National Park and South Pennines.

Use this guide to try your hand at spotting and identifying some of the landscape features that help to make these moorlands such important and unique places.

If you have a smartphone search for MoorSIGHTS on the Apple and Android app stores to find our interactive version of this field guide.

Archaeological



Prehistoric settlement and ritual

Evidence of prehistoric settlement survives on a number of moorland sites in the Peak District. Remains including field systems, house sites, clearance cairns, barrows, ring cairns and stone circles occur on the Eastern Moors estate – particularly Big Moor and Gardom's Edge, on Chatsworth's Beeley and Gibbet moors, and on Eyam and Stanton moors.

Thought to be largely of later prehistoric date (approximately 2000 – 500 BC) these extensive complexes include field systems which survive as low stone banks or turf covered lynchets, remains of house sites appear as levelled circular platforms and on the edges of these areas of activity are burial mounds (barrows) and ritual features such as ring cairns and stone circles.

Small mounds of stones, or clearance cairns, are interspersed amongst the field system enclosures. Most of these mounds are simply heaps of stone - the result of clearing land for cultivation. Recent excavations have revealed however that some overlie grave pits or include human cremations in urns.

Some areas, Gardom's Edge and Stanton Moor, for example, have had extremely detailed archaeological surveys, along with sample excavations – so we know quite a lot about how people lived in these places. Because of the antiquity, well preserved nature and extent of these sites most have been Scheduled as Ancient Monuments. This means that it is unlawful to damage or disturb the remains in any way.



Hill forts

One of the most prominent archaeological features in the whole of the Peak District is Mam Tor hill fort with its impressive boundary earthworks. Inside the fort are a large number of building platforms dug into the sloping interior. Its size and location all attest to the significance attached to this place in later prehistory. Whilst the ramparts (defensive banks and ditches) of the fort are of probable Iron Age date (800 – 70 BC), the presence of two Bronze Age (2000 – 800 BC) barrows within the enclosure, reflect that the hill was of ritual significance in earlier times.

Carl Wark is another probable hill fort, though archaeological investigation of the site has been largely inconclusive. Situated on moorland above Hathersage it occupies a position where steep slopes provide natural defences on all sides but one. The more easily accessible side is blocked by a rampart faced with a dry stone wall built of massive gritstone blocks and slabs.

A further such site, Fin Cop, which is located on the limestone at the head of Monsal Dale, was archaeologically investigated recently. This highly productive, Heritage Lottery funded project resulted in the discovery of a significant amount of skeletal material within the fort's defensive ditch. This represented the slaughtered individuals who had been thrown into the ditch before the fort's ramparts were destroyed during an attack. Radio carbon dating of deposits from the site confirmed an Iron Age date for its occupation.



Tools & arrowheads

Stone tools have been found widely across the Peak District including flint and chert (a fine-grained, sedimentary rock) artefacts dating from approximately 8000 BC to 500 BC. These are comprised of arrowheads, scrapers, knives, axes and the tools used to make them. They predominantly turn up as a result of today's farming activities although others have come to the surface due to the erosion of peat or as earth moved from animal burrows. Owing to the scale of activity ploughed fields have yielded some interesting finds.

Significantly several hundred polished axe heads from the Neolithic have been found in the lowlands of the area, suggesting that these tools had symbolic rather than an entirely practical value. Often the material used in their construction had its origin not in the Peak District but in Cumbria, North Wales and sometimes even further afield. This indicates that trade or the exchange of goods was taking place during this early period.

Artefacts from early prehistory, when people lived as hunter gatherers and moved through the landscape seasonally following herds of game, are frequently found on the high moors, particularly where peat erosion has revealed mineral soils. These are typically microliths, small carefully shaped points made from flint or chert. Flint arrowheads of Neolithic (4000 – 2000 BC) and Bronze age (2000 – 800 BC) date are also found in these locations as elevated positions above valleys were favoured hunting sites.

Archaeological



Packhorse routes

Before formal roads were established, packhorse routes traversed many of the Peak District moorlands. Originating in the medieval, and possibly earlier, goods such as lead ore, peat, charcoal, and salt were transported on these routes between production centres such as Cheshire and the industrial centres either side of the Pennines.

Evidence of these routes survive today as braided hollow-ways – networks of sunken tracks which have developed as travellers abandoned an existing route which had become too boggy, for drier ground. Some are also defined by flagged pavers.

A number of packhorse bridges, built where these routes crossed water courses, still survive today in moorland locations. Well known examples are at Slippery Stones in the Upper Derwent Valley and at Washgate, near Hollinsclough. Thought to be largely of 17th and 18th century construction they are just wide enough to allow the passage of a string of horses.

Farming and Recreation



Sheep folds

Sheep folds were (and still are) built as a gathering points for stock. Often rectangular (but also round) older ones are made of local stone and they may contain sub-compartments. It is now more practical for farmers to use moveable fences.



Shooting butts

These can be seen on many of the moors and are small structures built of stone, timber or simply turf.

They are generally of simple rectangular or circular design and are used during the grouse shooting season to help conceal hunters from the driven birds. Often there are eight or nine shooting butts forming a row.



Grips

Grips are drainage ditches which have been dug in the moors. Unlike erosion gullies, which meander across the moors, grips are very obviously man made. They are characteristically straight and you may find areas where many run in parallel. They were dug in order to improve grazing and the heather moors.

Grips are often blocked using peat dams or plastic piling. This helps restore the water table and prevent further peat erosion.

Industrial



Quarries, mines & spoil heaps

Industry has played a significant part in the history of the Peak District and myriad quarries, limekilns, mines and their spoil heaps still survive in the upland landscape. On the moors, the industrial remains which occur most commonly are gritstone quarries of various scales. These may be small, moorland edge delves for walling stone or millstones, or massive complexes such as the Danebower quarries on the moors to the north of Buxton. This extensive site produced stone for building, walling and roofing slates in the 19th century. It is now abandoned, but the vast waste heaps of stone and ruined quarry buildings still remain.

Evidence of early coal mining also survives on some moorland areas. Surface remains of the industry occur extensively in the Upper Goyt valley, west of Buxton. These comprise of mine shafts, causeways, gin circles (the foundations of horse-powered winding mechanisms for drawing up coal) and waste heaps. In the late 18th century the particularly important Goyt's Moss and Axe Edge mines brought coal to the surface via an underground canal.



Millstones

Watermills have a long history in the Peak District and have been present since at least the Saxon times. These early mills were mainly built for the production of flour but they were joined later in the 18th century by those producing textiles, largely cotton.

As a result of the milling industry, millstones were produced in the Peak District for many hundreds of years; the raw material (gritstone) being quarried along escarpments of the eastern moors. Millstones were also supplied widely to other regions of the United Kingdom.

Gritstone quarries with unfinished millstones can still be found in the area. A good place to visit is the area above Baslow where stones at various stages of completion can still be seen.

Conservation



Gully blocking with dams

This conservation technique is carried out on areas of bare peat where there gullies (eroded areas of peat often in old drainage channels) have formed. In situations where restoring the vegetation is not sufficient to repair the damage, the gullies themselves need to be blocked by creating a dam. These dams aim to aid revegetation, reduce erosion, trap sediment and increase water-table levels.

In the MoorLIFE project areas, gullies in bare eroding peat have been blocked with a variety of methods, including stone, heather bales, timber and plastic dams. Different materials have been used to suit the situation and the desired outcomes. Blocking normally starts at the top of the gully, where it is causing immediate damage to the peat, and continues downstream.

Each gully is unique and needs a tailored approach. For example, the natural stone dams used in MoorLIFE can be used in large gullies (up to four metres deep and three metres wide) and are suitable for any kind of substrate (peat, mineral soil or bedrock). Stone dams are also very good at trapping sediment and are also very stable. Heather bale dams are used where slopes are gentle and stop the flow of water across the surface of the bog. They are also good at trapping sediment. Timber and plastic dams are preferred where more water needs to be held in place.

Conservation



Geotextile

Some landforms like gullies have very steep sides, and heather brash will not stay in place. In cases like these, the Moors for the Future Partnership project uses water permeable landscaping fabric (geo-textile). It is completely biodegradable, but stays in place long enough to allow seeds to become established (around three years) and the peat to stabilise.



Dipwells

You may come across “dipwells” whilst walking across the moors. These are water-level measuring stations. The readings provide valuable information on the effect of our conservation work, which aims to ‘rewet’ the moors and provide the right conditions for plants like *Sphagnum* - vital to peat formation in active blanket bog.

Monitoring takes place on intact peat which has not been damaged by industrial pollution or wildfires, areas of bare peat, as well as areas that have undergone conservation work.

The dipwells are checked manually, by blowing down a tube which is lowered into the well. When the tube reaches water, audible bubbles are produced and the resulting depth is measured and recorded. This approach might seem low-tech but has proved to be very effective and reliable.

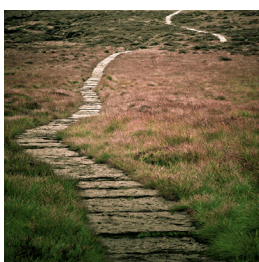


Footpath works

Popular footpaths suffer from increased foot-traffic which can cause erosion scars in the landscape. The situation is made worse by the action of water washing away the loosened soil. As walkers skirt around the edges of eroded and boggy areas, paths widen, plants become trampled and the birds that nest on the ground, often close to paths, are disturbed. Birds frightened from their nest leave eggs or young vulnerable to prey, the cold and even the risk of trampling.

Repairs and renovations are carried out to prevent further erosion and protect the landscape using materials and techniques for different reasons. Flagstones are laid over bare peat, pitching stone is used on steeper sections. Paths are landscaped and unified, removing extra strands. Water management features including ditches, water bars and fords help reduce the effect of erosion caused by rainfall.

On one section of well used path from Edale to Kinder Scout, a total of 236 tons of material had to be flown onto the site by helicopter. This included 122 tons of stone flags and 114 tons of pitching stone, used to build steps over the steepest sections of the path.



Flagstones

Flagstones are a relatively common sight across the moors and have been used to avoid further erosion to well used footpaths. Most came from derelict textile mills.

Flagstones have been laid over areas of deep peat by the Moors for the Future Partnership and other organisations to protect it from walkers’ feet - this allows the bare peat to recover and return to its natural vegetated state. It also helps walkers by giving them a firm surface underfoot.



Heather brash

Bare peat is very susceptible to erosion from wind, water and trampling from walkers.

Covering bare peat with cut heather (brash) can help to stabilise the peat by creating a skin that protects it from erosion and creates a microclimate that helps to protect seeds from harsh weather. Seeds can also be added as part of the lime, seed and fertiliser works or can also be found in the heather brash along with beneficial spores and fungi. As the plants grow they form a network of roots that help to keep the soil in place.

We identify areas suitable for treatment using GIS (Geographic Information System) mapping and aerial photography. The site is then physically checked. Once the size of a site is confirmed, the amount of brash required to cover it can be calculated. On average, one hectare of bare peat requires around 200 bags of brash.

Heather is cut in autumn when the seeds are ripe, collected into huge bags and transported by road to a collection point where it is flown up onto the moors by helicopter - from there it is spread by hand. It's hard physical work which is often interrupted by winter snowfalls that can cover the eroded peat, forcing work to stop until the snow thaws. Every year, it's a battle against the elements and a race against time to spread the brash before the bird nesting season starts.

There are three areas covered by the MoorLIFE project that have received the heather spreading treatment – including large areas of Bleaklow and at Rishworth and Turley Holes in the South Pennines.



Heather management

Heather moorlands require active management if they are to remain as heather moors. Without management heather moors will become dominated by mature heather and will be succeeded by colonising tree species such as birch and willow.

In order to manage grouse moor estates to keep a supply of young heather shoots, needed by red grouse to feed on, heather moors have been managed by burning sections on a rotational basis. This removes the mature, woody heather and invading tree species and encourages the regrowth from roots and seeds of young plants. This is what creates the familiar moorland patchwork. It is normally done in cycles of between 7 - 25 years, depending on how vigorous the regrowth is. Heather cutting is an alternative approach to burning and is preferable on areas of deep peat, where burning can kill off the *Sphagnum* understorey and cause the peat to dry out. In turn, this releases more CO₂ into the atmosphere, widely recognised as the main cause of climate change.

The Moors for the Future Partnership uses the material produced by cutting to protect areas of bare peat from erosion elsewhere, further reducing the release of carbon into the atmosphere. (See the Heather Brash entry for further information).



Plug plants

The Moors for the Future Partnership's aim is to restore active blanket bog (the term used to describe areas where peat is actively being made). Plants growing on these intact areas are often too far from restoration areas for the seeds to disperse naturally. This makes it difficult for some of the species which make up blanket bog to naturally re-colonise newly stabilised areas. To speed this process up we propagate appropriate species and plant them out as partially grown (plug) plants.

Six species are used that, along with *Sphagnum* moss make up the active blanket bog vegetation community in the Peak District:

- cloudberry *Rubus chamaemorus*
- hare's-tail cotton-grass *Eriophorum vaginatum*
- common cotton-grass *Eriophorum angustifolium*
- bilberry *Vaccinium myrtillus*
- crowberry *Empetrum nigrum*
- cross leaved heath *Erica tetralix*



Sphagnum application

To complete the restoration of an active blanket bog, where the top layer (acrotelm) contains living plants and is actively creating more peat, *Sphagnum* mosses need to be reintroduced. *Sphagnum* mosses in the Peak District have declined drastically, largely due to historical industrial pollution.

Because of the rarity of *Sphagnum* to act as a source material, new methods of reintroducing it over large areas have been developed over the course of the MoorLIFE project. We decided to propagate eleven species of *Sphagnum* mosses using the same micro-propagation techniques we use for growing plug plants.

These propagated plants are chopped into fragments and used in a number of different ways. They can be placed in a protective bead (propagule) and be applied directly onto the peat. This is suitable for application over a large area. *Sphagnum* mosses grow very slowly, and it takes two to three years for moss fragments to become established.

The fragments can also be grown in a greenhouse as plugs which are planted out by hand in a targeted application.

Where there is *Sphagnum* already growing nearby, the material can be translocated in hummock form to provide an established plant, without damaging the original donor location. This work has been pioneered by the RPSB in another part of the Peak District.

An advantage of using plug plants and hummocks is the plants take less time to become established.



Trig points

Trig points are typically truncated, square, concrete (occasionally stone) pyramids or obelisks tapering towards the top, and were erected by the Ordnance Survey.

On the top of each trig point is a brass plate with three arms and a central depression. This was used to mount and centre a theodolite which was used to take angular measurements to neighbouring trig points.

A benchmark is usually set on the side, marked with the letters "O S B M" (Ordnance Survey Bench Mark) along with the reference number of the trig point. Although many stations are no longer required for surveying purposes, they remain useful to hikers as navigational aids when hill-walking.



Aircraft wrecks

There are a number of aircraft wrecks on the moors. A well known site with wreckage still in evidence is at Bleaklow, Glossop where a Boeing RB-29A Superfortress (nicknamed "Over Exposed") of the 16th Photographic Reconnaissance Squadron (USAF), crashed on 3rd November 1948. The crew were flying on instruments in low cloud and miscalculated the duration of the flight, descending prematurely and hitting the hillside. Everyone on board was killed.

Nearby on Ashop Moor the remains of two North American Sabre F.Mk 4s may also be seen. They collided on the 22nd July 1954 during a training exercise killing both pilots.

Another wreck with a happier story associated with it is the crash site of a USAF B-24J Liberator which was a new aircraft on its delivery flight. Having experienced several problems on take off the plane later crashed at Mill Hill (SK 05850 90650) on the 11th Oct 1944 due to pilot error. Both crew thankfully survived the crash with relatively minor injuries.

Moors for the Future Partnership

Since 2003, the Moors for the Future Partnership has been working to reverse more than 200 years of damage from industrial pollution and wildfires that left large areas of uplands bare of vegetation in the South Pennine Moors Special Area of Conservation and Special Protection Area.

The £5.5 million EU LIFE+ MoorLIFE project is a key part of the initiative. Its primary objective is to restore habitats of European significance – protecting active blanket bog by restoring bare and eroding peat. In just five years, more than 2,000 acres of Peak District and South Pennine moorland has been restored.



Photo showing cottongrass plugs being planted out

© Moors for the Future Partnership

The project has key benefits for communities on both sides of the Pennines in terms of improved landscape, water quality and diversity of upland fauna and flora. The blanket bogs are home to many important birds including the endangered twite, curlew and golden plover. Peat-forming Sphagnum moss, which has nearly disappeared from this area due to industrial pollution and wildfires, and other key upland plants - heather, cottongrass, bilberry, crowberry, cloudberry and cross leaved heath – has been re-introduced.



Photo showing healthy blanket bog

© Tim Melling

The MoorLIFE Project was funded by the EU Life+ programme, led by the Peak District National Park Authority and delivered by the Moors for the Future Partnership. Partners: Environment Agency, Natural England, National Trust, United Utilities, Yorkshire Water.

Find out more at www.moorsforthefuture.org.uk

