



## Education Service

# Habitats of The Lake District

### Introduction

The Lake District National Park covers 2,292km<sup>2</sup> - approximately 1% of Great Britain's land area. It is exceptionally rich in wildlife due to its varied landscape, geology and climate and possesses a unique combination of spectacular mountains, rugged fells, pastoral and wooded valleys and numerous tarns and lakes.

### What is a habitat?

The natural home of a group of plants and animals is called a **habitat**, and the plants and animals which live there - a **community**. Woodland is a good example of a habitat. It is the home of a large community of different plants and animals. The woodland, its community and the non-living environment around it, make up an **ecosystem**.

The type of habitat which exists in a particular area, is determined by a number of factors. These include physical aspects such as climate, soil type, topography and altitude, as well as human and economic influences such as land use and management. If any of these factors change, then so will the habitat and its associated community of plants and animals.

### The History of the Countryside

5000 years ago, nearly all of Britain would have been covered in woodland. Over time, people began to clear fell areas for settlement and agriculture. This created new habitats as the previously almost unbroken tracts of forest were opened up. Coppicing, grazing and other activities maintained this "semi-natural" landscape and enabled it to evolve into the mosaic of habitats that we know today.

### The Lake District Landscape

Agriculture has played a huge part in shaping the landscape of the National Park. The existing pattern

of habitats reflects the area's strong history of farming. In the absence of grazing and other management regimes, much of the land would revert to oak woodland - the **climax vegetation**.

### Protected Areas

Within the Lake District National Park there are nationally and internationally important wildlife sites and many rare or unusual species. There are 8 National Nature Reserves (NNR), over 100 Sites of Special Scientific Interest (SSSI), 3 RAMSAR Sites (internationally important wetland designation), 2 European Special Protection Areas (SPA) and 23 candidate Special Areas of Conservation (cSAC).

### Woodland and Forest

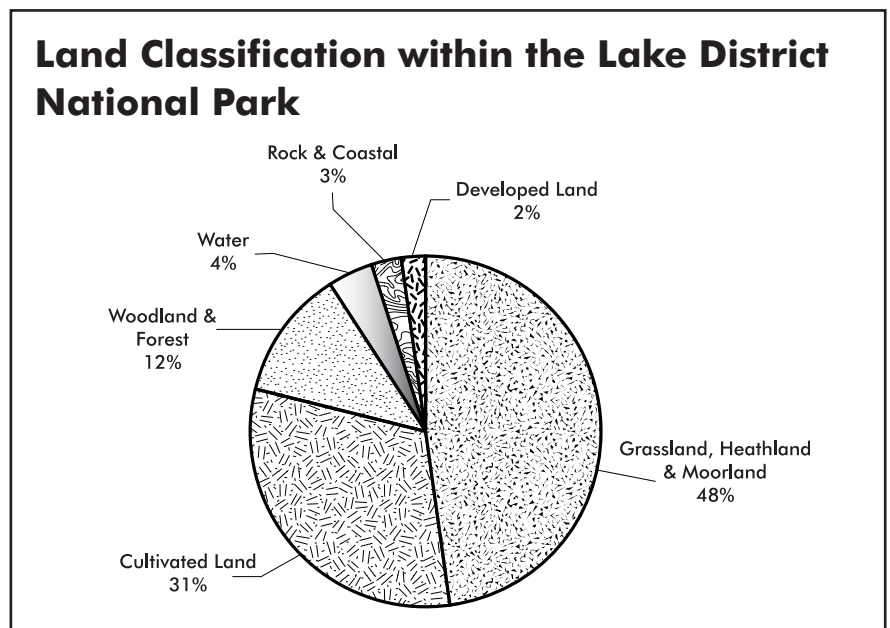
#### Woodland

There is more native woodland in the Lake District than in any other upland National Park in Britain. Those in Borrowdale are particularly important for their lichens and their rich moss and liverwort communities, which depend upon high rainfall and humidity. Sessile-oak woodlands occur on the acid rocks of the Lake District, while on limestone, ash woodlands dominate.

Woodlands provide food, shelter and breeding sites for many different birds such as buzzard, pied flycatcher and tawny owl, and animals including badger, fox, bat and deer.

#### Ancient Semi-Natural Woodland

The British Isles were once almost entirely covered with natural forests, often referred to as **wildwood**. Most of this natural woodland had disappeared by Roman times. Today there is little, if any, true wildwood remaining. However, there are sites that have been continually wooded for at least the past 400 years, which we term **ancient semi-natural woodland**. The continuity of woodland cover over such a long period of time has allowed a rich flora and fauna to develop, and makes these areas especially important for conservation. Roudsea Wood NNR, on the southern fringes of the Lake District National Park, is a good example of this rare and special habitat. The National Park also contains the highest altitude woodland in England and Wales, most notably the Keskdale and Birkkrigg woods which are thought to be descended from original **wildwood**.



## Coppicing

*In the past, woodlands have played an important role in local industries and traditional crafts such as hurdle making, basket weaving and charcoal production. Evidence of this can still be found in many woods in the form of coppice stools. Coppicing is a woodland management technique that can be traced to Neolithic times. Trees are cut to near ground level on a short rotation. The stump then sends up shoots from which poles can be harvested. Species such as the high brown fritillary butterfly, and its food plant, violet, benefit from the substantial light penetration to the woodland floor which this regime allows.*

## Forest

Conifer plantations occupy large areas of the Lake District. They often contain fast growing tree species such as spruce and pine which are favoured by commercial timber growers, but support only a limited range of wildlife. Compared to native broadleaved woodlands, conifer plantations are quite impoverished. They are used by several birds of prey including sparrowhawk, goshawk and merlin and provide refuge, feeding and nesting areas for the native red squirrel.



Recent moves towards more varied planting and felling patterns are producing a mosaic of smaller stands of different aged trees. These are more botanically diverse and of much greater value to wildlife.

## Threats to Woodland

Overgrazing by stock and deer is perhaps the greatest cause of decline in natural regeneration of broadleaved woodlands. A diverse age structure within a woodland is vital to ensure the long term survival of the habitat and its associated species. In some areas where regeneration is not occurring naturally, woodland management such as stock proof fencing and coppicing is being undertaken.

## Alien Invaders

*Ornamental species introduced by the Victorians such as rhododendron and laurel have escaped from the private gardens for which they were intended and spread into surrounding woodland, out-competing native species. Their dense canopy prevents light from reaching the woodland floor and the roots produce toxic chemicals that prevent other plants from growing. This makes the surrounding soil very acidic and reduces the species diversity of woodlands.*

## Grasslands

The National Park has many different kinds of grassland, reflecting the diversity of rocks, climate and topography. Before people began to clear the forests for agriculture and settlement, open grassland was a rare feature below the treeline. Most grasslands have been created by humans and grazing animals. Some areas have been drained, ploughed and re-seeded with "improved" grass mixtures for agriculture and so have limited wildlife value. Others remain as unimproved pasture which supports a greater diversity of plants and animals.

## Acid Grassland

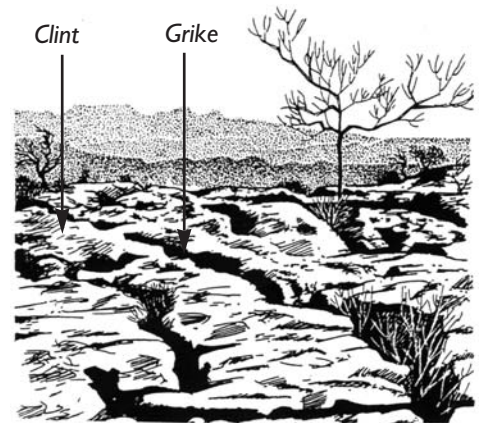
Acid grassland is common on upland sheep pasture where high rainfall, coupled with a long history of burning and grazing, has favoured this relatively species-poor habitat. However, the invertebrate species associated with grasslands provide a vital food source for birds such as skylark and meadow pipit along with small mammals such as mouse and vole. Acid grasslands often contain small areas of richer habitat in the form of wet flushes, springs and mires where many interesting plants, such as the insectivorous sundew and butterwort, can be found.

## Calcareous Grassland and Limestone Pavement

Calcareous grassland occurs on the limestone outcrops in the Lake District. Whitbarrow NNR is a fine example of this internationally important habitat. The area is dominated by blue moor-grass, which is locally abundant but nationally rare. Uncommon orchids and distinctive plants, such as crested hair-grass, also occur, along with several species of breeding butterfly.

## Limestone Pavement

During the last ice age, huge glaciers scoured the bedrock of the Lake District. In limestone areas this created a smooth, flattened surface which is characteristic of limestone pavements. Weathering and run-off from rainwater widened and deepened any cracks in the rock giving rise to a complex pattern of solid blocks called clints, separated by fissures known as grikes. These habitats form distinctive niches for a range of plants and animals. Rare ferns thrive in the deep shady crevices or grikes, while above you may catch a glimpse of the Duke of Burgundy or other rare butterflies.



Limestone pavement is a nationally-rare habitat of international importance. Outside Britain, pavement can be found in only a few other areas of Europe. Cumbria holds 36% of Britain's limestone pavement and examples at Whitbarrow NNR are some of the finest in Britain.

## Threats to Limestone Pavement

Limestone has been extracted for decades, to build walls and gateposts, but demand for stone to use in decorative rockeries has grown rapidly over the last 40 years. Commercial exploitation of the pavements has led to large scale destruction of this fragile habitat. Today, most pavement in England is protected by Limestone Pavement Orders, but this legislation does not extend to Eire where this rare habitat continues to be depleted.

### **Neutral grassland**

Haymeadows occur on neutral grassland. They support a rich variety of wild flowers, a diverse sward of grasses and provide nectar for invertebrates. Their richness is maintained by the fact that plants can flower and set seed before mowing, enabling them to be dispersed during summer haymaking. Sandybeck Meadow in the North West of the Lake District National Park is the smallest NNR in England at just 0.3 ha but it represents a good example of this declining habitat.

### **Threats to Haymeadows**

Many haymeadows have been lost over recent years due, in part, to the intensification of agriculture. The move away from hay making towards silage production which requires an earlier cut and often relies on the input of artificial fertiliser, has led to a considerable loss of species diversity on many grasslands or pastures.

### **Upland Heath**

Heathland is an open habitat dominated by dwarf shrubs such as heather. It is thought that areas were originally cleared for agriculture, but their poor acidic soils made them unsuitable for farming. This enabled the acid tolerant heather to colonise the land. These open habitats are particularly important for insects. Over 170 species of butterfly and moth have been identified at Rusland Moss NNR in the south of the National Park, along with moths, spiders, flies, beetles, birds and reptiles.

Large areas of upland heath have traditionally been managed as shooting estates. A diverse age structure of vegetation is maintained through systematically burning strips of heather to promote seed germination and encourage the growth of new shoots. This practice ensures a constant food supply for birds, such as the red grouse, and provides important breeding ground for (among others), Britain's smallest bird of prey, the merlin.

### **Threats to Heathland**

Heathlands need careful management to prevent them reverting to woodland. This is commonly achieved through stock grazing. However if stocking densities are too high the regeneration of heather cannot keep pace with the consumption of young shoots by the sheep and the heather dies back. This continues to be a problem in many areas of upland Britain including the Lake District.

Financial incentives aimed at tackling overgrazing have been introduced as part of the Government's Environmentally Sensitive Areas scheme.

#### ***The Environmentally Sensitive Areas Scheme (ESA)***

*In the 1980's the government designated the first English 'Environmentally Sensitive Areas'. These are nationally-valued parts of the British countryside that need careful management by farmers if they are to retain their character and continue to support a rich network of wildlife. The Lake District National Park was designated as an ESA in 1993 and financial incentives are used to encourage environmentally-friendly farming.*

*Farmers are asked to reduce chemical inputs such as fertilisers and pesticides, to safeguard and restore hedges, drystone walls, traditional farm buildings and archaeological remains and to take care of wildlife habitats such as flower-rich hay meadows, heather moor, wetlands, chalk downland and native woods. They are also encouraged to restore and recreate these features.*

### **Mires**

The cool wet climate of the Lake District provides ideal conditions for the development of peat, and the area is considered to be of national importance for both the extent and quality of its mires. Peat is characteristic of waterlogged conditions and consists of partially-decomposed plant material. In areas where soil micro-organisms cannot complete their natural breakdown processes due to highly acidic conditions and a lack of oxygen, organic remains accumulate as peat.

Many mires are nutrient-poor ecosystems, unsuitable for farming. The vegetation depends almost entirely on dilute nutrient supplies present in rainwater and atmospheric dust. Mosses and liverworts flourish along with many species of lichen and dwarfed forms of heathers and sedges.

**Blanket mire** is an internationally-scarce habitat which is particularly important for breeding moorland birds such as red grouse, golden plover and merlin. Many sites have become impoverished through

burning, grazing and drainage, but extensive areas remain on some of the flatter fell tops within the National Park.

Small fragments of **raised mire** also occur within the National Park, and these too are of international importance. Meathop Moss is one of the best remaining examples of a raised mire in south Cumbria. The moss supports a wide range of plants, over 200 species of butterfly and moth and several species of dragonfly and damselfly. It was one of the first nature reserves in the country and is now a SSSI.

### **Threats to Mires**

Like many wildlife habitats, mires were once more numerous and extensive but have been depleted by the activities of man. Vast tracts have disappeared over the past 100 years mainly as a result of reclamation for agriculture and horticulture. Artificial drainage of sites, coupled with the increased demand for peat by gardeners, has led to a widespread decline of this wetland habitat. To try to reverse this situation, attempts are being made to raise gardeners' awareness of alternatives for soil conditioning (such as home-made compost), and steps are being taken to protect and manage existing mires more sympathetically. A few have been re-wetted and are managed by controlling water levels. In areas where rare plants such as the bog orchid have been found, grazing has been controlled.

### **Lakes & Tarns**

Lakes and tarns make a vital contribution to the identity and beauty of the National Park. They support an exceptional variety of aquatic plants and animals, and are of national and international importance for nature conservation.

The lakes were formed in the last ice age by huge glaciers gouging out depressions which were later filled by meltwater and rain. They vary considerably in their size, depth and nutrient status. Some have a long tradition of recreational use, access and facilities, while others are valued for their tranquil and relatively undisturbed atmosphere.

The deep, cold lakes of Buttermere, Ennerdale and Wastwater provide habitat for a restricted range of plants and animals, including some rare crustaceans specifically adapted to nutrient-poor environments.


In contrast, lakes such as Windermere and Bassenthwaite Lake support a more diverse range of species. Their more wooded shorelines, with shallow bays and areas of reedbed, provide valuable nesting haunts for swans, grebes and other birds. Windermere is of national importance for wintering wildfowl.

Bassenthwaite Lake is very rich in aquatic plants including the nationally-scarce floating water plantain, and is one of only two lakes in Britain known to support the fish vendace. Bassenthwaite Lake was designated a NNR in 1993 and is owned and managed by the National Park Authority. In 2001 the first pair of ospreys to nest in northern England for 150 years, bred near the shores of Bassenthwaite Lake.


### Threats to the Lakeshore Environment

On many of the lakes and tarns recreational use can sometimes conflict with nature conservation interests. The lakeshore habitat is a fragile "soft shore" environment that is highly susceptible to erosion. The trampling action of feet, coupled with grazing by livestock and waves created from passing boats, can lead to soil and organic material being washed away. Over time, the reedy shoreline may begin to resemble a pebble beach which contains only a fraction of the invertebrate species and little or no aquatic vegetation.


**Erosion of a stony shore**




A stony shore hydrosere with all herbs and grasses ...



reduced by trampling to a grass sward which subsequently breaks up ...



leading to erosion of the surface and exposure of tree roots ...



This eventually results in the loss of lakeside trees and formation of a gravel beach

## Rivers

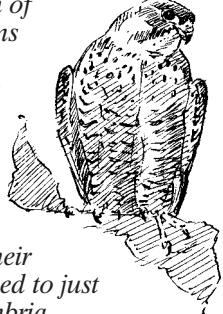
Many of the rivers within the National Park are of considerable ecological importance. The significant populations of fish, together with other species such as native crayfish, freshwater pearl mussel and otter, reflect the generally high standards of water quality. The fast flowing upland streams provide ideal conditions for birds such as dippers and grey wagtails.

## Rock and Scree

Glacial activity has produced a wide variety of crags, knolls, ledges and other rock features. In some places, steep sided *gills* cut deeply into the fellsides. These ravines provide a damp, sheltered environment and are largely inaccessible to grazing animals, which enables them to support many unusual plants.

Steep rocky cliffs known locally as crags support a mosaic of plant life, with a mixture of arctic-alpine flora and lowland plant species. Sheltered rock ledges support a rich assemblage of tall herbs and ferns along with many mosses, liverworts and flowering plants. They also provide a habitat for a varied range of bird species including stonechat, wheatear and ring ouzel and nest sites for raven, peregrine and golden eagle.

*The population of peregrine falcons suffered huge declines during the 1950s and 1960s due to widespread use of pesticides, and illegal persecution. Their numbers dropped to just 6 pairs in Cumbria. However over the last 20 years they have made a considerable recovery. The Lake District today supports the highest density of peregrines anywhere in Europe.*



### Threats to Rock and Scree

Cliff, rock and scree communities are very easily damaged. They are vulnerable to the activities of climbers, walkers and scramblers. Many agencies are working in partnership to promote responsible and sensitive use of the countryside. Seasonal access restrictions to crags with nesting birds are negotiated

annually. An Environmental Charter for outdoor users in the Lake District has recently been produced by the Adventure and Environment Awareness Group.

## Coastal Environments

Coastal environments include areas of dune, grazing marshes, coastal heath, mudflats and the banks of tidal rivers. Five sites of international importance for nature conservation are located on the coast of the National Park.

In the West, the National Park's coast stretches from Drigg Local Nature Reserve (SSSI) for 19km south to Silecroft. Large numbers of the internationally-important natterjack toad are found here along with the palmate, great crested and smooth newt. Other important species include the adder, slow worm, 18 nationally important invertebrates and over 200 plant species.

On its southern boundary the National Park encompasses small parts of the Duddon Estuary and Morecambe Bay. These extensive areas support huge numbers of breeding and wintering birds for which they are awarded special European protection – RAMSAR status.

## Conservation

Many organisations help protect Lake District habitats. They include the National Trust, English Nature, Royal Society for the Protection of Birds and Cumbria Wildlife Trust. The Lake District National Park Authority works closely with these organisations to monitor important habitats and ensure they are protected and maintained for future generations.



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