# Scotland's National Nature Reserves

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# The Story of Beinn Eighe National Nature Reserve

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## Foreword

Magnificent landscapes of mountain and temperate oceanic 'rain' forest greet visitors to the National Nature Reserve (NNR) at Beinn Eighe. Rising to more than a thousand metres and harbouring Scotland's signature wildlife, this was the first NNR to be established in the entire UK. Originally thought important only for the Scots pine woodland of Coille na Glas Leitir, the upland habitats have since been recognised as internationally important too. The Reserve lies in the Torridon Mountains, close to the village of Kinlochewe, Wester Ross.

Beinn Eighe is well known amongst walkers for its seven peaks, and its ridges and corries of white "snow-in-summer" quartzite. The Reserve is home to the largest remnant of ancient Caledonian forest in Wester Ross some of the Scots pine trees are nearly 400 years old. A distinctive mix of plants and animals thrive on the Reserve, and its rugged slopes support one of the UK's best tracts of prostrate juniper and moss heath. Rare lichens, liverworts and mosses flourish, from the mild, damp woodlands up to the highest peaks. Below the tree line, pine marten, Scottish crossbill and northern emerald dragonfly make their home in the ancient pinewoods, whilst otters and black-throated divers can be seen where the Reserve meets the waters of Loch Maree.

Beinn Eighe is one of 56 NNRs in Scotland. The NNRs are special places for nature, where some of the best examples of Scotland's wildlife can be found. Every NNR is carefully managed both for nature and for people, giving visitors the opportunity to experience our rich natural heritage. This is especially true on Beinn Eighe with its award winning Visitor Centre and interactive displays, all-abilities trails, interpretive panels, car parks, picnic sites and opportunities for voluntary work.

The Reserve Story contains background information about the Reserve, describing the wildlife interest, its land use history and management since it became a Reserve. We outline how we intend to manage the Reserve in future years in the Reserve Proposals document and we invite your comments on these proposals. Your feedback informs the production of the final Reserve Plan, which is the blueprint for management of the Reserve for the next six years. In future we will produce a Reserve Review to report how well our plans worked.

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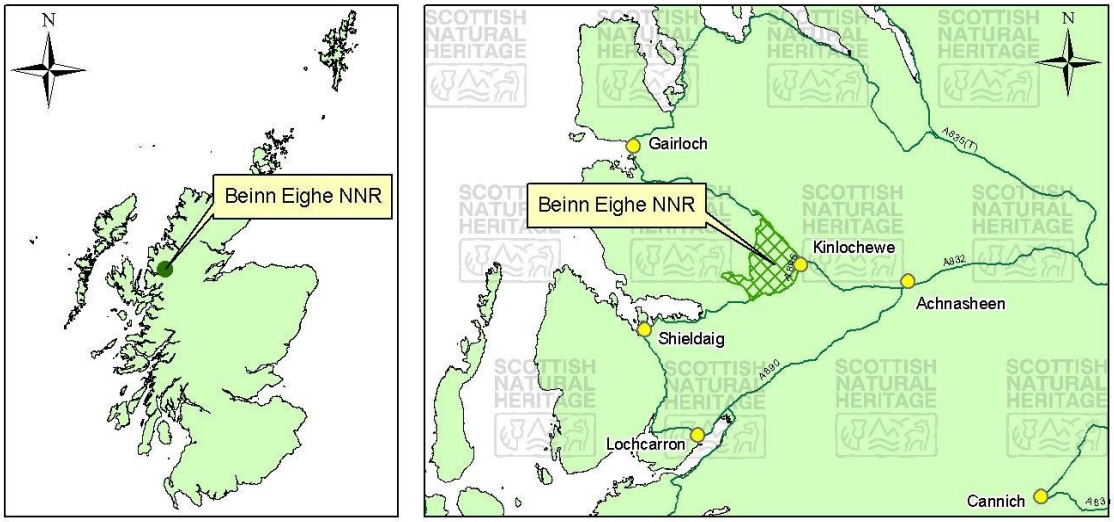
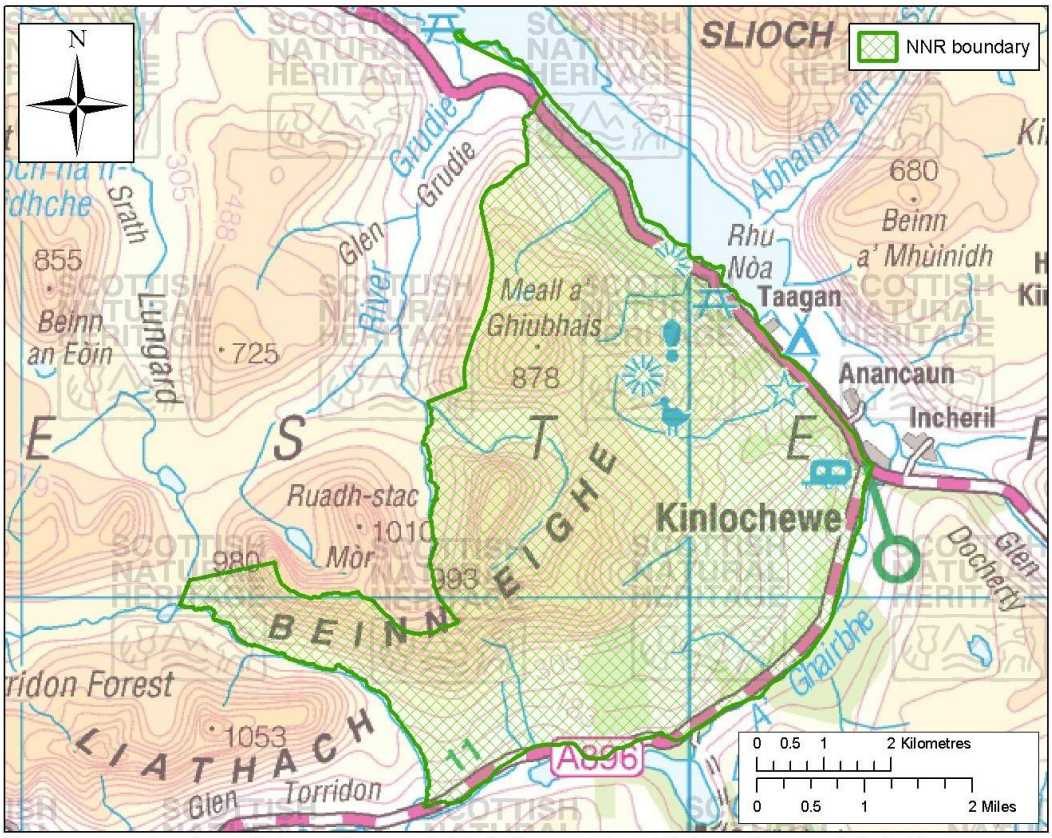
## Contents

# Maps of Beinn Eighe NNR

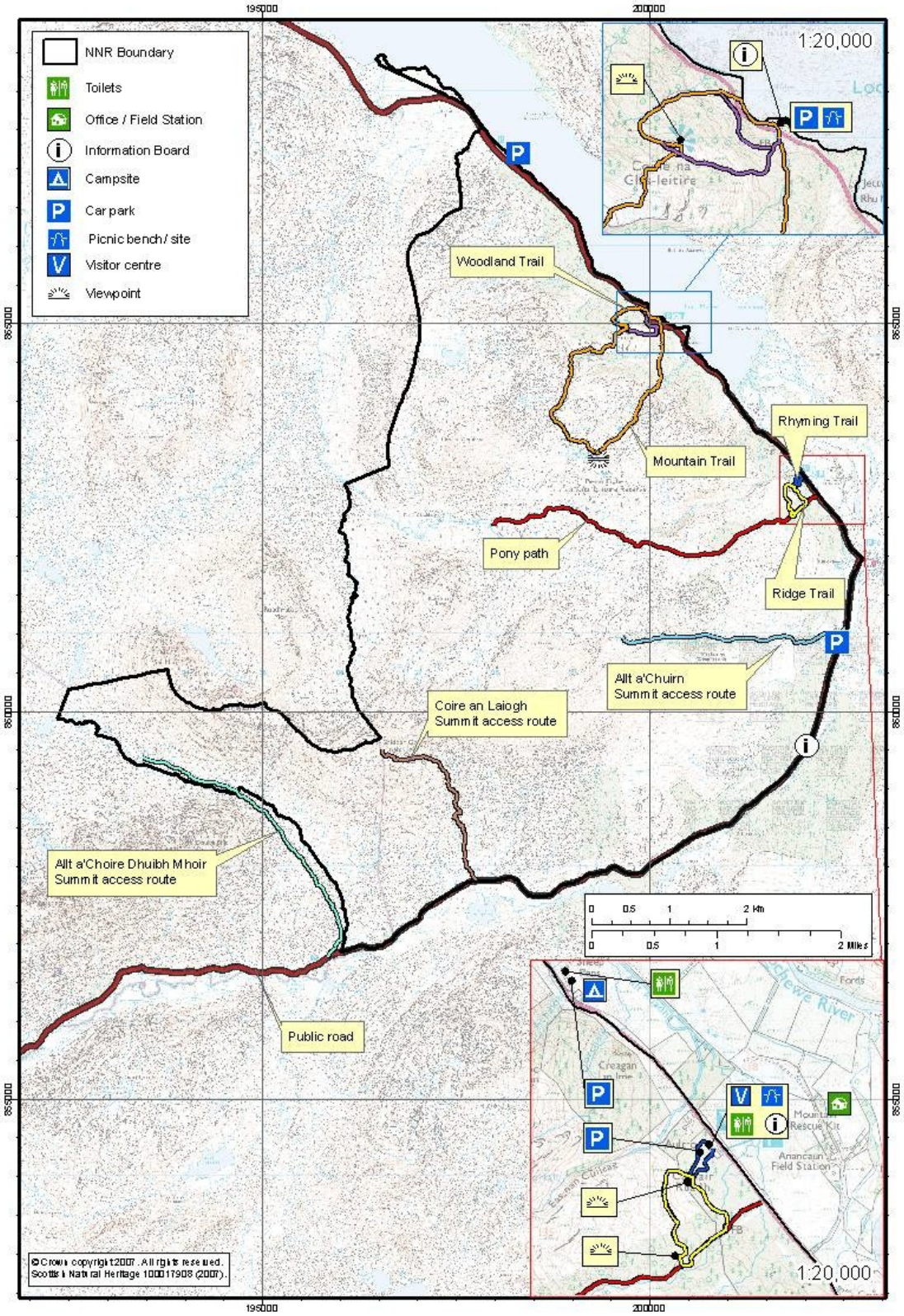
## Location maps




## Boundary of Beinn Eighe NNR



# Map showing key locations and trails at Beinn Eighe NNR



# 1 Introduction to Beinn Eighe NNR

Beinn Eighe NNR is close to the village of Kinlochewe, about 80 kilometres (km) west of Inverness. The Reserve covers nearly 4,800 hectares (ha), bounded by Loch Maree to the north-east and Glen Torridon to the south. To the west, the Reserve rises to the high tops of the Beinn Eighe ridge and the outlying mountain, Meall a'Ghiubhais.

This was the first National Nature Reserve to be declared in the UK, in September 1951. It was established originally to protect the largest fragment of ancient Caledonian pinewood in north-west Scotland, the Coille na Glas Leitir (the Wood of the Grey slope). While the inclusion of the mountains above the wood was simply a condition of the purchase at the time, it turns out that these hills contain some of the UK and Europe's best examples of western upland habitats, with their lower slopes supporting very large areas of heathland.

Beinn Eighe is the most inland of the Torridon Mountains, one of the most spectacular ranges in Scotland. The area is a magnet for climbers, walkers and geologists alike. Three very different types of rock are found on the Reserve. The underlying rock is ancient grey Lewisian gneiss, while younger pink Torridonian sandstone forms the bulk of the mountains. Some of the summits are topped by striking white Cambrian quartzites. Glaciers have sculpted these rocks during successive ice ages and this, together with wind, rain and frost, has all helped to shape the scenery we see today. Some of Scotland's oldest fossils - tiny creatures and worm burrows - can also be found amidst these ancient rocks.

*Beinn Eighe from Coulin*

The climate around Beinn Eighe is oceanic - generally mild and wet with more than two metres of rainfall annually. In fact, it is more likely to be wet than not, as it rains here on two out of every three days! Not surprisingly then, Coille na Glas Leitir is classed as a temperate rainforest and is one of the best places in Britain, for moisture-loving mosses and liverworts.

Above the tree line, the open ground upland habitats on the Reserve include extensive areas of bare rock, scree, scattered bog and alpine and sub-alpine heaths, together with grassland, smaller areas of snow beds, and ledges with tall herbaceous plants. Some crags have a wide range of lime-loving plants including rarities such as Highland saxifrage. The middle slopes are a mosaic of dwarf heaths, with large areas of dry and wet heath, interspersed with blanket bog.

At Coille na Glas Leitir, the ancient pinewood extends to the shores of Loch Maree. Dominated by Scots pine, these woodlands also contain a mixture of birch, rowan and holly with occasional oak. Elsewhere on the Reserve, the pioneering work of woodland restoration during the first 50 years of the Reserve is evident, with younger trees and natural regeneration extending the woodland habitat. This tremendous variety of habitats results in a rich diversity of plant and animal life from the rare liverwort, northern prongwort to the elusive otter.

Scottish Natural Heritage (SNH) owns most of Beinn Eighe NNR and has managed the Reserve for over 50 years. Looking after, and improving, the natural heritage interest of the Reserve has always been critical to our management at Beinn Eighe. Our visitors are also important and we have been providing facilities and attracting visitors since the 1970s. Today, the Reserve offers a comprehensive array of high quality visitor facilities. There are car parks, picnic areas, interpretation and several circular trails as well as the more difficult summit access routes. The award-winning Visitor Centre houses a fascinating set of interactive displays introducing all aspects of the Reserve. There really is something for everyone.

The Reserve is a Site of Special Scientific Interest (SSSI) and forms part of the Loch Maree Complex Special Area of Conservation (SAC), a European site of international significance, with the Caledonian pinewood, the rich mosaic of upland habitats and the otter population all forming part of the qualifying interests of the SAC designation. The Reserve is immediately adjacent to the Loch Maree Special Protection Area (SPA), which hosts the single most important breeding population of black-throated diver in Britain.

Designated as a Biosphere Reserve in 1976 as part of the UNESCO "Man and the Biosphere" Programme, the Reserve has also held a Council of Europe Diploma since 1983. The Reserve lies within the Wester Ross National Scenic Area (NSA) and contains two Geological Conservation Review (GCR) sites.

## Table 1 Designations and qualifying features for Beinn Eighe NNR

| Designation | Special Area of Conservation | Site of Special Scientific Interest |
|---|---|---|
| | European | UK |
| | Loch Maree Complex | Beinn Eighe |
| **Habitat** | | |
| Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels | ✓ | |
| Dry heath | ✓ | ✓ |
| Alpine and sub-alpine heaths (includes juniper heath) | ✓ | ✓ |
| Montane acid grassland (includes moss heath) | ✓ | ✓ |
| Acidic scree | ✓ | ✓ |
| Plants in crevices on acid rocks | ✓ | ✓ |
| Western acidic oak woodland [1] | ✓ | |
| Caledonian Forest * | ✓ | ✓ |
| Wet heathland with cross-leaved heath | ✓ | ✓ |
| Tall herb communities | ✓ | ✓ |
| Blanket bogs * | ✓ | |
| Depressions on peat substrates | ✓ | |
| Plants in crevices on base-rich rocks | ✓ | ✓ |
| Bog woodlands * | ✓ | |
| Alder woodland on floodplains [1] | ✓ | |
| Upland assemblage | | ✓ |
| **Species** | | |
| Otter[2] | ✓ | |
| Invertebrates | | ✓ |
| Vascular plant assemblage (higher plants) | | ✓ |
| Bryophyte assemblage (mosses, lichens and liverworts) | | ✓ |
| *Earth Science* | | |
| Cambrian stratigraphy | | ✓ |
| Moine structural and metamorphic geology | | ✓ |

* denotes priority habitat.
[1] habitats that occur within the SAC but not within the NNR.
[2] otters are also an European Protected Species (EPS).
[3] Habitats that form part of the SSSI upland assemblage

# 2 The Natural Heritage of Beinn Eighe NNR

## Earth science

The towering mountains of Beinn Eighe hold many clues to Scotland's past, from times when it was covered by ancient tropical seas to the glaciers of the last Ice Age. The oldest rocks of Beinn Eighe are the Lewisian gneiss, which date back to almost 3 billion years ago. Some 800 million years ago powerful rivers flowed across the landscape of these ancient rocks, accumulating a thickness of sands, many kilometres in depth. These sands are now the Torridon sandstones, which form the dominant rock type of the area.

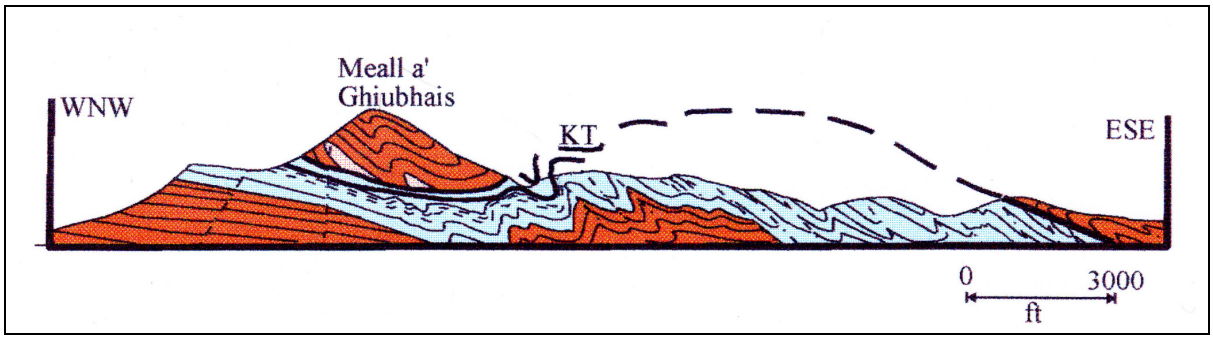
Later, around 540 million years ago, as the area was flooded by warm tropical seas pure white sands were laid down. The white sands are now visible as quartzite rock, which forms many of the summits of Beinn Eighe and scatters pale screes down its slopes. During summer, this often gives the appearance of snow on the mountain. Along with the sand, muddy and lime-rich layers containing the remains of animals that lived in these balmy waters were also laid down. As a result, the Reserve is also home to some of the oldest fossil animal remains in north-west Scotland. These occur in the Fucoid beds, seen from the Mountain Trail; but fossils are scarce.

The Reserve also bears witness to the immense Earth forces, which joined Scotland and England together some 425 million years ago. Massive continental collisions between the landmasses containing Scotland, England and Scandinavia, buckled and broke the rocks around Beinn Eighe. These collisions pushed huge layers of older rock over younger rock layers along a large geological fault. This fault is known as the Kinlochewe Thrust. At Meall a' Ghiubhais, in the northern part of the Reserve the older Torridonian sandstone can clearly be seen lying on top of the younger quartzite rock where the Kinlochewe Thrust cuts through the hill between the two rock types.

More recently, during the last 2.6 million years, large ice sheets and smaller local glaciers have repeatedly sculpted the landscape of Beinn Eighe. Since the ice retreated, rivers have cut some impressive gorges, soils have developed and vegetation has recolonised the area. The most intriguing arrival is the Scots Pine, which is more commonly associated with the Eastern Highlands. At Beinn Eighe, Scots pine appears in the pollen record much earlier than anywhere else in Scotland and is genetically different to Scottish and European Continental trees. How this has happened is unknown, but two theories are that either the genetically different Scots Pine seeds survived one or more glaciations, or that these seeds were carried here from elsewhere.

Soils in the Reserve are largely nutrient-poor with more fertile soils linked to the nutrient-rich fossil-bearing mudstones. All these events have contributed to make the impressive mountain landscape of Beinn Eighe that we appreciate today.

Cross-section through Meall a'Ghiubhais – showing older Torridon sandstone (orange) lying on top of the younger quartzite and similar age rock (blue) where they are separated by the Kinlochewe Thrust (KT/thick black lines).




## Habitats

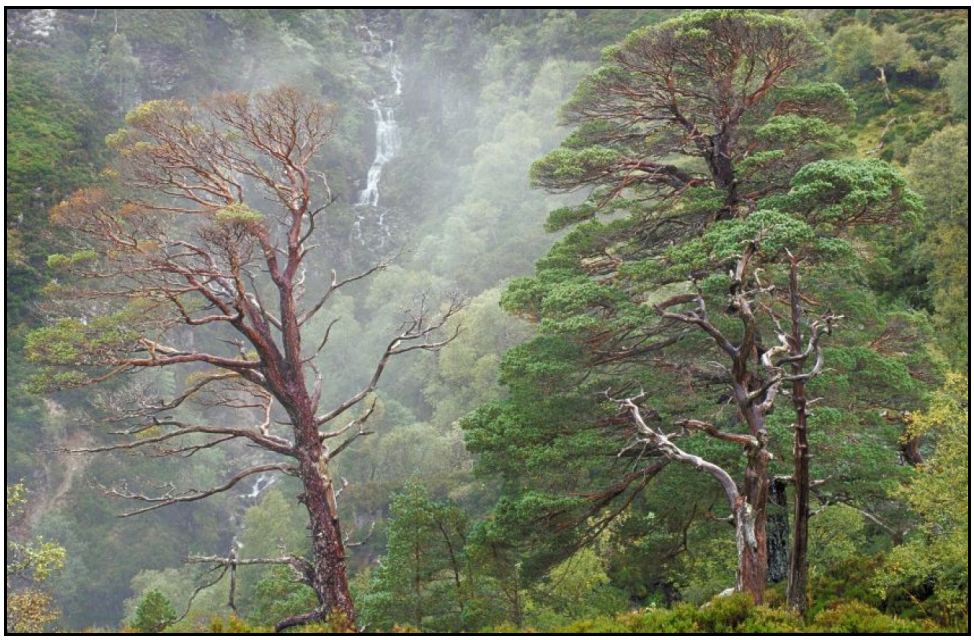
## The woodland

The woodland at Coille na Glas Leitir and three isolated woodlands in gorges elsewhere on the Reserve, are believed to have been present continuously throughout the last 8000 years. The woodlands are dominated by Scots pine, with a mixture of birch, rowan and alder, with the occasional holly. Altogether, the ancient woodlands on the Reserve cover 235ha.

Coille na Glas Leitir is a temperate rainforest adapted to the cool, wet climate of north-west Scotland. Temperate rainforest of any sort is a rare habitat across the world, and is restricted to coastal areas with high rainfall such as Norway and the west coast of Canada. In Scotland, these woodlands differ from the Scots pine forests found elsewhere in the Highlands, which often grow on drier ground with less humid climatic conditions.

Woodlands on Beinn Eighe rise from the shores of Loch Maree at only 12m above sea level to over 300m altitude in some places. Parts of the woodlands are very open; there are small areas pockets of bog with stunted trees around the edges and also, areas dominated by birch. Across the woodland, there are notable variations in the age and density of the trees, largely due to subtle differences in growing conditions and past use of the woodlands by people. The oldest trees are nearly 400 years old and are thought to have recolonised after a fire – the evidence for this is a layer of charcoal in the peat amongst the trees. Dead trees are common, both standing and fallen, and they provide important habitat for many plants and animals.

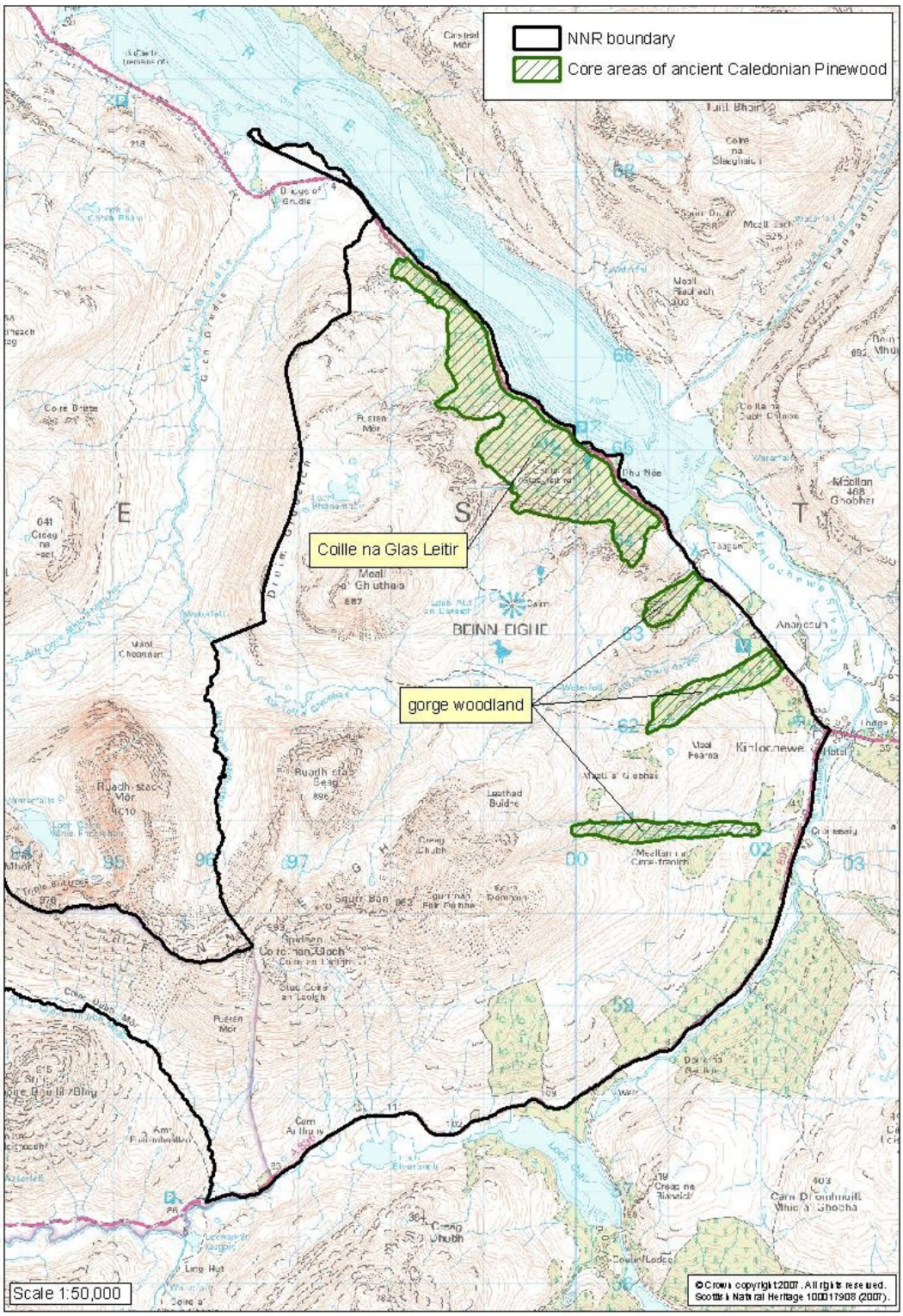
The pinewood on Beinn Eighe is the largest fragment of five ancient pinewoods in Wester Ross[1]. These woodlands are genetically different from other pinewoods in the rest of Scotland. They show similarities to Scots pine growing in the south of France and in Spain. These southern Continental woods may provide a clue as to how Scots pine colonised Scotland after the last age. It is thought that Scots pine may have moved back from two distinct sources. As the ice sheets remained in northern Europe but started to free western Scotland – Scots pine seed moved north from Spain and France into north-western Scotland. Then later, as the ice sheets retreated further in northern Europe, more easterly parts of Scotland were colonised from these more northerly areas.



*Ancient Caledonian pinewood*

[1] The others are at Coulin, Shieldaig, An Teallach and Loch Maree Islands.

# Map showing ancient Caledonian pinewood at Beinn Eighe NNR



## Upland open ground

About half of the Reserve can be regarded as upland open ground. These habitats include extensive dry, wet, alpine and sub-alpine heaths and important moss heaths. Other habitats include rock ledges, screes, montane grasslands and blanket bog, all contributing to the Reserve's national and international importance.

*Alpine heath with dwarf juniper and bearberry*

The dry heaths include some of the best examples of the moss and lichen rich heaths found in the more humid conditions of the north-west Highlands. Further up the mountain, the heaths change in character. Beinn Eighe has outstanding examples of several types of alpine heath, including forms rich in oceanic mosses and liverworts. These heaths include the largest area of dwarf juniper heath in the UK and rare species of liverworts, such as the northern prongwort. This type of heath is only found in the north-west of Scotland and rarely in Ireland.

The higher areas also include a form of moss heath, which is particularly rich in plant species due to the lime-rich rocks on which it grows.

Snow beds occur in areas where snow persists after the general snow cover has disappeared. These beds have developed their own special types of vegetation. The plants that grow here include grasses, ferns and mosses that can tolerate being buried under snow for long periods, and the damp conditions as the snow melts. Beinn Eighe has a wider range of these communities than most other mountains, and has interesting gradations from montane grasslands into the snow bed areas. The summit plant communities support many montane rarities including the only recently recorded British population of the arctic kidney lichen. The crags of the upper areas also support a wide range of lime-loving herbaceous plants, including many nationally scarce species.

## Flora and fauna

Over 680 different species of plants have been found at Beinn Eighe NNR. These are grouped into at least 78 different types of vegetation across the Reserve.

## Higher plants

Beinn Eighe is the most botanically distinguished of all the acidic mountains in the north-west Highlands. Of the 250 higher plants recorded on the Reserve, tufted saxifrage and brook saxifrage are Red Data Book (RDB) species, and 23 species are nationally scarce. There are a number of UK Biodiversity Action Plan (UKBAP) species that occur on the Reserve including, dwarf juniper, marsh clubmoss (not a moss at all) and brown beak-sedge. Likewise, Beinn Eighe is an important location for many of the species that occur in the Wester Ross Local Biodiversity Action Plan (LBAP). Species such as, melancholy thistle, frog orchid, early marsh orchid, creeping ladies tresses, bog orchid, lesser twayblade, mountain azalea, small white orchid and globe flower all thrive on the Reserve.

*Lesser twayblade*

## Lower plants

Beinn Eighe has the greatest variety of oceanic mosses and liverworts recorded anywhere on a single site in Britain. Surveys carried out in 1998 and 2003 recorded a total of 161 moss species and 95 liverworts including, 6 RDB and 56 nationally scarce species – the second highest total from any protected site in Scotland.

Not surprisingly, the Reserve is home to some special mosses. The rusty bow-moss can be found in the woodland, clinging to steep and shaded rock faces. This moss was discovered in Britain a little over 30 years ago, and is only known in the UK from Beinn Eighe and Knoydart, though it does grow as far a field as China.

Up on the plateau, northern prongwort, a 20cm tall, bright orange, leafy liverwort flourishes. Beinn Eighe holds the only population of this plant in Britain but, more significantly, this represents three-quarters of the world population. The remainder grows on 3 sites in Norway.

*Dog lichen*

Another Beinn Eighe speciality is a tiny, dark green, moss called *Daltonia splachnoides* (it has no common name), this is normally found in tropical and sub-tropical latitudes. On the Reserve, it is at its most northerly location in the entire world.

Of the 411 lichen species on the Reserve, 89 are either nationally rare or scarce. Over half of the lichen species grow on the bark of trees, particularly on broad-leaved species such as birch and rowan. Above the woodland, an entirely different range of lichens flourishes. The montane heaths on the tops of Ruadh-stac Mòr and Ruadh-stac Beag are particularly rich in lichens, including 4 RDB species. The most significant of these is the large, conspicuous, yellowish-green arctic kidney lichen. Beinn Eighe is the only known location for this species in the whole of the UK.

There are also 450 species of fungus recorded on the Reserve and again, more rarities such as the RDB species, green webcap, sunset webcap, red edge bonnet and pink bonnet.

## Invertebrates

Beinn Eighe NNR has an impressive assemblage of invertebrates associated with the variety of habitats present on the Reserve. The Reserve boasts the highest number of RDB and nationally scarce invertebrates (23 and 77 respectively), of all Scottish upland sites. Overall, the invertebrate community is of outstanding national importance, with over 1000 different types of invertebrate recorded from the Reserve.

*Azure hawker*

Of the 240 species of butterflies and moths, 4 are RDB species. We have also recently recorded argent and sable moth on the Reserve, a UKBAP species. The Reserve also hosts 180 species of flies and 130 species of beetles, many of which make their home in deadwood.

The wetland areas are prime viewing areas for the 13 species of dragonfly and damselfly that can be found on the Reserve. This variety of species is of national importance and includes the northern green emerald (a RDB species) and the uncommon azure hawker and white-faced darter.

Mammals

All the characteristic Highland mammals have been recorded at Beinn Eighe NNR, such as red and roe deer, pine marten, mountain hare and wildcat. Admittedly, the elusive wild cat has not been seen for many years, other than a hybrid spotted in 1991. Pine martens are however widespread, and signs of them are easy to find, though you will be lucky to spot one of these secretive creatures.

The Reserve and neighbouring Loch Maree supports an internationally important population of otter. Otters breed along the shores of Loch Maree, and there are signs of them around upland burns and lochans as high as 400m up Beinn Eighe. Pipistrelle bats are common on the Reserve and have breeding colonies in several buildings. Daubenton's bats are also seen but, so far, we don't know where they breed.

Two native species of deer can be seen on the Reserve. There are around 150-200 red deer, ranging from the summit plateau to the shores of Loch Maree. Roe deer are found throughout the Reserve and the non-native sika deer is present in the woodlands on the western side of the Reserve. The native deer play important roles in the ecology of woodland and upland habitats.

Many other mammal species live within the Reserve, including foxes, field mice, bank voles, field voles, hedgehogs, stoats, moles, and common and pygmy shrews. It is likely that water vole occur on the Reserve and surprisingly, given the amount of Scots pine, the Reserve has no red squirrels.

## Birds

Spectacular birdlife is a hallmark of many of our National Nature Reserves, and Beinn Eighe is no exception. Around 100 different bird species have been recorded on the Reserve, and about half of them breed here. Golden eagles can be seen occasionally soaring high above the highest peaks. In the woodlands, Scottish crossbills crack open pinecones and drop them to the woodland floor

*Golden plover*

below. The woodlands are also one of the few places in the UK where brambling has bred. Other important breeding species include 11 UKBAP and 10 LBAP species including, ring ouzel, golden plover, skylark, redwing and red-throated diver.

## Summary

Fifty-six years on and Beinn Eighe NNR is every bit as special as it was when it was declared our first National Nature Reserve. The ancient Caledonian pinewood at Coille na Glas Leitir stands proud on the north-eastern slopes. This temperate rainforest, and its humid climate is an ideal habitat for many globally important mosses and liverworts. The range of woodland habitats with ample deadwood and open, wet areas also provides a varied mix of plant communities, which in turn, attract a huge range of invertebrates. The upland open ground habitats add yet another dimension to the Reserve. The complexity of habitats, some more akin to sub-arctic and arctic environments supports rarities that are found nowhere else in the UK.

From the otters on the shores of Loch Maree to the golden eagles soaring high above the summit peaks, Beinn Eighe NNR is a true haven for Highland wildlife.

*Pinewood, dry heath, montane screes and snowbed habitats*

# 3 Management of Beinn Eighe before it became a NNR

## History of Beinn Eighe

| | |
|---|---|
| 8000 years ago | Scots pine colonises the Beinn Eighe area. |
| 6000 years ago | The earliest evidence of settlements in the area come from a burial cist found in 1898, and believed to date back to the Bronze Age. Contained within this cist were a Neolithic stone ball, a cup and numerous other artefacts. |
| 800AD | Vikings use the woodlands for small-scale boat-building endeavours. Loch Maree is still accessible from the sea at the west end of the loch. |
| 1300 | The Scots defeat the Vikings and the MacLeods and the Mackenzie's of Kintail claim the area. After many battles, it is the Mackenzie's that are victorious. |
| 17th century | Evidence of a charcoal layer in the peat soil suggests Coille na Glas Leitir experienced a major fire. |
| 1743 | The Mackenzie's of Coul buy the area from the Lord of Kintail. |
| 1830's | Creation of the Kinlochewe Deer Forest and interest in developing a sporting estate. |
| c1850 | The ravine woods of Allt a'Chùirn and Allt an Doire Dharaich are cleared. |
| 1862 | The land is resold to the Mackenzie's of Gairloch. |
| 1880s | Botanists start to take an interest in the area, including G.C. Druce. |
| 1919 | Coille na Glas Leitir is sold from the Kinlochewe Deer Forest. |
| 1939 | Coille na Glas Leitir and its bog is described by Prof. Sir Arthur Tansley in *The British Isles and their Vegetation.* |
| 1949 | Coille na Glas Leitir pinewood is recommended as both a National Nature Reserve, and as a National Park Reserve within a proposed National Park centred on Loch Maree. |
| 1951 | A Lancaster bomber crashes on Beinn Eighe, prompting the formation of the modern RAF Mountain Rescue Teams. |

## Land use history

Archaeological studies of pollen and seeds indicate that man has been present in the Beinn Eighe area for some 6000 years. The earliest evidence of settlement in the area consists of various finds dating to the Bronze Age, 2750 to 4000 years ago. The village of Kinlochewe, has probably been inhabited since this time. It is thought that, from the earliest times, agricultural use of Beinn Eighe and its lower slopes was for pasturing of domestic stock, mainly black cattle and a few sheep and goats. Viking settlers will have also farmed the area and used the timber from the woodlands to make boats.

The woodlands around Loch Maree however probably remained relatively undisturbed. In 1600, they were first described by the mapmaker, Timothy Pont as:

*'It [Loch Maree] is compassed about with many fair and tall woods as any in all the west of Scotland, in some parts with Holly, in some places with fair and beautiful firs[2] of 60, 70, 80 feet of good and serviceable timber for masts and raes[3], in other places are great plenty of excellent great oaks, where may be sawn out planks of 4 sometimes 5 feet broad. All their bounds is compassed and hemmed in with many hills but these beautiful to look on, their skirts being all adorned with wood even to the brink of the loch for the most part.'*

All this timber proved useful when, in 1607, Sir George Hay established some of the earliest ironworks in Scotland at Letterewe on the northern side of Loch Maree. The furnaces were fired with charcoal, and the annual consumption of each furnace was equivalent to nearly 120ha of woodland. It isn't clear whether they used timber from Coille na Glas Leitir, but the disappearance of trees from round about may have increased use of the pinewood for other purposes such as, domestic fires.

The early 19th century saw the first significant pressure on the woodlands. Large numbers of sheep were introduced, as well as muirburn, and the creation of the Kinlochewe Deer Forest. The practice of letting deer forest for the duration of the sporting season appears to have become widespread between1830-35. The increased grazing had significant effects on the native woodland where regeneration was already restricted by the harsh climate and poor soils. Most of the lower slopes of the hill were preserved for deer alone and Coille na Glas Leitir provided winter shelter for stags. Ancient ravine woodlands were also cleared at this time, with the timber possibly being used locally, such as in the construction of the hunting lodge on Coulin estate.

The most significant impact on Coille na Glas Leitir however, came during the Second World War. Though the pinewood was still in private hands, the Ministry of Supply paid £4,200 for timber from Coille na Glas Leitir to be used as ammunition boxes and pit props for mines. Trees were felled by the Pioneer Corps, with instructions to remove two-thirds of the pinewood. All the larger trees from two relatively accessible areas near the road were felled and an official report later describes the woodlands as "devastated".

The arrival of the railway at Achnasheen in 1870 signalled an important new land use for the area – tourism. The Achnasheen, Kinlochewe and Loch Maree Hotels were opened for business, and the old military road south of the loch became the main route towards the coast. Tourists began to frequent the area as the word spread about the beauty of Loch Maree. A steamer ran summer excursions down the loch

[2] Scots pine.
[3] Yard arms.

and the Beinn Eighe woodlands were a major attraction of the area. Such was the fame of the area that Queen Victoria visited in 1877, staying at the Loch Maree Hotel for 7 nights.

The great Victorian interest in natural history meant that the area began to be studied. Records of plants from Beinn Eighe date from the 1880's when the amateur botanist G.C. Druce, visited Kinlochewe and Beinn Eighe in 1881, '87 and '89. Later, in the 1930s, Coille na Glas Leitir was visited by Sir Arthur Tansley, who was Professor of Botany at Oxford University. He described the woodland in his influential book *The British Isles and their Vegetation* (1939) and again later, in his book *Britain's Green Mantle* (1949). Tansley later chaired the government committee that set up the Nature Conservancy, the organisation that would later declare Beinn Eighe as Britain's first National Nature Reserve.

## Summary

While it is difficult to be precise about the land-use history of the Reserve, it is clear that the woods around Loch Maree were regarded as impressive in the early 17$^{th}$ century. Coille na Glas Leitir survived while much of the woodland around was cleared during the Second World War. The history of the upland is probably even less clear, much will have been grazed by stock and deer, especially at the height of the Kinlochewe Deer Forest. Perhaps the most significant historical event was the coming of the railway to Achnasheen. This brought not only tourists bent on the simple pleasures of the landscape, but also botanists intent on discovering Beinn Eighe's true wealth. Sir Arthur Tansley highlighted Coille na Glas Leitir in his books, and it was well-known enough by 1949 to be included in a list of potential Scottish National Nature Reserves.

# 4 Management of Beinn Eighe NNR

Key events in the history of Beinn Eighe since it became a NNR are as follows:

| | |
|---|---|
| 1951 | The Nature Conservancy buys Coille na Glas Leitir from Mrs Grieg of the Grudie estate, along with large areas of adjoining upland (4320ha total) for £4000.<br><br>Beinn Eighe is declared as the UK's very first National Nature Reserve in September of that year. |
| 1953 | Anancaun farm and its buildings are purchased by the Nature Conservancy. |
| 1954 | A 44 ha enclosure is set up in Coille na Glas Leitir, and a series of experiments on tree establishment is begun. |
| 1957 | The first Reserve Management Plan is published. |
| 1962 | An additional 23ha of Scots pine woodland are added to the Reserve along the loch side. |
| 1966 | Scotland's first nature trail is created along the shore of Loch Maree. |
| 1969 | Gairloch Conservation Unit (GCU) is set up, and the first Deer Management Group in Scotland is established. |
| 1970 | HRH Princess Margaret opens the Mountain Trail, the UK's first self-guided trail. |
| 1971 | The tree nursery is abandoned, having been run down over the past three years. |
| 1973 | The NNR expands by 577ha as a result of a Nature Reserve Agreement (NRA) with the National Trust for Scotland (NTS). |
| 1974 | The Visitor Centre opens in the old crofters cottage at Aultroy. |
| 1976 | The Reserve is designated as a UNESCO Biosphere Reserve. |
| 1977 | In addition to the woodland habitats, the upland habitats on the Reserve are recognised as being of national importance by *A Nature Conservation Review: The Selection of Biological Sites of National Importance to Nature Conservation in Britain.* |
| 1978 | The Reserve is included within the Wester Ross National Scenic Area. |
| 1980 | New research on the genetics of Scots pine in Scotland shows that Wester Ross pines are the most distinctive. This raises concerns about the plantings at Beinn Eighe NNR, and planting is restricted to broadleaf trees for the time being. Removal of non-local trees begins soon after. |
| 1983 | The Reserve is awarded a European Diploma of Protected Areas by the Council of Europe (renewed 1988, 1993, 1998, and 2003) in recognition of its European importance. |
| 1985 | The Reserve is designated as a Site of Special Scientific Interest. |
| 1987 | A ring fence is completed around 1100ha of ground to protect ancient gorge woodland and areas of newly planted native trees. |

| | |
|---|---|
| | gorge woodland and areas of newly planted native trees.<br><br>The tree nursery at Anancaun is re-opened to raise Scots pine from local stock for planting on the Reserve.<br><br>Major refurbishment is completed on the Mountain Trail |
| 1988 | Two separate areas of the Reserve are recognised for their geological importance by *The Geological Conservation Review*. |
| 1992 | The Reserve's European importance is further recognised by its inclusion within the Loch Maree Complex SAC.<br><br>Removal of trees of non-local origin completed. |
| 1995 | The fourth Reserve Management Plan is published. |
| 1998 | Local community representatives are invited to join Beinn Eighe Advisory Group. |
| 1999 | The first Beinn Eighe NNR Open Day is held.<br><br>The re-structuring of Enclosure 2 begins with the clear felling of non-native Sitka spruce and lodgepole pine |
| 2001 | The Reserve celebrates its 50th anniversary. Celebrations include the publication of *Beinn Eighe – the Mountain Above the Wood*. |
| 2002 | The Visitor Centre reopens after major refurbishment and the building of three all-ability trails. Visitor numbers peak to 17,000. |
| 2003 | The landscape of the ancient woodland is improved by removal of overhead electricity lines and poles. |
| 2004 | The Visitor Centre receives two prestigious awards from the UK Association of Heritage Interpreters. |

## Management of the Natural Heritage

Since establishing the Reserve, our focus for management has been on the natural regeneration of the ancient woodland at Coille na Glas Leitir, and the restoration of woodland on other parts of the Reserve. Other issues have gained in importance, however. The deer needed to be managed, otherwise they would prevent woodland regeneration and damage newly planted areas. New methods and emphasis have changed over the years and new scientific discoveries were made about the distinctiveness of local Scots pine. Recognition of the importance of the upland open ground habitats has also influenced our approach to management of the natural heritage on the Reserve.

## Woodland management

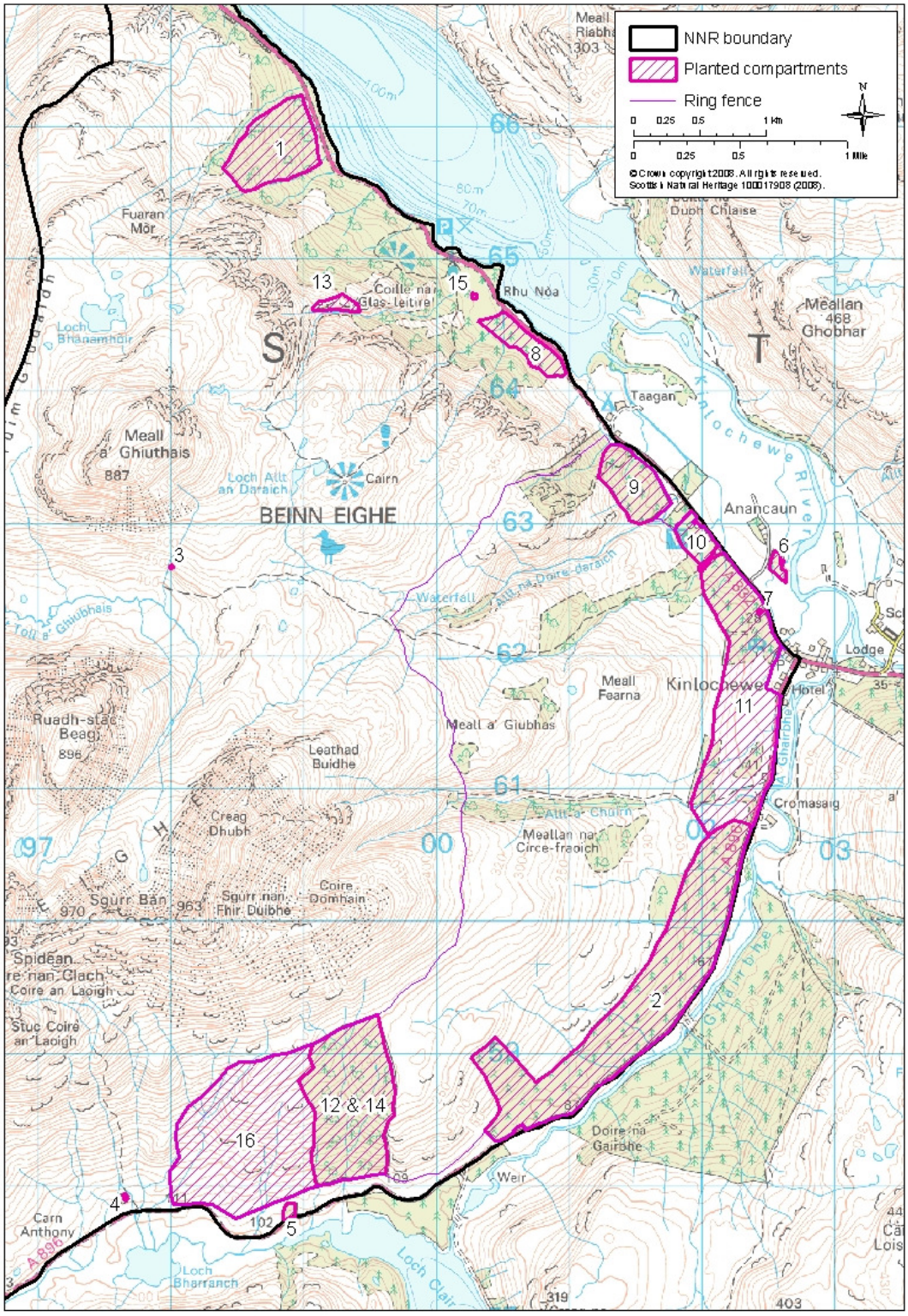
There was little experience of establishing new native pinewoods in the early 1950s, so our Reserve staff had to learn from scratch. We set up a tree nursery, and tried a

whole range of pioneering techniques for establishing trees on the Reserve, including various methods of cultivation, fertiliser treatments and planting. Initially, we carried out this work ensuring that the amount of disturbance to the ground was kept to a minimum. We hand sowed and planted trees, in natural groups according to the soil conditions. This produced a mosaic of mixed tree species and open ground. Planting in this way however, was painstakingly slow and showed only modest success on the ground. With increasing pressure to see results on the ground, our ethos of management changed, and we started to plant using more conventional forestry techniques. We also planted a preponderance of Scots pine, a major shift from the original idea of creating natural woodland, which essentially is a succession of pioneering broadleaved trees through to a climax pine woodland community.

We also recognised that deer numbers were preventing trees growing from seed within the Reserve. The ancient woodland was not regenerating, and deer would quickly browse any newly sown or planted trees. We started to erect deer fences as a standard practice to keep deer out of areas of the Reserve. Over the years, we have erected many enclosures and, in 1988, we erected the 'Ring Fence'. The 'Ring Fence' encloses about 1200ha of ground and helps link up a series of smaller woodland enclosures around the east side of the Reserve. Appendix 1 provides a brief summary of the fencing and planting history of the Beinn Eighe enclosures.

*Volunteers help to erect deer fence*

## Map showing fenced enclosures at Beinn Eighe NNR




Between 1968 and 1971, we started to get planting stock from other sources, rather than our own tree nursery. Concerns were raised about not using seed from local

trees, and these were justified in 1980 when research by the Forestry Commission showed that Wester Ross has a distinctive race of Scots pine. This revelation resulted in us re-opening the tree nursery to concentrate on raising locally sourced Scots pine for the Reserve. We also embarked on starting to remove trees from the Reserve, where there were concerns about their origins. Since the genetic research into Scots pine, we have discovered that the dwarf juniper on Beinn Eighe is also distinctive.

More recently, we have made big strides in techniques for raising and planting, particularly of broadleaf trees, which did not survive well in the past. We now raise seedlings in polytunnels, vastly increasing the germination and growth rates. We use fibre pots and soil similar to that within the Reserve, which means that trees suffer much less shock when they are planted – so they survive and grow much better.

*Volunteer hand planting Scots pine saplings*

Over the Reserve's first 50 years, we have planted almost 400,000 trees. At the turn of the millennium, our planting rate stood at around 15,000 trees per year, rather fewer than under the old, controversial ploughing methods, but achieving something rather more like a natural woodland.

An important aspect of woodland management is monitoring the extent, composition and structure of the woodlands. We do this in a number of ways including monitoring of permanent transects, regeneration transects and deer transects.

## Deer management

In the 1950's, an estate with a good deer population was considered a healthy estate. Left with the legacy of a sporting estate and its high deer population, our main focus in the early days was preventing deer grazing damage on newly planted trees by erecting fences. It wasn't until much later that attitudes changed and we began to start focusing on reducing deer numbers. We also recognised that, as more fences were erected, and the area available to deer reduced, there was a requirement to cull displaced deer. Red deer however, move about a great deal, especially stags during the rutting season and frequently travel from estate to estate. So, in 1967, the Gairloch Conservation Unit was established to make better counts of deer numbers in the whole area, and improve communication between the various estates.

Today, overall deer numbers on the Reserve are between150-200. We cull between 45-50 deer each year. All animals are brought down from the hill by hand, so this limits to some extent the areas where we carry out deer management. We concentrate our efforts in two areas at either end of the Ring Fence, so reducing deer movement into the woodland restoration areas. Within the Ring Fence, we also control deer on sight or when reported. The hinds are shot in season (October to February) whilst the bulk of the stag cull is now taken out of the normal season, under a licence issued by the Deer Commission for Scotland (DCS). This allows us to control the stags when they are having the greatest impact on the woodland.

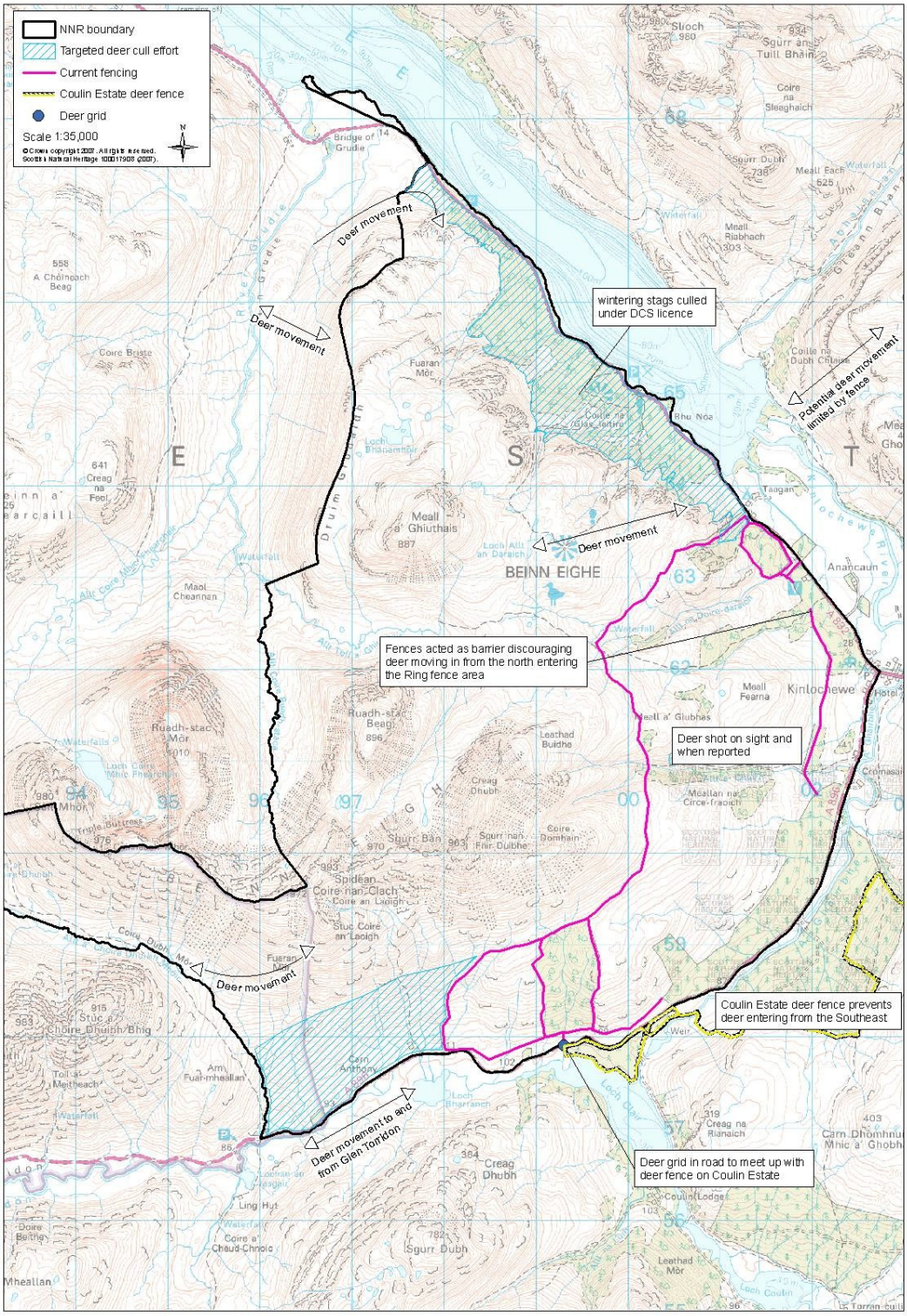
*Red deer*

## Monitoring

It is important for us to know the effect of deer grazing on both the woodland and the upland open ground areas. In 1957, we erected a small enclosure (No. 3) in an area of closely grazed grassland, 430 m up on Meall a' Ghiuthais, where there is a wide range of plants. With deer kept out of the area, it has changed enormously into a lush community of tall herbaceous plants. We keep a close eye on this enclosure, and compare photographs of the vegetation with others taken on neighbouring unfenced areas of grassland.

As part of our six yearly Site Condition Monitoring (SCM) programme, we monitor the condition of all the designated features at Beinn Eighe. Recent monitoring has shown that most habitats and species are thriving on the Reserve. Dry heath and sub-alpine heaths have been suffering some grazing damage, highlighting the need for future corrective management.

# Map showing current fencing and deer movement and management at Beinn Eighe NNR



## Research and demonstration

From the very beginning, Beinn Eighe NNR was a centre for research and considered an 'outdoor laboratory'. Donald McVean's studies of how trees could be re-established on the Reserve are well known, and had a fundamental influence on our management of the Reserve. At the same time, in the 1950s and '60s, our Field Station at Anancaun, became an important centre for scientists studying many aspects of the North-West Highlands, including pine marten and golden eagles. The Beinn Eighe warden assisted Ratcliffe and Lockie with their study on golden eagles and how they bred more successfully, after Dieldrin was banned from sheep dip.

*Researcher monitoring dwarf juniper*

There was a steady increase in research in the 1980's and 90's, as we encouraged more students to carry out projects on the Reserve. Many of these improved our understanding of the many interests of the Reserve through surveys of mosses, liverworts and lichens, and rare and upland species such as, dwarf juniper.

The Reserve was the focal point for a more recent, detailed study of pine martens. This showed that their main food, at least in this area, consists of field voles and, if they can't find voles, then they scavenge from deer carcases. The study also revealed their preferred habitat – they avoid open ground – and how the territories of the males are limited by the length of boundary they can defend against other males. Geographical comparisons also suggested that pine martens at Beinn Eighe needed larger home ranges than in the Central Highlands, indicating a need for larger areas of mature pinewoods in the west.

We also undertake long-term monitoring that contributes to our understanding of the locality. We set up a weather station soon after the Reserve was established, which has been operated continuously since. We also set up a moth trap, which has now been in operation on the Reserve for more than 20 years. The trap is part of a network established in 1968 by the Rothamsted Insect Survey, which is one of the longest-running and geographically extensive insect datasets in the world. The data we collect at Beinn Eighe, contributes to our understanding of how Britain's animals are affected by problems such as climate change, and reports such as, Butterfly Conservation's *The State of Britain's Larger Moths*.

On the cultural front, a huge effort has been put into discovering and translating the Gaelic place-names of Beinn Eighe and the Loch Maree islands. This research by Roy Wentworth, resulted in 240 names and alternative name-forms, many collected from native Gaelic speakers. The study massively increased the 80 names recorded by the Ordnance Survey, and gives many clues to past land use.

Research benefits not only the Reserve itself but, more importantly, contributes to our understanding of the wider world. We encourage all academic and research institutions to consider Beinn Eighe NNR as a possible study site for a wide range of issues and interests.

## Management for People

Visitors are welcome at Beinn Eighe NNR, and much of our management effort goes into providing facilities, information and, of course, a warm welcome. As many as 50,000 people come to the Reserve each year and, not surprisingly, the majority of visitors come for the walking and the wildlife. A higher proportion of visitors come from outside Scotland, with about 80% of visitors on holiday in the area.

*Visitor Centre at Aultroy*

The old croft house at Aultroy now houses our Visitor Centre. Here we have installed a wide range of activities to introduce the Reserve[4]. Various interactive displays suitable for all ages and abilities introduce people to the sights, smells, sounds and science of Beinn Eighe. The display won the Centre two prestigious awards in 2004, and is fun as well as informative.

We also run a small shop in the Visitor Centre, where there is a range of SNH publications, wildlife guides, cards and locally made crafts. We manage the Visitor Centre with the environment in mind, and have attained the Silver Standard under the Green Tourism Business Scheme, an environmental accolade awarded by Visit Scotland. Over 16,000 people came to the Visitor Centre in 2003, nearly three times the number in the mid-1980s.

The Visitor Centre also forms the start of the circular Rhyming and Picnic trails through Scots pine woodland. These are short, level, hard-surfaced paths suitable for

[4] Helped by funding from the Heritage Lottery Fund, the European Commission, and Ross & Cromarty Enterprise.

everyone, and they feature wildlife puzzles for children and sculptures in wood and stone. From the Rhyming Trail, the path climbs uphill, onto the more undulating Ridge Trail that winds through young woodland and moorland, with views over Kinlochewe and to the hills beyond. Occasional "sound stores" along this route provide audio surprises in Gaelic and English.

Three car parks serve Beinn Eighe NNR, as well as two other principal access points (on foot only). The main car park is on the A832 at Aultroy, just outside Kinlochewe, and serves the Visitor Centre and its adjoining trails. We recently extended this car park to provide ample parking, including bus and caravan areas.

Further along the A832, there is the Trails car park on the edge of Loch Maree and in the heart of the ancient Caledonian pinewood of Coille na Glas Leitir. Here there are picnic areas, information panels, leaflet dispensers and a very noisy black-throated diver! Two self-guided trails also start and finish here. The Woodland Trail provides a 1.5km path through this atmospheric hillside along an old timber extraction route up into the pinewood, with spectacular views over Loch Maree. The Mountain Trail (Britain's first ever self-guided trail established in 1972) is more taxing, a circular route of 6.6km which climbs to a height of 550m to another spectacular viewpoint high above the pinewood. Both these trails have frequent resting places.

In addition to visitors to the Visitor Centre or picnic areas, many walkers come to Beinn Eighe. Where we have recorders installed, there were over 20,000 trips round the Reserve Trails during 2003, and over 18,000 in 2004. There are three paths off the A896 road through Glen Torridon, which provide routes to the mountainous parts of the Reserve. From the National Trust for Scotland (NTS) car park a path heads north, into Coire Dubh Mòr. Further east, another path leads steeply into Coire an Laoigh, and closer to Kinlochewe a path follows the wooded gorge of the Allt a'Chuirn. The summit can also be accessed via the Pony Path, from the Visitor Centre. These mountain access paths were all upgraded to a high standard in the late 1990's under a programme of work led by the Footpath Trust.

While most visitors use the wealth of information available from the Visitor Centre and information points to find their way round the Reserve, occasional organised guided walks are run. One activity that proves popular is photographic deer-stalking expeditions, where people can experience the wildlife of the Reserve at close quarters and learn about the management directly from Reserve staff. Since 2000, we have run several Open Day events, which are our opportunity to put the work of the Reserve on show.

*Hill walkers on the Beinn Eighe ridge*

As well as the many visitors who come to Beinn Eighe NNR for leisure and general interest, the Reserve is an important focus for education and study, a tradition stretching back to the early 1960s. Primary and secondary school groups come here on day trips to learn about wildlife and conservation, or to plant trees. Our hostel and laboratory at the Field Station, also means that extended stays are possible. The Reserve has a long tradition of supporting placement students and volunteers, and we now have 15-20 each year, currently mainly from France but also from England and Wales. They are mainly involved in the day-to-day work of the Reserve, but may also undertake project work of their own. Most years we host a two-week college field course on practical conservation work, and the residential portion of the Duke of Edinburgh Award. We also support work experience placements from local high schools at Gairloch and Ullapool.

While the majority of these study visits are related to practical conservation, other groups come to the Reserve especially to study the wildlife. For example, the Scottish Dragonfly Society runs a field trip here each year, and a field course on mosses and liverworts comes here too. We encourage field groups to come to the Reserve, and to use our facilities. The information they collect helps add to our knowledge of the Reserve and how best to manage it.

We are always keen for the local community to be as involved as much as possible in the management of the Reserve. Formal inputs to Reserve management come through the Beinn Eighe Advisory Group, which includes members from the Local Community Council and The Highland Council, as well as a representative of the NTS one of our

neighbours and partners in the NNR. We attend Local Community Council meetings to discuss new works and any issues that may arise. Local people are also employed throughout the year working on the Reserve, and help us with the running of Open Days.

SNH has produced a range of publications about Beinn Eighe NNR, from simple leaflets to complete books. *Beinn Eighe: Britain's First National Nature Reserve*, shows stunning photographs of the Reserve and *Beinn Eighe: The Mountain above the Wood* details the first 50 years of management. The text of our Reserve leaflet - *Beinn Eighe: "First Among Equals"* can be downloaded from the NNR website and is available in Spanish, French, German, Italian, Gaelic and English, as well as in large print.


*Beinn Eighe booklet*

Keeping the Reserve in the public eye is an essential part of our business, if we are to maximise its benefits for everyone. Our NNR website page is our most basic promotional activity, and we find that many local websites either link to ours, or mention the Reserve. The local service station displays a stock of Reserve leaflets and trail guides. We tackle local publicity more broadly by advertising the Reserve and Visitor Centre 4-5 times each year in local newspapers and by doing interviews on local radio to promote the Reserve and specific events. It's not unusual to find the Reserve featured in the media; most recently you might have seen us on BBC Scotland's Adventure Show.

In providing information and facilities at the Reserve, we are trying to meet, as far as possible, the needs of our visitors and the public in general. We keep up to date on those needs by including Beinn Eighe NNR in our national NNR Visitor Survey which not only finds out who visits our reserves, but also what they expect to find and how they enjoy their visit. We continuously monitor numbers of visitors and cars by using counters on trails and at car park entrances. This information helps us plan maintenance and other management work.

## Property Management

While most of Beinn Eighe NNR is owned by SNH, 577ha on the western side belongs to the NTS and has been managed under a Nature Reserve Agreement since 1973. SNH also owns land on the eastern side of the A832, which is outside the Reserve itself.

Two utility companies have wayleaves across the Reserve to maintain their property. Scottish and Southern Energy maintain power lines in Glen Torridon, while Scottish Water operates a water treatment works on the Reserve.

We own a number of buildings at Beinn Eighe, both on and off the Reserve, all associated with running the Reserve and serving the needs of visitors. On the Reserve itself, the principal building is the Visitor Centre, described in detail above.

Off the Reserve, across the A832, we have a complex of buildings around the Reserve Office at Anancaun. This is where our placement students and visiting groups stay - the hostel sleeps 14 and has a laboratory alongside. Other buildings within this complex include a house (previously the Reserve Manager's house), a workshop and machinery sheds, and a deer larder. Also at Anancaun is our tree nursery, re-established in 1987 to raise trees from local stock for planting on the Reserve.

Some of the other ground adjacent to the Reserve is let for grazing, and another part is a simple campsite with toilets and cold running water. No charge is made for camping here, and the site is unmanned.

In addition to the maintenance of our buildings, we make a considerable commitment to looking after those visitor facilities mentioned earlier, including the car parks, trails, picnic areas, and information points. Our aim here is, as always, to ensure that everyone has as enjoyable, and safe, a visit to the Reserve as possible.

## Summary

Beinn Eighe NNR has had a huge amount of management effort expended in the last six decades. This has not only benefited the wildlife, but has tried to ensure that as many people as possible have an opportunity to experience how special the Reserve is. Our aim is to make sure that Beinn Eighe and Coille na Glas Leitir retain their natural character and rich biodiversity, whilst continuing to expand the woodland and welcoming visitors.

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Johnston, J.L. & Balharry D. (2001). *Beinn Eighe: The Mountain Above The Wood*. Birlinn, Edinburgh.

McVean, D.N. and Durno, S.E. (1959). Forest History of Beinn Eighe Nature Reserve. *New Phytologist* 58: 79-82.

NFO Transport and Tourism (2006). National Nature Reserve baseline visitor survey. Scottish Natural Heritage Commissioned Report No. 146 (ROAME No. F02AA632).

## Photographs

John MacPherson/SNH, Laurie Campbell and Lorne Gill

## Web links

| | |
|---|---|
| Basic information on the Reserve, and links to the Reserve leaflets. | http://www.nnr-scotland.org.uk/reserve.asp?NNRId=15 |
| Beinn Eighe as an "Access for All" case study. | http://www.snh.org.uk/wwo/Interpretation/index.htm |
| The Kinlochewe community website, with local and historical information. | http://www.kinlochewe.net/ |
| Timothy Pont's maps of Scotland (c1600) and writings. | http://www.nls.uk/pont/ |
| Beinn Eighe feature page on Undiscovered Scotland | http://www.undiscoveredscotland.co.uk/torridon/beinneighe/index.html |

# Appendix 1 - Planting and fencing history at Beinn Eighe NNR

| No. | Fenced | Management history | Where we are now |
|---|---|---|---|
| 1<br>c. 44ha. | 1954 | Planted by hand with Scots pine in 1954. We removed the fence between 1989 & 1998, to allow the woodland to 'naturalise'. | Some trees have established well.<br><br>No longer an enclosure and managed as part of the ancient woodland. |
| 2<br>c.125ha. | 1959 | We removed the non-native trees 1989-2001. Fence removed over a period from late 1990's to 2006.<br><br>Now under SFGS for new native woodland planting with a commitment to plant 1100 stems per ha. over 100ha. | No longer an enclosure but within the Ring Fence.<br><br>Considerable broadleaved tree regeneration but no Scots pine. |
| 3<br>c. 0.5ha. | 1957 | Experimental enclosure for studying the impacts of no grazing and consequential re-establishment of tall herbs. | |
| 4<br>c. 0.8ha. | 1958 | Planted with Scots pine (origin unknown) in 1958.<br><br>Fence removed in 2000. | Trees well established but stand as a small angular woodland block. |
| 5<br>c. 0.5ha. | 1959 | Experimental plot to see if trees would grow in that area. Planted by hand between 1959 and 1964 with non-local origin Scots pine. Trees grew but only with the protection of the deer fence. The fence was removed in 1977 and the planted trees were subsequently clear felled in 1992. | Broadleaved trees remain.<br><br>No longer an enclosure and natural regeneration is suppressed by deer. |
| 6 | 1958 | Enclosed to form a goose pen to encourage the local population of greylag geese to breed. It was not successful and was planted with trees in 1972. | |
| 7 | 1960 | Experimental plot to see if | Broadleaved trees remain |

| | | | |
|---|---|---|---|
| c. 1ha. | | trees would grow in that area. Planted by hand in 1960 with non-local origin Scots pine. We removed the fence in 1977 and clear felled the pine in 1992. | but are vulnerable to grazing – although grazing pressure is lower than in Enclosure 5.<br><br>No longer an enclosure in its own right but lies within Enclosure 11. |
| 8<br>c. 16ha. | 1960 | Planted with local origin trees in 1960. We removed the fence subsequently and carried out thinning to create a more natural structure through the early 1990's. | Planting was successful with trees growing well and blending in successfully with ancient woodland. Thinning resulted in high level of broadleaved tree regeneration (birch & rowan) but has been suppressed by over-wintering stags.<br><br>No longer an enclosure. |
| 9<br>c. 20ha. | 1965 | Planted with local origin trees in 1965. Fence intact & forms part of ring fence.<br><br>Any deer getting into the ring fence area are prevented from getting into this fenced enclosure. Trees in the enclosure are dense – which makes stalking deer in this area difficult – they are controlled more easily if kept out of Enclosure 9. | Trees are thriving. |
| 10<br>c. 18ha. | 1969 | Planted in 1969 with local origin Scots pine.<br>Roadside fence removed over a period from late 1990's to 2006, but upper fence remains to prevent deer encroaching into the ring fence area from the lower ground. | Trees are thriving.<br><br>Enclosure partly open.<br><br>We are currently carrying out some under storey planting to diversify structure. |
| 11<br>62ha. | 1969 | Planted local origin trees in 1971. | Growth rate variable – good regeneration on dry |

| | | | |
|---|---|---|---|
| | | Roadside fence removed over a period from late 1990's to 2006, but back fence left to prevent deer entering Ring Fence area. | areas. Tree growth stunted in wet areas and because of fire (1985).<br><br>Enclosure partly open. |
| 12<br>c.40ha. | 1975 | Planted mixture of non-local and local origin trees in 1975 on plough lines.<br><br>Removed internal fence between 12 and 14 in 1997 and clear felled non-local origin trees in 2001. | Trees mostly failed due to high altitude.<br><br>12 & 14 now one enclosure.<br><br>Protected by ring fence. |
| 13<br>c.2ha. | 1973 | Demonstration plot, which enclosed natural woodland & was partially planted in 1973 with local origin trees. Fenced only on two sides – as fences lead into gorge. | Tree growth variable.<br><br>Trees suffering from deer grazing damage – as deer manage to enter enclosure from gorge.<br><br>Managed as part of the ancient woodland. |
| 14<br>c.40ha. | 1977 | Planted with non-local origin Scots pine in 1977.<br><br>Removed the internal fence between 12 & 14 in 1997 and clear felled pine in 2001. | Broadleaved trees remain and some local origin Scots pine left. Planting was not very successful because of thin soils & rocky terrain.<br><br>12 & 14 now one enclosure.<br><br>Protected by ring fence. |
| 15<br>c. 0.5ha. | 1967 | Experimental enclosure planted in 1967 with local origin trees. Approx. 500 trees planted. Used a temporary fence, which was penetrated by deer almost straight away. Fence was removed soon after. | Planted trees destroyed by deer soon after planting.<br><br>No longer an enclosure & lies outwith the ring fence.<br><br>Managed as part of the ancient woodland. |
| 16<br>c.113ha. | 1978 | Planted with local origin trees between 1978 and present. | Planting is ongoing and growth rates variable – dependant on volunteers & |

| | | | |
|---|---|---|---|
| | | | their experience.<br><br>Protected by ring fence. |
| Coille na Glas Leitre | | Ancient woodland | Not protected by ring fence.<br>Successful regeneration |
| Gorge pinewoods | | Ancient woodland | Protected by ring fence<br><br>Successful regeneration |

## Appendix 2 – National Nature Reserves

Scotland's National Nature Reserves are special places for nature, where many of the best examples of Scotland's natural heritage are protected. Whilst nature always comes first on our NNR's, they also offer special opportunities for people to enjoy and find out about the richness of our natural heritage. NNRs are declared under the National Parks and Access to the Countryside Act 1949 or the Wildlife & Countryside Act 1981.

A policy for NNRs in Scotland was developed in 1996. This policy requires NNRs in Scotland to have four attributes and be managed for one or more of the three purposes.

The attributes are:

- Primacy of nature – The needs of nature will be placed at the heart of decisions about land-use and management of our NNRs, and nature conservation will be the overriding land use, although it may not be the sole purpose of management.

- National importance – The NNR must be managed for the features of interest which are of national importance on the NNR i.e. for the protection of geological features, habitats or species found there.

- Best practice management – NNRs must be well managed, not only to safeguard the nature conservation interests, but also to provide for people's enjoyment and understanding.

- Continuity of management – Both research and management on NNRs require us to take a long-term view, so it is important that management continuity is assured.

The purposes are:

- National awareness of NNRs – The NNR is managed so that people can take pride in the natural heritage 'on display' and come to understand it better and enjoy it to the full.

- Specialised management of NNRs - The character of one or all of the features of interest on the Reserve requires specialised and pro-active management, which is best, delivered by a Nature Reserve.

- Research-related NNRs - These NNRs will offer opportunities for research into the natural heritage and its management. The research specifically requires a Nature Reserve location.

From 2000 - 2003 all of Scotland's NNRs were reviewed against this policy. Because of the review there are now 56 NNRs in Scotland. There are currently a number of NNRs identified during the review which have still to be taken through the de-declaration process. As a result of this a search on many SNH systems will show more than 56 NNRs until this work is completed.

More information can be found at:
Scotland's National Nature Reserves: A policy statement:
http://www.snh.org.uk/pdfs/polstat/nnrpolcy.pdf

National Nature Reserves – General Information:
http://www.nnr-scotland.org.uk

## Appendix 3 – Special Area of Conservation (SAC)

Special Areas of Conservation are areas designated under the European Community Council Directive on the Conservation of Natural Habitats and Wild Fauna and Flora (92/43/EEC), commonly known as the Habitats Directive. Together with Special Protection Areas (SPA), which are designated under the Wild Birds Directive for wild birds and their habitats, SACs form the Natura 2000 network of sites. The Natura 2000 network is designed to conserve natural habitats and species of animals and plants, which are rare, endangered or vulnerable in the European Community. Annexes I and II to the Habitats Directive list the habitats and (non-bird) species respectively for which SACs are selected. In Great Britain, the Directive was transposed into domestic legislation via the Conservation (Natural Habitats &c.) Regulations 1994. The Regulations cover both SPAs and SACs. Natura sites are generally underpinned by a Site of Special Scientific Interest (SSSI) in the terrestrial environment, although there are a few exceptions where other management measures are employed. The Scottish Executive Rural Affairs Department Circular No. 6/1995 (Revised June 2000) on the Habitats and Birds Directives gives further details of how the Regulations apply in Scotland.

Scottish Natural Heritage (SNH) acts as the advisor to Government in proposing selected sites for ministerial approval as possible SACs. SNH then consults with key parties over the site proposals on behalf of Scottish Ministers. The consultees, who include owners and occupiers of land, local authorities and other interested parties, are sent details of the proposed site boundaries and the habitats and/or species for which they qualify. SNH also negotiates the longer-term management of these sites. Following consultation, SNH forwards all responses to Scottish Ministers who then make a decision about whether to submit the site to the European Commission as a candidate SAC. Once submission of all candidate sites is completed, the Commission, together with Member States, will consider the site series across Europe as a whole. At this stage, sites that are adopted by the Commission become Sites of Community Importance (SCIs), after which they can be finally designated as Special Areas of Conservation by national governments.

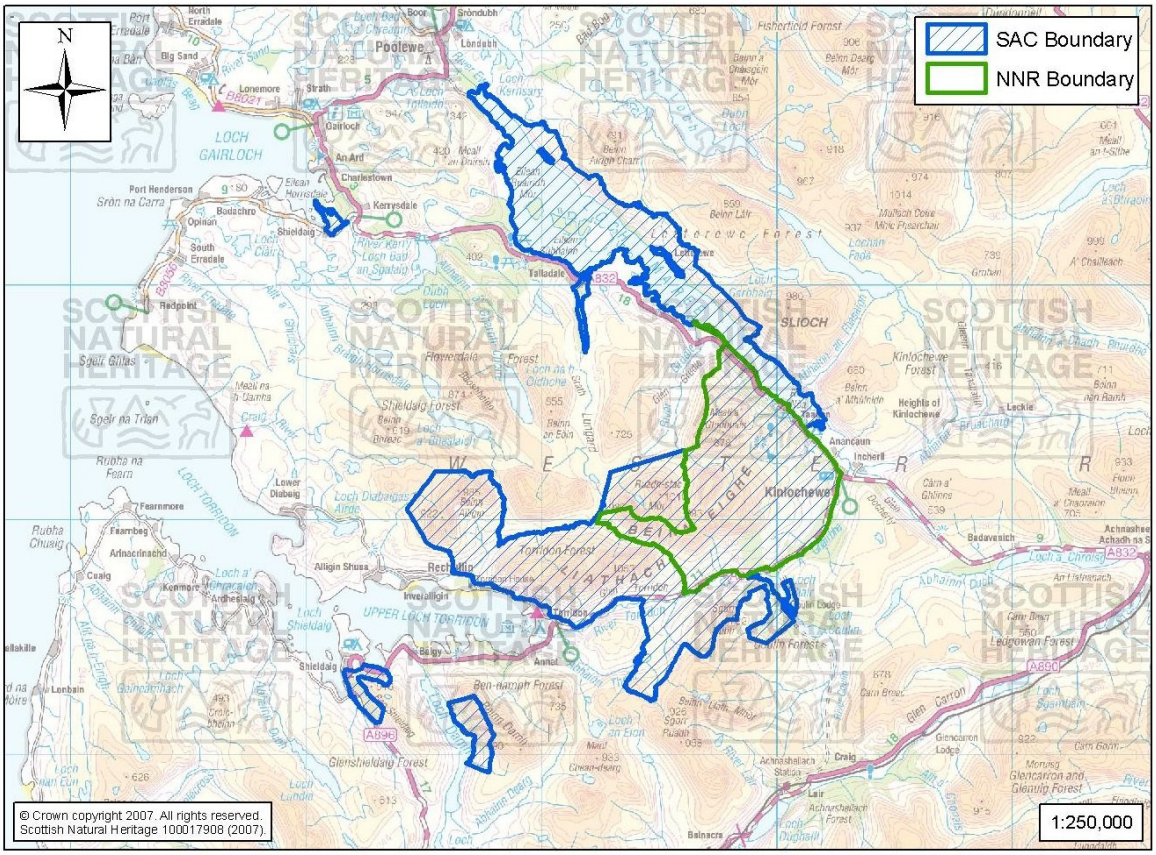
The following websites provide further information:

Special Areas of Conservation:
http://www.jncc.gov.uk/ProtectedSites/SACselection

## Loch Maree Complex SAC

| | |
|---|---|
| Country | Scotland |
| Unitary Authority | Highland |
| Grid Ref* | NG972625 |
| Latitude | 57 36 25 N |
| Longitude | 05 23 40 W |
| SAC EU code | UK0013597 |
| Status | Designated Special Area of Conservation (SAC) |
| Area (ha) | 15734.92 |

*This is the approximate central point of the SAC. In the case of large, linear or composite sites, this may not represent the location where a feature occurs within the SAC.



## Annex I habitats that are a primary reason for selection of this site:

### Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea

This site in the north-west Scottish Highlands includes Loch Maree, an excellent example of oligotrophic to mesotrophic standing waters, and numerous smaller, higher-altitude waterbodies. Loch Maree is of particular note as having the largest surface area of any loch in the north-west Highlands and being one of the most pristine waterbodies in the area. It is a large, deep loch and although many parts of its shoreline are unsuitable for plant growth, due to wave action and steep rocky outcrops, areas of predominantly sand and silt substrate, particularly around several large islands, support populations of pondweeds *Potamogeton* spp., water lobelia *Lobelia dortmanna* and quillwort *Isoetes lacustris*. The quality of Loch Maree suggests that it has not been subject to significant perturbation.

### European dry heaths

Beinn Eighe, Torridon Forest and Beinn Alligin have extensive and highly representative examples of hyper-oceanic European dry heaths characteristic of the north-west Highlands. The main NVC types represented are H10 *Calluna vulgaris – Erica cinerea* heath and H21 *Calluna vulgaris – Vaccinium myrtillus – Sphagnum capillifolium* heath. These include the most extensive and best-developed areas of moist Atlantic (oceanic) bryophyte-rich heaths in the UK, supporting bryophyte species of restricted world distribution, for example *Herbertus borealis* and *Mastigophora woodsii*. These heaths are still relatively undisturbed and in good condition, although less extensive than formerly, owing to burning in more accessible areas. There are also extensive heaths of a drier hyper-oceanic type dominated by bell heather *Erica cinerea*, representative of the development of this habitat type at higher altitude, where there are transitions to Alpine and Boreal heaths.

### Alpine and boreal heaths

The Loch Maree Complex encompasses a range of highly oceanic north-western types of Alpine and boreal heaths. This is one of the most oceanic localities within the series of sites selected for this habitat. It contains the most extensive and diverse assemblages in the UK of Atlantic mosses and liverworts associated with this habitat type (and with European dry heaths). The complex has the largest area of H15 *Calluna vulgaris – Juniperus communis* ssp. *nana* heath in the UK. This alpine heath type is unique to the British Isles; it is rare in Ireland and attains its finest and most extensive development on Foinaven and the Loch Maree Complex in the north-west Highlands. There is an abundance of Atlantic bryophytes, including *Herbertus borealis*, which is confined to this site in the UK and is otherwise known from only three localities in Norway, where it is less abundant. The sub-type of H20 *Vaccinium myrtillus – Racomitrium lanuginosum* heath with Atlantic bryophytes that is restricted to

the north-west Highlands is well-developed and extensive. There are also areas of H14 *Calluna vulgaris – Racomitrium lanuginosum* heath. At lower altitudes, these alpine heaths give way to the oceanic subalpine H10 *Calluna vulgaris – Erica cinerea* heath with abundant woolly fringe-moss *Racomitrium lanuginosum*, and H21 *Calluna vulgaris – Vaccinium myrtillus – Sphagnum capillifolium* heath. The structure and function of these heaths is well-developed owing to lack of disturbance.

## Siliceous alpine and boreal grasslands

The Loch Maree Complex represents Siliceous alpine and boreal grasslands in the highly oceanic and heavily glaciated hills of the north-west Highlands. Both acid and calcareous sub-types are represented at moderately high altitude. The characteristically oceanic U10 *Carex bigelowii – Racomitrium lanuginosum* moss-heath is the most extensive and well-developed type, and includes both species-poor and species-rich sub-types with arctic-alpines and rare montane mosses well-represented. There is a relatively small representation of the snow-bed communities U7 *Nardus stricta – Carex bigelowii* grass-heath and U14 *Alchemilla alpina – Sibbaldia procumbens* dwarf-herb community. There are well-developed transitions to snow-beds dominated by the moss *Rhytidiadelphus loreus* (assignable to U13 *Deschampsia cespitosa – Galium saxatile* grassland).

## Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)

Loch Maree Complex is representative of vegetation communities on siliceous scree, mainly of quartzite and sandstone, in north-west Scotland. Screes are extensive and the communities they support are well-developed and diverse, with a range of characteristic species. Parsley fern *Cryptogramma crispa* is locally abundant, northern rock-cress *Arabis petraea* is frequently found and alpine lady-fern *Athyrium distentifolium* occurs in high-altitude areas where snow lingers. Other ferns occur frequently in the screes, including mountain male-fern *Dryopteris oreades*, beech fern *Phegopteris connectilis*, lemon-scented fern *Oreopteris limbosperma* and the oceanic Wilson's filmy-fern *Hymenophyllum wilsonii*. The most outstanding feature of the vegetation on these sites is the abundance of northern Atlantic mosses and liverworts, which include *Plagiochila spinulosa*, *Anastrophyllum donnianum* and *Scapania nimbosa*, which are chiefly developed on steep, shady and humid slopes. The screes form a significant part of the habitat complex on this site, which is the most important single area in the UK for communities of these lower plants.

## Siliceous rocky slopes with chasmophytic vegetation

Loch Maree Complex is representative of the acid siliceous rocky slopes with chasmophytic vegetation in north-west Scotland. The habitat occurs widely on extensive crags of Torridonian sandstone and quartzite at low to moderately high altitudes. The site contains a characteristic north-western flora, with many of the

commoner montane vascular plants, including Wilson's filmy-fern *Hymenophyllum wilsonii*, sea spleenwort *Asplenium marinum*, three-leaved rush *Juncus trifidus*, dwarf willow *Salix herbacea* and spiked wood-rush *Luzula spicata*. Rarer species include the characteristic black spleenwort *A. adiantum-nigrum*. Oceanic influence is shown by the widespread development of oceanic ferns. Of particular importance is the outstanding flora of Atlantic mosses and liverworts in the crevices of the more shady crags.

## Old sessile oak woods with Ilex and Blechnum in the British Isles

The Loch Maree area in north-west Scotland is representative of old sessile oak woods of the north-west Highlands bryophyte zone. The ground flora communities range from those favouring base-rich areas through to those dominated by dwarf shrubs in more acidic areas. A distinct feature of parts of this site is the juxtaposition of oakwood and the Annex I type Caledonian forest, for which this site is also selected. Oak-dominated woodland on the lower slopes grades through a series of transition communities to Scots pine *Pinus sylvestris* and birch *Betula* spp. communities at higher altitudes.

## Caledonian forest * Priority feature

Loch Maree Complex comprises four Caledonian forest areas, and is representative of the North West Zone. The pinewoods in this region are considered to be genetically distinct from those elsewhere in Scotland, though their origins are believed to be similar to those of the South West Zone. Genetic variation is high and the woods have affinities with the pinewoods of Spain and southern France. Pollen records from peat bogs in the area suggest that these pines may be the descendants of trees which survived the last Ice Age somewhere off the present west coast of Scotland when sea level was much lower. Together, these woods show a strong oceanic influence and mostly fall within NVC type W18 *Pinus sylvestris – Hylocomium splendens* woodland, sub-types W18d *Sphagnum capillifolium/ quinquefarium* and W18e *Scapania gracilis*. The woodland at Beinn Eighe is scattered and of variable canopy structure and shows a mixed range of age groups. The diversity of Atlantic bryophytes is a major feature of the site, and several national rarities are present, including *Daltonia splachnoides*. The Loch Maree islands support one of the least-disturbed remnants of native pinewood in Scotland. In the wettest areas within the woodland there are small-scale examples of Bog woodland. At Shieldaig there is the most westerly pinewood remnant in the UK and one of the most extensive blocks of woodland in this biochemical region.

## Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

Northern Atlantic wet heaths with *Erica tetralix*

Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels

Blanket bogs

Depressions on peat substrates of the *Rhynchosporion*

Calcareous rocky slopes with chasmophytic vegetation

Bog woodland
Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)

Annex II species that are a primary reason for selection of this site:

Otter *Lutra lutra*

This site contains the large freshwater waterbody of Loch Maree with its numerous heavily wooded islands and areas of fringing woodland and heath. There are also a number of smaller, higher altitude lochans within the site and numerous small streams which hold salmonid fish. The site contains all the necessary requirements for otters *Lutra lutra* and supports a good population representative of a freshwater loch environment in the west Highlands of Scotland.

Annex II species present as a qualifying feature, but not a primary reason for site selection:

Not applicable.

## The conservation objectives for qualifying habitats are to:

To avoid deterioration of the qualifying habitats thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and to ensure for the qualifying habitats that the following are maintained in the long term:

- Extent of the habitat on site
- Distribution of the habitat within site
- Structure and function of the habitat
- Processes supporting the habitat
- Distribution of typical species of the habitat
- Viability of typical species as components of the habitat
- No significant disturbance of typical species of the habitat

The conservation objectives for qualifying species are to:

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure for the qualifying species that the following are maintained in the long term:

- Population of the species as a viable component of the site
- Distribution of the species within site
- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats supporting the species
- No significant disturbance of the species.

## Appendix 4 - Special Protection Area (SPA)

Special Protection Areas are areas classified under Article 4 of the European Community Directive on the Conservation of Wild Birds 1979 (EC79/409), commonly known as the Birds Directive. SPAs are intended to safeguard the habitats of birds which are rare or vulnerable in Europe as well as all migratory birds which are regular visitors. Together with Special Areas of Conservation (SAC), which are designated under the Habitats Directive for habitats and non-bird species, SPAs form the Natura 2000 network of sites. The Natura 2000 network is designed to conserve natural habitats and species of animals and plants which are rare, endangered or vulnerable in the European Community. Natura sites in Great Britain are protected via the Conservation (Natural Habitats &c.) Regulations 1994, which transpose the Habitats directive into GB law and are relevant to both SACs and SPAs. Natura sites are also generally underpinned by the SSSI mechanism in the terrestrial environment. The Scottish Executive Rural Affairs Department Circular No. 6/1995 (Revised June 2000) on the Habitats and Birds Directives gives further details of how the Regulations apply in Scotland.

SNH acts as the advisor to Government in proposing selected sites for ministerial approval as proposed SPAs. SNH then consults with key parties over the site proposals on behalf of Scottish Ministers. The consultees, who include owners and occupiers of land, local authorities and other interested parties, are sent details of the proposed site boundaries and the species for which the site qualifies. SNH also negotiates the longer-term management of these sites. Following consultation, SNH forwards all responses to Scottish Ministers who then make a decision about whether to classify the site as a Special Protection Area.

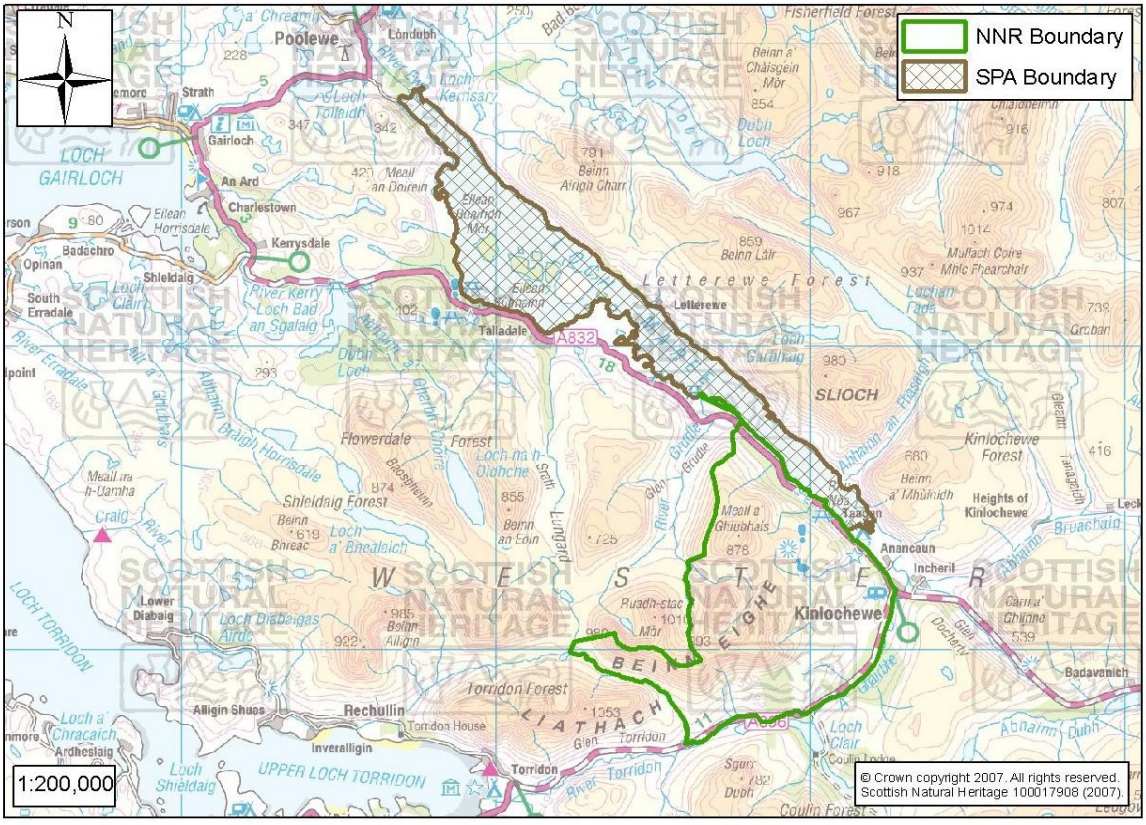
The following websites provide further information:

Special Protection Areas: http://www.jncc.gov.uk/UKSPA/default.htm

## Loch Maree SPA

| | |
|---|---|
| Country | Scotland |
| Unitary Authority | The Highland Council |
| Grid Ref.* | NG 91 07 20 |
| Latitude | 57 41 10 N |
| Longtitide | 05 28 15 W |
| SPA EU CODE | UK9001531 |
| Area | 2,875 ha |

*This is the approximate central point of the SPA. In the case of large, linear or composite sites, this may not represent the location where a feature occurs within the SPA.




Loch Maree qualifies under Article 4.1 (79/409/EEC) by regularly supporting 9 pairs of breeding black-throated diver *Gavia arctica* (6.5% of the EC and British breeding population).

Loch Maree is a large (2,875 ha) oligotrophic loch in north west Scotland with a mean depth of 38m and a volume of 1091 million cubic metres. The loch contains many islands, both large and small, which support native woodland communities. The

boundary of the international site follows that of the Loch Maree SSSI. The total area of the site is 3,100 ha.

Loch Maree is the single most important breeding site for this species in Britain.

The conservation objectives for the qualifying species are to:

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure for the qualifying species that the following are maintained in the long term:

- Population of the species as a viable component of the site;
- Distribution of the species within site;
- Distribution and extent of habitats supporting the species;
- Structure, function and supporting processes of habitats supporting the species;
- No significant disturbance of the species.

## Appendix 5 - Site of Special Scientific Interest (SSSI)

Scottish Natural Heritage is the key statutory agency in Scotland for advising Government and for acting as the Government's agent in the delivery of conservation designations in Scotland. Site of Special Scientific Interest (SSSI) is the main nature conservation designation in Great Britain. These sites are special for their plants or animals or habitats, their rocks or landforms or a combination of these.

The SSSI series has been developed over the last 50 years, and since 1981 as the national suite of sites providing statutory protection for the best examples of GB's flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, many SSSIs were renotified and others newly notified under the Wildlife and Countryside Act 1981 or the Nature Conservation (Scotland) Act 2004. Further changes in the protective mechanisms were introduced by the 2004 Act.

These sites are also used to underpin other national and international nature conservation designations. Most SSSIs are privately owned or managed; others are owned or managed by public bodies or non-government organisations. There are more than 1400 SSSIs in Scotland.

Web Links:

'The Nature of Scotland – A Policy Statement'
http://www.scotland.gov.uk/library3/environment/nas-00.asp

'People and Nature: A New Approach to SSSI Designations in Scotland'
http://www.scotland.gov.uk/library/documents-w1/pandn-00.htm

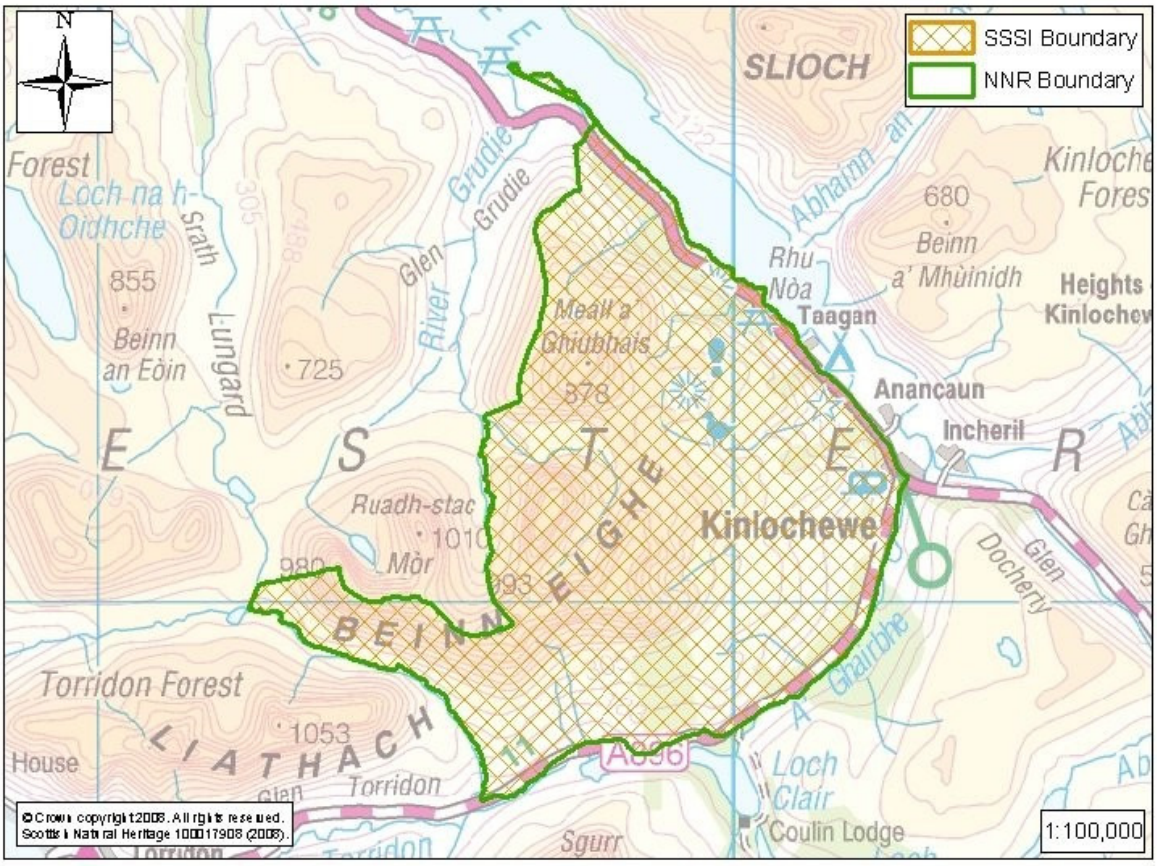
Guidelines for selection of biological SSSIs
http://www.jncc.gov.uk/Publications/sssi/default.htm

Site of Special Scientific Interest (SSSI):
http://www.snh.org.uk/about/ab-pa01.asp

## Beinn Eighe SSSI

| | |
|---|---|
| Country | Scotland |
| Unitary Authority | The Highland Council |
| Grid Ref.* | NG 98 56 25 |
| Notified | 26 February 1985 |
| Area | 4,758 ha |

*This is the approximate central point of the SSSI. In the case of large, linear, or composite sites, this may not represent the location where a feature occurs within the SSSI.




The summit has a species-rich moss heath, but bare ground predominates. However the crags of the upper areas, especially in areas of calcareous mudstone, have a rich herb flora of lime-seeking plants including many nationally uncommon species and several rarities.

The site contains a range of upland birds and mammals.

Woodland

Beinn Eighe is a major massif which contains some of the best examples of Western Upland plant communities associated with a range of rock types. The lower slopes support the most extensive native pinewood in Wester Ross, mainly on north facing

slopes. Locally on the lower slopes are small areas of mire. This complex of habitats makes this one of the single most important sites in Wester Ross.

Upland
The site contains a range of habitats including extensive areas of bare rock and scree, moss heath, exposed spurs, snow beds, grassland and tall herb ledges.

Stoney moraines of middle slopes support good examples of NW Highland dwarf shrub heath. Snow lies only moderately late and the range of snow bed communities is restricted. However montane grassland is particularly rich especially in flushed areas.

The lower north-facing slopes support a major area of native pinewood with a mixture of deciduous trees such as Birch, Rowan and Holly. The wood is scattered, of variable canopy and shows a range of age groups. The ground flora is dominated by dwarf shrub heath with abundant moss and lichen cover. The range of Atlantic bryophytes is a major feature of the site and includes several national rarities. Mire communities in more open areas give added diversity.

A good population of characteristic woodland birds and mammals are present, while invertebrates include several nationally rare species.

Geology: Cambrian
The "Fucoid" beds of this area have long been known for their common olenellid trilobite faunas of Lower Cambrian age. Other taxa, including hyolithids, echinoderms and several inarticulate brachiopods also occur. This is the type locality for several olenellids. The distinctive *Olenellus armatus* is known only from this locality.

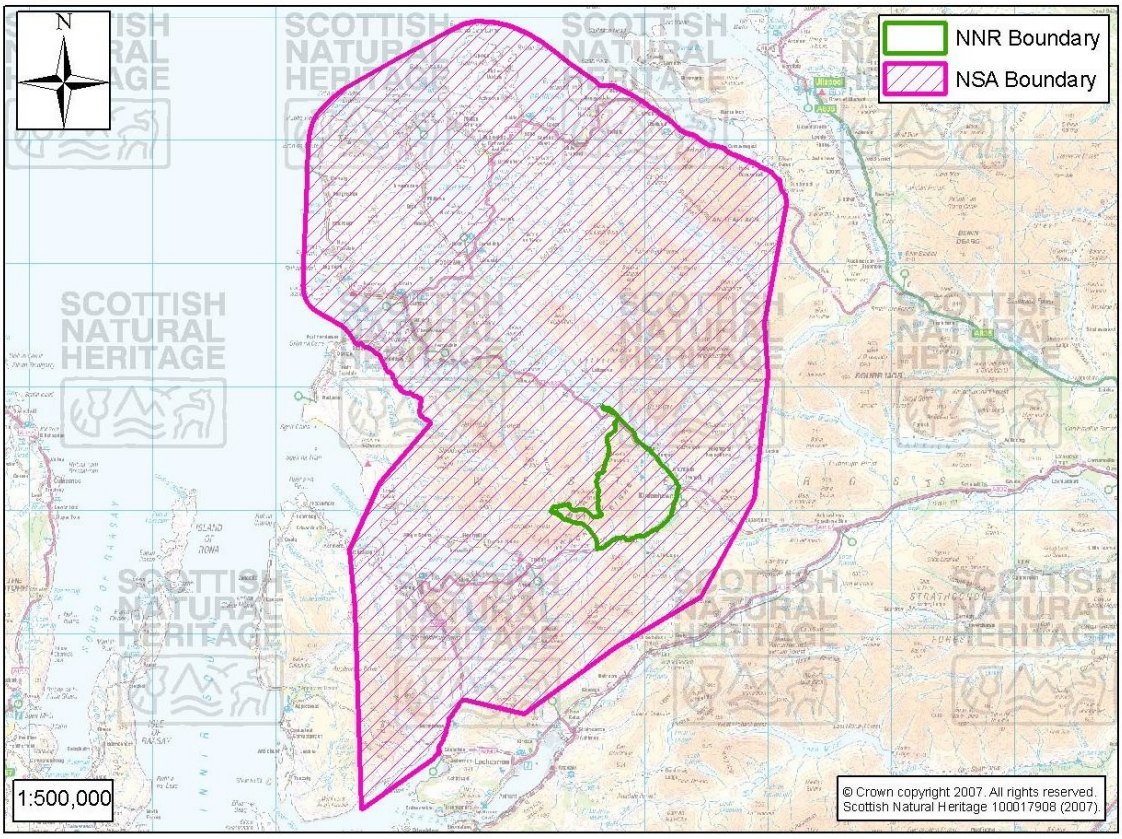
The fauna show affinities with those from Greenland, Spitsbergen and Arctic Canada, and are unknown in equivalent rocks in Wales and England. They have, along with those from Loch Awe Quarry, provided useful information on the palaeogeography of the region and the physical conditions of deposition of the rocks. Palaeontologically, material from the site has been critical in gaining an insight into the life-cycles and mode of life of olenellid trilobites.

Moine
The hill of Meall a'Ghiubhais marks a klippe within the Moine Thrust Zone. It is built of an outlier of Torridonian, Applecross and Diabaig formations, which have been driven along the Kinlochewe Thrust over folded Cambrian strata of the foreland cover succession. Its southern and eastern slopes show a spectacular zone of imbrication which has developed in Cambro-Ordovician and Torridonian strata below the Thrust Plane. This site is outstanding because of the continuity with which the Kinlochewe Thrust Plane can be traced, and the clarity with which the complicated nature of the many individual thrust units can be determined; in addition it contains a very fine exposition of the imbricated cratonic cover succession.

# Appendix 6 - National Scenic Area

National Scenic Areas (NSA) are Scotland's only national landscape designation. They are those areas of land considered of national significance on the basis of their outstanding scenic interest, which must be conserved as part of the country's natural heritage. They have been selected for their characteristic features of scenery comprising a mixture of richly diverse landscapes including prominent landforms, coastline, sea and freshwater lochs, rivers, woodlands and moorlands. There are currently 40 NSAs in Scotland, covering a total area of 1,001,800 ha.

## Wester Ross NSA




The most extensive of the National Scenic Areas proposed, this area includes the Applecross Forest, the Ben Damph Forest, the Torridon mountains, Loch Maree, the Letterewe Forest, the Fisherfield Forest and the Strathnasheallag Forest.

## Description

The area combines six of the great mountain groups of Scotland. The names of the outstanding individual peaks and their profiles are perhaps better known than the slopes of the mountains themselves, and the descriptive literature is full of hyperbole, at

which few beholders of the scene would demur. To traverse the area from the beetling crags and precipitous corries of the Applecross Forest to the jagged teeth of An Teallach is to experience a sustained crescendo of mountain scenery which could leave no spectator unmoved. Murray has described Liathach in the Torridon Group as 'the most soaring mountain in the North,' and many writers concur with his opinion that An Teallach 'is one of the half dozen most splendid mountains in Scotland,' and that 'its eastern corrie, Toll an Lochain, is one of the greatest sights in Scotland.' It would be superfluous to describe the individual qualities of all the intervening mountains. For most people their names will suffice to conjure up the splendour of the scene: Ben Damph, Beinn Eighe, Beinn Alligin, Slioch, A'Mhaighdean, Mullach Coire Mhic Fhearchair, Bein Lair, Beinn Dearg Mhor.

The area is frequently described as the last great wilderness of Scotland, but contains much that is of a serene and gentler beauty than the rugged splendour of mountain fastnesses. Loch Maree has been described as 'one of the two most excellent of Scotland's big inland waters' (Murray) and 'the embodiment of what is called Highland Grandeur' (Weir). Of Loch Torridon, Wainwright writes: 'Without the loch, Torridon would be a fearful place, but with it, there is not a grander prospect to be found in Scotland. 'Many other water bodies, notably Loch Shieldaig, Loch Damh, Loch Clair, the Fionn-Fada lochs, Loch-na-Sealga and Loch Tournaig contribute variety of character to the scene. With the exception of the Fionn-Fada group these lochs have in varying degrees shores which between rocky headlands are frequently wooded with semi-natural woodlands of oak, birch, and Scots pine, which together with moorland and scrub soften the lower lying parts of the area to make a gentle foil for the starker mountains. Around the coast Gruinard Bay, Loch Ewe and Loch Gairloch exhibit a pleasing mixture of beaches, islands, headlands, inlets, woodlands and crofting settlements. The bleaker promontories of Rubha Mor and Rubha Reidh, though not of high intrinsic scenic merit in themselves, are visually inseparable from the mountain backdrop and only at Red Point does the rather plain local scene lose the advantage of this prospect.

## Appendix 7 - Biosphere Reserves

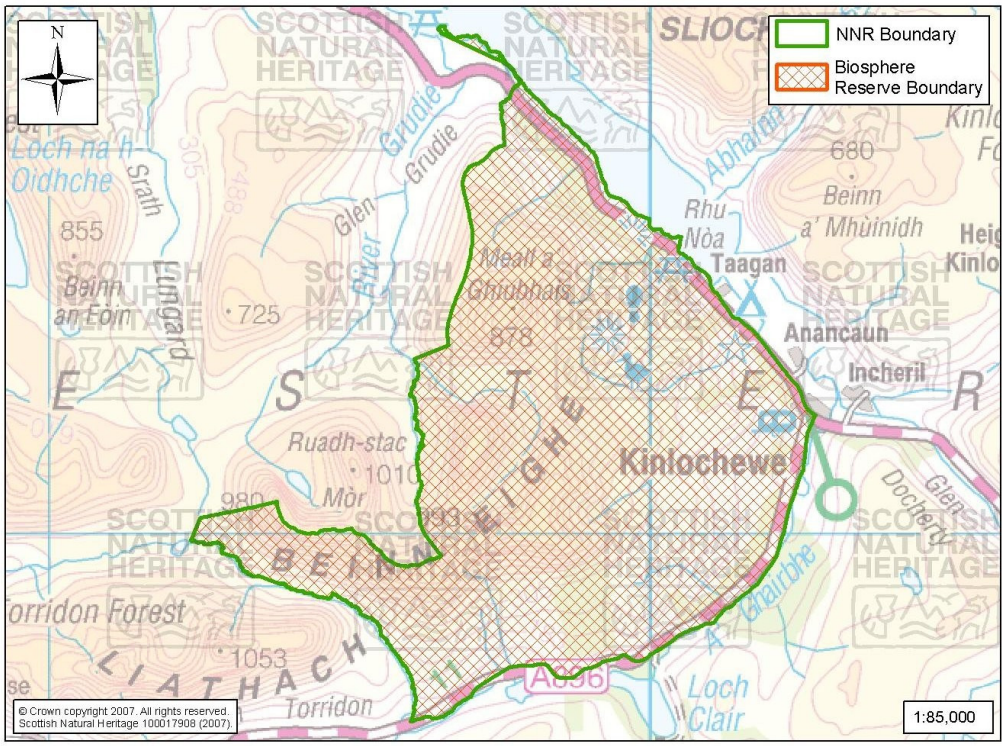
Biosphere reserves are areas of terrestrial and coastal ecosystems promoting solutions to reconcile the conservation of biodiversity with its sustainable use. They are internationally recognized, nominated by national governments and remain under sovereign jurisdiction of the states where they are located. Biosphere reserves serve in some ways as 'living laboratories' for testing out and demonstrating integrated management of land, water and biodiversity. Collectively, biosphere reserves form a World Network. Within this network, exchanges of information, experience and personnel are facilitated. There are over 480 biosphere reserves in over 100 countries.

For more information on biosphere reserves:
http://www.defra.gov.uk/wildlife-countryside/ukmab/Index.htm

Or:
http://www.unesco.org/mab/faq_br.shtml

## Beinn Eighe Biosphere Reserve

| | |
|---|---|
| Country | Scotland |
| Major ecosystem type | Mixed mountain and Highland systems |
| Designated | 1976 |
| Area | 4,800 ha |




Situated on the west coast of Scotland, Beinn Eighe Biosphere Reserve and Nature Reserve displays a suite of habitats primarily influenced by upland and oceanic factors. Most of Beinn Eighe is covered by open heathland, bare rock, scree, and wet grassland with scattered bogs and peat lands. Of national interest are two variants of dwarf shrub heath and a western variant of moss heath. The woodland, which is found below 300m close to Loch Maree and in various isolated gorges, includes the best remaining examples of western pinewood in Britain, and also contains birch, holly, ivy, rowan, oak and juniper.

Beinn Eighe is managed purely for conservation objectives and there is no buffer zone or transition area. Only some extensive forms of recreation such as hillwalking take place. The nature reserve was originally established partly as an open-air laboratory, and continues to provide a site and facilities for the long-term monitoring of environmental change. The Anancaun Field Station, with full laboratory facilities for up to 14 people, plays an important role in attracting scientists and in the coordination of field data recording. The area is also frequently used for education purposes, particularly for undergraduate field courses which can be accommodated in the field station.