



Scotland's National Nature Reserves

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The Story of Cairnsmore of Fleet National Nature Reserve

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Foreword

Cairnsmore of Fleet National Nature Reserve (NNR) is situated in the Wigtown district of Dumfries and Galloway on the B796 road, approximately 10km from Gatehouse of Fleet and 8km from Creetown. The imposing granite hill that is Cairnsmore stands above Wigtown Bay and is one of the most southerly of the Galloway Hills. It is the only remaining large area of unforested ground stretching from the Fleet river valley bottom to summit top. There is a diverse range of upland habitats, heather moorland, blanket bog and wind clipped summit heath, all of which provide a home to species such as bog cotton, sundew, sphagnum moss and heather, wheatear, skylark, curlew, black and red grouse. Peregrine falcon, hen harrier and merlin hunt the moorland, and if you're lucky a golden eagle may also be seen. Brown hares inhabit the lower ground with their cousin, the mountain hare, at higher altitude. Red deer and wild goat can be seen on the hill, with roe deer found where the Reserve meets with forestry ground.

Cairnsmore of Fleet is one of more than 50 NNRs in Scotland. NNRs are special places, carefully managed to conserve some of the best examples of Scotland's wildlife. While dedicated to nature, NNRs also provide opportunities for people to enjoy and find out about the richness of Scotland's natural heritage.

The Reserve Story has background information on the Reserve and its history. It briefly describes the wildlife on the Reserve, the history of the land use before it became a Reserve and past management of wildlife, people and property on the Reserve.

This story is one of two booklets used to guide the management of the Reserve. It summarises our basic understanding, while the Reserve Proposals booklet outlines the plans for the future. Your comments are invited on the proposals.

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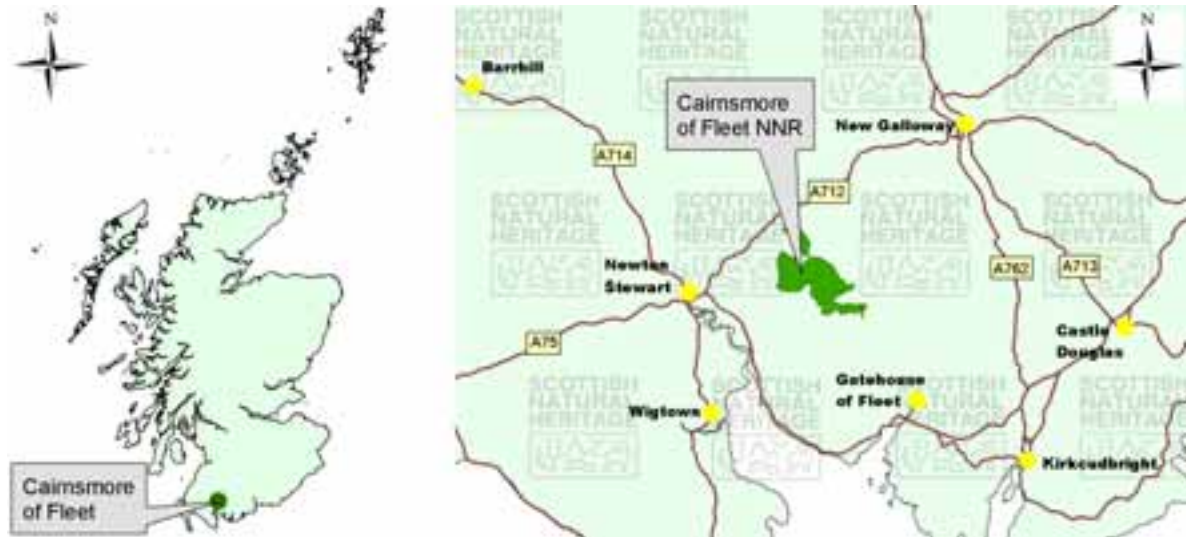
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Location and boundary maps of Cairnsmore of Fleet NNR

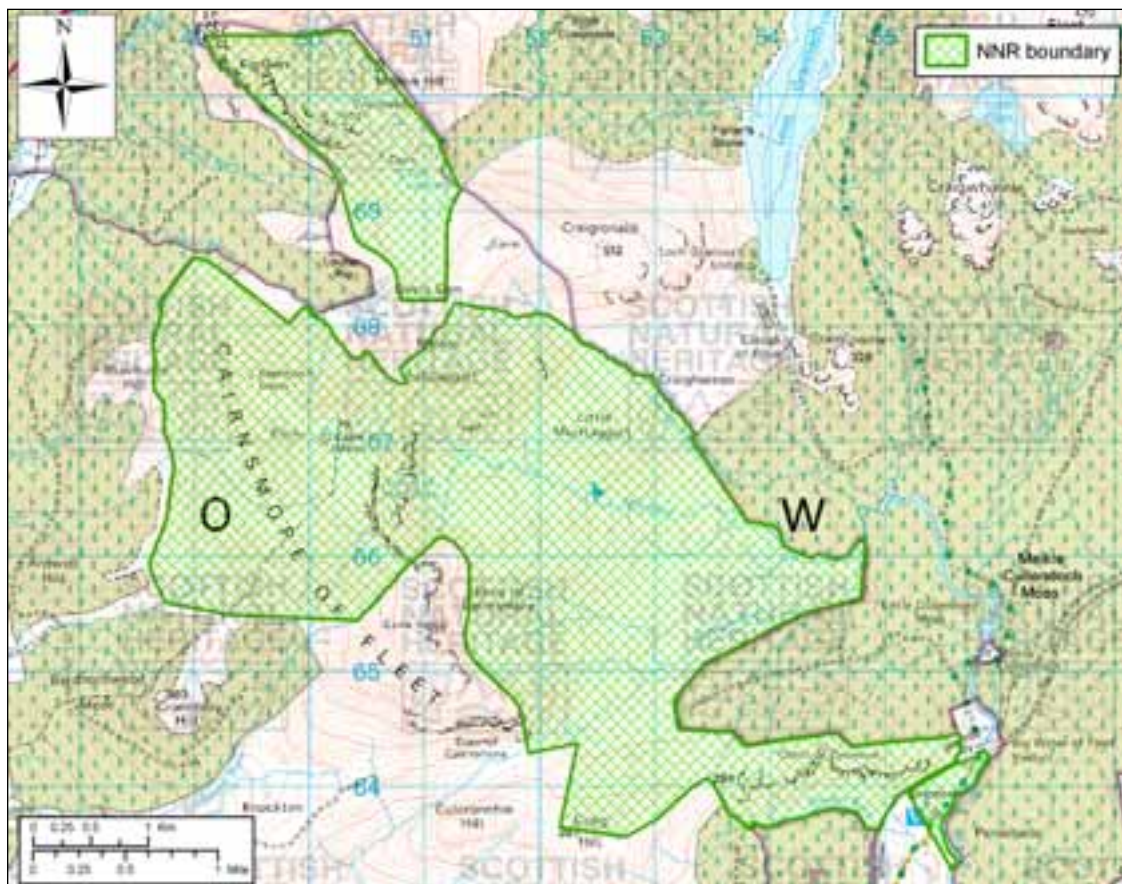
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Maps of Cairnsmore of Fleet NNR

Location maps



Boundary of Cairnsmore of Fleet NNR¹



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1 Introduction to Cairnsmore of Fleet NNR

Situated in southwest Scotland the Reserve covers 1,922 hectares (ha) and lies predominantly on the eastern side of the granite hill of Cairnsmore. It extends from the visitor centre below the Clints of Dromore, to Craignelder in the north and from the Knee of Cairnsmore in the west, to Little Mulltaggart in the east.

The Reserve lies off the B796 between Creetown and Gatehouse of Fleet. It is open all year with a small informal visitor centre and car park. From the visitor centre there are short circular walks of moderate ability of the “in-bye” farm, viaduct and Clints. Picnic benches and further parking are available under the Big Water of Fleet viaduct, which straddles the River Fleet. To the west of the site, the summit path can be accessed via the Cairnsmore estate off the A75 at Palnure.



Cairnsmore of Fleet

Scottish Natural Heritage's (SNH) predecessor, the Nature Conservancy Council, purchased 1,314ha of land from the Forestry Commission in 1974 and declared the NNR in 1975. A further 608ha are subject to Nature Reserve Agreements with neighbouring landowners, which include the summit of Cairnsmore itself. The total land within the NNR is 1,922ha.

The site was chosen as representative of the granite uplands of Galloway and has continuity between un-forested moorland and montane ground above the potential tree limit. The plant communities and animal habitats present at Cairnsmore of Fleet were formerly widespread in the Southern Uplands, but have been much reduced over the past 60 years by land use changes.

The main conservation designation in the UK is the Site of Special Scientific Interest (SSSI). Cairnsmore of Fleet was re-notified as a SSSI in 1986 having been originally notified in 1968. The features for which Cairnsmore of Fleet is designated are listed in Table 1. The SSSI covers a wider area (3,836.65ha) than the NNR.

The United Nations Educational, Scientific and Cultural Organisation (UNESCO) accepted the NNR as a Biosphere Reserve in 1976. Although this designation is under review, Cairnsmore is, therefore, part of an international network of Reserves.

Table 1 Designated and qualifying features for Cairnsmore of Fleet NNR

Designation	Site of Special Scientific Interest	Biodiversity Action Plans	
		UK	Local
Blanket bog	✓		
Upland assemblage	✓		
Blue aeshna dragonfly* (<i>Aeshna caerulea</i>)	✓		✓
Black grouse		✓	✓
Golden eagle			✓
Hen harrier			✓

* Also referred to as the azure hawker dragonfly.

2 The Natural Heritage of Cairnsmore of Fleet NNR

The NNR takes its name from Cairnsmore of Fleet, one of the most southerly of the high Galloway Hills. Cairnsmore sits in a commanding location overlooking the Cree Estuary, and on a clear day views from the summit extend south across the Solway Firth to the Lake District and the Isle of Man, west across the Irish Sea to Ireland, and north over the Galloway Hills to Ayrshire and beyond.

The NNR extends from the Clints of Dromore in the south at 92 metres (m), to Craignelder in the north at 601m to the summit at 711m. Cairnsmore hill is a granite mass, oval in shape, measuring 18 kilometres (km) by 11km. The summit forms a distinctive ridge with high cliffs and screes along its eastern side. The lower ground is moorland with areas of blanket bog of varying depths of peat.

The Flora of Cairnsmore of Fleet NNR

The granite bedrock of the NNR and high rainfall means vegetation on the Reserve has developed in almost entirely acid conditions in one of the wildest parts of southwest Scotland. The two most extensive habitats of the site are heath and bog. Both are similar in that they have varying amounts of heather on largely peaty soils. Very simply the bog is wet and the heath drier, although only by a matter of degrees!

Typically, upland moorland, which includes bogs and heaths, develops in Scotland on summits or gentle slopes with an altitude of 250–1000m. The thickness of peat can be a distinguishing feature between heath and bog, with heathland peat being shallow and



Sphagnum Moss

relatively dry. In bogs, the peat is deeper and wetter and may vary from 1.5m to over 10m in depth. In areas of bog where peat is thick its capacity to hold water is greater, creating poorly aerated, acidic and cold conditions. Because of this, decomposition is suppressed and the peaty soils are lacking in minerals and nutrients.

Summit vegetation – the summit ridge of Cairnsmore of Fleet has two main types of mountain vegetation – montane grassland and dwarf shrub heath. The heath has species such as dwarf willow, stiff sedge and woolly fringe moss. These cover the gently sloping areas around the summit and the lower summit slopes. The grassland areas consist of taller vegetation with fewer of the montane species. Here the dominant species are mat grass and blaeberry with heath rush. The montane grassland here was probably once heath that has been modified by grazing activity.

Moorland – the heather moorland is the driest type of moorland; here heather, bell heather and blaeberry are some of the dominant plants. As it gets wetter, cross-leaved heath, heath rush, purple moor grass, cotton grass and mat grass can be found. Although water is usually plentiful many of these plants appear to have adapted for living in drier conditions and have developed particular features to reduce water loss; these can be spiny or waxy leaves, hairs or pores arranged in grooves. Such plants are said to be xeromorphic. They may have developed these features because of the exposed and windswept nature of Cairnsmore; this could mean they lose water by evaporation through their leaves or because the rate at which their roots can take in water is reduced in the cold and low oxygen condition of the peat.

Blanket bog – this is the wetter moorland; here there are numerous colourful mosses to be seen. These are mostly various species of *Sphagnum* and tussocks of hair moss. Carnivorous plants, such as the round leaved sundew and common butterwort, are found on the blanket bog. These plants show yet another adaptation to living in the low nutrient environment; the sticky hairs on their leaves trap small insects, which the plants are able to digest through chemicals they produce in their leaves.

The Fauna of Cairnsmore of Fleet NNR



Peregrine falcon

Birds – the Reserve is an important breeding site for birds of mountain and moorland. Historically golden eagle bred on the cliffs and occasional sightings are still recorded. Peregrine falcon, merlin, kestrel, raven and buzzard still breed regularly. Hen harrier is a frequent visitor during winter months.

Red grouse numbers have fluctuated greatly and are generally found in four main areas of the Reserve. Black grouse can also be found in small numbers.

Golden plover and dotterel have both been recorded nesting on the summit areas.

Mammals – red deer use the main hill and central area of the Reserve throughout the year, whilst around the boundary with forestry, roe deer can be seen.

A herd of wild goats roam the Reserve; it may be that they descended from animals abandoned by crofters during the 18th and 19th centuries.

Small numbers of foxes, mountain hare and stoats occur within the Reserve. Brown hares are regularly seen close to the farmhouse, or “in-bye land” as it is known.

Amphibians and reptiles – common frogs and palmate newts are present in the damper areas around pools, streams and ditches. Adders are present throughout the Reserve, as are common lizards. Slow worms have been recorded along the Clints of Dromore.

Insects – dragonflies and damselflies can be seen hunting along the banks of the River Fleet or over bog pools. Most notable is the presence of the azure or blue hawker, which is a Red Data book species (“Nationally Scarce”) and has its British strongholds in the Highlands. This species is only found in highly acidic bog pool complexes in exposed situations such as those found at Cairnsmore. Cairnsmore is the southernmost known breeding site for azure hawker in Britain.



Azure hawker

Seventeen species of butterfly out of the thirty-four found in Scotland have been recorded on the site and over 120 species of moth.

Other UK species of Conservation Concern found on the Reserve include the small pearl-bordered fritillary, large heath and broad-bordered white underwing, a montane moth species associated with woolly fringe moss heath found at over 600m. Argent and sable, a daytime flying moth, is found over the open moorland and bogs. Beetles are also well represented; the golden green ground beetle is a nationally notable species.

In recent years, heather beetle has caused problems. Its larvae feed on young shoots of heather and, as a result of mild winters and changing climatic conditions, numbers have escalated. As in other parts of Scotland, areas of heather have died back as a consequence.

Summary

Cairnsmore of Fleet NNR is a good example of upland habitats and the species that rely upon them in poor acidic and nutrient poor conditions. Examples of species that have adapted to live in these difficult conditions can be found here, but apart from a few well-adapted plants none of the wildlife is ever abundant.

3 Cairnsmore of Fleet before it became an NNR

Land Use

The wildlife and habitats of Cairnsmore of Fleet NNR are a direct result of Man's management over hundreds of years. It is thought that during the medieval period land use in the area was primarily sheep and goat grazing and hunting for game. The Cistercian monks probably moved flocks onto Cairnsmore every summer.

It was not until the late 18th and early 19th centuries that land use changed. The introduction of enclosures and the clearances of small tenants, together with the introduction of a predominantly sheep based culture, with a few shepherds looking after large flocks, saw areas like Cairnsmore supporting fewer people. It was during this period when sheep farming increased, with less emphasis on hunting, that small quantities of lead and other minerals were mined in the area around Cairnsmore.

The railway, for which the viaduct was constructed in 1860, led to a boom in grouse shooting. Effectively from this point Cairnsmore was divided in two. The western side of the hill was used principally for sporting purposes and some cattle grazing, whilst the eastern half was used primarily for sheep with sporting use a secondary interest.



Big Water of Fleet Viaduct

Three important changes in land use have taken place since the Second World War. First, sheep farming became the major use of the land. Secondly, sporting use declined in importance. Thirdly, much of the surrounding area was planted with coniferous forest.

Decline of Woodland

Evidence from pollen in peat deposits shows that Galloway was once covered with alder, oak and birch forest, which was at its greatest extent during the Atlantic period, between 4000 and 6000 B.C. It is thought that the Cairnsmore area was suitable for deciduous tree growth well into the historical period.

During the Atlantic period it is thought the only parts of Scotland without trees would have been the mountain areas over 2000ft in the west. This would mean that the summit plateau of Cairnsmore has had no tree growth on it for at least 10,000 years.

Records indicate that prior to the Roman invasion, forest clearance in Galloway was insignificant. The Roman legions appear to have spent much of their time occupied doing just this. Although documentary evidence from the end of the Roman period until the later Middle Ages is scarce, it is generally assumed that between 1400 and 1700 much of the natural woodland in lowland Scotland was removed. Fire was a powerful tool for clearing land, and in the wars between the Scots and the English reference is often made to the burning of land.

Maps of 1596 show small deciduous woods at Cullendoch and Cullendoch Moss up towards the Clints of Dromore; these woodlands no longer exist.

Farming

The earliest evidence for cultivation dates to the Bronze Age in the areas south of Cairnsmore, which are rich in archaeological remains from this time.



Shepherd at Cairnsmore

Farming, and in particular sheep rearing, increased in importance from Roman to medieval times. There is evidence of the Cistercian monks having granges (a country house with farm attached) and sheilings across the Galloway hills, and they probably used Cairnsmore for their flocks during the summer. These sheep-farming medieval monks are also said to have carried out muirburning to improve their grazing.

The droving of cattle to markets in England first started in the early 1600s and it is likely that between the 14th and 18th centuries there was mixed grazing on all the Galloway moors. In 1684 there is mention of the land from Bardrochwood to the top of Cairnsmore of Fleet as being good pasture and some corn land. These comments are supported by General Roy's maps of 1745 which mark the riggs in fields caused by generations of ploughing at Little Cullendoch.

The first enclosures started in the 1720s, when smaller tenants were cleared, to be replaced by the introduction of a sheep monoculture, with a few shepherds looking after larger flocks. At this time the Cairnsmore moors became the headquarters of Billy Marshall, leader of the Galloway gypsies who, with his gang, demolished dykes on Cairnsmore during 1724.

The gang hid out in "Billy Marshalls cave" on the north end of Cairnsmore, where they stored the spoils from their activities, which included smuggling. A report from the tenants of the Cuil reported up to 80 packhorses journeying past the Door of Cairnsmore laden with contraband. William "Billy" Marshall was reputedly born around 1672 in Ayrshire, surviving until around 1792, and if Cairnsmore was his headquarters, it may be that there was little farming on Cairnsmore during his most active years.

During the 18th century, moor farms were said to have march (boundary) dykes and dykes around the in-bye. Attempts to improve moorland fertility were made by paring and burning. The top layer of turf was ploughed off, collected and burnt. The ash and charcoal was then spread and the area sown with oats the following summer. Maybe this was practiced on Cairnsmore, but repeated cropping in this way eventually exhausted the soil fertility, so that many landlords prohibited the practice.



Cairnsmore of Fleet

The commissioning of a detailed plan of Cullendoch and Dromore in 1810 possibly indicates the change from mixed pastoralism to sheep monoculture on Dromore. This was presumably done with a view to increasing the revenue from the farms. It is also likely that with this switch to a sheep monoculture, systematic muirburn was adopted to improve grazing for sheep. Before this time, mixed grazing would have meant the herbage was palatable to a wider range of graziers.

There do not appear to have been any major changes in farming practice at Cairnsmore since the late 19th century. However, during the 1960s the progressive loss in the profitability of sheep farming led to many unprofitable upland farms being planted with conifers.

Game Management

It is likely that management for game has been as much a part of the relationship between man and the land on Cairnsmore as farming for sheep has been. Evidence suggests that even early man may have burned forest underbrush to improve grazing for the animals he hunted.

Probably the most significant event for Cairnsmore with regard for game was the opening of the Castle Douglas to Portpatrick railway in 1861–2, for it is shortly after this (in 1868) that the first game-bag records are found.

Since Cairnsmore was first opened up for commercial grouse shooting in the 1860s it is likely that strip burning for grouse was introduced. Indeed the whole of the Cairnsmore estate, apart from the summit, was strip burnt whilst leased to the Duke of Bedford. This continued until the 1950s.

Apart from the adoption of muirburn practice, the other most significant management practice was probably the intensifying of “vermin” control. Indeed the attitude of the 19th century landowner to “vermin” is well illustrated in the moor management chapter of “Grouse and Grouse Moors” by G Malcolm and A Maxwell, which lists every conceivable predatory and omnivorous mammal and bird as a threat to grouse.

Despite this, there is no evidence to suggest that “vermin” on Cairnsmore were ever subjected to the level of control suggested in the above, although control did take place and reference of payments to under keepers of vermin money can be found.

After the Second World War, records suggest that Dromore was only lightly kept, but prior to this it was as intensive as the rest of the estate. Species controlled at this time were: raptors, magpies, crows, ravens, black backed and herring gulls, stoats, weasels, rats, hedgehogs, cats and foxes.

The available evidence suggests that during the last century the use of Dromore for game was secondary to its sheep interest. However, this was not the case on the west side of the hill.

Management on the estate for game intensified and regular payments were made to tenant farmers for the losses they incurred as a result. Increasingly the farming practices became uneconomic.

The expenditure on game management produced results; grouse shooting before the war regularly saw 70 brace a day shot. About 40 people were employed in two squads for a day's drive and usually there were eight drives a season, with three guns per day. The southwestern slopes of Cairnsmore, from the Door across to the Cuil, were reputed to be the best for grouse.

After the war things started to change and shooting on Cairnsmore saw different beats being let to different shooting syndicates and the gradual decline of the importance of game management.

Introducing new species

1891 saw the start of a concerted effort to introduce deer onto the estate. By 1907 a report states that a herd of red deer had become established. By 1914 they had been encouraged onto the moor and by the 1930s there were "any amount of deer".

Deer were not the only attempted introductions. Black partridges from India, quail and partridge are also listed.



Dromore Farm, with Clints of Dromore from Gatehouse Road

Other land uses

Before 1845 some small-scale mining took place. Then in the mid 19th century there was a boom, and the mines were quickly worked out. The Dromore lead mine was probably opened during the 1840s when extraction was mainly opencast. During the 1914–1918 war the mine was also worked for copper and zinc. Four workers were employed, with two working underground.

Undoubtedly the largest change in land use in the area over the last century was the move away from a sheep based land use to conifer forestry. Around Cairnsmore this change has occurred since the last war.

A brief history of wildlife recorded at Cairnsmore

1690:	Cairnsmore is noted for its red deer and red grouse. Eagles are common and the rivers rich in salmon.
1794:	Grouse (both red and black) are in decline. Partridge, hare, woodcock, rabbit, badger, fox and polecat are present. Loch Grannoch has healthy numbers of Arctic charr, but salmon have declined in the River Fleet.
1810:	Golden eagles known to nest on Cairnsmore.
1845:	Corncrake, water rail, partridge, bittern, osprey and polecat are on Cairnsmore and at Loch Grannoch. Red deer and ptarmigan have disappeared.
1870s:	Wildcats have disappeared.
1876:	Green spleenwort fern is abundant on Cairnsmore. Starry saxifrage is present on the summit.
1894:	Red kites breed at Loch Grannoch.
1914:	Red deer are successfully re-introduced.
1929–1938:	Golden eagles continue to nest.
1940:	Buzzards cease breeding.
1950:	Peregrine falcon and raven are in decline.
1960s:	Golden eagles are still breeding.
1972:	Charr had disappeared from Loch Grannoch by this date.
1980s–1990s:	Peregrine falcon and raven numbers are increasing, buzzards are breeding, but golden eagles no longer breed on site. Records are made of moths, flies, dragonflies and beetles.

Summary

Over the last two centuries, changes in the vegetation of the area away from the natural deciduous woodland, with birch scrub, heath and montane vegetation at increasing altitude has resulted in a decline in species richness. The first major factor in this was the gradual and progressive destruction of deciduous woodland by Man's activity and climate change. A more rapid factor was the move to a sheep monoculture that necessitated the need for regular burning to retain stable heath vegetation. This change was strengthened by the increase in sporting for grouse, which also relied upon burning as a management tool. The scrub vegetation was replaced by a heather dominated habitat which itself has in places been replaced by one containing mat-grass, purple moor grass and bracken if burning and grazing are not finely balanced.

4 Management of Cairnsmore of Fleet NNR

SNH and its predecessors have maintained the Reserve with a working hill sheep farm, integrating this with the conservation of both wildlife and vegetation.

Extensions to the Reserve have been made through Nature Reserve Agreements (NRA) with neighbouring landowners. See Appendix 2 for boundary map.

The upland nature of the site, the way forestry developed and the consequent lack of good in-bye land makes the farm uneconomic in farming terms. SNH ownership means that the habitat can be managed to maintain and, where possible, improve the natural heritage interest.

In February 2000, SNH started a review of all of the then 71 NNRs in Scotland. Cairnsmore of Fleet NNR was one of six for which the case was re-examined as to how best it could fit the requirements of an NNR.

By July 2003 it was agreed that Cairnsmore of Fleet did meet all the criteria for a NNR, and that it should be redeveloped as part of a larger proposed Galloway Hills NNR, along with an enlarged Silver Flowe NNR, incorporating the Merrick and associated hills.

Management of the natural heritage

Management on the site has been a combination of grazing, using SNH's own sheep flock, muirburn and swiping. In an attempt to improve the productivity of the area, by increasing the proportion of heather dominated vegetation at the expense of purple moor grass dominated vegetation, we burn small-scattered areas each year.

Logistical problems and poor weather conditions have meant that until 2006, burning to the extent required had not been carried out on the site for a number of years.

Some experimentation with grazing by cattle to break up the purple moor grass was tried prior to the outbreak in 2001 of Foot and Mouth Disease. This was not very successful, principally because the cattle used were not a hill breed. In 2006, 20 head of more suitable cattle returned to a designated part of the hill to re-assess this option.

To ensure deer and goat numbers are kept at a sustainable level we will continue to actively control them.

During 2002/3 work started to improve the habitat for black grouse; this has included some small scale planting of tree species such as rowan, silver birch, willow and alder.

In March 2003, we commissioned McCauley Land Research to undertake a habitat assessment of Cairnsmore, with a further commission in November 2003. This was to further build upon the information gained, but focussed more specifically upon the condition of the heather, and aimed to provide an assessment of grazing options.

The research results are a firm foundation from which to decide the future planning for the site, and will be referred to in the Reserve Proposals and Plan.

Management for People

At Dromore, people are able to explore the southern end of the Reserve. There is a short circular marked walk around the farm in-bye land. Access to the viaduct is particularly popular with local people. Proposals are underway to develop routes onto the Clints of Dromore. Further consideration is to be given to an all-abilities walk around the lower ground. The national cycle route passes through the steading on its way to Clatteringshaws. Racks are provided for cyclists who wish to stop and explore the site.

Further improvements are underway and these include upgrading of the visitor centre, new interpretation and signage, the provision of public toilets and improved car parking.

The main access onto Cairnsmore Summit follows the path up the western side of the hill, from near Cairnsmore House. A new car parking area has been developed to address problems with the old parking arrangements, which could no longer cope with the level of demand.



Path from Cairnsmore House to Cairnsmore Summit

Consideration is being given to encourage access onto the higher ground from the Queensway, near Murray's Monument, taking people up onto Craignelder, Meikle Mulltaggart and the summit. This could create a day-long walk north to south.

Property Management

SNH owns approximately 68% of the NNR, with the remainder being under NRAs with two neighbouring landowners. SNH endeavours to follow best practice in its management. The buildings on the Reserve are the visitor centre and office, the shepherd's farmhouse, and the farm buildings, for which SNH is solely responsible. SNH has shared responsibility for the boundary, or march, fences. The infrastructure includes the small car park, picnic area and short in-by walk. Enhancements to the



Dromore Visitor Centre

visitor facilities currently underway will require additional maintenance.

A Reserve Manager, Reserve Officer and Shepherd staff the Reserve, with overall responsibility lying with the Area Officer for West Galloway. The equipment and vehicles used at Cairnsmore are dedicated to the site, with occasional use by other Reserves within Dumfries and Galloway as appropriate.

Management of the Reserve has to comply with Health and Safety legislation; this includes updating the fire plan and carrying out risk assessments. Because the Reserve includes a working farm, bio-security recommendations also have to be taken into account.

SNH has also established aspirational sustainability criteria for its buildings on NNRs, and intends to adopt best practice by conventional and innovative ways to demonstrate the benefits of this greener approach.



Summit cairn at Cairnsmore

Conclusion

Cairnsmore of Fleet NNR is one of the most remote sites in southwest Scotland. In the words of visitors it can give “an unspoilt wilderness experience”.

This perception and the enjoyment it gives is something that SNH is proud of, and will build on in the years to come, where the public can enjoy, appreciate and understand this special place and the flora and fauna that live on it.

Appendix 1 – National Nature Reserves

Scotland's NNRs are special places for nature, where many of the best examples of Scotland's natural heritage are protected. Nature comes first on our NNRs, (referred to as primacy of nature). These reserves, also offer special opportunities for people to enjoy and find out about the richness of our natural heritage. NNRs (NNRs) are declared under the National Parks and Access to the Countryside Act 1949 or the Wildlife and Countryside Act 1981.

A new policy for NNRs in Scotland was developed in 1996. This Policy requires NNRs in Scotland to have four attributes, and to 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** – It must be of national importance that the NNR be managed as a nature Reserve, 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** – on these Reserves 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 the interest 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, which specifically require a nature Reserve location and which are not available elsewhere.

From 2000–2003 all of Scotland's NNRs were reviewed against this policy. Because of the review there are now 55 NNRs in Scotland.

More information can be found at:

Policy statement: <http://www.snh.org.uk/pdfs/polstat/nnrpolicy.pdf>
NNRs – general information: <http://www.nnr-scotland.org.uk>

Appendix 2 – Site of Special Scientific Interest

The Site of Special Scientific Interest (SSSI) designation is the main nature conservation designation in Great Britain. 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 the United Kingdom'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. There were further changes in the protective mechanisms in place as a result of the Nature Conservation (Scotland) Act when it came into force in 2004.

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)

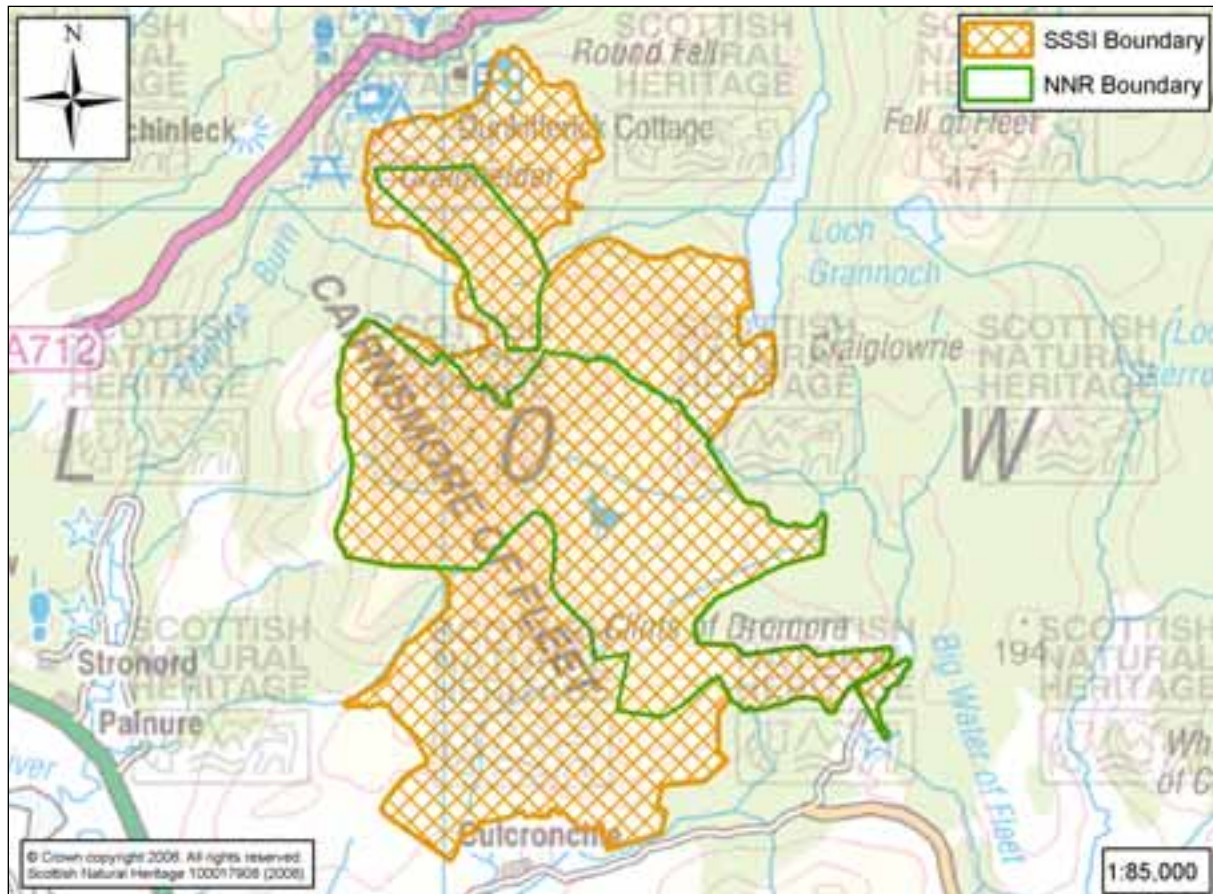
<http://www.snh.org.uk/about/ab-pa01.asp>

List of Scottish SSSI

http://www.snh.org.uk/pdfs/protect/SSSI_02.pdf

Cairnmore of Fleet Site of Special Scientific Interest

Country	Scotland
Unitary Authority	Dumfries and Galloway District
Date notified under 1981 Act	30 June 1986
Grid Reference	NX 515665
Area	3559.3ha



SSSI citation:

Biological: Habitat: Upland

Biological: Habitat: Peatland

Biological: Species: Birds

The site is the best example in Wigton District of an un-afforested granite massif of perched blocks, slabs and pavement, with continuity between low-level moorland and montane grassland and dwarf shrub heath. The area is wind exposed and close to the western seaboard resulting in montane communities occurring at rather low elevation and in blanket bog with a rich bog moss *Sphagnum* spp community. Flowering plants of interest include western gorse *Ulex gallii* and bog rosemary *Andromeda polifolia* at their

northern limit and petty whin *Genista anglica* at its western limit. Several calcicole species occur – mossy saxifrage *Saxifraga hypnoides*, pale butterwort *Pinguicula lusitanica*, green spleenwort *Asplenium viride*, tawny sedge *Carex hostiana* and dioecious sedge *Carex dioica*.

The area is particularly important for its characteristic upland fauna which includes a breeding bird community with a number of birds of prey (peregrine, golden eagle, merlin), a high number of red grouse, and waders (curlew, golden plover, common sandpiper); mammals such as mountain hare, red deer and the largest herd of feral goats in the district. There is some invertebrate interest, with eight species of dragonfly (the Blue aeshna dragonfly *Aeshna caerulea* being nationally scarce) and a number of rare and local spiders.

The site is important as an area against which the effects of afforestation can be measured and assessed.

Remarks

A Nature Conservation Review Site, Grade 1.

1,314ha of the site were declared a National Nature Reserve (NNR) in 1975, with the addition of a further 608ha in 1981. The NNR is a Biosphere Reserve, accepted by UNESCO in 1976.

3,083.5ha of the site lie in Wigtown District, with a further 475.8ha in Stewartry.

Appendix 3 – Biosphere Reserves

Biosphere Reserves (BRs) are areas of terrestrial and coastal/marine ecosystems, or a combination thereof, which are internationally recognised within the framework of the United Nations Educational, Scientific and Cultural Organisation's (UNESCO) Programme on Man and the Biosphere (MAB) which was launched in 1970. They are established to promote and demonstrate a balanced relationship between humans and the biosphere. Biosphere Reserves are designated by the International Co-ordinating Council of the MAB Programme at the request of the State concerned. Individual Biosphere Reserves remain under the sovereign jurisdiction of the State where they are situated. Collectively, all biosphere Reserves form a World Network in which participation by States is voluntary.

Each Biosphere Reserve is intended to fulfil three basic functions, which are complementary and mutually reinforcing:

- A conservation function – to contribute to the conservation of landscapes, ecosystems, species and genetic variation;
- A development function – to foster economic and human development which is socio-culturally and ecologically sustainable;
- A logistic function – to provide support for research, monitoring, education and information exchange related to local, national and global issues of conservation and development.

The first BRs in the UK were established in the period 1976–77. Originally there were 13 BRs designated in the UK, 9 of them in Scotland, including Cairnsmore of Fleet. All of them were based on NNRs. Since the original suite of designations there have been significant reviews of the BR concept, notably at the International Conference on Biosphere Reserves, held in Seville (Spain) in 1995.

Following the Seville meeting, BRs now have to demonstrate a zoned structure composed of the following elements:

- **Core area(s):** which are strictly protected;
- **Buffer zone:** where only activities compatible with protection of the core take place;
- **Transition area/zone of co-operation:** where co-operation between the landowners and users of the area and the manager of the protected area has to be demonstrated. The outer edge of this zone is not strictly delineated.

A detailed explanation of what the Biosphere Reserve concept encompasses is given on the UNESCO web site at <http://www.unesco.org/mab/nutshell.htm>.

Following the publication of the 'Review of UK Biosphere Reserves' carried out in 1999 the UK Government consulted a range of agencies including SNH. One of the outcomes of this review was the recommendation that SNH continue to support the concept of Biosphere Reserves in Scotland. Cairnsmore of Fleet is part of this ongoing review.

Appendix 4 – Species

There are a number of laws protecting species in the UK; this is only a brief synopsis.

The Wildlife and Countryside Act 1981

This is a key Act, which makes it an offence to intentionally kill, injure, or take any wild bird or their eggs or nests (except for species listed in Schedule 2). Special penalties are available for offences related to birds listed on Schedule 1, for which there are additional offences of disturbing these birds at their nests, or their dependent young. The Act also prohibits certain methods of killing, injuring, or taking birds, restricts the sale and possession of captive bred birds, and sets standards for keeping birds in captivity.

The Act makes it an offence (subject to exceptions) to intentionally kill, injure, or take, possess, or trade in any wild animal listed in Schedule 5, and prohibits interference with places used for shelter or protection, or intentionally disturbing animals occupying such places. The Act also prohibits certain methods of killing, injuring, or taking wild animals.

The Act makes it an offence (subject to exceptions) to pick, uproot, trade in, or possess (for the purposes of trade) any wild plant listed in Schedule 8, and prohibits the unauthorised intentional uprooting of such plants.

There are other Acts that protect Wild Mammals, Badgers, Deer and Seals.

The Habitats Directive

Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora requires Member States to take the requisite measures to establish a system of strict protection for the animal species listed in Annex IV, ie animal and plant species of community interest in need of strict protection. There are 13 European Protected Species in Britain.

The Biodiversity Convention

The Convention on Biodiversity was adopted at the Earth Summit in Rio de Janeiro, Brazil in June 1992. In the UK, the Government launched the UK Biodiversity Action Plan, a national strategy that identified broad activities for conservation work over the next 20 years, and established fundamental principles for future biodiversity conservation. A number of Biodiversity Action Plans (UKBAPs) have been produced for selected habitats and species, and some areas have developed local biodiversity action plans (LBAPs) too.

Red Data Book Species

Red Data Books list species that are threatened or endangered. In the past species in Britain were included as Red Data Book species if they occurred in fewer than 15 10km x 10km squares. Britain is moving towards the IUCN (The World Conservation Union) criteria which categorises species as Extinct, Extinct in the Wild, Critically Endangered, Endangered or Vulnerable.

Protected and biodiversity action plan (BAP) species found at Cairnsmore of Fleet

Common name	Scientific name	European Protected Species	Wildlife & Countryside Act	UK BAP*	L BAP*
Adder	<i>Vipera berus</i>				✓
Azure hawker* dragonfly	<i>Aeshna caerulea</i>				✓
Barn owl	<i>Tyto alba</i>		S1		✓
Black grouse	<i>Tetrao tetrix</i>			✓	✓
Bluebell	<i>Hyacinthoides non-scripta</i>			✓	✓
Brown hare	<i>Lepus capensis</i>			✓	
Bullfinch	<i>Pyrrhula pyrrhula</i>				
Dotterel	<i>Charadrius morinellus</i>		S1		
Fieldfare	<i>Turdus pilaris</i>		S1		
Golden eagle	<i>Aquila chrysaetos</i>		S1		✓
Golden plover	<i>Pluvialis apricaria</i>				
Goosander	<i>Mergus merganser</i>				✓
Grey partridge	<i>Perdix perdix</i>			✓	
Hen harrier	<i>Circus cyaneus</i>		S1		✓
House martin	<i>Delichon urbica</i>				✓
Large heath butterfly	<i>Coenonympha tullia</i>				✓
Merlin	<i>Falco columbarius</i>		S1		✓
Mountain hare	<i>Lepus timidus</i>				✓
Northern brown argus butterfly	<i>Aricia artaxerxes</i>				✓
Otter	<i>Lutra lutra</i>	✓		✓	✓

Protected and biodiversity action plan (BAP) species found at Cairnsmore of Fleet *(continued)*

Common name	Scientific name	European Protected Species	Wildlife & Countryside Act	UK BAP*	L BAP*
Peregrine	<i>Falco peregrinus</i>		S1		✓
Pipistrelle bat	<i>Pipistrellus pipistrellus</i>	✓		✓	✓
Redshank	<i>Tringa totanus</i>				✓
Reed bunting	<i>Emberiza schoeniclus</i>			✓	✓
Ring ouzel	<i>Turdus torquatus</i>				✓
Skylark	<i>Alauda arvensis</i>			✓	✓
Slow worm	<i>Anguis fragilis</i>				
Small pearl bordered fritillary butterfly	<i>Boloria selene</i>				✓
Snipe	<i>Galinago galinago</i>				✓
Song thrush	<i>Turdus philomelus</i>			✓	
Spotted flycatcher	<i>Muscicapa striata</i>				✓
Swallow	<i>Hirundo rustica</i>				✓
Water vole	<i>Arvicola terrestris</i>				✓
Western gorse	<i>Ulex gallii</i>				✓
Whorled caraway	<i>Carum verticillatum</i>				✓

* Also known as the Blue aeshna dragonfly