

CITATION

CAIRNGORMS
SITE OF SPECIAL SCIENTIFIC INTEREST
Highland, Moray, Aberdeenshire

Site code: 288

NATIONAL GRID REFERENCE : NN934985

OS 1: 50 000 SHEET NO : Landranger Series 36 and 43
1: 25 000 SHEET NO : Explorer Series 403, 404 and 387

AREA : 29226.7 hectares

NOTIFIED NATURAL FEATURES

Geological	: Quaternary geology and geomorphology	: Quaternary of Scotland
	: Mineralogy	: Mineralogy of Scotland
	: Geomorphology	: Fluvial Geomorphology of Scotland
Biological	: Woodlands	: Native pinewood
	: Upland habitats	: Upland assemblage
	: Freshwater habitats	: Dystrophic and oligotrophic lochs
	: Vascular plants	: Vascular plant assemblage
	: Non-vascular plants	: Bryophyte assemblage
		: Lichen assemblage
		: Fungi assemblage
	: Birds	: Breeding bird assemblage
		: Dotterel <i>Charadrius morinellus</i> , breeding
		: Snow bunting <i>Plectrophenax nivalis</i> , breeding
		: Ptarmigan <i>Lagopus muta</i> , breeding
		: Golden eagle <i>Aquila chrysaetos</i> , breeding
	: Invertebrates	: Invertebrate assemblage

DESCRIPTION

The Cairngorm mountains, of which the SSSI covers a large part, is the most important mountain area in Britain for nature conservation. The Cairngorms includes the greatest area of high land in Britain, much of it unique both geomorphologically and biologically for its extensive arctic character. The Cairngorms is internationally recognised for its exceptional assemblages of landforms, habitats and animal and plant species, many of which are scarce nationally. As such the whole area is of considerable international importance.

GEOLOGY

Quaternary Geology and Geomorphology

The Cairngorms mountains is one of most outstanding geomorphological areas in Britain. Its exceptional assemblage of landforms is important for scientific research and education, providing insights into long-term processes of mountain landscape evolution and environmental change in a maritime, mid-latitude setting in the northern hemisphere.

Relict landforms which originated before the Ice Age, or during its earlier phases, are unusual for their scale of development in a glaciated mountain area; they include tors, weathered bedrock and plateau surfaces. These features stand in sharp contrast to glacial troughs, glacially breached watersheds and corries. Together they form an outstanding example of a landscape of selective glacial erosion. The adjacent glens support a diverse assemblage of glacial meltwater features and glacial deposits, notably channels, eskers, kames, kettle holes, terraces, lake deposits and moraines. Periglacial landforms, illustrating

the effects of cold climate conditions on the bedrock and soil, are extensively developed on the high slopes and plateau surfaces and add further to the landform diversity, as do several rock slope failures.

A variety of slope landforms, river terraces and gravel-bed rivers reveals the pattern of postglacial landscape changes. The history of climate and change and vegetation development during the final part of the Ice Age and in the subsequent postglacial period is contained in the records of plant remains and pollen grains preserved in lochs and peat bogs.

Many of the individual features are classic examples of their type. It is, however, the scale and total assemblage of features, developed in a relatively compact area, which makes the site so remarkable.

Mineralogy of Scotland

Course-grained (pegmatite) veins within the granite of the Loch Avon area are an established source of gem-quality smoky quartz, commonly known as 'cairngorm', and beryl. Moreover, this is the only location in Great Britain, and one of the few locations in the United Kingdom, to yield blue topaz. Although the gemstones were the basis of an important 19th century industry in the district, precise locations of the workings in the Loch Avon area are not recorded. Rolled cairngorm, topaz and beryl crystals in the gravels of the River Avon, almost certainly derived from the Loch Avon area, now represent the most accessible source of material.

Fluvial geomorphology of Scotland

The Derry Burn provides an excellent example of a river system adjusting to rapid downstream decline in valley floor slope, exhibiting changes in sediment size and channel shape along its course within a small upland alluvial basin. The shape of the channel changes downstream: from a wandering gravel bed river with a divided channel in the upstream reaches, becoming progressively more sinuous, to a single meandering channel with tortuous bends at the downstream end of the burn. Channel shape has also changed over time during the last 150 years, in response to flood events. The site is interesting as it is close to the threshold separating braiding from meandering streams. The floodplain has numerous examples of abandoned channels (palaeochannels) and gravel bars, marking where the river has migrated in the past.

The Luibeg Burn provides an excellent example of a steep, boulder-bed mountain stream which has a documented history of large-scale sediment mobilisation during extreme flood events. During the catastrophic floods of the 4 August 1829 and July 1956, the channel was totally disrupted and widened and the floodplain was extensively reworked. Deep flood channels above the level of the present floodplain were also excavated during these extreme flood discharges which generated shear stresses capable of moving the whole range of sediment sizes present in the stream bed. Under normal flows, however, a high percentage of the available bed material cannot be transported and thus during the interim period between storms, little geomorphic work is done.

BIOLOGY

Ranging from 260-1309 m in altitude, the SSSI contains a superlative range of montane and submontane habitats characteristic of the eastern Highlands from native Scots pine woodland through a variety of mires, grasslands, heathlands, lochs and streams. Many individual habitats and species are of national and/or international importance in their own right, but the value of the site is accentuated by the overall assemblage distributed according to natural factors such as altitude, aspect and soils.

As the glacial drift which covers many of the lower hillsides is primarily derived from the acidic granite bedrock, the Cairngorms' vegetation is dominated mainly by acid-tolerant plant species. The Moine Schist, which contrasts with the granite in giving soils of higher base-status and fertility, outcrops in Glen Feshie and at the head of Glen Einich. The base-rich soils in these areas locally support on cliffs, in screes, flushes and grasslands a number of rare calcareous habitats and a wide range of lime- and/or base-loving plants, including many local or rare species. The massive summit plateaux and broad watersheds, with a considerable land mass above 1100 m, allow prolonged snow cover in a variety of situations and in turn give rise to the largest extent of late snow-influenced vegetation in Britain.

Upland and montane habitats

Examples of some of the most natural plant habitats in Britain occur on the site's mountains. Large areas of the mountain summits support plants which occur only in relatively small scattered patches elsewhere in Britain, e.g. rush-heath with three-leaved rush *Juncus trifidus*.

Alpine moss-heath and associated vegetation

The Cairngorms has the largest tracts in Britain of a range of alpine moss-heath and associated sedge and rush communities developed on base-poor granites and schists and the full range of these communities. The community characterised by three-leaved rush is particularly well developed, with the full range of subtypes varying from those where woolly fringe-moss *Racomitrium lanuginosum* is co-dominant to open tussocky, lichen-rich areas. Extensive areas of the plateau are dominated by stiff sedge *Carex bigelowii* and woolly hair-moss, particularly on the western spurs and ridges.

Calcareous grassland

Glen Feshie has several areas of alpine and sub-alpine calcareous grassland, developed on calcareous schists, including alpine calcareous grassland characterised by mountain avens *Dryas octopetala*. Coire Garbhlach has a very rich calcicolous flora.

Alpine heath

The Cairngorms has the full range of alpine heaths characteristic of the Eastern Highlands and the most extensive tracts of alpine heath in Britain. Snow-bed heaths are better developed than in any other area and there is superlative development of wind-pruned and patterned lichen-rich dwarfed heath, dominated by combinations of common heather *Calluna vulgaris*, bearberry *Arctostaphylos uva-ursi*, blaeberry *Vaccinium myrtillus* and crowberry *Empetrum nigrum*, along with abundant lichens (*Cladonia* species), including fine examples of "wave vegetation." Dwarfed heath with abundant common heather and *Cladonia* lichens is developed extensively and extends to a higher elevation here (1000 m), than anywhere else in Britain, changing with altitude to a montane form rich in bearberry and trailing azalea *Loiselura procumbens*. Wet heath with a good cover of lichens is also found at alpine levels.

Snow-beds

Communities of late snow beds characterised by least willow *Salix herbacea* and bryophytes are more extensive and finely developed than anywhere else in Britain and support a number of rare arctic-alpine herbs, bryophytes and lichens. Herb-dominated vegetation of slopes irrigated by melt waters is also finely developed.

Springs

Springs are generally dominated by the liverwort *Anthelia julacea* or the moss *Philontis fontana* but at the highest altitudes, where snow lies the longest and the irrigating waters from the snow beds are the coldest, the spring-heads are dominated by spongy carpets of the moss *Pohlia wahlenbergii* var. *glacialis*. These communities are the habitat of a number of rare species of vascular plant and bryophyte.

Base-rich flushes at high altitudes

Due to the restricted distribution of suitable rocks, base-rich flushes are not widespread in the Cairngorms area but are well developed in Glen Feshie where they support a number of arctic-alpine plants.

High-altitude blanket bog

Blanket bog is found at a range of altitudes. At over 900m, Moine Mhor, above Glen Feshie, probably has the largest extent of high-altitude blanket mire in Britain, set amongst snow-bed grassland and associated sedge communities.

Scree and rocks

The site has extensive areas of granitic rock outcrops and screes at a range of altitudes. Of particular interest is the flora of high-altitude screes in the snowy corries, with parsley fern *Cryptogramma crista* and alpine lady-fern *Athyrium distentifolium*.

Woodland

Native pinewood is the most local of all major forest types in Britain. Those on the lower slopes of the Cairngorms, in Strathspey and on Deeside, are the remnants of a once-continuous tract of Caledonian pine woodland that covered much of the eastern Highlands. Those in Strathspey are more extensive than the remnants of the Forest of Mar on Deeside, and form part of one of the most extensive areas of native woodland still existing in Britain.

The pine woodland within the Cairngorms SSSI shows interesting transitions to a wide range of other habitats, locally including bog woodland and subalpine scrub and heath. The upper limits of the forest are mostly artificially depressed but locally extend to over 450 m. An exceptional, apparently natural altitudinal limit is still evident at 640 m on Creag Fhiachlach, where there is stunted growth of pine admixed with juniper of a similar stature.

Lochs

Among the Cairngorm lochs are the highest standing water bodies in Britain. Fringed with ice-polished boulders, these high altitude lochs are arctic/alpine in character, suffering a harsh climate, with continuous ice cover from December to May in most winters, and with very low levels of nutrients. This low fertility leads to a low diversity of flora and fauna, mainly of phytoplankton plus a few zooplankton and invertebrates, in the absence of aquatic plants (macrophytes), or fish.

Lochs Avon and Einich are examples of larger glacial trough lochs and enjoy more sheltered conditions. The occurrence of finer sediments allows the limited establishment of higher plants such as shore-weed *Littorella uniflora*. Several species of fish are also found, including Atlantic salmon, trout and Arctic charr *Salvelinus alpinus*.

Lower down, forest pools and more nutrient-rich lochs such as Loch an Eilean and Loch Gamhna add to the diversity of freshwater habitats within the site.

Plants

The site, part of the richest area for acid-tolerant montane plants in Britain, is nationally important for its assemblages of vascular plants, bryophytes and lichens, including a number of species which are very rare or unknown elsewhere in Britain.

The Cairngorms' montane vascular plants include nationally rare species such as the oblong woodsia fern *Woodsia ilvensis*, Highland saxifrage *Saxifraga rivularis*, hare's-foot sedge *Carex lachenalii*, rock speedwell *Veronica fruticans*, wavy meadow grass *Poa flexuosa*, drooping woodrush *Luzula arcuata* and woolly willow *Salix lanata* and a large number of nationally scarce species.

Species strongly associated with the Cairngorms include the lichens *Cladonia trassii* and *C. maxima* (found in snow-beds), the lichen alpine sulphur-tresses *Alectoria ochroleuca* (on alpine heaths), the icy rock moss *Andreaea frigida* (melt water channels from late snow-beds), the moss *Hygrohypnum molle* and the liverwort *Gymnomitrium apiculatum* (both associated with meltwater streams). The native pinewood is also important for mosses and lichens with rare species such as *Buxbaumia viridis*, *Xerotrema megalospora* and *Pycnora xanthococca* on standing and fallen dead wood and *Bacidia vermifera* on birch, and with a well-developed Lobarion community on willows.

Notable and rare species of fungi include the arctic-alpines *Amanita nivalis*, *Cortinarius favrei* and *Cortinarius rufostratus*. The pinewoods of Inshriach and Rothiemurchus are important areas for stipitate hydroid 'tooth' fungi (*Bankera*, *Hydnellum*, *Phellodon* and *Sarcodon*).

Birds

The Cairngorms is of outstanding importance for its assemblage of breeding birds of woodland, moorland and mountain. This includes the best example of a montane bird community in Britain with many typical and rare species. Amongst these, the breeding populations of snow bunting and dotterel are particularly important. Ptarmigan, golden eagle, merlin, peregrine, golden plover, dunlin and purple sandpiper are also found. Woodland birds include characteristic pine woodland species such as Scottish crossbill, capercaillie and crested tit.

Invertebrates

The Cairngorms is nationally important for its assemblage of invertebrates, with the second highest number of Red Data Book species for any Scottish site including beetles, flies, spiders, butterflies and moths. These are found in a number of habitats, in particular in the pine woods and on the mountains. Several species are known only from these mountains, for example the fly *Wiedemannia simplex* and the spider *Lepthyphantes antroniensis*. Others restricted to areas of high ground include the flies *Rhamphomyia albosegmentata*, *Clinocera nivalis* and *Rhamphomyia hirtula*, the fungus gnats *Macrocera aterrima*, *M. zetterstedti* *Boletina groenlandica*, and the rove beetle *Eudectus whitei*. The northern dart *Xestia alpicola* is also found in the mountains, where it feed on crowberry.

NOTIFICATION HISTORY

First notified, under the 1949 Act: 1954.

Re-notified, under the 1981 Act: 8 January 1987.

Reviewed under the 2004 Act: 25 April 2013.

REMARKS

Measured area of site corrected (from 29161.9 ha).

The Cairngorms SSSI is designated as part of the Cairngorms Special Area of Conservation (SAC) for the European habitats and species listed below and as part of the Cairngorms Special Protection Area (SPA) and Cairngorms Massif SPA for the birds listed below. Those highlighted by an asterisk are most relevant to the area of this SSSI.

Habitat: Acid peat-stained lakes and ponds*
Acidic scree*
Alpine and subalpine heaths*
Blanket bog*
Bog woodland
Caledonian forest*
Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels*
Dry grasslands and scrublands on chalk or limestone
Dry heaths*
Hard-water springs depositing lime
High-altitude plant communities associated with areas of water seepage*
Juniper on heaths or calcareous grasslands*
Montane acid grasslands*
Mountain willow scrub*
Plants in crevices on acid rocks*
Plants in crevices on base-rich rocks*
Very wet mires often identified by an unstable `quaking` surface
Species-rich grassland with mat-grass in upland areas*
Tall herb communities*
Wet heathland with cross-leaved heath*

Species: Green shield-moss *Buxbaumia viridis*
Otter *Lutra lutra**

Birds: Dotterel *Charadrius morinellus**, breeding
Golden eagle *Aquila chrysaetos**, breeding
Merlin *Falco columbarius**, breeding
Peregrine *Falco peregrinus**, breeding
Scottish crossbill *Loxia scotica**, breeding
Capercaillie *Tetrao urogallus**, breeding
Osprey *Pandion haliaetus*, breeding

Parts of Cairngorms SSSI are also designated part of River Spey SAC designated for the following European species. Those highlighted by an asterisk are most relevant to the area of this SSSI.

Species: Atlantic salmon *Salmo salar**
Freshwater pearl mussel *Margaritifera margaritifera*
Otter *Lutra lutra**
Sea lamprey *Petromyzon marinus*

Parts of Cairngorms SSSI are also part of River Dee SAC designated for the following European species. Those highlighted by an asterisk are most relevant to the area of this SSSI.

Species: Atlantic salmon *Salmo salar**
Freshwater pearl mussel *Margaritifera margaritifera*
Otter *Lutra lutra**

//;