CITATION

BEN MORE ASSYNT
SITE OF SPECIAL SCIENTIFIC INTEREST

Highland (Sutherland)

Site code: 191

NATIONAL GRID REFERENCE: NC 300185

OS 1:50,000 SHEET NO: Landranger Series 15
1:25,000 SHEET NO: Explorer Series 439, 440, 442

AREA: 8835.9 hectares

NOTIFIED NATURAL FEATURES

Geological:	**Structural and metamorphic geology:**	**Moine**
	Igneous petrology:	**Caledonian igneous**
	Geomorphology:	**Caves**
		Karst
	Quaternary geology and geomorphology:	**Quaternary of Scotland**
	Palaeontology:	**Pleistocene vertebrata**
Biological:	**Upland habitats:**	**Upland assemblage**
	Freshwater habitats:	**Oligotrophic river/stream**
		Mesotrophic loch
	Vascular plants:	**Vascular plant assemblage**

DESCRIPTION

Ben More Assynt Site of Special Scientific Interest (SSSI) is located in Sutherland, approximately 16km east of Lochinver. The site has been notified for its nationally important geology, upland plant communities and freshwater habitats.

Moine (geology)

The western edge of the Moine Thrust Belt can be seen in Cambrian limestone rocks at Stronchrubie Cliff, just south of Inchnadamph. Stronchrubie Cliff shows the lowest fracture in the Moine Thrust Belt, known as the Sole Thrust. Above this is a series of steeply inclined minor thrusts which form a stack of rock 'slices' known as an 'imbricate' structure. A thrust plane is superbly exposed at the Traligill Burn 1.5km to the east. The rocks in these two places show how the overall westward thrusting involved complex stacking of rocks at a local scale.

The Ben More Thrust, in the middle of the Moine Thrust Belt, is clearly exposed on the southern ridge of Conival and on either side of Strath Oykel. Spectacular folds visible in the quartzite cliffs of Na Tuadhan show how these rocks buckled when forced over the Ben More Thrust. Relationships between the folds and fractures help in understanding the prolonged and complex history of the Moine Thrust Belt.

Caledonian igneous (geology)

The variety of steeply inclined dykes and shallow-angled sills on this site are important in establishing the sequence of events that formed the Moine Thrust Belt. Outcrops of these igneous rocks can be found on the slopes of Cnoc an Droighinn, where hornblende porphyrite dykes and sills have been cut by the Glencoul Thrust. In contrast, dykes and

sills made of grorudite are only found in rocks above the Glencoul Thrust. Sills found on the slopes of Luban Croma, including the unique 'Breabag porphyrite', occur only between the Sole Thrust and the Ben More Thrust. A 20m-thick sill of vogesite in the lower Allt nan Uamh valley is another key outcrop that helps to establish the order of complex thrust movements. Rocks from the 10km^2 Loch Ailsh Intrusion are exposed in upper Glen Oykel and these are cut by a grorudite dyke. There is an excellent outcrop of jumbled blocks of Cambrian limestone below Carn a' Mhiodair in Glen Oykel. These rocks represent the explosive activity of a volcanic vent. Together, these outcrops of igneous rock show how both thrusting and intrusions were involved in building the Caledonian mountains and allow interpretation of the order in which the various thrusts and intrusions occurred.

Karst (geology)
The area round the Traligill River contains Scotland's finest karst landscape. Karst landscapes are produced when water erodes easily dissolved rock such as the Durness dolomite (a type of limestone that is rich in magnesium) that is found here. The site has many of the key features of a karst landscape including dry valleys and sinkholes where watercourses vanish underground, limestone pavements and caves.

Caves (geology)
The cave systems on this site are the most extensive in Scotland. The sand and gravel deposits and calcite formations, such as stalagmites, within the caves provide valuable records of past conditions. Laboratory dating of the calcites indicates that the higher caves developed several hundred thousand years ago. Caves then developed at lower levels as glacial ice repeatedly cut deeper into the valley floor, allowing water to form deeper underground passages.

Quaternary of Scotland (sediments within caves)
Three caves at the Creag nan Uamh outcrop, known as the 'Bone Caves', have been partly filled by layers of silt, sand and gravel. These sediments are nationally important because mammal bones within them allow the layers of sediment to be dated to the last 125,000 years. The environmental record of this period can then be determined from the dated layers of sediment.

Pleistocene vertebrata (animal bones)
Animal bones have been found within the layers of sediment in the Bone Caves. This is the most diverse and best dated record of the animals that lived in Scotland during and immediately after the last Ice Age. The bones of wolf, arctic fox, brown bear, northern lynx, polar bear, reindeer, badger, common scoter, long-tailed duck and puffin have been found here. Their position within the sequence of sediments gives an opportunity to date the advance and retreat of the ice sheets in this area during the last 45,000 years. In particular, there is detailed evidence that sub-arctic mammals were present soon after the last ice sheets melted, about 10,000 years ago.

Upland assemblage (upland habitats)
The site includes a range of upland habitats. The higher parts of the site have one of the most extensive areas in the northern highlands of Alpine moss heath and associated vegetation. Three types of calcareous grassland are found on base-rich rocks: Dryas heath, subalpine calcareous grassland and Alpine calcareous grassland. These are especially rich in montane species. The montane willow scrub habitat near Inchnadamph has the largest colony of the nationally scarce whortle-leaved willow *Salix myrsinites* in

Britain. Areas of Lewisian gneiss on Ben More Assynt have good examples of tall herb ledge plant communities.

The spring-head rill and flush component of the upland assemblage includes petrifying springs, where tufa forms in moss-dominated vegetation. The best examples in Scotland are found near Inchnadamph. Alkaline fen, another base-rich vegetation type, is found here and elsewhere on the site. The site has one of the few extensive examples of limestone pavement in Scotland. This supports a diverse montane flora due to its relatively high altitude.

Oligotrophic river/stream (low nutrient river)
The River Traligill is an example of an oligotrophic river (a river with clear water that is low in nutrients). These are unusual in northwest Scotland because most rivers in this area flow through areas covered by peat, which stains the water brown. Typical species include the lichens *Verrucaria aquatilis* and *V. praetermissa* and mosses such as western brook-moss *Hygrohypnum eugyrium*, rusty feather-moss *Sciuro-hypnum plumosum*, greater water-moss *Fontinalis antipyretica*, long-beaked water feather-moss Rhynchostegium *riparioides* and river grimmia *Schistidium rivulare*. Flowering plants such as water blinks *Montia fontana* and the nationally scarce alpine rush *Juncus alpinoarticulatus* also grow in the stream. A diverse range of plants are found amongst the mosses on the banks of the stream including yellow mountain saxifrage *Saxifraga aizoides*, greater bird's-foot-trefoil *Lotus pedunculatus* and common pearlwort *Sagina procumbens*.

Mesotrophic loch (loch with moderate level of nutrients)
Loch Mhaolach-coire is small, shallow loch with a moderate level of nutrients and peat-stained water. It supports plant species that are more typically found in nutrient-rich lochs such as delicate stonewort *Chara virgata* (var. *annulata*), growing alongside species that are usually found in nutrient-poor water such as shoreweed *Littorella uniflora*. The nationally rare long-stalked pondweed *Potamogeton praelongus* grows here, together with perfoliate pondweed *P. perfoliatus* and broadleaved pondweed *P. natans* and the alga *Nitella flexilis*.

Vascular plant assemblage
Four nationally rare plants - Arctic sandwort *Arenaria norvegica*, the eyebright *Euphrasia ostenfeldii*, spring gentian *Gentiana verna* and curved woodrush *Luzula arcuata* - and 22 nationally scarce plant species are found on this site.

NOTIFICATION HISTORY

Previously notified under the 1949 Act as Allt nan Uamh SSSI, Ben More Assynt SSSI, Loch Ailsh Complex SSSI and Traligill SSSI: 1963

Re-notified under the 1949 Act as Ben More Assynt and Breabag SSSI: 1974 (incorporating the four SSSIs previously notified in 1963)

Previously notified under the 1949 Act as Inchnadamph NNR and SSSI: 1956 and 1975

Re-notified under the 1981 Act as Ben More Assynt SSSI, incorporating Inchnadamph NNR and SSSI, and with a 216ha increase in area: 24 March 1987

Notification reviewed under the 2004 Act: 31 March 2011

REMARKS

Measured area of site corrected (from 9118.75 ha).

Part of Ben More Assynt SSSI is also designated as the Inchnadamph Special Area of Conservation (SAC) for the European habitats listed below.

Habitats	:	Alpine and subalpine calcareous grasslands
	:	Base-rich fens
	:	Base-rich scree
	:	Dry heaths
	:	Hard-water springs depositing lime
	:	Limestone pavements
	:	Mountain willow scrub
	:	Plants in crevices on base-rich rocks

Parts of the Ben More Assynt SSSI are part of the River Oykel SAC designated for the European species listed below.

Species	:	Atlantic salmon (*Salmo salar*)
	:	Freshwater pearl mussel (*Margaritifera margaritifera*)