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Geodiversity of Applecross:

Statement of Significance and Identification of Opportunities

Geology and Landscape (Northern Britain) Programme

Report OR/07/020

BRITISH GEOLOGICAL SURVEY

GEOLOGY AND LANDSCAPE (NORTHERN BRITAIN) PROGRAMME

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Geodiversity of Applecross:
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Front cover

View north-east along the shoreline of Applecross village. Jurassic limestone in the foreground; Applecross Formation sandstones form the glaciated hill of Beinn a'Chlachain in the distance.

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1 Introduction

This report has been prepared for the Applecross Estate Trust, in order to provide a summary of the geological history of Applecross, to identify the key geodiversity features, and to suggest opportunities for geological interpretation.

The geology of Applecross can be divided into four main elements. These are: the Lewisian gneisses, the oldest rocks in Britain, which are exposed on the peninsula's north coast; the Torridon Group sandstones, which make up the hills that form the main part of the Applecross peninsula; the younger sedimentary rocks around Applecross village itself; and the glacial features formed during the last Ice Age. Each of these four elements represents a different part of the Earth's history, and they provide a fascinating record of the changing environment and land surface of western Scotland.

The first section of this report describes the geological history of Applecross in more detail, and emphasises some of the important events. The second section discusses the relationship between geology and the landscape of Applecross, and focuses on some areas and localities that are of particular importance in terms of their geological interest. Possible interpretation opportunities and suggestions for geotourism facilities are given in the third section.

2 The Geological History of Applecross

The oldest rocks on the Applecross Peninsula are the Lewisian gneisses, which are exposed along the peninsula's north coast, around Kenmore and Ardheslaig. Recent dating work, involving separation of particular minerals from within the gneisses and very careful measurement of radioactive elements with known decay rates in those minerals, has dated gneisses from the Loch Torridon area at more than 3,100 million years old – making them the oldest known rocks in Britain, and among the oldest rocks in Europe. Structures within these rocks record a long and complex history, which is extremely difficult for geologists to unravel.

The early part of the Earth's history – the Precambrian Era – has always proved difficult for geologists to understand in detail. By 3,100 million years ago, it is thought that the processes of plate tectonics had begun to operate, and so continents moved slowly across the surface of the globe, colliding with each other to throw up mountain ranges (as with the present-day Himalaya) or splitting apart to produce new oceans (as in the present-day Red Sea). The surface of the Earth would have looked very different to today; the only life-forms were simple clusters of cells floating in the oceans, and there was little or no oxygen in the atmosphere. The oldest parts of the Applecross Lewisian gneisses were formed at depths of several kilometres in the roots of an ancient continent, where magma (molten rock) slowly cooled, crystallised and solidified to form igneous rocks similar to granites.

These rocks remained within that ancient continent for hundreds of millions of years, until eventually two continents collided, burying the igneous rocks at depth beneath a mountain range. The rocks were buried so deeply that they were heated up significantly, and these higher temperatures led to the formation of new minerals in the rocks through the process of metamorphism. Growth of new minerals under pressure meant that the rocks developed a banded appearance – the characteristic feature of the metamorphic rocks known as gneisses. At a later stage, further compression of these rocks at great depths meant that the banding became crumpled and folded.

Around 2400 million years ago, a change in the forces acting on this piece of continental crust meant that it began to stretch and rift apart, and magma from deep within the Earth was forced up cracks in the crust. This magma eventually cooled in those cracks, forming dykes – narrow, near-vertical sheets of dark-coloured rock. Similar dykes occur in the Lewisian gneisses throughout the North-west Highlands, and are known as the Scourie Dykes. The dykes would once have cut straight across the banding in the gneisses, but that relationship has been destroyed by another episode of continental collision that occurred around 1800 million years ago, once again burying the gneisses and creating new structures within the rocks. It was at this time that the gneisses of Applecross became joined to other gneisses in the Gairloch area. Even although the rocks of the two areas had substantially different histories up until 1800 million years ago, those histories are not easy to unravel, and so geologists have grouped all the Precambrian gneisses of Scotland's north-west coast, and of the Outer Hebrides, together under the name of the Lewisian Gneiss Complex.

After the last continental collision, the Lewisian gneisses of Applecross lay within the interior of a continent. As rocks above them were eroded, they were uplifted, until eventually they were exposed at the Earth's surface. By around 1000 million years ago, the segment of crust that would become Scotland was part of a vast supercontinent, and lay much further south than it does now, at about the same latitude as modern-day Athens. The landscape of Applecross would have been characterised by low, rocky hills of Lewisian gneiss up to 300 m high, separated by irregular valleys. There were no land plants, and the valleys were largely dry, although some contained shallow lakes in which layers of mud were deposited. Angular fragments of rock and grains of sand tumbled down the slopes and accumulated in the valleys, and because they were exposed to the air, small particles of iron oxide in the sand rusted to a reddish colour. This mixture of sand and rock fragments became cemented together to form rocks called breccias. The breccias and lake deposits together make up a rock unit called the Diabaig Formation. This description of the Applecross landscape 1000 million years ago is so clear because, remarkably, that landscape can be seen almost unchanged in northern Applecross today, between Ardheslaig and Kenmore, as described in Section 3.

Eventually, the Lewisian gneiss land surface was buried by the deposits of large braided rivers flowing from a mountain belt, many hundreds of miles to the west. These rivers carried sand and pebbles, and because there was no vegetation to stabilise the land surface, they were vulnerable to flash floods when huge amounts of debris could be carried downstream and then deposited. The sand and pebbles built up over time into thick layers of sediment that covered a wide area, and the material in the lower layers was compressed, turning it into sandstone. The sandstones contain many features that provide us with information about the environment in which they were deposited: for example, cross-bedding (a series of layers at angles to each other) represents the fossilised surfaces of small dunes on the riverbed. Because dunes typically have gentle slopes facing upstream, and steeper slopes facing downstream, these fossilised dunes allow us to work out in what direction the rivers flowed.

The red sandstones accumulated to a thickness of several kilometres. Today, they form many of the mountains of the North-west Highlands, including all the high ground of the Applecross Peninsula. Victorian geologists named this thick pile of red sandstones the 'Torridonian' – the modern, formal name is the Torridon Group. The lower part of this sequence, which has abundant pebbly layers, is known as the Applecross Formation after the area in which it is best exposed. This formation was probably deposited over a relatively short period of geological time, perhaps a few million years. Above the Applecross Formation lies a thick unit of similar red sandstones which lack pebbly layers – this is known as the Aultbea Formation, and is exposed in southern Applecross.

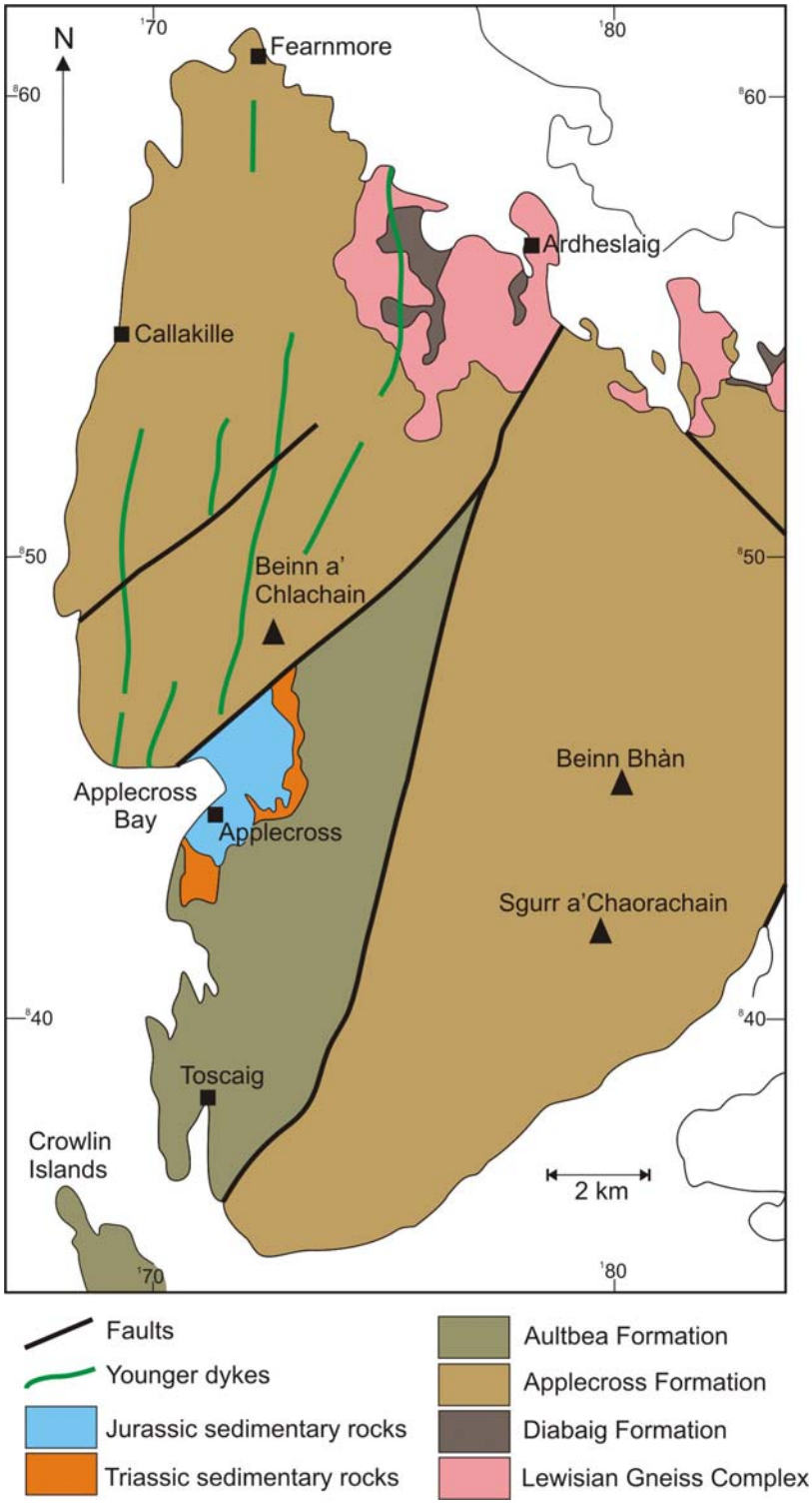
Outcrops of Applecross Formation sandstone north of Cuaig, showing cross-bedding

After deposition of the red sandstones, the Applecross area remained within the supercontinent, until continental rifting and the formation of a new ocean occurred around 600 million years ago. Northwest Scotland lay on the edge of this ocean, and pure white quartz sand beaches formed here, extending for hundreds of miles along the continental margin. These sands built up to form units of a rock type called quartzite, which today forms the gleaming white caps of nearby mountains such as Beinn Damh. The quartzites might well have once capped the Applecross hills, but have since been eroded away. Gradually, the sea-level rose along the continental margin, so that deeper water muds and limey deposits were laid down onto the quartzites. These deposits formed mudstones and limestones that can be seen today on the roadside just east of the River Kishorn.

Around 430 million years ago, that ocean closed, leading to a mountain-building event known as the Caledonian Orogeny. Beneath the mountains, the rocks were squeezed and compressed until layers of rock were forced to move over each other, or were folded and crumpled. A short distance to the east of Applecross, around Kishorn, it is possible to see where older rocks have been forced over younger, in a broad belt of complex geology known as the Moine Thrust Zone. However, the rocks of the Applecross peninsula were just far enough to the west to escape this deformation.

For over a hundred million years, the Applecross area remained on the edge of an upland area that comprised most of the present-day Highlands, and so no more rocks were formed here. However, the Minch was always an area of lower relief, between the areas of high ground formed by the Highlands and the Outer Hebrides. During the Triassic period (about 250 to 205 million years ago), streams flowing off this high ground carried sand and pebbles down into the Minch, which at the time was a broad valley lying above sea level. As the valley began to fill up with sediment, the streams spread across the Minch, depositing sand and mud on the edges of the Highlands. Small areas of these Triassic sedimentary rocks are exposed to the south and east of Applecross village.

During the Jurassic period, around 205 to 140 million years ago, the Minch basin gradually subsided, and was flooded by warm, shallow seas. The lime-rich sediments that were deposited on the seafloor contained fossils, which show that these seas were teeming with life, including corals, oysters, coiled ammonites and bullet-like belemnites, and even plesiosaurs. Fossil footprints, found on Skye, show that dinosaurs roamed the coastal fringes. The Jurassic limestones of the Minch are exposed around Applecross village, with their most prominent exposures being the coastal pavements south of the Applecross Inn. At a much later stage in the history of Applecross, they provided the raw material for the village's lime kilns.



Simplified geological map of the Applecross peninsula, showing the bedrock geology

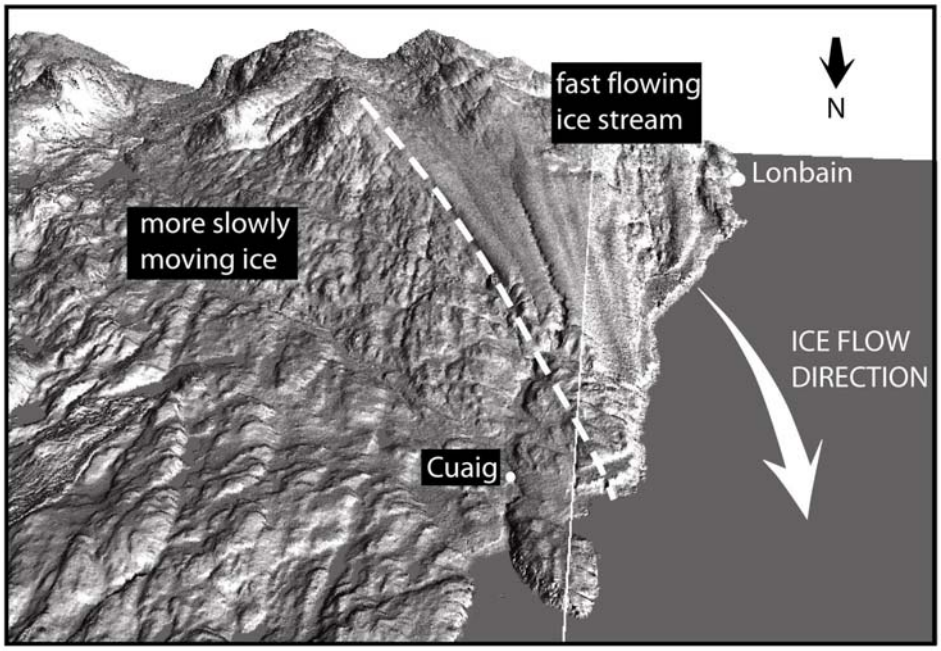
Sea level rose and fell in the Minch basin, but it remained essentially low-lying. Gradually, the continental crust in this area began to be stretched and thinned – the process that would eventually lead to the opening of the North Atlantic. Hot magma rising up from deep in the Earth impinged on this thinned crust until eventually it broke through, and about 60 million years ago, volcanoes developed along the west coast of Scotland. The most northerly of these, and the closest to Applecross, was on the Isle of Skye. Although much of North Skye is made up of lavas erupted from this volcano, they did not extend eastwards to Applecross. Beneath the Earth's surface, though, hot, fluid magmas flowed along crack systems, extending great distances out from the central volcanoes. These magmas eventually cooled and crystallised in the cracks, forming vertical sheets of igneous rock (dykes), each up to 2 m in thickness. Many of these dykes occur across the hills of Applecross, cutting through the sandstones.

By 55 million years ago, volcanic activity in Western Scotland had ceased, as the focus of North Atlantic opening jumped to the west of the Outer Hebrides. Today, similar volcanic activity continues on Iceland. As the ocean opened, the ocean margins were uplifted, increasing erosion rates across much of Scotland, so that the land surface was worn down towards its present level. The final sculpting of the landscape came in the last 2.6 million years of history – the Ice Age.

During this time northern Europe has been subjected to a series of climatic cycles, represented by alternating glacial and interglacial conditions. The glacial episodes are characterised by cold, unstable climate, and growth of large ice-sheets in the high and mid-latitudes. In contrast, interglacials (such as the current Holocene period which began approximately 11,500 years ago) experience a warmer, more stable climate, with more restricted ice cover.

Evidence for the earliest glaciation at mid-latitudes comes from deep-sea cores from the floor of the North Atlantic. Layers of debris dropped by icebergs indicate that calving glacier fronts were present around the north Atlantic by 2.4 million years ago. Although no direct evidence has been found for glaciation of Scotland at that time, it remains possible that ice did build up, at least in highland areas. The first direct evidence for western Scotland being ice-covered comes from glacial sediments offshore, demonstrating that an extensive ice-sheet covered Scotland about 440,000 years ago, terminating at the margin of the continental shelf. The entire Applecross peninsula was probably overwhelmed by ice at that time.

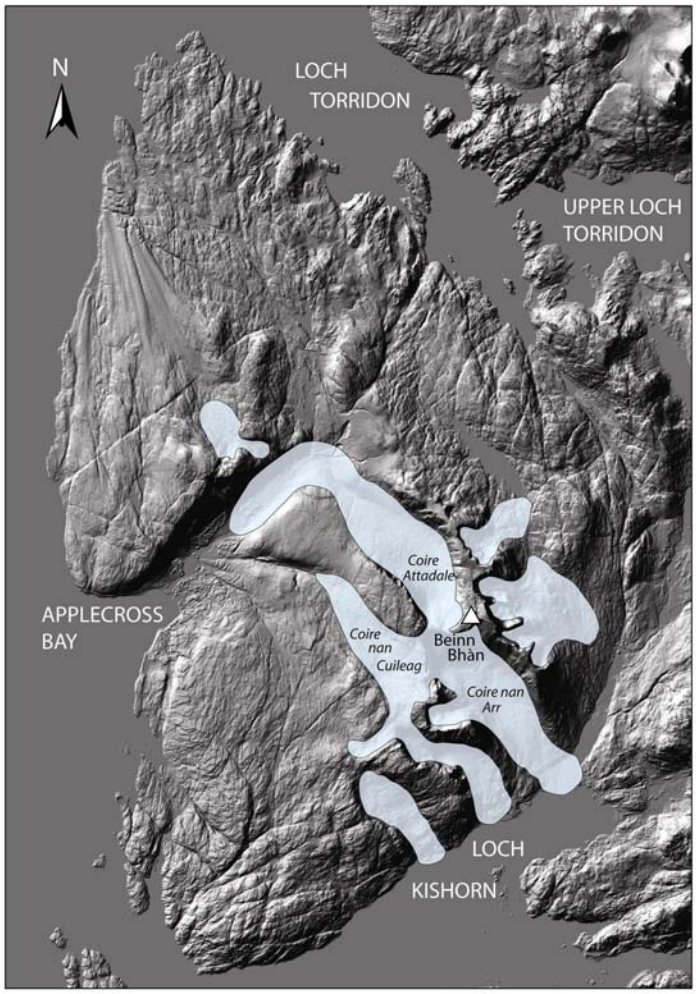
The most recent major glaciation in Scotland (known as the Main Late Devensian) reached its maximum extent about 22,000 years ago. The upper surface of the Late Devensian ice sheet in Applecross reached at least 850 m over high ground – only the highest summit, Beinn Bhàn, may have protruded above the ice. Striations (small scratches in rock formed by subglacial abrasion) indicate that ice over much of Applecross flowed in a north-westerly direction towards the Minch. Recent evidence has revealed that a major, fast flowing ice stream operated in the Minch during late stages of the Main Late Devensian (much like those operating today in Antarctica). The sharp transitional zone that separated the fast flowing ice stream from more slowly moving inland ice is spectarularly preserved in the landscape of north-western Applecross.



Oblique hill-shaded digital surface model looking southwards down the west coast of Applecross. Note the sharp transition between land affected by the Minch Ice stream and land affected by more slowly moving ice. Surface model built from Intermap Technologies NEXTMap topographic data.

Retreat of Main Late Devensian ice was punctuated by at least one major glacier readvance, known as the 'Wester Ross Readvance'. This event is documented in northern Applecross by a change in dominant striation direction and by a conspicuous bouldery ridge to the south of Loch Gaineamhach, which formed as a lateral moraine at the margin of a large glacier occupying Loch Torridon. New dating work, based on the length of time fresh boulder surfaces have been exposed to cosmic rays, has shown that the Wester Ross Readvance occurred around 16,300 years ago.

Climatic warming had melted much of the ice cover over Applecross by about 14,000 years ago, however, it is possible that some small corrie glaciers may have persisted in some high altitude and north facing locations. A small icefield re-developed over the mountains of Applecross during a subsequent, short-lived cold spell 12,500 to 11,500 years ago, known as the Loch Lomond Stadial. During this period low temperatures would have promoted freeze-thaw activity on exposed ground, shattering rocks and giving rise to down-slope creep of soil and scree.



Maximum extent of Applecross icefield and surrounding glaciers during the Loch Lomond Stadial 12,500 to 11,500 years ago. Hill-shaded digital surface model built from Intermap Technologies NEXTMap topographic data.

During these glacial periods, the weight of ice over Scotland depressed the earth's crust beneath it (a process known as isostatic depression). At the same time global sea-levels were lower than today, due to a significant volume of ocean water being locked up in continental ice sheets. However, when large parts of the ice sheets melted, releasing water back into the oceans, sea-level rapidly rose. The depressed land took longer to rebound following ice-removal, allowing the sea to reach higher levels relative to today. Continued crustal rebound has now elevated the shorelines formed during these deglacial periods, so that today raised beach deposits and landforms can be traced round much of Scotland's coastline. This interplay between crustal

rebound and global sea-level has left a series of remarkably well-preserved raised shorelines along the western coast of Applecross.

Preserved pollen in peat bogs and lake sediments show that during and immediately following final glacier retreat, the wider area around Applecross was dominated by an open grassland environment, similar to parts of northern Norway today. Taxa such as crowberry became established, followed by juniper, birch and hazel. Expansion of pine woodland occurred between about 8000 and 5000 years ago, followed by a significant decline shortly after. An expansion of plants of wet blanket-mires occurred at that time suggesting that the pine decline in northwest Scotland was associated with the climate becoming wetter.

3 Geology and Landscape of Applecross

The landscape of Applecross - from the wall of mountains that separates the peninsula from the mainland, to the sheltered valleys that have allowed native woodland to survive - is truly underpinned by its geology. This section will describe the link between geology and specific elements of the Applecross landscape in more detail.

3.1 ARDHESLAIG TO KENMORE [NG 785 550 TO NG 750 580]

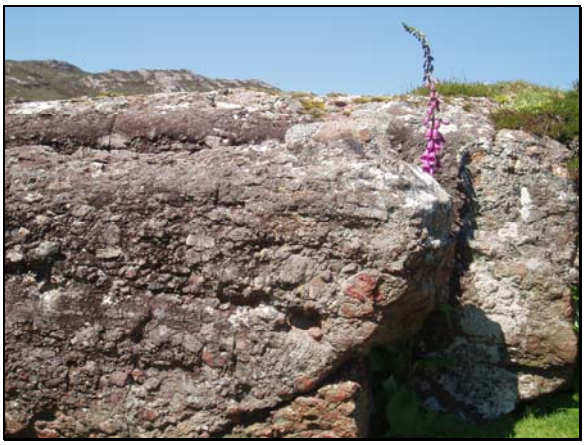
As described in Section 2, around 1000 million years ago, the Lewisian gneisses had been eroded into a landscape of rocky hills and valleys, with piles of rock debris building up on the valley floors. This landscape was eventually buried by the thick pile of sand that became the sandstones of the Applecross Formation. Over time, those sandstones have once again been eroded away, whilst the harder, underlying gneisses have resisted erosion, and so the 1000 million year old hills and valleys have once again been exposed. We know that we are looking at such an ancient landscape, because the breccias that formed in the valleys are still there today.

Driving westwards along the north-east coast of the Applecross peninsula takes the visitor across this ancient landscape, which is particularly dramatically displayed around the head of Loch Beag [NG 780 560]. As the turn-off for Ardheslaig is approached, a ridge of Lewisian gneiss rises up to the left of the road. Just beyond the junction, the road curves round that ridge, and the view in front is dominated by the rocky hill of A'Bhaintir [NG 768 564], which is also composed of Lewisian gneiss. However, in the foreground lie flat, reddish-coloured rock platforms, and a closer look shows that these are made up of many angular rock fragments surrounded by areas of red sandstone. These are breccias, formed by accumulation of rock debris in the valley 1000 million years ago, and their presence proves that these hills and valleys had much the same shape at that time as they do now. The breccias belong to a unit that is known as the Diabaig Formation, as similar rocks occur around Diabaig on the north side of Loch Torridon. Rocks of the Diabaig Formation also occur in the valley on the west side of the A'Bhaintir ridge.

These ancient hills and valleys can be appreciated from the road, but the good path that winds from Ardheslaig up onto the A'Bhaintir ridge and then down to Kenmore provides stunning views up Upper Loch Torridon on a clear day, as well as the best opportunity to see the rocks. It not only crosses the breccias in the base of the valley, but also runs past many of the main features of the Lewisian gneisses, such as examples of Scourie Dykes. This path would certainly benefit from some interpretation.

The rolling topography, created by these 1000 million year-old hills and valleys, also provides sheltered areas in which native woodland has been protected from the worst ravages of Highland weather. For this reason, the preservation of beautiful native woodland of northern Applecross is directly linked to the underlying geology.

View across flat pavements of breccia, hill of Lewisian gneiss in the background, near Ardheslaig



Close-up of breccia outcrop, showing that it is made up of many separate angular rock fragments

3.2 NORTH-WESTERN APPLECROSS [NG 730 605 TO NG 685 530]

The north-western tip of the Applecross peninsula feels subtly different to the rest of the area, with rather more subdued topography. However, the rocks here are the same Applecross Formation sandstones that form the major hills to the south. These rocks are well exposed around Fearnmore [NG 725 606], with many of the outcrops containing excellent examples of sedimentary structures such as cross-bedding. Further south, though, the northern and western slopes of An Garbh-mheall [NG 726 529] have relatively few rock outcrops. Here, bedrock is masked by sediment deposited beneath glacier ice, known as 'till'. The till in north-western Applecross was moulded into broad streamlined ridges as ice flowing over the peninsula became incorporated into the fast flowing Minch Ice Stream. The ridges can still be seen today to the east of Callakille [NG 695 545].

A 2 km long chain of bouldery mounds which formed when sediment was deposited at the margin of a large glacier occupying Loch Torridon, can be seen to the north-west of Croic bheinn [NG 755 525]. This moraine ridge provides some of the best-preserved landform evidence for a significant glacier re-growth that occurred approximately 16,000 years ago, known as the Wester Ross Readvance.

A well-developed former shoreline can be traced between Cuaig and Lonbain along the coast of north-western Applecross [NG 705 580 to NG 685 530]. This platform, occurring at slightly less than 30 m above modern-day sea-level, was cut into the till at a time when sea-level was higher than today. The shoreline also exists further to the north, inside the former margin of the glacier that occupied Loch Torridon during the Wester Ross Readvance, indicating that the high shoreline was cut after that event.

Looking south along the raised shoreline at Callakille

View up the Allt an t-Strathan, showing smooth till-covered slopes with many boulders but no rock outcrop.

3.3 THE APPLECROSS HILLS [NG 700 500 TO NG 830 400]

The central part of the Applecross peninsula is dominated by hills over 500 m in height, including Beinn Bhàn, Sgurr a' Chaorachain, Meall Gorm and Beinn a'Chlachain. These hills are all made up of red sandstones of the Applecross Formation. These red sandstones form thick layers (or beds), which would have originally been laid down as flat sheets of sand and pebbles on the wide floodplain of a braided river. However, in the many hundreds of millions of years since these rocks formed, they have been tilted by large-scale earth movements, so that now the layers dip gently (at around 10º) towards the west. Erosion typically focuses parallel to these beds, so that the western sides of the hills have broad, gently dipping, layer-parallel slopes, whereas on the eastern sides steep cliffs cut across the layers. If erosion across the whole of Applecross had been uniform, then the whole peninsula would consist of a broad, gentle, western slope, reaching a high point above sheer eastern cliffs. However, of course, erosion has not been uniform. Faults, or fractures in the Earth's surface, provide zones of weakness along which erosion has focused – the best example in Applecross is the deep valley of the River Applecross. These zones were exploited first by rivers, but then later by glaciers, which sculpted the modern shapes of the Applecross hills.

The hills of Applecross were almost completely overwhelmed by the ice during the maximum stages of the Main Late Devensian glaciation. Only the summit of Beinn Bhàn [NG 804 450] may have protruded above the ice surface, like nunataks do today in Greenland. Beinn Bhàn's exposed summit was subjected to severe frost shattering while lower lying terrain was smoothed and moulded by ice.

During the later, short-lived Loch Lomond Stadial 12,500 to 11,500 years ago, the Applecross hills nourished an independent icefield. Numerous boulder-strewn mounds and ridges exist in the corries and valleys surrounding the peaks of Beinn Bhàn, Carn Dearg, Sgurr a' Chaorachain and Meall Gorm. These ridges formed at the margins of active glaciers as ice retreated up-valley. The glaciers on the south-eastern side of the Applecross plateau extended right down to the present shore of Loch Kishorn. In one case (the glacier nourished in Coire nan Arr), ice reached the eastern shore of Loch Kishorn, depositing blocks of sandstone as erratics on the limestone rock platform.

Following the retreat of Loch Lomond Stadial ice, the hills of Applecross were subjected to considerable slope activity as the landscape adjusted to non-glacial conditions. Loose glacial sediment that had been deposited on steep valley slopes and oversteepened rock slopes became unstable due to the removal of supporting glacier ice. Debris flows and rockslides occurred frequently during this 'paraglacial' period. Relict talus cones and scree slopes in the valleys of the Applecross hills are a reminder of this period of landscape adjustment.

Gently-dipping layers of Applecross Formation sandstone in the foreground are mirrored by the dipping layers on Beinn a'Chlachain beyond

View up the Russel Burn, with the corries of Sgurr a'Chaorachain on the left

3.4 APPLECROSS VILLAGE [NG 700 460 TO NG 720 400]

The area around Applecross Bay is geologically quite different from the rest of the peninsula, because it is here that the much younger, Triassic and Jurassic sedimentary rocks are exposed at the ground surface. Here, the older Aultbea Formation sandstones are only buried a few tens of metres beneath these younger rocks, but beneath the waters of the Minch the younger sedimentary sequences are much thicker. On land, the Triassic and Jurassic rocks are cut off to the north-west by the major fault that runs along the valley of the Applecross River – millions of years ago, displacement of rocks along this fault brought the older Applecross Formation rocks that form the hill of Beinn a'Chlachain to the same level as the younger rocks around Applecross village.

The Triassic rocks of Applecross are red in colour, much like the underlying rocks of the Applecross Formation; they consist of mudstones with some beds of pebbly conglomerate. They are poorly exposed on the hill above Loch a'Mhuillin [NG 713 432].

Of more interest are the Jurassic rocks, which are chiefly limestones with some mudstones and sandstones. A sloping pavement of pale grey limestone, which looks almost man-made, forms the foreshore to the south of the Applecross Inn [NG 710 444]. Fossils such as ammonites have been found in these exposures in the past. The limestones are also exposed in some of the streams behind the village, and were quarried in the past for use in the village's lime kiln.

A series of raised shorelines can be seen around Applecross Bay. These range from fragments of the highest shoreline at approximately 30 metres above sea-level (which may date to before the Main Late Devensian glaciation) to the lowest at approximately 3 metres above today's coastline. This lowest former shoreline probably relates to a Holocene sea-level high stand that occurred about 5000 years ago.

Jurassic limestones on the foreshore, Applecross village

Raised shoreline terraces, Applecross village

4 Opportunities for geological interpretation around Applecross

Most people come to Applecross to walk in the hills, to cycle the roads and tracks, or to drive across the spectacular Bealach nam Ba. Virtually all visitors will pass through Applecross village, which thus acts as a 'hub' for provision of information and interpretation. Outwith the village, there are few localities that really lend themselves to static interpretation – an obvious exception being the carpark at the top of the Bealach nam Ba. It is suggested that interpretation should be centred on a hub in the village, with information available there and also via the internet for walkers, cyclists and drivers.

4.1 INTERPRETIVE OPPORTUNITIES FOR APPLECROSS VILLAGE

At the current time, issues surrounding climate change are heavily publicised in the press, and will be at the forefront of many visitors' minds. The geological and landscape features of Applecross can provide a unique insight into how climates in Scotland have changed over many different timescales during the last 1000 million years. The rocks of the Torridon Group that make up much of the peninsula, together with the ancient landscape and breccias of the Diabaig Formation at Ardheslaig, provide evidence that Scotland was once a desert-like environment. The much younger Jurassic sedimentary rocks – which can be seen around the lime kilns or on the shore in Applecross village – record a time when temperatures in Scotland were warmer, and the shores were lapped by coral seas. Around 20,000 years ago, Applecross was largely covered by ice, which scoured out the spectacular valleys and corries of the Applecross hills, whilst a fast-flowing ice stream to the west shaped the streamlined glacial deposits in the area around Cuaig. The raised shorelines that can be seen on the west coast of Applecross provide a timely reminder of the threat of sea-level rise associated with the melting of global ice sheets.

This story could be interpreted through a centre in Applecross village, and also through other visitor material, including information about short walks around the village. BGS is developing a range of ways in which geology and landscape can be viewed in three dimensions, either digitally or in images such as that on p. 5, and this type of information could be used in interpretive material.

4.2 INTERPRETIVE OPPORTUNITIES FOR WALKERS, CYCLISTS AND DRIVERS

Many road cyclists and drivers will come to Applecross simply for the chance of crossing the Bealach nam Ba. They will stop in only a few places, and so static interpretive boards are unlikely to be useful. However, many will use the internet as a resource (e.g. http://www.undiscoveredscotland.co.uk/applecross/peninsula/index.html), and so a comprehensive website may prove the best way to provide information to this group.

Walkers, mountain bikers and climbers will also use the internet as a resource and this is an excellent way to get information across to these groups, but they are also more likely to pick up leaflets that are available in Applecross village. Popular routes that would benefit from geological interpretation would include:

- Walks around Applecross Bay, including particularly the lime kilns above the village.
- The route from Applecross to Kenmore (for both walkers and mountain bikers), which passes glacial features, Applecross Formation outcrops, and hills of Lewisian gneiss. A

return via the coast road would take in many glacial features, including the streamlined glacial deposits and the raised shorelines around Callakille.

- The hills of Beinn Bhàn and Sgurr a'Chaorachain, with their superb exposures of Applecross Formation sandstones and their glacially-carved corries and ridges.
- The path from Ardheslaig to Kenmore, which crosses an ancient landscape with hills of Lewisian gneiss and valleys filled with breccias. This area is also of interest for its woodland regeneration.
- Ardban and Coillegillie. White sand beaches and red sandstones of the Aultbea Formation.

5 Further Reading

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