Loch Glencoul

Information Sheet

Location: LOCH GLENCOUL
Conservation designations: UNESCO Global Geopark
Grid reference: NC 23518 32044
Address: IV27 4HW
Parking available: Yes. Layby, free of charge

Useful equipment:
- Camera
- Notebook
- Pencils
- Rubber

Relevance national curriculum:
eg. age group and topic

Rock types and geological processes observed: Gneiss, mylonitized Moine, quartzite and other Cambrian sediments
Geological structures: Ben More Thrust, Moine Thrust, unconformity of Cambrian Quartzite direct on to Lewisian Gneisss
Earth processes: eg. Unconformity formation, mountain building (specifically thrust faulting) and glacial erosion
Geological periods present: Precambrian (Archaean and Neoproterzoic) and Cambrian. Deformation during the Silurian.

Site specific hazards and risks:
- eg. Traffic
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Mitigation measures:
- Park in a designated area and do not leave layby
- At the Rock Stop geocentre park so passengers alight the vehicle on the verge not the road

Did you know: Our present day continental crust in areas of Scotland, the north of Ireland, Greenland and North America once formed part of a continent known as Laurentia. Rocks at Glencoul were once the coastal edge at the shore of an ocean called the Iapetus and began life as a white sandy beach. The beach sand was deposited on top of the Lewisian gneiss (unconformably) and is now the rock that we call Cambrian quartzite. Before it was deposited the Torridonian had been completely eroded.
Other sediments deposited along this continental margin are Moine rocks here and Lochaber Geopark and Marble Arch Caves Global Geopark, Dalradian rocks in Causeway Coast and Glens, Moine & Dalradian rocks in Geopark Shetland, Humber Zone in Cabox Aspiring Geopark.

Topics to cover before visit: Continental drift, plate tectonics, Orogenic (mountain building) processes including thrust faulting, erosion, metamorphic and sedimentary rocks

Keywords: Tectonic plates, continental drift, orogeny, Laurentia, Avalonia, Gneiss, Quartzite, metamorphic, sedimentary

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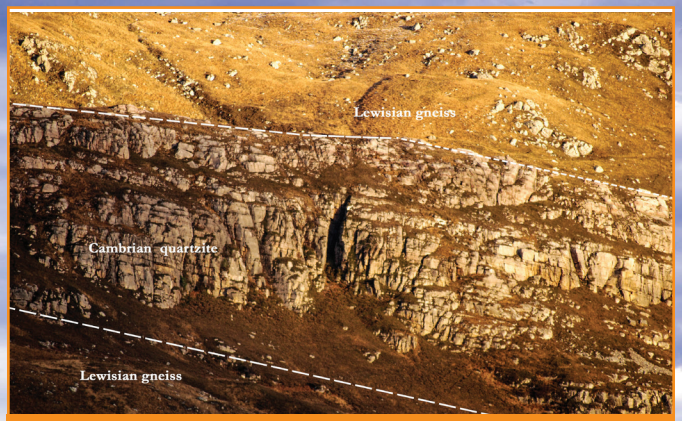
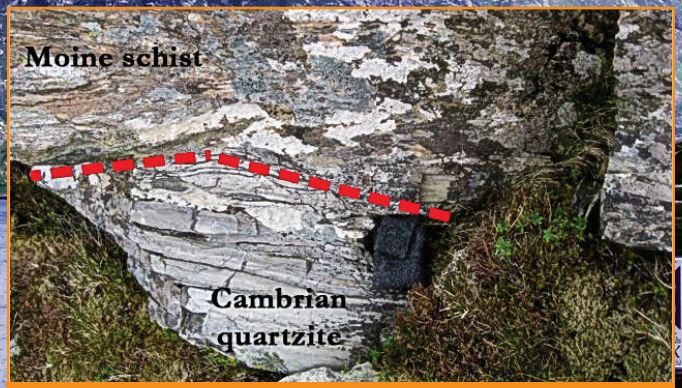
Beinn ard da loch – Across the loch there are layers in the hillside. The layers tilt downward to the right (east). Bottom to top: Gneiss, Quartzite, Gneiss.



Detail of the unconformity between the Lewisian Gneiss and the Cambrian Quartzite.

Imbricated Quartzite. This has developed below the Moine thrust. The roof of the overhang is along a fault forming part of the imbrication.

Stac of Glencoul – The most major thrust called the Moine Thrust passes through the Stac of Glencoul near the very top.



Contact between the Cambrian quartzite (below red line) and Moine Mylonite Schist (above red line). Near the top of the Stac of Glencoul.

Lewisian Gneiss thrust over Cambrian sediments. Note the green grass at the bottom of the hill where limestone is under the thrust.

Geological history*:
The bottom layer of Beinn ard da loch is Lewisian gneiss, this is the foundation of North West Highlands UNESCO Geopark stratigraphy. Torridonian sandstone should be found on top of this Lewisian gneiss but this was eroded away more than 500 million years ago before the Cambrian commenced, exposing the Lewisian gneiss again. Cambrian quartzite is the next layer you can see and was deposited in a shallow sea in the Cambrian. As the continents drifted together the Iapetus ocean began to close. In the Silurian a smaller continent called Avalonia collided with Laurentia. The force of the collision forced rocks hundreds of kilometres away to be thrust over one another. Lewisan gneiss basement was thrust over basal Cambrian quartzite. So, the next layer up the sequence across the loch is another layer of Lewisian Gneiss – it has been thrust there along what is called the Ben More Thrust. The collision was a very slow process (just 2.5cm per year) and so multiple thrust events can be observed. The Moine Thrust is slightly higher in the sequence and formed by the same processes and about the same time.