

Edinburgh Geological Society – Excursion Programme 2022



Excursion title: Eyemouth and Burnmouth Coast, Scottish Borders
Date & time: Saturday 4 June, 09:00 **Finish time:** 16.00
Leader(s): Alastair Robertson, Edinburgh University

<p>Excursion aims and description:</p>	<p>This excursion will consider the demise of the Iapetus Ocean and the birth of the Midland Valley, looking at the sedimentary, volcanic, structural and palaeontological setting of the Silurian/Devonian to early Carboniferous in south-east Scotland.</p> <p>We plan to study field evidence for the closure of the Iapetus ocean in world-significant outcrops just east of Eyemouth; they show that the ocean closed obliquely (i.e. with left-lateral transpression). We will also examine the aftermath of Iapetus closure which includes non-marine channelised river deposits and andesitic volcanics and tuffs. Additionally, we will see how the landscape developed into lagoonal and deltaic environments during the Devonian-Carboniferous transition. Associated mudrocks host globally important fauna including lungfish; we can hope to see bivalve shells and serpulids, at least. For reasons of tide and access, we will visit three main outcrops in non-chronological order as indicated below (note: low tide is c. 12.10 am).</p>
<p>Transport:</p>	<p>Private car (car sharing to be arranged by Ian Kearsley if possible).</p>
<p>Meeting point:</p>	<p>From Edinburgh, turn off A1 and follow sign to Eyemouth town centre on B6355; drive c. 0.5 miles to car park (with toilets and cafe) on the esplanade [NT 944 645].</p>
<p>First locality:</p>	<p>From the car park (see above), turn left and walk to a point where access to a corner of the beach can be obtained via a ramp. On the lower foreshore are exposures of Early Devonian agglomerates that will be our first stop at [NT 944 646].</p>
<p>Excursion route:</p>	<p>1. Devonian agglomerates [NT 944 646] and transgressive Late Devonian channelised fluvial deposits; also abandoned Quaternary fluvial channel [NT 944 649]; walk along the foreshore to NW until turned back by cliff (below caravan park);</p> <p>2. Silurian turbidites structure (folds with transecting cleavage); drive back (southwards; through town) to A1 roundabout; at roundabout take exit to New Harbour and golf course; car park is on left side of road; descend slope and walk down to breakwater; follow cliff-edge path south round Nestends [NT 950 647] for c. 250m; view from above then descend to the beach where indicated (more than one location may be visited if time permits);</p> <p>3. Devonian-Carboniferous transition; drive southwards down A1 to 2nd Burnmouth turning; park just before restaurant/pub in public car park (near [NT 957 611]); walk down old track to Partanhall; ORS on beach below houses (E of harbour) (time permitting); walk along coastal access road past harbour to Burnmouth and access the beach; walk SE to cliffs to see muddy limestones (cementstones) and fossiliferous shales, and also deltaic sandstones (Fell Sandstone) with fine concretions (tide allowing). Note: if time is short (and if not too many cars) we may drive directly down the main access road to Burnmouth and park east of the harbour.</p>
<p>Terrain, walking distance, height gain:</p>	<p>Coastal paths, minor roads, coastline; loc. 1. c. 1 km total; loc. 2. c. 1 km total; loc. 3. c. 2 km total (if walking from A1; if starting in Burnmouth (<1 km total); Height gain 1 and 2, negligible; 3. c. 90 m (down wide track then back up it).</p>
<p>Specific or Medium- / High-Risk Hazards:</p>	<p>Medium; danger of slipping on foreshore and slipping on slopes down to shore; could be slightly more hazardous if raining or if ground very wet. Not problematic for anyone</p>

	with average fitness but is not recommend in full for anyone with mobility difficulties. However, access down slope to beach at loc. 2 (Nestends) could be omitted if anyone does not wish to do this.		
Control measures required to mitigate against any Hazards referred to above:	Leader will clearly indicate safest route at loc. 2 (Nestends), which is the only steep off-path access required; stronger participants may assist any others who are less confident; as above, descent to beach at loc. 2 (Nestends) could be omitted		
Hard hats or Hi-viz clothing needed?	No.		
May dogs be brought on the excursion?	Yes, provided they are kept under control.		
Toilet information:	Public toilet in Eyemouth near the access to the beach (loc. 1) Recently only one of several was operating on the esplanade [NT 944 645]. There are no public toilets at loc. 2 (Nestends) or at Burnmouth (however, there is a restaurant/pub at the A1 to Burnmouth 2nd (main) turnoff.		
Geological map sheet:	B.G.S. (Scotland) 1:50 000 Sheet 34 Eyemouth	OS map sheet:	O.S. 1:50 000 Sheet 67 Duns, Dunbar & Eyemouth;
References:	<p>K. Atkinson and C. Scrutton. Geology of Eyemouth and Burnmouth - an excursion, Yorkshire. In: Northumbrian rocks and landscape: a field guide. 2004. 2nd edition. Published by the Yorkshire Geological Society. Available on-line (unrestricted) from Earthwise (we will pretty much follow this excursion).</p> <p>Tavarnelli, E. et al. 2004. The anatomy and evolution of a transpressional imbricate zone, Southern Uplands, Scotland. <i>Journal of Structural Geology</i>, 26(8), pp.1341-1360 (specialized on structural geology; basic information needed is in the Earthwise guide).</p> <p>Marshall, J. et al. 2019. Early Carboniferous in Scotland. <i>Earth and Environmental Science Transactions of the Royal Society of Edinburgh</i>, 109(1-2), 265-278. doi:10.1017/S1755691018000968 (specialized on stratigraphy; basic information needed is in the Earthwise guide).</p> <p>Challands, T.J. et al. 2019. A lungfish survivor of the end-Devonian extinction and an Early Carboniferous dipnoan radiation, <i>Journal of Systematic Palaeontology</i>, 17:21, 1825-1846, DOI: 10.1080/14772019.2019.1572234 (specialized on lungfish; basic information needed is in the Earthwise guide).</p>		