

Site Name: Cwm Gwerin Grid Reference: SN 799894 to SN 806282

RIGS Category: Aesthetic, Educational & Scientific

Earth Science Category: Quaternary & Geomorphology

RIGS Statement of Interest:

Cwm Gwerin is a little visited valley on the northeast side of the Pumlumon massif, sister-valley to the more popular Llyn Llygad Rheidol valley. Cwm Gwerin is unique in the upland area of Mid Wales, in the sense it contains probably the best examples of small-scale subglacial erosion features, such as glacial striations, grooves and chattermarks (see Etienne et al., 2005). Normally, glacial striations in this part of Wales are extremely rare to find preserved, due to the easily weathered bedrock or of them being blanketed by soil. The considerable concentration of glacial erosion features to be found in the cwm is also unrivalled in the upland valleys of Ceredigion and Powys.

The lack of glacial striations in upland Mid Wales has been an obstacle for detailed glacial reconstructions, and the dynamics and ice flow directions of the upland of Mid Wales has therefore been poorly understood (see Etienne et al., 2005). Sites with glacial striations in conjunction with associated landforms and deposits are therefore of exceptional value for understanding the glacial history.

The very well-preserved striated surfaces of Cwm Gwerin are found on the western flank of the valley, at 400 – 550 m a.s.l. The sites are mainly concentrated at the mouth of the valley [SN 799893], at the outcrops of Lluet y Graig [SN 804888] and at Craig y March [SN 803890]. The glacial striations are generally parallel to the length of the valley (326°), indicating ice flow out from Cwm Gwerin to the Hengwm valley where the ice direction curves towards west (286°). This is consistent with valley glaciation in Late Devensian time, as the cold climate of the Younger Dryas is believed to not have been able to produce a valley glacier of any length. Some of the striations have previously been recorded by Cave & Hains (1989) and Jansson & Glasser (2005), enabling large scale reconstructions of the Devensian ice sheet.

Outside these proposed RIGS, other glacial striations – fewer in number, less well-preserved and more difficult to access than those of Cwm Gwerin – occur at the summit ridge east of Pen Pumlumon Fach, in Llyn Llygad Rheidol valley and on the north side of the Afon Hengwm valley. In contrast to the striations of Cwm Gwerin, these striations are more difficult to put into a framework as they occur in a more dispersed geographical setting.

Each outcrop with glacial striations occupies an area of only a few square metres, but collectively they provide information about the glacier movement and vividly record the immense erosive power of a valley glacier. Although remote and rarely visited by walkers, these RIGS merit a public awareness initiative, possibly a leaflet dealing with other aspects of Quaternary landscapes and geodiversity in the Pumlumon region.

Surveyed by: E.A. Sahlin, B. Clissold & W.R. Fitches