
Mynydd Du (Black Mountain)

Highlights

This site includes the escarpment and associated cirques of the western Brecon Beacons. Its suite of probable Younger Dryas (Devensian late-glacial) erosional and depositional features affords outstanding evidence of the last cirque glaciation.

Introduction

The north and east-facing escarpment of Mynydd Du (Black Mountain) is important for a range of glacial and periglacial features of the Devensian late-glacial. Protalus ramparts and moraines occur at the foot of the escarpment and its associated cirques in an almost continuous landform assemblage. The site has been studied by Howard (1901), Robertson (1933), North (1955) and Thomas (1959). Detailed descriptions were provided by Ellis-Gruffydd (1972, 1977).

Description and interpretation

The north and east-facing Old Red Sandstone escarpment of Mynydd Du reaches 781m and runs from Llyn-y-Fan Fach in the west to beyond Fan Hir in the east. The principal features of the landform assemblage associated with the escarpment are shown in (Figure 18). Along its northern edge, the escarpment is dissected by a number of cirques including that which houses Llyn-y-Fan Fach. Along its eastern margin, the cirque forms are less well developed and the complex depositional landforms at Llyn-y-Fan Fawr and Gwal y Cadno occupy small embayments in the escarpment — see (Figure 18).

Fan Hir

The most striking of the depositional landforms is the large ridge running along the foot of Fan Hir (Figure 18), between c.[SN 833 207] and [SN 836 197] (Ellis-Gruffydd 1972). Little can be added to the description given by Robertson (1933) — "At the foot of Fan Hir there is a fine example of a snow-scee moraine. It runs as a lofty, rampart-like ridge of debris, three-quarters of a mile long, parallel to the scarp, and separated by a fosse-like gully". It reaches some 30m above the surrounding land and its sides slope at 30° (Ellis-Gruffydd 1972). The stream draining the gully between the ridge and escarpment shows the ridge to be composed of angular and subangular fragments of Devonian sandstones in a loose sandy matrix (Ellis-Gruffydd 1972). Robertson (1933) further noted that "...We may suppose that after the Tawe Valley ice had disappeared a snow-slope lingered for many years under the great escarpment, and that the scree material which otherwise would have accumulated at the foot of the latter, was shot down at some distance in advance to form the ridge". Although the ridge beneath Fan Hir has been regarded as a classic protalus feature (for example, Robertson 1933; Ellis-Gruffydd 1972, 1977), the possible influence of structural control has also been commented upon (Thomas 1959).

Llyn-y-Fan Fawr and Gwal y Cadno

The moraines enclosing Llyn-y-Fan Fawr were first described by Howard (1901) and later by Robertson (1933) and North (1955). A ridge comprising a series of low mounds separated by cols and two northerly trending channels can be traced around the northern, eastern and part of the southern lake shores — see (Figure 18) (Ellis-Gruffydd 1972). These mounds are strewn with large boulders and are partly peat covered. Sections near the lake outlet suggest that the mounds are composed of angular material with a subordinate proportion of subangular and subrounded clasts set in a coarse matrix. It is not known if the lake itself occupies a rock basin (Howard 1901). The interest of this part of the site is enhanced by a prominent debris cone located at the foot of a bedrock chute in the escarpment face (Ellis-Gruffydd 1972).

Farther north at Gwal y Cadno, a moraine or protalus rampart was described by Howard (1901) and Robertson (1933). It consists of a single arcuate ridge enclosing a peat-flat, although at its north-west end it bifurcates and is separated from the back wall by a dry channel (Ellis-Gruffydd 1972). The ridge rises about 9m above the outlying terrain, although only 1m above the enclosed peat-flat (Ellis-Gruffydd 1972). Prominent avalanche chutes are incised into the back wall beneath Fan Foel — see (Figure 18), and scree erosion continues to form prominent debris cones at the foot of the scree banks and onto the peat-flat behind the enclosing ridge. According to Ellis-Gruffydd (1972), there can be little doubt that the well developed arcuate ridge, which lies well in front of the cirque back wall, is a moraine.

Sychlwch, Pwll yr Henllyn and Llyn-y-Fan Fach

The cirques and embayments of the north-facing escarpment also contain a wide range of depositional landforms. Ridges were recorded in Cwm Sychlwch beneath Fan Foel and Bannau Sir Gaer by Howard (1901) and Robertson (1933) see (Figure 18). The northernmost ridge is situated close to the foot of the western face of Fan Foel see (Figure 18), and was interpreted by Ellis-Gruffydd (1972) as a protalus rampart. The principal ridge is arcuate and encloses a small peat-flat in its central portion, and bifurcates at its south end (Ellis-Gruffydd 1972). It is separated from a prominent linear ridge to the south which encloses a more substantial peat-flat and rises about six metres above the surrounding area. The features are interpreted as a moraine and a protalus rampart, respectively (Ellis-Gruffydd 1972).

North-west of Bannau Sir Gaer a prominent arcuate ridge occurs, its crest standing 6m to 12m above the surrounding ground surface. The ridge slopes outwards at 20–27° and encloses a peat-flat. Although arcuate in form, the lateral margins of the ridge are poorly developed and do not climb up-slope. Ellis-Gruffydd (1972) suggested that the feature was probably a protalus rampart, built at the foot of a circular snow-patch. Large gullies are incised into the scree behind the moraine (Statham 1976).

A further feature interpreted as a protalus rampart occurs beneath an embayment in the escarpment at Pwll yr Henllyn — see (Figure 18), (Ellis-Gruffydd 1972). This single, slightly sinuous ridge abuts the back wall at its eastern end, but near the western end is separated from the back wall by a channel enclosing a peat-flat. The back wall is mantled with scree which is extensively gullied.

Morainic accumulations have also been described around Llyn-y-Fan Fach (Howard 1901; Robertson 1933; Ellis-Gruffydd 1972) — see (Figure 18). The feature is complex and is diversified by a series of smaller ridges, knolls and small enclosed depressions. Slope values along the length of the ridge vary between 15–25° and the form, extent and location of the ridge suggests that it is the product of glacial deposition (Ellis-Gruffydd 1972). To the south and south-west margins of Llyn-y-Fan Fach, the cirque back walls rise steeply by 160m. The lower slopes are extensively mantled with scree in which a number of spectacular gullies has been incised. Two particularly prominent chutes/avalanche couloirs cut the upper slopes of the back wall — see (Figure 18), (Ellis-Gruffydd 1972).

Although cirque moraines and protalus ramparts have long been recognised in the Brecon Beacons (Symonds 1872; Reade 1894; Howard 1901; Richardson 1910; Robertson 1933), the first systematic interpretation of the features was made by Lewis (1966a, 1966b). He argued that the morphology of the moraines and protalus ramparts indicated two phases of formation during Pollen Zones Ic and III of the Devensian late-glacial. Preliminary pollen work in the region by Trotman (1963) was also used in support of this dating. Subsequent workers have, however, demonstrated sound evidence for only a single phase of moraine and protalus rampart formation in the South Wales uplands during the Devensian late-glacial (Ellis-Gruffydd 1972, 1977; Walker 1980, 1982a, 1982b).

Ellis-Gruffydd (1972, 1977) analysed the morphology, situation, aspect and altitude of moraines and protalus ramparts in the Brecon Beacons, including those of Mynydd Du. In total, 27 moraines and protalus ramparts of varying morphological complexity were identified at 23 locations along the escarpment. These included three moraines and five protalus ramparts around Mynydd Du. Morphological evidence indicated a single, synchronous phase of protalus rampart and moraine formation in the region (Ellis-Gruffydd 1977). The single exception to this rule was Craig Cerrig-gleisiad where, according to Ellis-Gruffydd (1977), possible evidence for more than one phase of moraine formation was present. Pollen, stratigraphic and radiocarbon evidence presented by Walker (1980, 1982a, 1982b) has since shown that a number of cirque moraines in the Brecon Beacons was formed during the Younger Dryas (c. 11,000–10,000 BP), and it is now

widely held that the majority of cirque moraines and protalus features in the British Isles was formed at this time (for example, Ince 1981; Lowe 1981; Gray 1982a). Although the moraines and protalus ramparts around Mynydd Du have not been dated, it seems likely that they too were formed during the Younger Dryas.

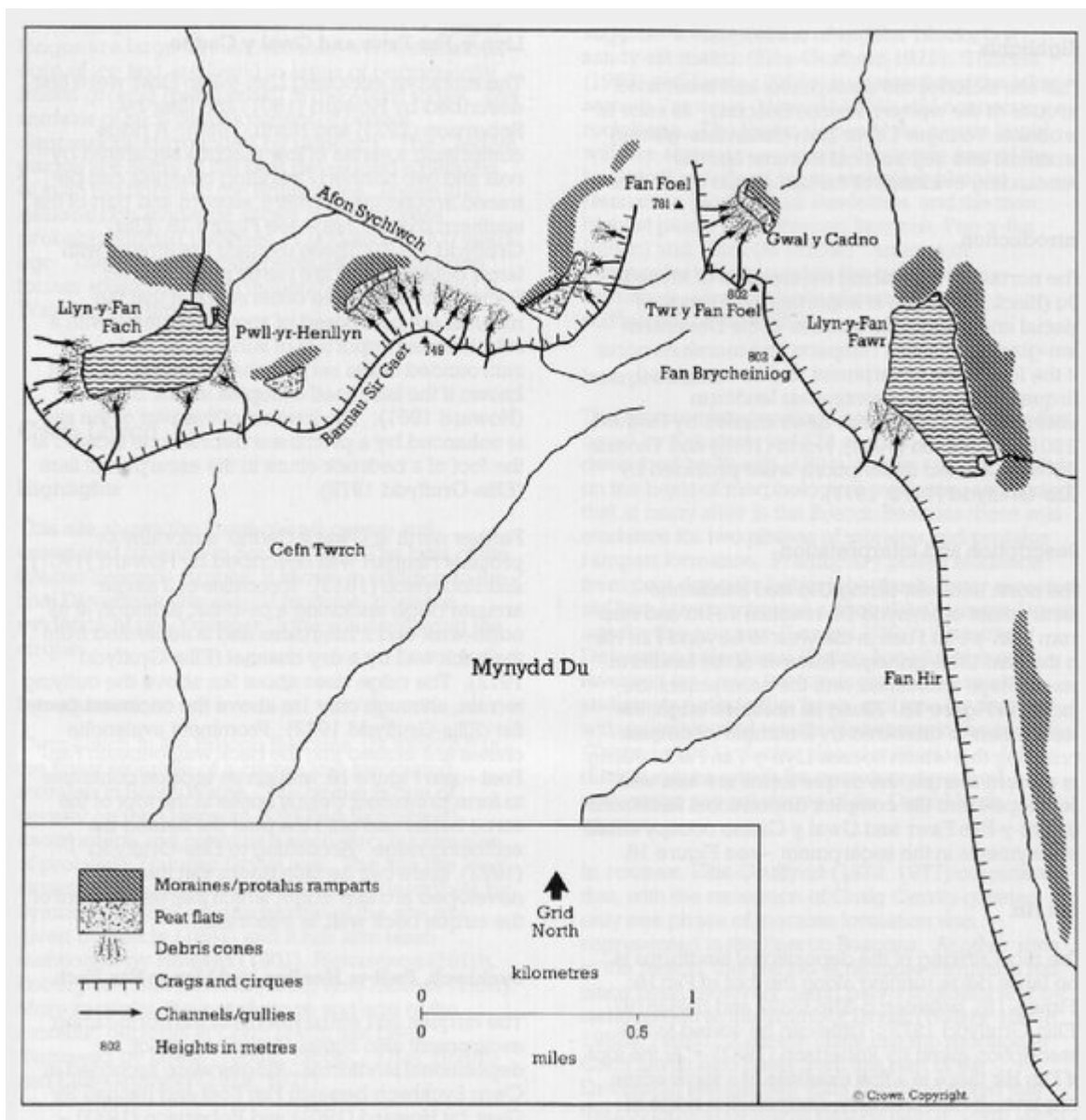
Mynydd Du demonstrates a range of upland landforms with a significant bearing on attempts at reconstructing Devensian late-glacial palaeoenvironments. The relationship between the depositional landforms and the presence or absence of extensive plateau surfaces in the Brecon Beacons is particularly striking, and is well illustrated around Mynydd Du: the cirques at Llyn-y-Fan Fach and Gwal y Cadno, for example, contain well developed moraines and lie at the north-east extremity of an extensive plateau. In these locations, specific meteorological conditions were conducive to the distribution and redistribution of snow, and ultimately the growth of glaciers. In contrast, an extensive plateau surface is absent west of the Fan Hir escarpment. In this location, circumstances favoured only the accumulation of a perennial snowpatch, at the foot of which formed the large protalus rampart (Ellis-Gruffydd 1972).

The moraines and protalus ramparts which stretch around the foot of Mynydd Du escarpment form an almost continuous landform assemblage. This assemblage contrasts with other upland areas where individual landforms are more isolated. The fresh and distinctive morphology of the features strongly suggests that they were formed during the Younger Dryas. Mynydd Du also exhibits exceptional examples of Devensian late-glacial scree slopes and talus cones. These deposits have been extensively gullied in recent times, leaving spectacular scars and unvegetated debris flows.

Conclusions

The drift ridges of this site form one of the finest assemblages of such landforms in the British Isles. They were formed between 11,000 and 10,000 years ago at the foot of either small glaciers or large snow patches. Spectacular evidence of recent erosion also occurs throughout the area.

[References](#)



(Figure 18) Mynydd Du: principal landforms (after Ellis-Gruffydd 1972; Statham 1976)