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Clawdd Mawr cross-ridge dyke, near Abergwynfi: new evidence for its construction and date

By CAI MASON

Archaeological excavation at the Clawdd Mawr cross-ridge dyke Scheduled Monument demonstrated that it comprises a 5m-wide by 0.4m-high earthen bank, flanked by a single shallow ditch on the upslope side. Optically Stimulated Luminescence dating established that the bank overlies a Late Neolithic/Early Bronze Age buried soil horizon and that the flanking ditch probably silted up c. AD 0–800. Previous studies have suggested an early medieval date for the cross-ridge dykes of south-east Wales. The new dating does not disprove this suggestion, but a critical analysis of the evidence has shown that previous assumptions regarding the date of this type of monument, though probably correct, have yet to be confirmed by scientific means.

INTRODUCTION

Archaeological investigation of Clawdd Mawr dyke Scheduled Monument,[1] Glyncorrwg, near Abergwynfi, Neath Port Talbot, was prompted by the construction of a 12-turbine windfarm known as Llynfi Afan Renewable Energy Park in an area of upland moorland at the heads of the Llynfi, Garw and Afan valleys in Glamorgan in 2016. The whole project was subject to monitoring by Wessex Archaeology, with a targeted excavation focused on a short section of the dyke which would be disturbed by widening of a new access track (WA 2017). The aim of the excavation was to apply a range of modern scientific methodologies, to date the dyke and enhance our understanding of this class of monument. This article details the results of the investigation and reports on a small assemblage of Mesolithic worked flint that was recovered during a concurrent watching brief on one of the turbine construction sites.

LOCATION, GEOLOGY AND ARCHAEOLOGICAL BACKGROUND

The area covered by the windfarm comprises a 6.1 square kilometre area of upland moorland that encompasses the hills of Werfa, Mynydd y Gelli, Llyndwr Fawr (part of Mynydd Caerau), and Coaetgae Isaf (Figs 1–2). Clawdd Mawr dyke is positioned on a north-east facing slope of the Bwlchgarw saddle, overlooking the Garw and Nantyfedw valleys, at a height of approximately 470m above Ordnance Datum (OD). The solid geology at Bwlchgarw comprises Carboniferous Sandstone of the Rhondda Member, which is overlain by a ferric stagnopodzol, with intermittent peat occurring in the wetter and/or lower-lying areas.[2]

Clawdd Mawr is one of the 23 known cross-ridge dykes, or *cloddiau*, in the uplands of Glamorgan and Monmouthshire (Lewis 2006, 3). Cross-ridge dykes, as their name implies, comprise one or more parallel banks and ditches that cut across upland ridges, often on narrow saddles or scarps. Clawdd Mawr is aligned north-west to south-east and is approximately 200m long. The dyke is approximately 7.5m wide and comprises a low bank with shallow ditch along the south-west (upslope) side (Lewis 2006, 51). It has been suggested that this class of monument was constructed in the eighth or ninth centuries AD as a

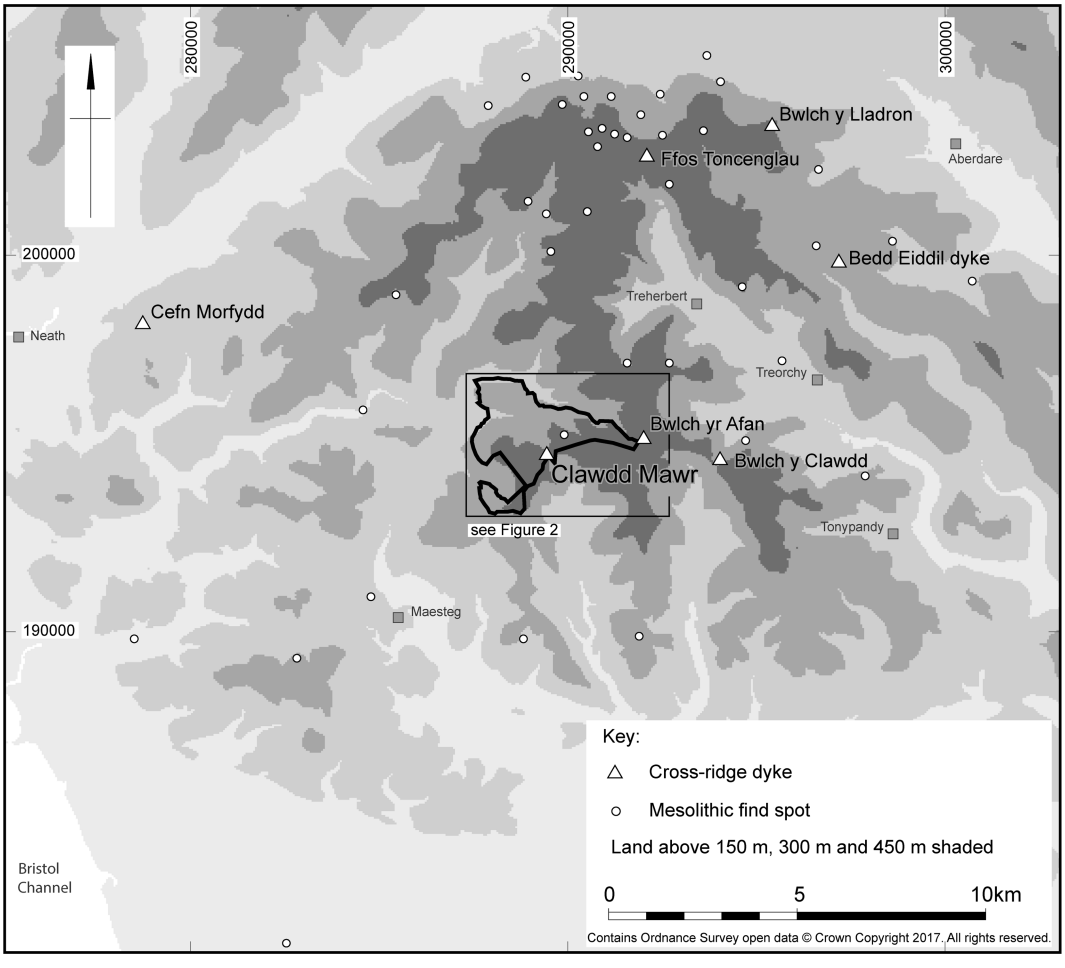

Fig. 1. Site location in showing cross-ridge dykes and Mesolithic find spots in the Glamorgan uplands.

means of controlling access along ridgeway routes (Fox and Fox 1935; Crampton 1966; RCAHMW 1976; Lewis 2006, 5). However, prior to the present work, the only scientific investigation of the south Wales cross-dykes was a soil study undertaken by Crampton (1966).

Finds of Mesolithic and Neolithic worked flint on the hills 4–5 kilometres to the north and north-west of the site provide evidence for human activity in the uplands from a relatively early date, but this is likely to have been of a transient and intermittent nature. There is considerably more evidence for Bronze Age activity, in the form of a barrow cemetery,[3] containing eleven round barrows, on the summit of Llyndwr Fawr. There are no known Iron Age or Romano-British sites in the area.

The ridgeway between the Afan and Garw valleys is considered to have formed part of a natural north-east/south-west aligned upland route that is likely to have been used from a very early date. This postulated route is divided by two undated cross-ridge dykes, namely Bwlch y Afan[4] and Clawdd Mawr. Crampton's (1966) study of the soil structure and pollen beneath Clawdd Mawr, Bwlch y Afan, Ffos Toncenglau and Bedd Eiddil cross-ridge dykes suggested that they were constructed soon after an Ericaceae pollen

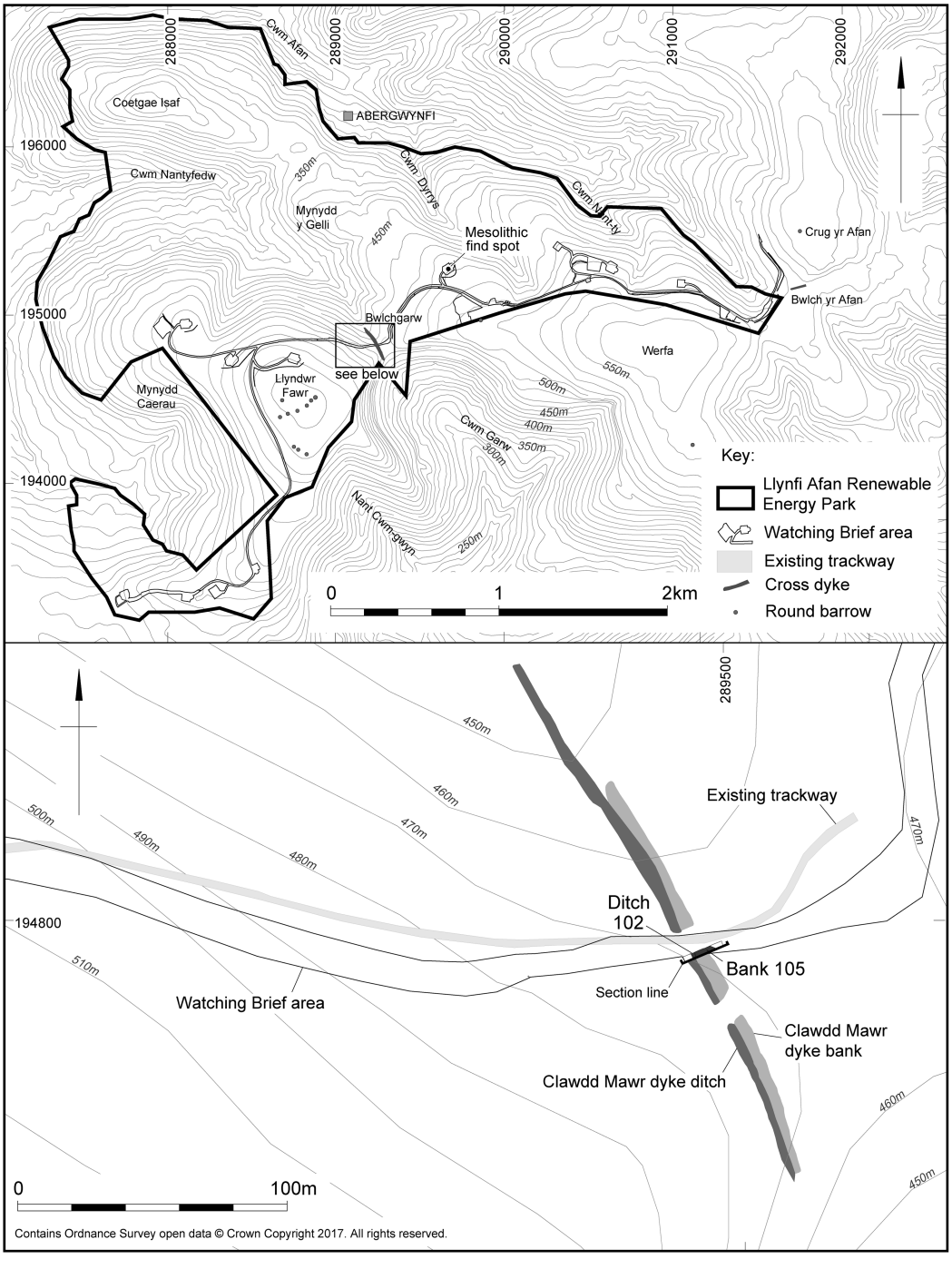

Fig. 2. Llynfi Afan Renewable Energy Park, showing excavation and watching brief areas in relation to Clawdd Mawr dyke and Llyndwr Fawr barrow cemetery.

maximum, which was considered to have occurred in the medieval period (ibid. 381). This was interpreted as supporting the early medieval date suggested by Fox and Fox (1935; Crampton 1966, 389). More recent pollen studies, undertaken with the benefit of radiocarbon dated sequences (e.g. Hibbert and Switsur 1976; Chambers 1982; Smith and Green 1995), have however shown that the Welsh uplands have a more complex vegetational history, with considerable local and regional variation. Dated pollen sequences from the south Wales uplands show that although some locations remained partially wooded until the end of the Bronze Age (Smith and Green 1995, 172), much of the landscape was characterised by open moorland from the Early Bronze Age and in some instances from the Neolithic, onwards (Chambers 1982, 453–7; Brown 2013, 286). Further afield, Hibbert and Switsur's (1976) study of Tregaron Bog, has shown that moorland habitats with high levels of Ericaceae existed in some upland areas from as early as the Late Mesolithic.

EXCAVATION

The excavation comprised a single hand-excavated, 15.3m by 2m wide, trench across the bank and ditch. Natural geology comprised yellow and brownish orange weathered sandstone (101) that contained frequent angular gravel, cobble and boulder-sized sandstone inclusions. The geology was overlain by a 0.12m deep buried soil horizon (105), which survived in a 6m-wide band below the dyke bank.

Clawdd Mawr dyke (Figs 3–4) comprised a 5m-wide by 0.4m-high bank of redeposited natural mid-brown clayey sand (106) that contained common angular sandstone inclusions. The bank was flanked by a 1.7m wide by 0.55m deep ditch (102). The ditch had a 0.4m-thick primary fill of pale-brown clayey sand (104) with common angular gravel and cobble-sized sandstone inclusions. Fill 104 was overlain by a 0.1m-thick secondary fill (103) of dark greyish-brown peaty clayey sand with similar inclusions. Fill 103 and bank 106 were both overlain by a 0.1m deep deposit of dark brownish-grey peaty topsoil. There were no finds in any of the excavated deposits.

Dating

The Optically Stimulated Luminescence (OSL) dating was undertaken by Dr Phil Toms of Gloucester University (2016). OSL dating uses the fact that, over time, certain buried minerals (e.g. quartz) gradually accumulate electrons derived from radioactive decay of uranium, thorium and potassium-40 within imperfections (traps) in their crystal lattices. This occurs at a predictable rate. When the minerals are exposed to light (e.g. sun or artificial light), the trapped electrons are released. OSL sediment samples are taken using opaque cylinders, the ends of which are sealed to prevent uncontrolled exposure to light. Samples are opened and 'optically stimulated' (i.e. exposed to light) under controlled laboratory conditions. This frees the trapped electrons, and by measuring the energy release, it is possible to determine when the mineral was last exposed to sunlight. A copy of the full OSL dating report, which provides a detailed explanation of the mechanisms and principals of OSL dating and the methods used in this study, is available in the site archive. Samples were taken from four locations within the dyke (Fig. 3; Table 1).

OSL dating of buried soil layer 105 suggests that it formed in the Late Neolithic/Early Bronze Age. The anomalous Pleistocene dates from the bank were caused by incomplete exposure of the up-cast earth to sunlight prior to burial, and must therefore be discounted. The OSL date from the bottom of the secondary fill ditch fill (103) suggests that the ditch had largely silted up *c*. AD 0–800 and therefore probably during the Romano-British or early medieval periods.

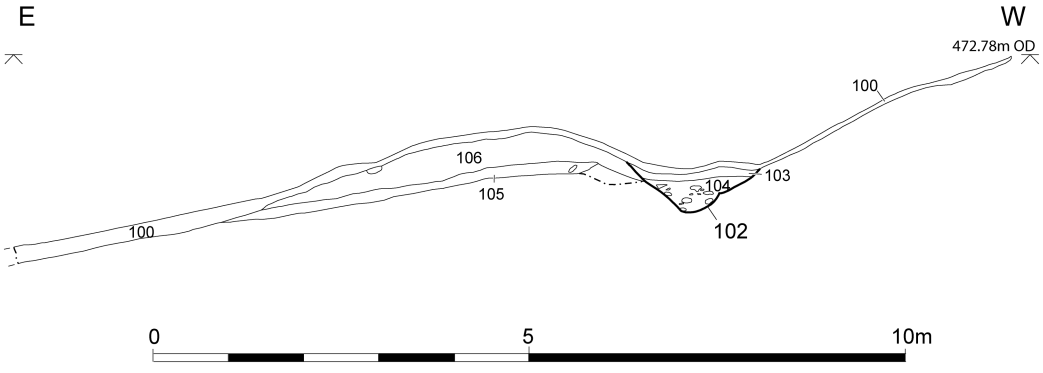

Fig. 3. Section through Clawdd Mawr dyke.

Fig. 4. Excavation area, looking east.

Environmental remains

The environment sampling programme comprised bulk samples taken from all contexts for the recovery of charred plant remains and molluscs and monolith samples for pollen analysis. Assessment of the bulk environmental samples showed high levels of bioturbation indicators (e.g. modern roots and earthworm eggs) with very rare charred plant material, comprising a few fragments of charcoal and a single carbonised Cyperaceae (sedge) seed. The charred plant remains were assessed as being of insufficiently

secure provenance to warrant undertaking radiocarbon dating (WA 2017, 12). No molluscan remains survived due to the acidic nature of the local soils.

Given the very broad potential date range provided by the OSL and the lack of stratigraphically secure material suitable for radiocarbon dating, it was decided not to proceed with pollen analysis, as the absence of a tight chronological framework would have rendered the results meaningless.

Watching brief

The watching brief during the construction of the rest of the windfarm was largely negative, the only anthropogenic feature being an undated, but probably post-medieval or modern, ditch (WA 2017, 9). A small assemblage of worked flint and quartzite was however recovered from the site of a turbine on the ridge between Werfa and Mynydd y Gelli (centred on SS 290884 195254). The flint,[5] consists of a small assemblage of eight pieces, comprising the distal end of a tertiary flint flake with a hinge termination, broken transversely; a small flint chip, mostly cortex; the proximal end of a quartzite bladelet, snapped transversely; a trimming flake from a bladelet core; a tertiary blade, trimming a bladelet core (Fig. 5, no. 1); a tertiary trimming flake from a blade core, heat-affected and snapped obliquely across the left distal end; a burnt fragment of quartzite, not definitely worked; and a trapezoidal microlith (Fig. 5, no. 2) of Clark's (1933, 58) form 6a.

With the exception of the heat-affected pieces, condition is very good, with fresh ridges and no edge damage. Some pieces are patinated, while others are fresh. All of the chronologically-distinctive pieces appear to be Late Mesolithic.

DISCUSSION AND CONCLUSIONS

The worked lithics found during the construction of the windfarm add to a growing body of evidence for Mesolithic activity in the Glamorgan uplands. Most Mesolithic findspots in south Wales have been discovered at elevations in excess of 300m OD, or at lower elevations nearer to the coast (Lille 2015, fig. 3.1).[6] In common with many of the other upland sites with a Late Mesolithic component, the assemblage is small, and likely to represent a short-term or overnight campsite, temporary processing site, hunting area or stone tool preparation area (ibid. 137). In this region, more 'permanent' foci of hunter-fisher-forager activity have, to date, only been found in lowland locations (ibid. 123).

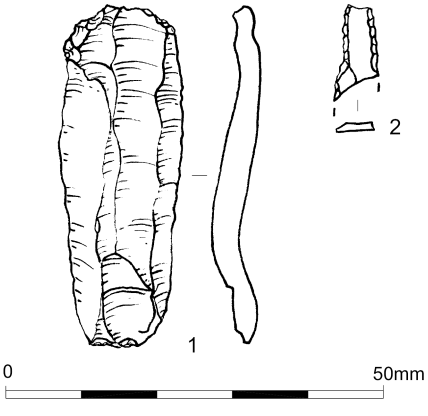

Fig. 5. Mesolithic flint blade and microlith form the Werfa/ Mynydd y Gelli ridge. Scale 1:1.

Clawdd Mawr is the first cross-ridge dyke in south-east Wales where scientific dating has been undertaken. Previous dating of this class of monument has been based on their association with early medieval ridgeway routes and early Christian inscribed stones (Fox and Fox 1935; RCAHMW 1976; Lewis 2006, 6). Soil studies by Crampton (1966) were considered to support this date, based on the idea of there being a date at which Ericaceae pollen was at its most abundant. Later pollen studies have however shown a marked chronological, regional and local variation in Ericaceae abundance, and that moorland habitats existed in some Welsh uplands by the Late Mesolithic and were regionally widespread from the Bronze Age onwards.

The OSL dating of the Clawdd Mawr dyke was only partially successful. Whist it does suggest that the dyke was probably constructed before AD 800, it does not preclude the possibility that it may be considerably older, and could potentially date from as early as the Late Neolithic/Early Bronze Age.

Radiocarbon dates obtained from peat-derived charcoal beneath four short-dyke banks in Powys produced dates that ranged from AD 340–530 at Giant's Grave to AD 650–780 at Crugyn Bank (Hankinson 2006, 266). Precise dating of the longer dykes on the Welsh border, such as Offa's Dyke and Watt's Dyke, has proved problematic, but they are also clearly post-Roman (Bapty and Ray 2015, 19). Given the similarity of form between the short dykes of Powys and the cross-ridge dykes of south-east Wales, this provides some support for an early medieval date suggested by twentieth-century researchers (Fox and Fox 1935) of the latter.

Crampton's description of Clawdd Mawr dyke as having a ditch and stone revetment on the north-east (downslope) side (1966, 380–1) is not supported by the present excavation, which showed that the section of dyke within the excavated area comprised an earthen bank, with a single shallow ditch on the upslope side. This arrangement is not conducive to defence, which suggests that the dyke is more likely to have functioned as a visual boundary rather than being a practical defensive structure. Support for the suggestion may be provided by proximity of the Llyndwr Fawr Bronze Age barrow cemetery to the south. These prominent burial monuments would have been clearly visible to anyone travelling along the ridge from the north-east, and could be viewed as a deliberate statement of land ownership by the inhabitants of their associated settlement or settlements, which were presumably located on the lower slopes of Mynydd Caerau or the adjacent valleys. However, this suggested association between prehistoric burial monuments and cross-ridge dykes does not appear to be replicated at other cross-ridge dyke sites in south-east Wales, which suggests that this is either a local phenomenon or that it is entirely coincidental. Whilst the OSL dating does not preclude the possibility that the barrow cemetery and Clawdd Mawr are contemporary, the fact that all of the dated short dykes in mid and north-east Wales are early medieval, make the latter date more likely. However, even if there is a significant disparity between the dates of the barrows and dyke, this does not invalidate the suggestion that they could both be viewed as territorial markers and could indicate the existence of a long-lived boundary on the Mynydd Caerau–Werfa ridge.

Unlike Hankinson's studies of short dykes in mid and north-east Wales, the archaeological work at Clawdd Mawr has not provided a definitive answer as to the date of the cross-ridge dykes in south-east Wales. It has, however, provided an opportunity for a critical analysis of previous assumptions as to the nature and date of these monuments and provides a firm scientific footing for future research into this poorly understood class of monument.

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NOTES

1. Scheduled Ancient Monument (SAM) GM231.
2. British Geological Survey, British Geological Survey online viewer, <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>, accessed 15 November 2017.
3. SAM GM232.
4. SAM GM246.
5. Identified by Matt Leivers.
6. Data examined on Archwilio, The Historic Environment Records of Wales, <https://www.archwilio.org.uk/arch/>, accessed 15 November 2017.

BIBLIOGRAPHY

Bapty, I, and Ray, K., 2016. *Offa's Dyke: Landscape and Hegemony in Eighth-Century Britain* (Oxford: Oxbow Books).

Brown, A., 2013. 'Bronze Age vegetational history and human activity at Llandevenny and in the wider Severn Estuary region', in M. Bell (ed.), *The Bronze Age in the Severn Estuary* (York: Council for British Archaeology), 274–87.

Chambers, F. M., 1982. 'Two radiocarbon-dated pollen diagrams from high-altitude blanket peats in South Wales', *Journal of Ecology* 70, 445–59.

Clark J. G. D., 1933. 'The classification of a microlithic culture: the Tardenoisian of Horsham', *Archaeological Journal* 90, 52–77.

Crampton, C. B., 1966. 'An interpretation of the pollen and soils in cross-ridge dykes of Glamorgan', *Bulletin of the Board of Celtic Studies* 21 (6), 376–90.

Fox, C. and Fox A., 1935. 'The short dykes of Glamorgan', *Bulletin of the Board of Celtic Studies* 7, 221.

Hankinson, R., 2006. 'Short dykes in Powys and their origins', *Archaeological Journal* 163.1, 264–69.

Hibbert, F. A. and Switsur, V. R., 1976. 'Radiocarbon dating of Flandrian pollen zones in Wales and northern England', *New Phytologist* 77, 793–807.

Lewis, R., 2006. 'Cross Ridge Dykes of Southeast Wales', unpublished report, Gwent-Glamorgan Archaeological Trust report 2006/103.

Lillie, M., 2015. *Hunters, Fishers and Foragers in Wales: Towards a Social Narrative of Mesolithic Lifeways* (Oxford: Oxbow Books).

RCAHMW 1976. *An Inventory of the Ancient Monuments in Glamorgan. Vol. I: Pre-Norman, Part III, The Early Christian Period* (Cardiff: HMSO).

Smith, A. G., and Green, C. A., 1995. 'Topogenous peat development and late-Flandrian vegetation history at a site in upland South Wales', *The Holocene* 5, 172–83.

Toms, P. S., 2016. 'Optical dating of sediments: Llynfi Afan excavations', unpublished report, University of Gloucester Luminescence Dating Laboratory.

WA 2017. 'Llynfi Afan Renewable Energy Park, Mynydd Caerau, Glamorgan (Investigations of the Clawdd Mawr dyke Scheduled Monument GM231 Post-Excavation Assessment and Updated Project Design)', unpublished report, Wessex Archaeology report 104991.02.

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