CROP-MARKED ENCLOSURES IN SOUTHWEST WALES 2007: GEOPHYSICAL SURVEY
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Gan / By

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SUMMARY

Approximately 60 crop-marked enclosures have been discovered by aerial photography in south Ceredigion and several in north Pembrokeshire since the early 1980s. Thirty-two are rectangular. Aerial photographs indicate that all sites are crop-marks and that little or no earthwork evidence survives. However, prior to this project, few of these sites had been inspected on the ground. The non-rectangular sites conform to known late Iron Age defended settlement types in southwest Wales. The rectangular enclosures form a distinctive and unique group, and while they may be of a similar function and date to the non-rectangular sites, earlier or later dates are possible, and their designation as settlements is not certain. During the summer of 2004, geophysical and topographic survey was conducted on eight rectangular enclosures. A further five sites, rectangular and non-rectangular, were surveyed in 2005, and one rectangular site, Troedyrhiw, was excavated. This work confirmed that only rarely did any surface evidence for the enclosures exist, and where present it was very slight. Geophysics and excavation, however, demonstrated that important below-ground archaeology is likely to survive in addition to the crop-marked ditches recorded on aerial photographs. In particular circular gullies, probably indicating the location of roundhouses, hearths, post-holes and internal divisions of the enclosures were detected on some sites. This evidence is similar to that obtained by excavation on Iron Age defended settlement sites.

During 2006, six further crop-marked enclosures were surveyed and one of the enclosures surveyed in 2005 was partially excavated. Of the six surveys, one was partially surveyed in 2005, but was abandoned owing to malfunctioning equipment; one, Troedyrhiw - sample excavated in 2005 - had only been half surveyed in 2004; and another, Ffynnonwen, had been incompletely surveyed in 2005. This last site was sample excavated in 2006. Results complemented those of previous years, with internal features such as roundhouses and external trackways and ditches detected.

In 2007, Berry Hill, a site surveyed in 2005 and 2006 was excavated and five other sites surveyed. Results from three of these - Treferedd Uchaf, Llangan Church and Plas-y-Parc - were exceptionally good with structures, possible pits and hearths/furnaces detected in addition to the large ditches visible on aerial photographs. At Ffynnon-Llygoden only part of the site was available for survey, but in addition to the defended enclosure a part of a smaller enclosure was detected. Results at the last site, Nevern Castle, were disappointing, with no obvious archaeological features detected.

INTRODUCTION

Since the early 1980s a number of crop-marked enclosures of presumed later prehistoric or Romano-British date have been recognised through aerial photography in south Ceredigion, with a lesser number in north Pembrokeshire. Prior to these discoveries few later prehistoric settlements were known and these were confined to substantial hillforts with upstanding earthwork defences such as Castell Nadolig to the southeast of Aberporth, and Castell Henllys near Nevenr. Until the investigation of the Troedyrhiw enclosure in 2005 (Murphy and Mytum 2005), excavated as part of this project in 2006, evidence for Romano-British settlement in south Ceredigion was absent, and rare in north Pembrokeshire apart from the excavated evidence at Castell Henllys. A series of dry summers, 1983-83, 1994-95 and 2003, and an increasing awareness that the terrain was conducive for crop-mark archaeology, has resulted in the recording of approximately 60 new enclosure sites, and the enhancement of knowledge of the few previously known settlements.
The late prehistoric settlement of southwest Wales is characterised by hill-forts and smaller defended enclosures. Typically these consist of earthworks - defensive banks and ditches - enclosing an internal area that is oval or irregularly oval in shape. Rarely, some defended enclosures are rectangular. In the course of the discoveries in south Ceredigion and north Pembrokeshire it became increasingly clear that a high proportion of the crop-marked enclosures were rectangular. Currently, 32 of the enclosures recorded in the area are rectangular.

The rectangular enclosures are remarkably similar indicating similar function and date. They are defined by crop-marked ditches, about 3m to 5m wide, with only very occasional evidence for banks or other features. The aerial photographs only rarely indicate that low earthworks may be present. The enclosures usually approximate to a square, with dimensions between 40m - 50m by 45m - 55m. Most have an entrance through the ditch mid-way along one side. Although the ditches, and assumed accompanying banks, indicate a defensive function, rectangular enclosures are not located in defensive locations. Most in south Ceredigion are sited on hill-slopes/valley sides, often just below a crest or summit, but locations towards the base of slopes are also known.

The oval or near oval enclosures are more varied, but are towards the smaller end of the scale when compared with all sites of this type in southwest Wales, with internal dimensions of 40m to 60m, and ditches 3m - 5m wide. They are found in a wider variety of locations that rectangular enclosures; on rounded hilltops as well as on hill-slopes. Several oval enclosures have concentric, larger enclosures surrounding them, some over 100m diameter. The ditches of these outer enclosures are generally slighter than those of the inner ones, but not always so. Entrances are sometimes in-turned, forming a ditched track-way approach to the inner enclosure.

The area in which most of the crop-marked enclosures have been discovered comprises a roughly triangular dissected plateau, approximately 100 square kilometres, between 80m to 150m above sea level, and lying between Newport, Aberporth and Newcastle Emlyn. The modern settlement pattern comprises dispersed farms with a few hamlet/village clusters. Apart from on the steepest slopes almost all the land is parcelled into fields and intensively farmed. The western section of the area is exposed to the prevailing Atlantic winds. Improved pasture is the chief agricultural land-use, with an arable element producing mainly fodder crops. To the south of the River Teifi sites comprise mainly upstanding earthworks, but in recent years aerial photography has added to our knowledge with the discovery of several crop-marked enclosures.

In the first year of this project, 2004, eight rectangular crop-marked enclosures were geophysically surveyed (Murphy et al 2004). In 2005, five sites, rectangular and non-rectangular, were surveyed (Murphy et al 2006a) and one rectangular site, Troedyrhiw (Murphy and Mytum 2005), was sample excavated. During 2006, six cropmarked enclosures were surveyed and one of the enclosures surveyed in 2005 was partially excavated (Murphy and Mytum 2006). Of the six surveys, one, Berry Farm, was partially surveyed in 2005, but was abandoned owing to malfunctioning equipment. Troedyrhiw - sample excavated in 2005 - had only been half surveyed in 2004, and another, Ffynonwen, had been incompletely survey in 2005. This last site was sample excavated in 2006 (Murphy and Mytum 2006). The other three sites were Penpedwast, Tre-cefn Isaf and Cwmhowni.
AIMS AND OBJECTIVES
In 1996, Cambria Archaeology were grant-aided by the RCAHMW to plot all the known cropmark enclosure sites in south Ceredigion and mid Pembrokeshire/Carmarthenshire. Since then, other sites have been identified and plotted by RCAHMW staff. Thus, although c.60 enclosures, including 32 rectangular enclosures, have been identified and plotted, it is not known what archaeological evidence survives underground, and their function and date is not known. The aim of this Cadw grant-aided project was to conduct geophysical and topographic surveys on at least five rectangular enclosures in order to assess their potential for buried archaeology with the objectives of:

- assessment of the archaeological significance of these sites in both a regional and national context
- assessment of the vulnerability of the sites
- formulation of scheduling criteria, which may be appropriate regionally and nationally, and the formulation of future management strategies
- enhancement of the Regional Historic Environment Record and END

SUMMARY OF RESULTS
Five sites were surveyed in 2007. Apart from disappointing results from Nevern Castle, the surveys detected buried archaeological features in addition to those visible on aerial photographs.

At Llangan Church, Carmarthenshire, the geophysical survey clarified those parts of the defended enclosure visible on aerial photographs and added detail to the site in the form of hearths, furnaces and structures.

Results from Plas-y-Parc clearly show the defended enclosure with a possible roundhouse in the inner enclosure.

The wide area of the bank was detected at Treferedd Uchaf demonstrating that the internal area of the enclosure was just 20m diameter. A possible roundhouse lies in this enclosure.

At Ffynnon Llygoden the multivallate character of the defended enclosure was confirmed and in addition the presence of an external, small, rectangular enclosure was also confirmed. This latter site may be an Early Medieval funerary site.
Figure 1. Location of sites.
LLANGAN CHURCH PRN 11786 SN136216

Site Description
Aerial photographs show Llangan Church lying eccentrically within a crop-marked enclosure. The church lies immediately to the NW of the inner, sub-circular enclosure measuring c.30m-40m across. The photographs indicate a possible rectangular building in this enclosure. Concentric to the inner enclosure is a bivallate or possibly trivallate outer enclosure measuring approximately 85m across. There seems to be an entrance on the east side of the inner enclosure approached by a ditched trackway.

An Early Medieval inscribed stone known as St Canna’s Chair lay in the field to the north of the church - the stone now lies in a hedge-bank. This field contains complex crop-marks, the most prominent of which seem to be a continuation of one of the ditches of the outer concentric enclosure. The site occupies a gentle south-facing slope commanding wide-ranging views in this direction.

Topographic survey: Hubert Wilson, Martin Denneh, Graeme Bick, Patrick Morton, Jeff Gerber

Geophysical survey: Lloyd Bosworth, Elaine McElroy, Kendra Patten, Andrew white, Abigail Foan, Louise Griffin, Felicity Hemlin, Becky Steinnes, Vicki Baldwin

Gradiometer settings:
To the north of the church a Geoscan FM36 Fluxgate Gradiometer was used with a sample interval of 0.25m over 20 1m x 20m traverses. The raw data was Geoscan’s Geoplot 3 software. The survey grid measured 100m x 80m and consisted of 13 20m x 20m squares of which 10 full and, due to existing field boundaries and the topography of the site, 3 partial squares were surveyed.

The survey to the south of the church was undertaken over several days of intermittent showers and sun. The temperature was generally warm with strong westerly winds during the last day of survey. The survey grid measured 140m x 100m and consisted of 35 20m x 20m squares of which 27 full and 3 partial squares were surveyed. A Geoscan FM36 Fluxgate Gradiometer was used with a sample interval of 0.25m over 20 1m x 20m traverses. The raw data was de-spiked and interpolated using Geoscan’s Geoplot 3 software. A high resolution survey was undertaken over part of the inner enclosure.

Gradiometer results:
South of the church the survey has helped resolve some of the ambiguities of the aerial photograph. On the south side the outer enclosure is clearly trivallate, the outer ditch of which curves off to the SE. The two inner ditches run close together on the east side of the enclosure, but are clearly separate. There does seem to be a ditched track-way entering the inner enclosure from the east, but the relationship between this and the outer enclosure is not clear. The outline of what is probably a rectangular building c.18m by 8m with possible internal divisions and two hearths is clearly visible on the survey results, particularly on the high resolution plot. Numerous high readings across the southern part of the site are probably from hearths or furnaces.

North of the church - the results show a complex series of linear ditches indicating a site with many phases of occupation. The large and slightly curved ditch at the eastern corner of the survey plot may be prehistoric in origin. The remaining linear features may date from anytime between the Romano-British period through to the Medieval period. While there is nothing in the results to suggest a possible phasing or stratigraphic relationship between the features, it
can be clearly seen that space was being divided into discrete plots. A rectangular feature positioned near the top centre of the results appears to have internal divisions and may be a building. The neighbouring linear features being paddocks.
Figure 3. 1984 Aerial photograph of Llangan Church by Terry James, Dyfed Archaeological Trust.
Figure 4. Aerial photograph of Llangan Church (RCAHMW Crown Copyright © DI2007_1674)
Figure 5. Llangan Church geophysical survey - field to south of the church.

Figure 6. Llangan Church geophysical survey - high resolution survey of part of Fig. 3.
Figure 7. Llangan Church geophysical survey - field to north of the church.
Figure 8. Llangan Chruch - combined geophysical results.
PLAS-Y-PARC PRN 14336 NGR SN136216

Site Description
Aerial photographs show a roughly circular, concentric enclosure with the inner enclosure approximately 45m diameter and the outer enclosure 160m across. South facing entrances through both enclosures seem to be connected by two parallel ditches. The site occupies a low hillock, with the inner enclosure lying on an east-facing slope immediately off the highest point.

Topographic survey: Hubert Wilson, Janet Irvine,


Gradiometer settings:
A Geoscan FM36 Fluxgate Gradiometer was used with a sample interval of 0.25m over 20 1m x 20m traverses. The raw data was edge-matched, de-spiked and interpolated using Geoscan’s Geoplot 3 software. The survey grid measured 120m x 100m and consisted of 30 20m x 20m squares of which 26 full squares were surveyed. The survey was undertaken over 4 days.

Gradiometer results:
A concentric enclosure with two clearly defined opposing south-facing entrances. Parallel ditches visible on the aerial photographs we not detected, although other ditches are apparent on the geophysical plot.

The entire inner enclosure has been revealed containing evidence for a possible roundhouse eaves-drip gully as well as possible internal divisions.

Two old field boundary walls, visible on the 1989 AP of this site and since demolished, running horizontally and vertically across the plot can be seen with varying levels of visibility. A cluster of high magnetic responses visible centre bottom between the inner and outer enclosure ditches are likely due to buried metallic objects, possibly remains from the recently demolished field walls.
Figure 9. Location of Plas-y-Parc Survey showing crop-marks plotted from aerial photographs. Contours at 1m and 0.10m intervals. Scale 1:2500.
Figure 10. Aerial photographs of Plas-y-Parc (RCAHMW Crown Copyright © DI2007_1664)
Figure 11. Geophysical survey of Plas-y-Parc.
TREFEREDD UCHAF PRN 8386 SN226499

Site Description
Located just off the highest point of a rounded hill, Treferedd Uchaf is a good example of a concentric cropmark enclosure with ditches flanking the entrance to the inner enclosure in ‘banjo’ style. It is located at 165m above sea level. To the south, east and west the land falls away gently giving wide-ranging views. To the north the land rises very gently a few metres to a high point 350m away.

Aerial photographs show an inner circular crop-mark ditch, approximately 35m in diameter. Concentric to this, c. 25m distant from it is an outer circular enclosure, approximately 85m - 95m in diameter. The entrance to both enclosures face west-southwest. Ditches flanking a possible entrance track run between the two entrances. These ditches may continue outside the outer enclosure entrance, but this is not certain, and these features may be geological.

A site visit in April 2005 was undertaken as the field was being ploughed. No trace of the outer enclosure or the ditched track-way was visible, but a curving stony band up to 0.2m high in the ploughsoil probably marks the line of the bank inside the inner enclosure ditch.

Topographic survey: Hubert Wilson, Neil Attwood

Geophysical survey: Lloyd Bosworth, Gill Salt

Gradiometer settings:
A Geoscan FM36 Fluxgate Gradiometer was used with a sample interval of 0.25m over 20 1m x 20m traverses. The raw data was de-spiked and interpolated using Geoscan’s Geoplot 3 software. The survey grid measured 100m x 120m and consisted of 28 20m x 20m squares of which 24 full and, due to the existing field boundaries, 4 partial squares were surveyed. The survey was undertaken over 3 days.

Gradiometer results:
Concentric enclosure

Clearly defined opposing entrances to both enclosures facing SW.

The inner enclosure antennae terminate short of the outer enclosure. Two possible explanations for this are, firstly, access to the outer enclosure was desired and that this access was either free and unrestricted or controlled by a gate. Secondly, access to the outer enclosure was blocked by the construction of a bank from the excavated ditch material; which would account for the antennae terminating short of the outer ditch. The survey data does not, however, provide evidence for either of these scenarios and an entrance to the outer enclosure may exist elsewhere on an un-surveyed section of its circuit.

This survey has produced evidence of a track or hollow-way which passes through both the outer and inner enclosure entrances. This feature has also helped to define the internal earthen bank of the inner enclosure as a lighter band running the entire inner perimeter of the circular ditch and antenna.

The inner enclosure has evidence of possible post-holes indicating the possible location of a structure.
Old field boundaries/hedgerows/tracks are clearly visible and would have divided current field into four separate fields.

The characteristic readings of intense heat or burning is visible in the results close to and outside the outer enclosure ditch. Contemporaneity between the enclosure ditch and this area of intense heat/burning is not evident and they are likely to represent two separate and unrelated incidents at this site.
Figure 12. Location of Trefredd Uchaf survey showing crop-marks plotted from aerial photographs. Contours 1m and 0.10m. Scale 1:2500.
Figure 13. Aerial photograph of Trefereedd Uchaf (RCAHMW Crown Copyright ©AP_2005_1493)
Figure 14. Geophysical survey of Trefereidd Uchaf.
Topographic survey: Hubert Wilson, Rachel banks, Frank Olding

Geophysical survey: Lloyd Bosworth, Kendra Patten

Site Description
Aerial photographs show a complex cropmark enclosure bisected by a public road in a deep hollow-way and by a farm track, also in a hollow-way. The enclosure lies on a north-facing slope at approximately 130m. It consists of a distinct cropmark ditch enclosing a sub-rectangular area 60m by 60m. There is no obvious entrance through the ditch into the enclosure, but the road/track may be masking this. Concentric to and about 12m distant from this distinct ditch is a very much slighter ditch. There is an entrance through this ditch on the eastern side. Two and possibly three more ditches lie on the east side of the enclosure, with hints that they too run concentrically around the enclosure, at least on the north side. There are entrances through these ditches on the east side. The relationship between this enclosure and a smaller rectangular cropmark (35727) 75m to the west is unknown. In 2005, the enclosure was under improved pasture.

Gradiometer settings:
A Geoscan FM36 Fluxgate Gradiometer was used with a sample interval of 0.25m over 20 1m x 20m traverses. The raw data was processed using Geoscan’s Geoplot 3 software. The survey grid measured 100m x 60m and consisted of 15 20m x 20m squares, all of which were surveyed. Two further 20m x 20m squares were positioned over a second, smaller enclosure located toward the centre of the field. Both of these squares were surveyed. The survey was undertaken over two warm and sunny days.

Gradiometer results:
One half of a concentric enclosure was surveyed.

Double ditch – outer ditch becomes increasingly indistinct as it passes westwards around the inner ditch.

No entrance visible along this half of the enclosure, though the inner ditch does become indistinct on its western edge giving the appearance of an entrance at this point. However, internal features suggest the presence of structures.

An uneven linear feature running east to west and cuts through the outer enclosure ditch; this linear feature may be archaeological but its relation with the rest of the enclosure is uncertain.

A narrow linear feature runs parallel to and inside the inner enclosure ditch from the south centre westwards to the north. At its western limit this linear feature appears to be triple. This feature may be a trench for a revetting wall beneath the bank.
Figure 15. Location of Ffynnon Llygoden survey showing crop-marks plotted from aerial photographs. Contours at 1m and 0.10m. Scale 1:2500.
Figure 16. Aerial photograph of Ffynnon Llygoden (RCAHMW Crown Copyright © 95-cs-2051)

Figure 17. Aerial photograph of Ffynnon Llygoden (RCAHMW Crown Copyright © 2003-cs-1594)
Figure 18. Geophysical survey of Ffynnon Llygoden, main enclosure.

Figure 19. Geophysical survey of Ffynnon Llygoden, small enclosure.
NEVERN CASTLE  PRN 1600 NGR 082401

Site Description
Nevern Castle is a multivallate Iron Age, inland promontory fort that was reused as a medieval castle. It lies at c.50m above sea level. To the east and south the land falls away by 30m to the River Nevern. To the west there is a deep natural gully. To the north and northeast land is fairly flat. The main defences curve around to the north and northeast and consist of three massive banks and ditches. At the highest there is 7.5m between the bottom of the ditches and top of the banks. The internal area is level and roughly triangular, measuring c.100m E-W and 80m N-S. A linear hollow running E-W across the interior seems to be a silted ditch. Apart from this the interior is featureless.

A medieval motte lies over the multivallate defences on the northwest side. The eastern side to the promontory has been separated from the main part of the fort by a deep rock-cut ditch to form a sub-fort. This sub-fort is surrounded by a stone wall and in its centre there are the remains of a stone tower.

The ramparts are under scrub and the interior under long grass, but becoming invaded by scrub. The steep slopes and motte are under deciduous woodland.

Geophysical survey: Lloyd Bosworth, Hayley Nichols, Kendra Patten

Gradiometer settings:
The survey was undertaken over one day. The survey grid measured 140m x 100m and consisted of 35 20m x 20m squares of which 27 full and 3 partial squares were surveyed. A Geoscan FM36 Fluxgate Gradiometer was used with a sample interval of 0.25m over 20 1m x 20m traverses. The raw data was despiked and interpolated using Geoscan’s Geoplot 3 software.

Gradiometer results:
The survey was undertaken in the internal area of the fort/castle. No definite archaeological features were detected. On the surface what appears to be a silted ditch is visible running across the internal area; there is a hint on the survey, but it is not a clear feature.
Figure 20. Location of Nevern Castle geophysics.
Figure 21. Geophysical survey of Nevern Castle.
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REFERENCES


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Paratowyd yr adroddiad hwn gan / This report has been prepared by K Murphy

Swydd / Position: Trust Director

Llofnod / Signature ........................................... Dyddiad / Date

Mae'r adroddiad hwn wedi ei gael yn gywir a derbyn sêl bendith
This report has been checked and approved by

ar ran Archaeoleg Cambria, Ymddiriedolaeth Archaeolegol Dyfed Cyf.
on behalf of Cambria Archaeology, Dyfed Archaeological Trust Ltd.

Swydd / Position:

Llofnod / Signature ........................................... Dyddiad / Date

Yn unol â’n nôd i roddi gwasanaeth o ansawdd uchel, croesawn unrhyw sylwadau sydd gennych ar gynnwys neu strwythur yr adroddiad hwn

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