
**RE-ASSESSMENT OF TWO HILLFORTS IN NORTH WALES:
PEN-Y-DINAS, LLANDUDNO AND CAER SEION, CONWY**
A report for Archaeology in Wales

GAT Project No. G1770

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with a report on the mammal bones from Pen-y-dinas by Deborah Jaques, Palaeoecology Research
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**Prepared for Cadw
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A survey of hillforts and defended enclosures in Wales was carried out between 2004 and 2006 by the four Welsh archaeological Trusts for Cadw. The main aim was to produce an up-to-date record of all forts or defended enclosures and an assessment of all those that were not currently protected as Scheduled Ancient Monuments. The results for north-west Wales are recorded in GAT reports nos. 580 and 634 covering about 130 hillforts or defended enclosures. Many of the forts in this area are small and of simple design in comparison with those of the Welsh Marches and southern England. Much of the area is mountainous or upland and the forts make good use of natural features, such as scarps and promontories and many of the forts have stone-built walls rather than ditches and banks. The high altitude, remote location and stone construction of many forts means that most have survived well and include some of the best preserved examples in Britain.

Despite the large number of forts in north-west Wales there have been very few excavations to provide interpretation or dating although there have been some casual finds. One of the greatest hindrances to interpretation has been the general lack of artefactual evidence. North-West Wales was more or less aceramic during the first millennium BC and the acid soils mean that animal bones do not survive to provide economic evidence. Those excavations that have taken place have mainly been antiquarian or carried out prior to the introduction of radiocarbon dating. Antiquarian finds from several forts have produced artefacts showing occupation, or re-occupation during the Roman period. On the other hand there has been an almost total lack of information to show when hillforts of different styles were built, or, if there were several phases, what date these belonged to. The same was true, until recently, of undefended settlement, where finds of the Roman period were often the only datable material. However, excavations in recent years have produced radiocarbon dates confirming widespread Roman-period occupation but showing origins in the middle of the first millennium BC and in some cases continued occupation into the fifth century AD.

The work described here took place with funding from Cadw as a follow-up to the hillforts project. It was designed to provide some new interpretative evidence about hillforts by small scale work re-assessing earlier excavations at two hillforts in Conwy County Borough. The first was at the hillfort of Pen-y-dinas, Great Orme, Llandudno where a small private excavation took place in 1960 (Sirrett 1960). The fort lies on a coastal promontory of limestone bedrock, the alkaline soils of which provide good survival of animal bones, which is exceptional in the region, providing the possibility of economic information and material for radiocarbon dating. The second hillfort, Caer Seion, lies only 5km to the south of Pen-y-dinas on a ridge of igneous rock overlooking the sea. Significant excavations took place there in 1950-1, which allowed some interpretation and raised questions about the use and phasing of the fort, but without the benefit of radiocarbon dating (Griffiths and Hogg 1956). The full re-assessment reports with specialist contributions can be consulted at Gwynedd HER, GAT report nos 823 and 1059.

Acknowledgements

For the work at Pen-y-dinas, thanks go to the Trustees of Llandudno Museum, to the late Peter Sirrett, Richard Thomas (Mostyn Estate Office) and Susan and David Chapman (Ancient Arts).

For the work at Caer Seion, thanks go to Alun Jones and Shirley Williams (Conwy County Borough Council). The work was carried out by the author and Robert Evans of GAT with Cliff 'Beaver' Hughes, Jeff Marples and Emily May.

Radiocarbon dating was carried out by Beta Analytic Inc., Florida and calibrations carried out according to INTCAL04 (2004).

Pen-y-dinas hillfort

Pen-y-dinas hillfort is unusual in its coastal location on the Great Orme peninsula, and of interest because of its close proximity to the Bronze Age copper mines there. The main period of working was in the Bronze Age but excavations at the mine have produced one radiocarbon date of 740-400 cal BC at 2 sigma (Lewis 1996) so there is a possibility of exploitation in the Iron Age. There are unenclosed roundhouses elsewhere on the Great Orme (Bibby 1984), that are most likely to be of Iron Age date and no settlement has so far been identified that could be associated with the Bronze Age mining. The Great Orme was once almost an island, surrounded by the sea on three sides and by marsh on the isthmus on the south side, probably until the Medieval period, when sand blows from the west buried much of the peat. Geological boreholes near to Llandudno Railway station recorded peat at a depth of -8.5m which produced a radiocarbon date of 6600-6390 cal BC (SRR-61) (Taylor 1980, 370). Pen-y-dinas hillfort is assumed to be of Iron Age origin although the only datable artefact from it is a piece of Roman Samian ware, from 19th century excavation of a roundhouse (Penrhos 841). Elsewhere on the Orme there has been a chance find of a gold coin of the early 1st century BC originating from Eastern England (Savory 1976, 64).

The fort has management issues because it lies close to a heavily visited tourist area and because of invasive blackthorn scrub within the interior. It is a Scheduled Ancient Monument, but previously no detailed plan existed, which led Cadw to commission a topographic survey, carried out by GAT (Fig. 2 and Muckle 1993). The fort relies on naturally defensive steep slopes on three sides but the north-west side, where the entrance is situated, was defended by an inner wall and three lines of outer banks. The internal area is about 2ha (5 acres), within which are the platforms of about 65 roundhouses, some with vestiges of walls. The houses cluster mainly behind the inner wall on the west and on the sheltered lower terraces on the east

The excavation in 1960 was carried out by Peter Sirrett, a local historian, with local helpers. Mr Sirrett hoped that the excavation would provide information about the dating of the fort. Unfortunately no diagnostically datable items were recovered although the excavation did produce animal bones and marine shells and such dietary and economic evidence is rare in North Wales. A short report and catalogue of finds were produced (Sirrett 1960) but not published and so in 2008 it was proposed to re-assess the site archive and provide scientific analysis and radiocarbon dating of the finds with a view to publication.

After the 1960 excavation the finds and site records from the excavation were deposited with the landowner, the Mostyn Estate Office. In 1992 the artefacts were transferred to Llandudno Museum when an accession catalogue showed that the few 'diagnostic' items were missing. These missing items, as well as the paper records, drawings and photographs could not be located after further enquiry with the Mostyn Estate Office, Conwy Archives and the Flintshire Record Office (who hold most of the Mostyn Estate papers). Mr Sirrett did not keep any copies of paper records or photographs that might have helped in understanding the context of the finds. It was not possible to carry out the re-assessment to the level that had been proposed but it is possible that the missing material might be found in future...

The 1960 excavation

The roundhouse excavated was identified by Mr Sirrett as that numbered 34 on the survey of the fort produced in 1993 (Fig. 2). This lies at the east edge of the summit plateau, the largest of a group of six there. The 1960 report describes the site as '...excavated by the quadrant method, using a permanent north-south line for measurement. Bedrock, and consequently the soil level, sloped gently from South to North. The two Southern quadrants were very shallow, while the North Western quadrant (which proved to be most productive as regards articles recovered) was, in places, several feet deep.' The catalogue lists finds only from the south-west and north-west quadrants and of these the largest number (48) came from the south-west quadrant, with 32 from the north-west. It is uncertain whether the depth was from a common datum or simply from the surface but the considerable depth in the north-west is confirmed by the recorded depth of one find at 39in. The lack of any finds from the south-east and north-east suggest that these areas were not excavated and Mr Sirrett in a letter of 2007 stated that '... we excavated the half

section nearest to the cliff edge but were forced to discontinue the excavation due to persistent attacks of vandalism. For protection of the undisturbed portion of the site we infilled and re-turfed the area to prevent further damage.'

The report describes the roundhouse before excavation as 'a shallow saucer-shaped depression some 15 feet in diameter'. On excavation it was shown to have 'a drystone wall, wide at the base and narrowing towards the top'. There were no traces of internal posts or of any deliberate floor. The description and the recorded depths indicate that the finds were somehow incorporated in the deposits, rather than lying on an occupation horizon or horizons although it states that '...several small makeshift fireplaces were uncovered, at widely varying places and at different levels. All constructed of sea-washed stones.' This suggests different floor levels and phases of use, some possibly even from re-use of the abandoned house site. For instance 'a vast quantity of limpet shells were uncovered, at one place a bed several inches thick had accumulated.' Together these all suggested intermittent and casual occupation. Without the site drawings or photographs it is not possible to produce any new plan of the roundhouse, which could only be obtained by re-excavation.

Re-assessment of the excavation archive

Mr Sirrett's catalogue listed eighty finds, comprising 63 animal bones, 8 stones, 1 'lump of yellow ore', 3 burnt clay fragments, a calcined oyster shell and four 'small finds'. The latter comprised a pierced oyster shell, a 'deer horn' knife handle, a bone needle and bone button. The report also mentions 'Two large granite mauls or stone hand-hammers', various pot-boilers as well as limpet shells, and smaller numbers of mussel and oyster shells. The latter are not in the museum archive and probably discarded.

A few of the bones were missing from the museum collection as well as the four small finds. No measurements were given for the small finds. They were described as follows: 'A fine example of a Deer horn knife handle (Red Deer). It was complete and undamaged, but showed no trace of a blade having been in place. An equally fine bone needle, also undamaged. A small bone button, a disc of animal bone neatly pierced in its centre.' It is uncertain why the knife handle was identified as such if it did not have traces of a blade. The needle was presumably pierced with an eye. The description of the handle, needle and button does not allow them to be dated. The stone hammers mentioned in the report are potentially interesting as such objects could be associated with mining or ore processing. The 'yellow ore' was found to be just iron-stained limestone. One piece of 'green stone' was a slate pebble fragment. There were also four other small pebbles and a possibly burnt cobble. The three burnt clay fragments were potentially of interest as possible pot fragments, but these were burnt daub, two with possible wattle impressions.

Vertebrate remains by Deborah Jaques

Although the vertebrate assemblage recovered from Pen-y-dinas was small and somewhat fragmented, analysis was recommended in view of the scarcity of vertebrate remains from settlements of this date in Wales. The following account provides some general comments regarding the composition of the vertebrate material; however, the small size of the assemblage and paucity of the archaeological information was restrictive.

Summary information for the vertebrate remains is reported in Tables 1 to 3, whilst description of the methods used and detailed records of individual bones, including tooth wear data and measurements can be found in the archived report (GAT Report No. 823).

In total, 59 bones were recovered from the excavations; their preservation being surprisingly good given that vertebrate material of prehistoric date is generally in a rather poor condition (or completely absent) because of the acidic nature of the soils over much of Wales (Caseldine 2003). A single fragment (a cattle calcaneum) showed possible dog gnawing damage, whilst fresh breakage was apparent throughout the assemblage. Six of the nine caprovid mandibles recovered had broken teeth; it was not readily apparent (in most cases) whether this damage was recent or had occurred in the past, however. Tooth damage to the third and fourth premolars and the first molar of one of the mandibles (Id. no. 22) may have been the

result of shattering after being subjected to heat, but this could not be confirmed with any certainty. As might be expected, dental attrition information from some of the broken teeth could not be determined or could only be approximated.

Species representation: Cattle and caprovid remains provided the bulk of the identified assemblage (Table 1), with one of the caprovid bones being more closely identified as goat. A small piece of horn core may also have been of the same species. Pig remains were present, together with single fragments of horse and ?human. Diagnostic features were absent from some of the fragments and these were assigned to the large and medium-sized mammal categories. Most of the large mammal fragments were probably cattle, whilst two medium-sized mammal vertebrae were almost certainly caprovid.

Although the size of the assemblage precluded detailed analysis, frequencies calculated on the basis of fragment counts (NISP) suggested that cattle remains were most numerous, forming 42% of the identified assemblage, with caprovid remains being just slightly less common – 40% (Table 2). However, using MNI (minimum number of individual) values, these frequencies altered considerably, with caprovids forming 56% of the identified assemblage and cattle providing 22%. Pig remains were the least significant of the three main taxa on the basis of fragment counts (18%) but MNI values placed pigs on a par with domestic cattle with a frequency of 22%. It must be noted that both quantification methods have disadvantages particularly when applied to small assemblages. In short, NISP counts may over represent species with more bones and those whose bones fragment into more readily identifiable pieces, whilst MNI values can over emphasise the importance of less common species, a problem that increases the smaller the assemblage (Hambleton 1999).

Nine of the 18 caprovid bones were mandibles, with parts of the fore (scapula, radius and ulna) and hind (pelvis and femur) limbs also identified. Two horn core fragments (one of which may be goat, as mentioned above) and two medium-sized mammal vertebrae (sheep/goat/small cervid rather than pig) were also recorded. Cattle remains included a range of skeletal elements representing the head (cranium, maxillae, mandible fragments and isolated teeth) and limbs, including meat-bearing elements, such as the pelvis and scapula, and terminal limb bones, such as astragalus and calcaneum.

Pigs were represented predominantly by isolated teeth and maxilla fragments, together with a single metacarpal. The mandibular canine present (Id. no. 19) was that of a female individual. A single tooth (a maxillary premolar/molar) was identified as horse. One fragment could not be identified but may represent part of a human collar bone (Id. no. 56). A confident identification of this fragment could not be made, despite its examination by two human bone specialists (Dobney and Gowland pers. comm.).

Butchery: Marks on the bones which provided evidence of butchery were quite frequently encountered and were mainly, although not exclusively, observed on the cattle bones.

Knife marks were noted on a cattle frontal bone fragment (Id. no. 20), whilst horizontal cuts were observed just below the proximal articulation of a cattle metacarpal; these probably result from skinning. The latter had also been split longitudinally, almost certainly for the removal of the marrow. Damage to a cattle mandible (Id. no. 63), which had been chopped across the diastema, may also have been related to marrow extraction (Dobney *et al.* 1996). This fragment was possibly heat damaged (there were slight traces of a blackened area and some splitting of the bone surface into layers) which would have facilitated the chopping of the bone into two, with the additional benefit of heating the marrow so that it could be more easily removed. However, Rixson (1989) suggests that chopping through the diastema, and also across the vertical ramus of the mandible (fragment indicative of this was also noted – Id. no. 36) was more likely for the removal of the extremities of the mandible and the recovery of the cheek meat. This would accord well with a cattle maxilla fragment (Id. no. 34) which had a pair of vertical (shallow) chop marks above the molars and the bone had also been chopped through at the end of the tooth row. These could have been made during the removal of the cheek meat, together with the tongue, both of which would have been a valuable resource. Alternatively, once the meat had been removed the cranium may have been chopped into pieces for fat extraction (Rixson *op. cit.*).

Second and tertiary butchery, i.e. division of the carcass into major portions and then into more manageable household 'joints', was also indicated by the chopped femur and humerus shafts, and the scapula and pelvis fragments. Trimming of the scapula 'spine' (as noted on Id. no. 29) was the result of removal of the meat (Seetah 2002), as were knife marks on the pelvis (ilium). Filleting was also apparent as evinced by knife marks on a caprovid lumbar vertebra and associated sacrum.

Age at death: As a result of the damage to the caprovid teeth, it was not always possible to confidently determine the wear stage of a particular tooth, although occasionally a wear stage could be approximated. Where possible, mandibles with incomplete tooth rows were assigned to age groups on the basis of comparison with records from more complete aged mandibles from this site and other assemblages from sites of similar date. On this basis, it was possible to suggest that at least four of the eight mandibles available were probably from individuals of 12 months of age or less (in three cases, not less than 6 months) when killed, whilst four were from animals of two to three years old at death. Epiphyseal fusion data suggested that the animals represented were mostly less than 2 years old, with just one bone from a sheep that was at least 2 years old.

Little information concerning age [from teeth] was available for cattle or pigs, with the exception of two cattle maxilla fragments. One included a deciduous third premolar representing an immature individual, although actual age cannot be determined. Teeth from the other maxilla fragment also included deciduous premolars which showed no evidence of wear. These teeth erupt within the first three weeks of birth (Hillson 1986), and, typically, unless kept as veal calves, the animals start to eat grass from about two weeks, after which, wear on the surface of the tooth would be expected. This fragment is, therefore, likely to represent a neonatal or juvenile animal. Fusion data were scarce and it was only possible to suggest that the animals represented were over 18 months, whilst a calcaneum was from an individual of less than 24 months.

Conclusions: Though well preserved, the small size of this bone assemblage renders it of limited interpretative value. Species identified were restricted to the main domestic mammals and no bird or wild mammal remains were recorded. In all likelihood, given the date of the excavations, and that no sieving was undertaken, a bias in favour of larger fragments and those that are most easily recognizable (such as mandibles for example) is inevitable. Most other assemblages of Iron Age date from elsewhere in Britain are also typically dominated by domestic animals and evidence for the exploitation of wild resources is usually minimal (Hambleton 1999).

Although little age-at-death information was available for the main domesticates, there was some evidence for the slaughter of young sheep of less than a year old. These were probably for meat, whilst those that were slightly older would have provided several fleeces before they were culled. Hambleton found, in her study of animal husbandry regimes in Iron Age Britain (1999), that on most sites of Iron Age date a large proportion of the sheep were slaughtered at a relatively early age. Various researchers (eg Albarella, 2007; Hambleton 1999) have suggested that the culling of young sheep prior to the optimum size in terms of meat production (typically between 1.5 and 2.5 years) may relate to the problems of keeping and feeding large numbers of animals over the winter months and additionally that sheep (and goats) would also have been of use as sacrificial animals during autumn/winter religious festivals and feasts. Both Albarella (2007) and Hambleton (1999) found no evidence for a particular emphasis on any one product during the Iron Age and suggested that meat and wool (and possibly milk) were likely to have been of equal value. This would also fit with the limited information supplied by the small data set from Pen-y-dinas.

There were too few fragments for detailed analysis but the remains would appear to represent waste from all stages of butchering – heads and lower limbs from initial preparation of carcasses (with evidence for skinning), bones representing joints of meat and those, such as vertebrae, from which the meat had been filleted. This suggests that the animals were slaughtered, butchered and eaten on-site, with the presence of young individuals (calves and lambs) implying that livestock was also raised at the site or nearby.

Table 1. Hand-collected vertebrate remains from excavations at Pen-y-dinas Hillfort, Great Orme, Llandudno.

Species		Total
<i>Equus</i> f. domestic	Horse	1
<i>Sus</i> f. domestic	Pig	8
<i>Bos</i> f. domestic	Cattle	19
Caprovid	Sheep/goat	17
<i>Capra</i> f. domestic	Goat	1
? <i>Homo sapiens</i>	?human	1
Large mammal		10
Medium-sized mammal		2
Total		59

Table 2. Fragment counts and MNI values for the main domestic mammals from excavations at Pen-y-dinas Hillfort, Great Orme, Llandudno. Key: NISP = number of identified fragments; MNI = minimum number of individuals, *includes goat.

	NISP	%	MNI	%
*sheep/goat	18	40	5	56
cattle	19	42	2	22
pig	8	18	2	22

Table 3. Fragment counts for individual skeletal elements from the main domestic mammals from excavations at Pen-y-dinas Hillfort, Great Orme, Llandudno. Key: * = goat.

skeletal element	horse	pig	cow	sheep/goat
horncore	-	-	-	2
cranium	-	1	1	-
maxilla + teeth	-	3	2	-
upper incisor	-	1	-	-
mandible	-	-	2	9
isolated teeth	1	2	2	1
scapula	-	-	2	1
humerus	-	-	1	-
radio/ulna	-	-	-	1*
radius	-	-	1	-
ulna	-	-	-	1
metacarpal	-	1	1	1
pelvis	-	-	3	-
femur	-	-	-	1
astragalus	-	-	1	-
calcaneum	-	-	2	-
metatarsal	-	-	-	1
cuboid-navicular	-	-	1	-
Total	1	8	19	18

Discussion and dating

The Pen-y-dinas excavation showed that the roundhouse was of a relatively small and simple kind, c 5m internal diameter, with no evidence of internal posts. A house of that size could have a roof supported

entirely on its walls. The report described the presence of large quantities of limpet shells, as well as smaller quantities of mussel and oyster shells, none of which were retained. Bird and fish bones might also have been present but undetected. Several 'fireplaces' were described so charcoal was probably present, which could have provided evidence of date, diet and environment. The presence of what appears to be a midden of shell and bone inside a house could indicate late casual re-use of the house, but this cannot be certain. It is clear, however, that the diet included terrestrial and marine resources, some farmed, some wild.

The economic and dietary evidence from study of the vertebrate remains is useful for north-west Wales where such information has so far been absent. All three of the main domestic species were present with no significant difference from assemblages from Iron Age sites elsewhere. There was evidence for slaughter and butchery on-site, and of the use of young individuals, suggesting that the occupants kept stock. One sheep/goat foot tarsal/carpal bone has polish around its shaft as well as a probably deliberate perforation. Similar items have been found for example at the Iron Age settlement of Meare East in Somerset and classified as bobbins, for use in spinning, (Coles 1987, 145-150).

The previous but now missing finds from Pen-y-dinas might be compared to those from Dinorben hillfort, only 15km to the east, where alkaline soils over limestone also allowed preservation of bone and antler objects. These included several sawn antler tines, interpreted as handles, used in a number of ways, as well as antler tine sections perforated as toggles. There was also one bone pin, probably of Romano-British date, but no needles (Gardener and Savory 1964). The circular bone 'button' from Pen-y-dinas was more likely to be a bead, and one such, sawn from an antler, was also found at Dinorben. Plain bone needles have been found at the Iron Age and Romano-British settlement of Whitton, Glamorgan, but not in a dated context (Jarrett and Wrathmell 1981, 212-3).

The latest occupation might be expected to have been in the Roman period, as suggested by the previous find of Samian pottery from another of the houses. However, a radiocarbon date was obtained from one cattle femur, recorded as at a depth of 9ins in the deposits within the roundhouse (Sirrett 1960). The date was 2270 +/- 40 bp or cal BC 400 to 340 or cal BC 320 to 210 at 2 sigma (Beta-254961). This must correspond to near the end of occupation within the house and indicates much earlier occupation of the fort and probably earlier abandonment than would previously be expected. It also suggests that occupation of the fort in the Roman period was limited. Overall it is significant that there is now evidence for occupation of the fort in the Middle Iron Age.

Caer Seion hillfort, Conwy Mountain

Conwy Mountain hillfort, sometimes known as Caer Seion or Caer Lleion is a substantial fort of *c* 3 hectares (7.5 acres) with a commanding position overlooking Conwy Bay, the River Conwy and close to a major trackway that follows the coastal ridge.

Excavations at the fort were carried out in 1906 and 1909 but produced little evidence (Picton 1909). More extensive excavations in 1951-2, carried out to a high standard, investigated several roundhouses and parts of the defences (Griffiths and Hogg 1956). No pottery or other datable artefacts were found but the work did produce numerous sling stones, spindle whorls, rubbing stones, fragments of saddle querns and some iron fragments, including possibly part of a pair of tweezers. The presence of saddle querns, but no rotary querns, and the absence of any Romano-British material were interpreted as showing occupation during the Middle to Late Iron Age, about 300 BC to 1st century AD and possibly abandoned when the Romans occupied North Wales in 78 AD.

The fort had two phases of defences (Fig. 3). In the first period a single stone wall of 3 to 4m width encircled the whole hill top except at the steep north side where no defence was needed. It had one entrance, a simple gap at the south side, which was shown to have had a substantial timber gate. Within the fort were over 50 timber round houses, visible as terraced platforms. They varied in size from about 4m to 8m diameter, some with traces of walling.

In the second period a smaller and stronger fort was constructed at the west end of the hill, partly replacing the walls of the earlier fort (Figs 3 and 4). This small fort had wider walls, a strong gateway protected by flanking bastions and no access to the area of the earlier fort. The defences were reinforced by the addition of an outer rampart at the east side, where the relatively level approach made it more vulnerable. Outside the small fort was a walled outer yard with a wide entrance, which was later blocked. The 1956 report suggested that this outer work was part of the first period but this is uncertain. The visible evidence is that the larger fort was still occupied after the small fort was built, even though there was no gateway between them.

In 1991 a survey of the condition of the fort was carried out by Peter Crew, then archaeologist for the Snowdonia National Park Authority. An assessment report was produced and consolidation work was carried out for Cadw (Crew 1991). The report noted that the 1956 excavation had identified charcoal-rich layers that could be targeted for future research, a suggestion that instigated the work described here.

The present project aimed to re-excavate parts of two of the 1952-2 trenches. The first was in a round house within the small fort, called Hut 4 in the earlier report, where a layer of charcoal was recorded sealed beneath the hut wall (Fig. 5). The second was a trench through the outer rampart at the east side of the small fort where an 'occupation horizon' containing charcoal was described beneath the rampart (Figs 4 and 6).

Excavation results

Trench 1 (Fig. 5). The whole of the interior of Hut 4 had been excavated in 1951 but the 2008 excavation was limited to a one metre wide strip across the interior. Two post-holes, [14] and [16] were identified of five possible post-holes recorded in 1951. The occupation deposits excavated in 1951 produced 400 slingstones, 3 spindle whorls, pot boilers and rubbing stones. It also recorded two hearths, which might have provided radiocarbon dating material but nothing remained of the fill of either (Fig. 5a).

A layer of charcoal was identified in 1951 sealed beneath the roundhouse wall at the west side, and butting up against a wall that appeared to have been built as a widening of the rampart wall of the small fort (Fig. 5a). This layer (19) of almost pure charcoal was still evident when the face of the hut wall was exposed (Fig. 5b). The charcoal layer overlay a thin soil layer (20) that in turn overlay another thin layer (21) with some charcoal fragments, which continued beneath the rampart wall widening (Fig. 5c).

The quantity of charcoal present in (19) suggests that it derived from clearance prior to construction of the hut, and so could provide a significant date. However, the sequence may not be so simple. The 1951 report noted that the hut wall at the south-west was built of small laid stones in contrast to the rest, which had orthostatic facing infilled with rubble. It may be that the hut itself belonged to an earlier phase and that the south-western part was re-built when the small fort was built or strengthened.

Trench 2 (Fig. 6). This trench included a complete section across the outer rampart and its ditch, which consisted of a conjoined line of quarry pits (Fig. 4). The rampart fill was still intact but the south face across the quarry ditch was only backfill and must have collapsed during the earlier excavation.

The quarry pit was cut into the blocky bedrock and must therefore have produced many large angular pieces of rock, as seen in the backfill. The rampart bank however, was made of mainly small pieces of broken stone in a matrix of silt. There was no remnant of any stone revetting of the bank as might have been expected. The quarry pits lay within a shallow ditch about 1m deep, where the superficial deposits had first been removed, within which was the 1m deep quarry pit. The bank was 1m high, but originally must have been about 2m high, providing a considerable defensive obstacle.

The bank fill overlay a deep buried soil (9) of dark humic silt containing a scatter of charcoal fragments (Fig. 6a). This soil, the 'occupation horizon' of the 1951 excavation appeared mixed and disturbed. Wood charcoal was collected for identification and dating, the soil was sampled for palaeo-botanical study and pollen analysis. Two pits [4] and [6] described as possible post-holes in 1951 were re-excavated and

proved to be post-holes, still with some *in situ* fill and post-packing stones. The 1951 report suggested that these belonged to a roundhouse indicated also by a shallow curving gully. This feature survived as an arc of about 4m diameter, possibly an internal drain. However, the lack of any evidence of a floor surface makes interpretation as a roundhouse uncertain.

Artefacts

In Trench 1 the 1951 backfill produced three possible sling stones and one burnt fragment of a possible rubbing stone. In the buried soil (19) was another possible sling stone. In Trench 2 the 1951 backfill produced six possible sling stones and one smooth flat cobble of soft stone with multiple fine scratches in various directions, possibly a smoothing stone.

Environmental evidence by Astrid Caseldine and Catherine Griffiths

The results are summarised here. The full reports can be viewed in the in-house report (GAT Report no. 1059).

Charcoal Identification

A limited amount of charcoal was identified both from hand-picked and bulk samples (Table 4). The sample from layer (19) beneath the roundhouse wall in Trench 1 contained charcoal of birch, alder, hazel while that from charcoal layer 21, which underlay the buried soil below layer 19 and continued under the rampart, produced alder, hazel and cherry/blackthorn. Charcoal from the buried soil (9) in Trench 2 (Fig. 6, Sample <1>) comprised alder, oak and hazel as did charcoal from the fills of one of the post-holes (4). Birch pollen (see below) was also recorded from the buried soil (9). The evidence from both trenches indicates a similar type of woodland in the area. The presence of some round wood pieces may also suggest that coppicing was taking place.

Table 4 Charcoal identifications from Caer Seion hillfort

Trench	1	1	2	2	2	2	2	2	Total
Sample	4	5	6	3	7	8	9	10	
Context	19	21	5	9	9	10	27	30	
<i>Quercus</i> spp. (Oak)	-	-	-	1	-	1	3	1	6
<i>Betula</i> spp. (Birch)	1*	-	-	-	-	-	-	-	1
<i>Alnus glutinosa</i> (L.) Gaertner (Alder)	2	1	-	9	5*	3	-	-	20
<i>Corylus avellana</i> L. (Hazel)	2	3	4	-	-	1	2*	4	16
<i>Prunus</i> sp. (Cherries/blackthorn)	-	1	-	-	-	-	-	-	1
Total	5	5	4	10	5	5	5	5	44

*includes charcoal used for AMS dating.

Charred Plant Remains

The carbonised plant remains, recovered by flotation and sieving, were relatively plentiful (Table 5). In Trench 1, the soil (19) beneath the roundhouse wall produced emmer/spelt wheat grain, spelt chaff, an oat caryopsis and several weed seeds of cultivated or disturbed ground, including corn spurrey, redshank and sheep's sorrel, probably representing crop processing waste. The layer (21) beneath the rampart wall yielded only one grain and one glume base of emmer or spelt wheat and a few weed seeds indicative of cultivation or soil disturbance. The most frequent remains were heather flowers, possibly indicating clearance before construction after a period of site abandonment or the sample could represent fuel waste. In Trench 2 the dark, organic layer at the base of the ditch produced no plant remains. The buried soil (9), previously interpreted as an 'occupation horizon', produced wheat, barley and oat grain, wheat chaff,

including spelt glume bases, and oat chaff confirming that at least some of the oat was wild rather than cultivated. In addition hazelnut shell fragments and seeds and other remains of species associated with arable cultivation, disturbed ground, grassland or heathland were present. The latter included fat-hen, ribwort plantain, heath grass, sedge and bracken. The scatter of charcoal in layer (9) was confined to a limited area and therefore may represent a single event. Overall the sample suggests waste from one or more domestic fires which included crop processing waste. The assemblage demonstrates that crop processing was taking place at the hillfort and that wheat, including spelt wheat, and barley were being grown in the area during the Mid Iron Age. The evidence is consistent with that from a roundhouse at Parc Bryn Cegin, Bangor, where crop plants included spelt wheat, emmer wheat, naked wheat, barley and oat (Kenney 2008, Schmidl *et al* 2008). The recovery of plant remains from deposits dating to the Mid Iron Age at Caer Seion is a particularly useful addition to the record for crop husbandry in Wales, given the relatively limited evidence available for this period

Table 5 Charred plant remains from Caer Seion hillfort.

Trench	1	1	2	2	Habitat preference
Sample	4	5	3	10	
Context	19	21	9	30	
Volume (litres)	0.5	0.5	6.7	0.4	
<i>Hordeum</i> sp. - grain (straight) (Barley)	-	-	1	-	A
<i>Hordeum</i> sp. - grain (twisted)	-	-	1	-	A
<i>Hordeum</i> sp. - grain	-	-	1	-	A
<i>Triticum dicoccum/spelta</i> - spikelet forks (Emmer/spelt wheat)	-	-	12	-	A
<i>Triticum dicoccum/spelta</i> - glume bases	-	1	29	10	A
<i>Triticum dicoccum/spelta</i> - grain	4	1	7	1	A
<i>Triticum spelta</i> - glume bases (Spelt wheat)	1	-	24	2	A
<i>Triticum</i> sp.- glume bases (Wheat)	-	-	4	-	A
<i>Triticum</i> sp. - rachis frags.	-	-	7	-	A
<i>Triticum</i> sp. – grain	-	-	1	1	
<i>Cerealia</i> indet.	2	-	19	1	A
<i>Corylus avellana</i> L.) - nut shell frags. (Hazel)	-	-	20	5	W
<i>Chenopodium album</i> L. (Fat-hen)	-	5	8	-	A, D
<i>Atriplex</i> spp. (Oraches)	-	-	5	-	A, D
Chenopodiaceae indet.	-	-	2	-	
<i>Spergula arvensis</i> L. (Corn spurrey)	1	-	-	-	A, D
<i>Cerastium</i> spp. (Mouse-ears)	1	-	1	-	G, A, D,
Caryophyllaceae	-	-	2	-	
<i>Persicaria maculosa</i> Gray (Redshank)	2	-	-	-	A, D
<i>Persicaria lapathifolia</i> (L.) Gray (Pale persicaria)	-	-	1	-	D, A, w
<i>Persicaria minor</i> (Hudson) Opiz (Small water-pepper)	1	-	-	-	Gw, B
<i>Polygonum aviculare</i> L. (Knotgrass)	4	3	2	-	D
<i>Rumex acetosella</i> L. (Sheep's sorrel)	2	-	5	-	A, G, H
<i>Rumex</i> spp. (Docks)	1	-	2	1	G, D, A, M, B

<i>Calluna vulgaris</i> (L.) Hull (Heather)	-	-	2	-	H, M, W
<i>Calluna vulgaris</i> (L.) Hull) - flowers	1	33	6	1	H, M, W
<i>Brassica</i> sp./ <i>Sinapis arvensis</i> (Cabbages/charlock)	1	-	1	-	D, A
<i>Vicia</i> sp. (Vetches)	-	-	1	-	G, W, D, H, A
cf. <i>Vicia</i> sp.	1	1	-	-	G, W, D, H, A
<i>Medicago</i> sp./ <i>Trifolium</i> sp. (Medicks/clover)	-	-	1	-	G, D,
<i>Plantago lanceolata</i> L. (Ribwort plantain)	1	-	3	-	G, O
<i>Galium aparine</i> L. (Cleavers)	-	1	-	-	A, O, W
<i>Carex</i> spp. - biconvex (Sedges)	-	-	5	-	B, H,M, W, Gw
<i>Carex</i> spp. - trigonous	-	-	3	-	B, H, M, W, Gw
<i>Avena</i> sp. - caryopses	1	-	5	1	A, D
<i>Avena fatua</i> L. - pedicel (Wild oat)	-	-	1	1	A, D
cf. <i>Danthonia decumbens</i> (L.) DC. (Heath grass)	-	-	1	-	A, H
Poaceae (Grass)	-	-	14	1	G, H, M, W,
<i>Pteridium aquilinum</i> (L.) Kuhn - leaf frags. (Bracken)	-	-	2	-	W, H, M
Rhizome frags.	-	-	13	-	G
Tree buds	1	2	3	2	W
Total number of items	25	48	224	29	
Items /litre	50	96	33.4	72.5	

Habitat preference: A - arable; B = bank side, pond margins; D = disturbed ground; G = grassland; H = heaths, moorland; M = marshes, fens, bogs; O = open ground; W - woods, hedgerows, scrub; w = wet

Pollen Analysis

Pollen was identified from a column through soil (9), buried beneath the rampart in Trench 2, outside the small fort (Table 6). Pollen was scarce, in a poor state of preservation and difficult to interpret because the buried soil had probably been mixed and trampled. However, the pollen indicated a heath and grass dominated open environment, not too dissimilar to that of today. Spores were also well represented, indicating the growth of bracken and polypody ferns in the area. Bracken favours dry acid soils and is commonly associated with heathland. Equally, polypody ferns like acid soils but will also grow on rock outcrops or walls. The occasional cereal type pollen grain may reflect cereal brought onto the site, demonstrated by the charred cereal remains found in the occupation deposit, but could also reflect cultivation nearby. Charred heather and bracken remains from the buried soil/‘occupation horizon’ might also indicate that some of the pollen from these taxa was derived from plant material brought onto the site, but they might have been growing locally and reflect local burning to clear the site. Tree and shrub pollen was very scarce but consistent with the charcoal record which confirms that hazel, alder and birch woodland was present in the local area. The pollen record dates to a period of activity at the hillfort prior to the construction of the rampart of the smaller fort and associated with a date of 750-680 cal BC, 670-610 cal BC and 600-400 cal BC Whether the construction of the earlier hillfort, or activity during the Bronze Age or Neolithic, had already led to woodland removal in the immediate area of the site is unclear from the evidence, but by the time of construction of the smaller fort an open grass-heath environment clearly existed in the locality

Table 6 Pollen evidence from Caer Seion hillfort, Conway Mountain

Depth	1cm	4cm	6cm	8cm	9cm	12cm	16cm	20cm
<i>Taxa</i>								

<i>Betula</i>	-	-	-	-	-	-	1	-
<i>Alnus</i>	1	2	-	-	1	-	-	-
<i>Fraxinus</i>	-	-	-	-	-	-	-	1
Total Trees	1	2	-	-	1	-	1	1
<i>Corylus avellana</i>	1	1	-	-	1	-	6	-
type								
Total Shrubs	1	1	-	-	1	-	6	-
Ericaceae	8	8	15	1	13	-	5	2
Total Dwarf shrubs	8	8	15	1	13	-	5	2
Poaceae	1	2	7	1	5	-	3	1
Cereal type	-	-	-	1	-	-	1	-
Cyperaceae	-	1	3	-	2	-	-	-
Lactuceae	3	1	1	2	1	1	-	1
<i>Plantago lanceolata</i>	-	1	-	-	-	-	-	-
Total Herbs	4	5	11	4	8	1	4	2
Total Pollen	14	16	36	5	23	1	16	5
<i>Pteridium</i>	3	2	7	1	7	-	6	1
<i>Polypodium</i>	8	20	5	2	3	-	3	
Pteropsida monoete indet.	-	-	-	-	1	-	1	2
<i>Sphagnum</i>	1	-	-	-	-	-	-	-
Total Spores	12	22	12	3	11		10	3
Indet.	5	-	4	4	4	-	5	2
Total	31	38	52	12	38	1	31	10

Dating and discussion

Three radiocarbon dates were produced, one from Trench 1 and two from Trench 2. In Trench 1 layer (19) was fairly pure wood charcoal and so probably derived from a single event. It lay directly under the wall of Hut 4 and so represented an episode at or closely prior to its construction. It also butted the face of the inner rampart wall, indicating that the rampart wall was in existence when the roundhouse was built. A piece of birch round wood charcoal produced an AMS date of 2240 +/- 40 BP (Beta-254607) with cal BC 390 to 200 at 2 sigma. This date shows quite closely when the wall of Hut 4 was built and that the small fort was in use by at latest the end of the 3rd century BC.

From the buried soil (9) in Trench 2 a piece of alder round wood charcoal with bark produced a date of 2420 +/-40 bp (Beta -250542) or cal BC 750 to 680 and Cal BC 670 to 610 and Cal BC 600 to 400 at 2 sigma, with the latter being the most likely result. From the *in situ* fill of post-hole 4, a piece of hazel round wood charcoal produced a date of 2320 +/-40 bp (Beta-250543) or cal BC 410 to 360 at 2 sigma.

The scatter of charcoal in layer (9) may have derived from a single activity while the charcoal in post-hole 4 was residual so it could derive from activity when the post was erected or when it was removed. There seems a considerable difference between the two dates but they overlap at the extremes of their ranges. They indicate that the larger fort was in existence some time between 600 and 400 BC and that the rampart over the buried soil was built no earlier than and possibly soon after 410 to 360 BC. The dates provide useful evidence of the period of occupation of the larger fort, which is surprisingly early, although the date of construction is still unknown. The house within the small fort is likely to have been built some time after the construction of the dump rampart, although the date ranges overlap. The date for the end of occupation at the fort is still unknown. The lack of Roman period artefacts suggests that the fort was never occupied or re-occupied in that period and the radiocarbon dates suggest abandonment some time before the Roman period. This question could be answered by further targeted excavation of one of the roundhouses in the small fort.

The lack of datable pottery from Iron Age sites in North Wales has meant that this period has been a vacuum in knowledge and open to speculation. There have been few excavations of hillforts and only three of these, at Castell Odo (Llŷn), Pendinas (Bangor) and Bryn y Castell (Meirionnydd), have produced radiocarbon dates. Excavations at hillforts elsewhere in Wales and the Marches have shown origins in the

Later Bronze Age. There is no certain evidence that this was the case in north-west Wales but there have been some casual finds from in and around hillforts that support that possibility. These comprise an Early Bronze Age flat copper axe from Tre'r Ceiri (Llŷn), two Early Bronze Age halberds from Tal y Garreg (Meirionnydd), a Middle Bronze Age looped spearhead from Braich y Dinas (Conwy) and a Middle Bronze Age looped palstave from Garn Fadryn (Llŷn).

There are a number of small, lightly defended forts in the North-west and these might be early in the sequence of hillfort building. Only one of these has so far been excavated, at Castell Odo, which showed several phases of occupation, beginning about the 6th century BC as an undefended hill-top settlement (Alcock 1960 and Undated). Caer Seion itself may have been built as a successor to the (undated) small, lightly defended hillfort of Dinas Allt Wen, only 1.5km to the west. Several forts elsewhere, such as Caer Euni (Meirionnydd) and Dinas Dinorwic (Gwynedd) show that bank and ditch ramparts were added to original walled defences, as may have been the case at Caer Seion.

The period of construction and phases of occupation of most forts are uncertain where excavations before the availability of radiocarbon dating, as at Caer Seion produced few finds, mostly limited to stone objects such as querns, spindle whorls and sling stones. Castell Odo was the exception, producing some pottery, of a simple and undatable style, of the Late Bronze Age or Early Iron Age as shown by radiocarbon dates. Elsewhere, Garn Fadryn (Llŷn) produced a bead of Middle Iron Age type, and Din Silwy (Anglesey) an iron ring-headed pin of Middle Iron Age type and Dinas Emrys (Gwynedd) some bronzes of Late Iron Age type. Two more recent excavations have produced radiocarbon dates. Excavation of part of the rampart at Pendinas, a small, well-defended fort at the mouth of the Ogwen Valley, near Bangor, showed a single phase of construction associated with a radiocarbon date of 2nd to 1st centuries BC (White 1992). Extensive excavation within the small, single walled hillfort of Bryn y Castell (Meirionnydd), on the edge of high moorland, has shown that its inhabitants were smelting iron on a considerable scale from towards the end of the first millennium BC until mid 1st century AD. The fort was unusual in the variety of artefacts found, suggesting wide contacts and some personal wealth (Crew 1986). In England and the Marches the latest forts are those of 'developed' design with complex entrances. The nearest fort of this type was at Pen-y-Corrdyn (Llanddulas, Conwy), which lies east of the Conwy River and possibly within a separate tribal territory.

The response to the Roman invasion in AD 44 would have caused reactions further north and could have included strengthening of fort defences, perhaps by building additional ramparts and ditches. A few forts have been suggested to have been deliberately demolished after Roman attack, including Caer Seion and Caer y Twr (Anglesey), because of the nature of the remains. This is questionable but there is a large roundhouse just outside Caer Seion at the south-east. It has a large boulder lying within it that must have derived from the fort wall above and seems unlikely to have fallen naturally. The walls of a few forts, including Pendinas (Bangor) and Caer Euni (Meirionnydd), also have burnt stones that may be evidence of burning of the ramparts. Several forts have artefactual evidence of occupation during the Roman period, but only one, Braich y Dinas (Conwy), has produced artefacts of the 1st century AD. There thus may have been later re-use of hillforts with some acceptance by the Romans of local authority with a need to provide defence against outside attacks. At Tre'r Ceiri hillfort (Llŷn), excavation has shown that the main entrance was re-built during the 2nd century AD (Hopewell 1993).

The strengthening of Caer Seion by the addition of the small fort could be seen as a reaction to an imminent Roman threat but the radiocarbon dates suggest that it was constructed much earlier. The large fort, with over fifty houses, was a considerable community and may well have been in existence by about the 6th century BC. The small fort, with only six houses, was more strongly defended and represented only a small section of the community. The outer rampart of the small fort was built about the 4th century BC and about the same time one of the latest roundhouses was built within it. Pen-y-dinas hillfort was also a large settlement, with about 65 houses. The radiocarbon date, probably from the latest use of the roundhouse there shows that this was in the 4th or 3rd century BC. There is a strong possibility then that Pen-y-dinas and the larger fort at Caer Seion were both occupied in the Middle Iron Age and abandoned before the 2nd century BC. This corresponds with some evidence from south-west Wales (Lynch *et al*,

2000, 157). The focus of authority in this period may have switched to smaller forts like that at Caer Seion that at Caer Bach, 6km to the south (Fig. 1)

The substantial nature of the major hillforts tends to suggest that they were all in existence at the same time, which therefore provides evidence of social groups and territories. In north-west Wales the larger hillforts are quite well distributed around the fringes of the upland, often set at the entrance to the major valleys, suggesting a territory that included upland or lowland, or a wish to control of access between these areas. Caer Seion lies on stony heathland, suitable only for grazing, but close by, to the south, are fertile fields with arable potential. The 1951-2 excavation found saddle querns and spindle whorls while the 2008 excavation produced botanical evidence of mixed woodland in the vicinity, of cereal growing and crop processing, all indicating a mixed farming economy. The focus of settlement was probably outside the fort. There is an isolated roundhouse and a possible courtyard type settlement just outside the fort to the south and there are single houses and a larger, unenclosed settlement at Gwern Engan, only 1km to the south-west (Fig. 1), although the dates of occupation of these are unknown. The economy at Pen-y-dinas included marine resources and the lack of finds of querns may suggest the absence of arable farming but the bone evidence showed that stock-raising was important. Research excavation is needed at various settlements in the area to provide a fuller picture of the nature of society and its changes over the first millennium BC. This could very usefully focus on settlement within limestone areas, where bones will survive, which, with charred botanical remains can provide evidence of environment and land use (Gwilt 2001). Research also needs to focus on stratigraphy and the radiocarbon dating of the commencement and end of occupation.

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RE-ASSESSMENT OF TWO HILLFORTS IN NORTH WALES: PEN-Y-DINAS, LLANDUDNO AND CAER SEION, CONWY

Illustration headings

- 1 General location map
- 2 Pen-y-dinas hillfort plan (Muckle 1993)
- 3 Caer Seion hillfort plan (annotated, after Griffiths and Hogg 1956)
- 4 Caer Seion, plan of small fort (annotated, after Griffiths and Hogg 1956) and location of the 2008 trenches

5 Caer Seion Trench 1 plan and sections. 5a 1951 excavation plan of Hut 4 showing location of the 2008 trench (after Griffiths and Hogg 1956). 5b 2008 trench plan. 5c Elevation of rampart inner wall and roundhouse wall. 5d Section showing relationship between rampart inner wall and layer (19).

6 Caer Seion Trench 2 plan and sections. 6a 1951 profile of the small fort wall and bank (enlarged from Griffiths and Hogg 1956). 6b and 6c 2008 Trench 2 plan and section, showing post-holes and the buried occupation horizon (section a-b mirrored).

NOTES TO EDITOR

Fig. 1 is designed for reproduction at 1 column width.

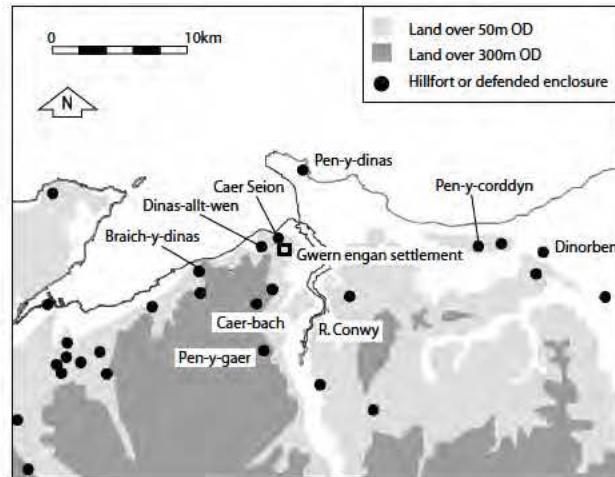
Fig. 2 is designed for reproduction at full page width but Frances thinks the detail is worth reproducing at full page landscape size (the original survey was designed to reproduce at A3 landscape).

Fig. 3 is designed for reproduction at full page width.

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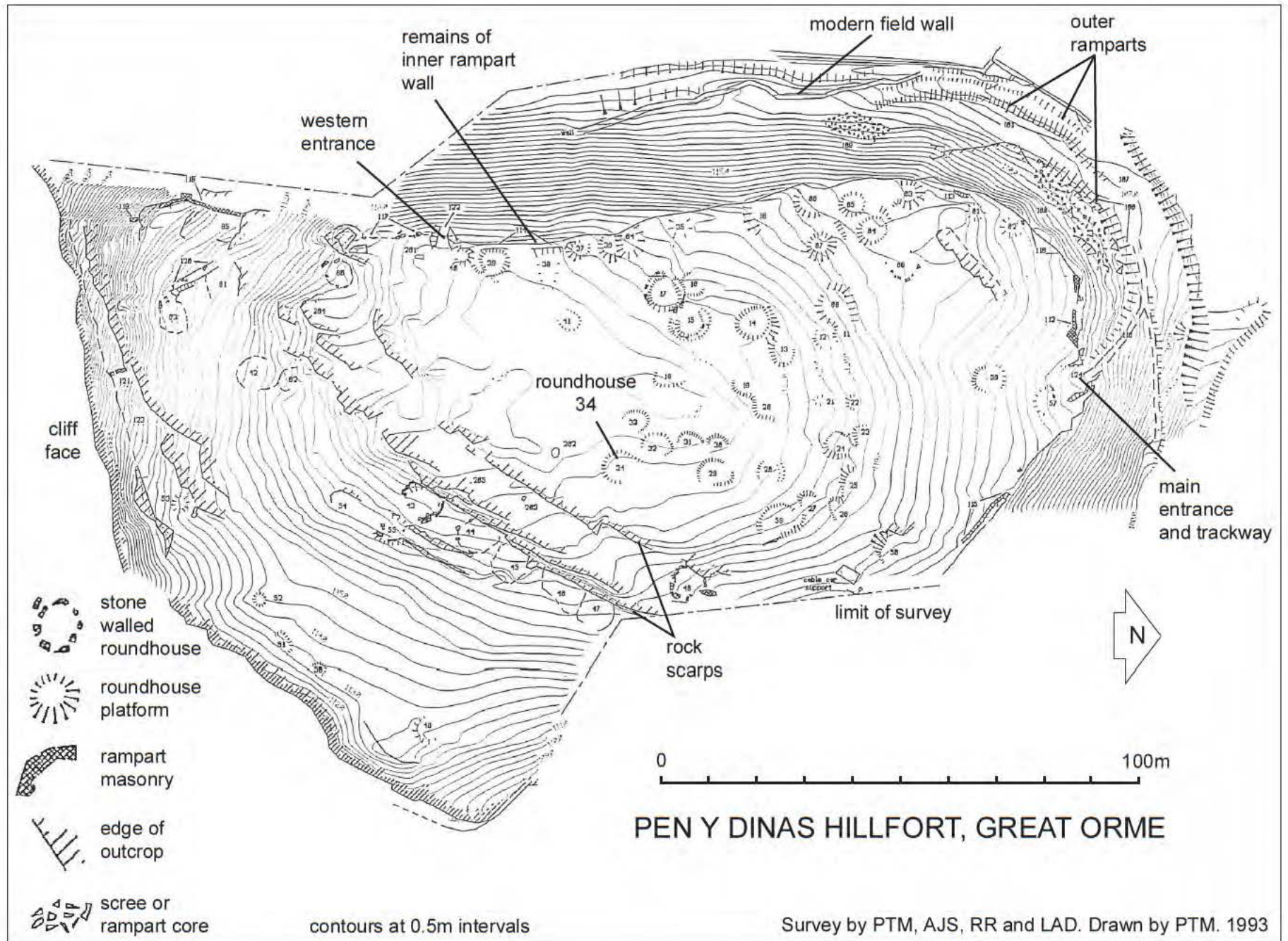
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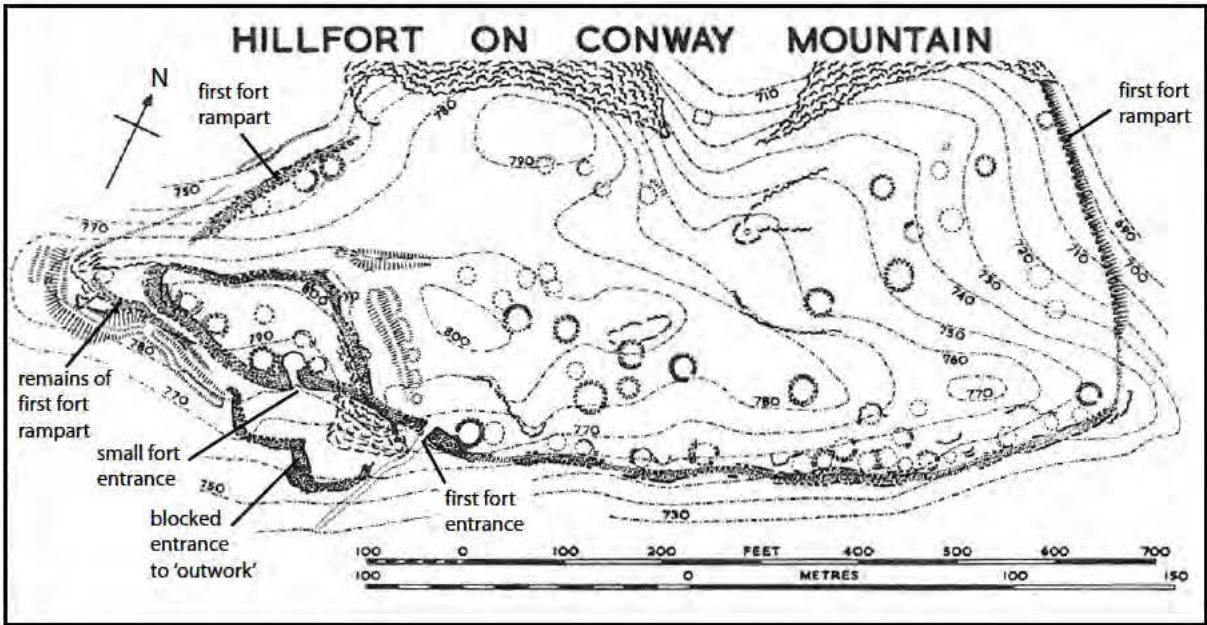
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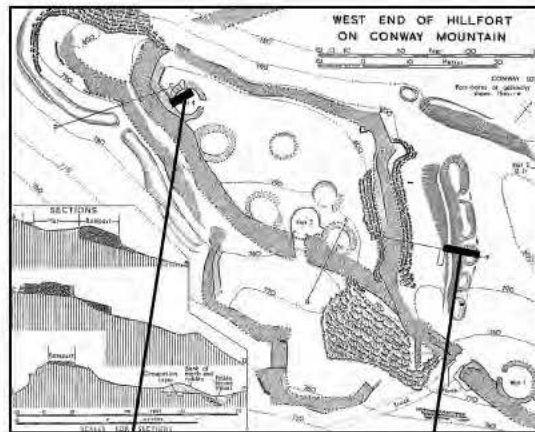
PenydinasCaerSeion Fig1

PenydnascaerSeion Fig. 2





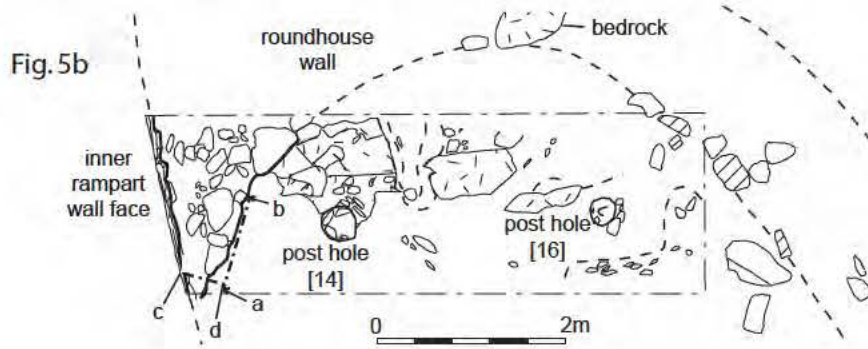
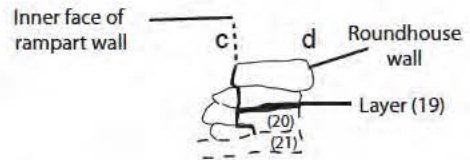
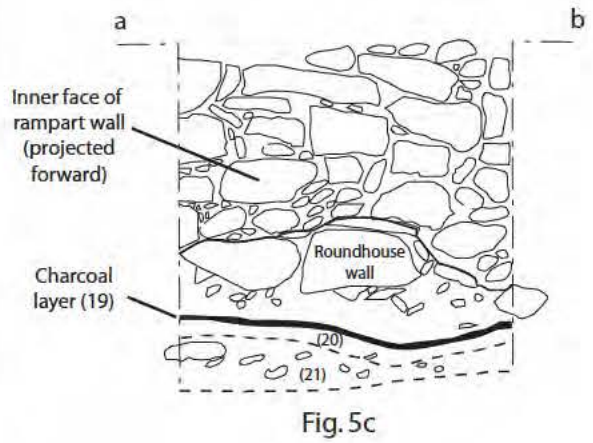
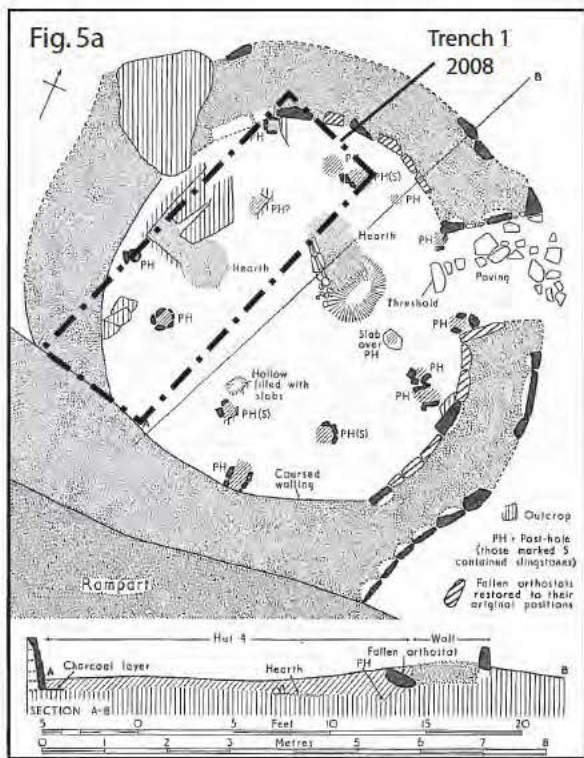
PenydinasCaerSeion Fig. 3



2008 Trench 1

2008 Trench 2

PenydinasCaerSeion Fig. 4



Peny DinasCaer Seion Fig. 5

Fig. 6a

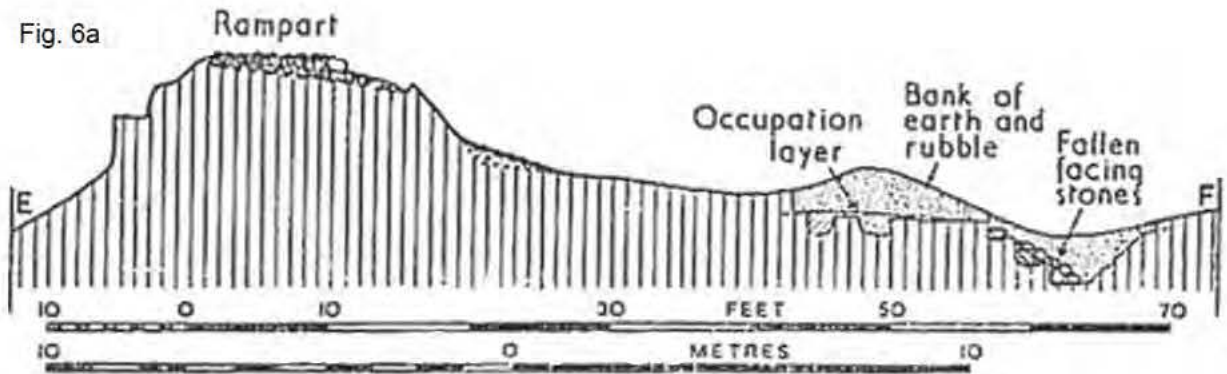


Fig. 6b

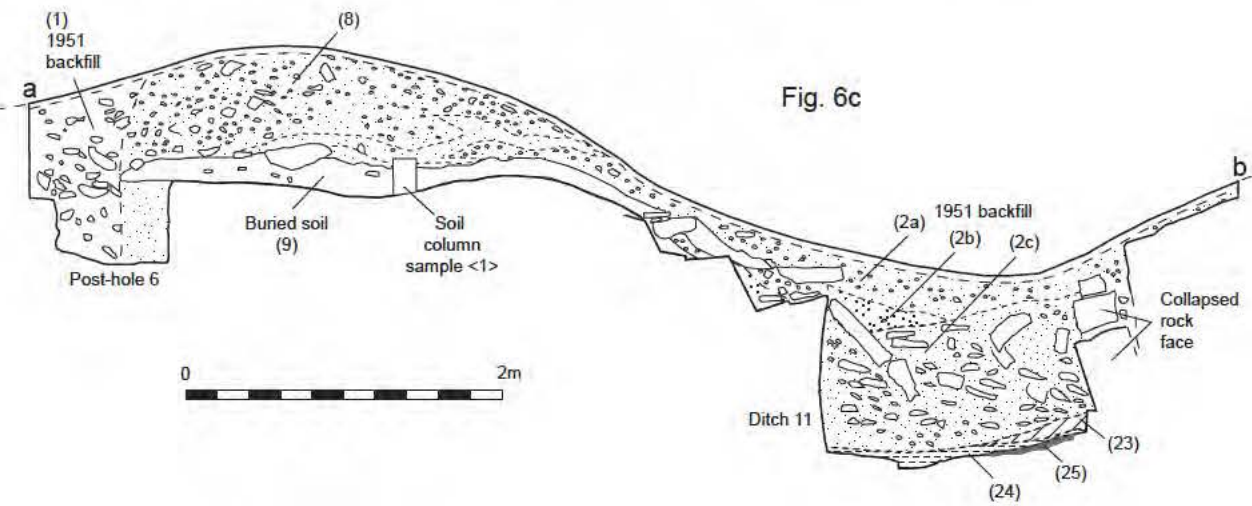
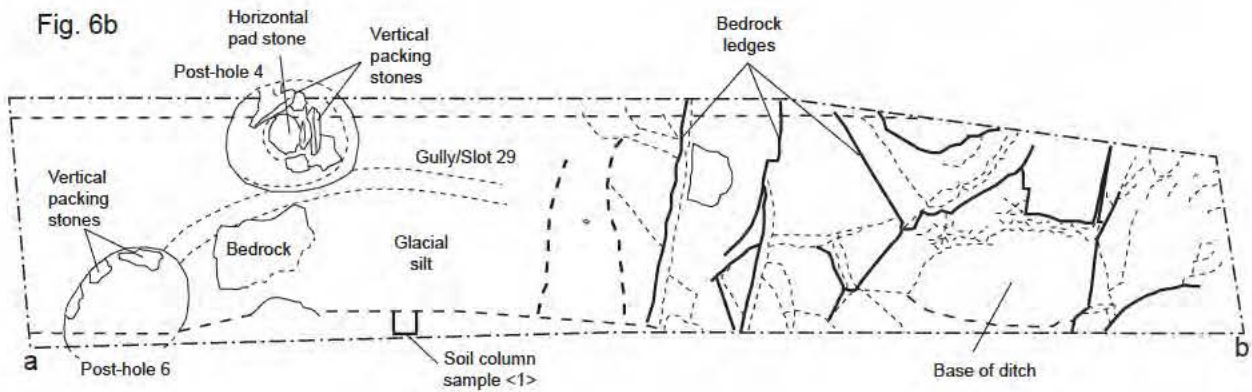


Fig. 6c

PenydinasCaer Seion Fig. 6



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