Little Doward Hillfort, Ganarew, Herefordshire

A Report on Excavations in 2009 and 2011

March 2012

Report prepared by
Peter Dorling, Julian Cotton and Neil Rimmington

With specialist contributions by Michael J Allen, A J Clapham, C Jane Evans, S Hamilton-Dyer and Rob Scaife

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Herefordshire Archaeology
Economy, Environment and Cultural Services Directorate
Herefordshire Council

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Scheduled Monument No: 1001766
Monument No: 213
NGR: SO5390 1602
Event No: EHE 1961 and 1962

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Herefordshire Archaeology is Herefordshire Council's county archaeology service. It advises upon the conservation of archaeological and historic landscapes, maintains the county Sites and Monument Record, and carries out conservation and investigative field projects. The County Archaeologist is Dr. Keith Ray.

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Summary

Two small scale excavations were carried out within the interior of Little Doward hillfort. In 2009 a small scale excavation was carried out in an area of disturbance caused by a fallen beech tree and where some quantity of Iron Age ceramics had been recovered. The trench examined small areas of two sub-circular building platforms. Little definite structural evidence was recorded but part of what is probably a midden deposit was excavated. Large quantities of bone and Iron Age ceramics were recovered together with some metalwork and metalworking residues. Four worked bone artefacts were found including a parallelopiped die. Ceramic styles and C14 dates from the bone place this activity firmly in the middle Iron Age. A small quantity of late Bronze Age or Early Iron Age pottery was also recovered along with briquetage from Cheshire and Worcestershire. The ceramics suggest that the site might have had wider than normal trading links, perhaps reflecting its proximity to a major source of iron.

Work in 2011 was carried out to test the theory that the south-eastern portion of the site ("the annexe") might be the primary settlement area. The promontory appears to have been defined in the earliest Iron Age by a timber palisade which was replaced towards the end of the early Iron Age by a rock cut ditch and rampart. Industrial activity within the partially silted up ditch was dated to the middle Iron Age and appears to be broadly contemporary with the midden activity. Finds were few but included the same Late Bronze Age or Early Iron Age ceramics found in 2009. A metalled trackway is likely to be post-Medieval.

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Introduction

Neil Rimmington

This report presents the results of two seasons of archaeological excavation conducted by Herefordshire Archaeology on the Scheduled Ancient Monument of Little Doward Camp (Scheduled Monument Number 1001766). These excavations were carried out in 2009 and 2011, in partnership with The Woodland Trust, English Heritage, and the Overlooking the Wye Heritage Lottery Fund (HLF) project. The Woodland Trust own and manage the site. Little Doward Camp was a key project area within the Overlooking the Wye project and the project provided funding towards the cost of the work, which facilitated their aim to improve and promote the enjoyment, understanding, accessibility, involvement, conservation and management of the historic environment in the landscape of the lower Wye Valley. English Heritage also provided contributory funding towards the 2009 excavation.

Little Doward Camp, which is located (Figure 1) at SO53971594 in the parish of Ganarew, Herefordshire, is a major later prehistoric hilltop enclosure (hillfort) that occupies the summit of Little Doward, a substantial hill rising to 221m above Ordnance Datum (at the trig point in the north west of the hillfort enclosure). The hillfort, which overlooks the River Wye, is principally composed of two parts, an upper NW oval enclosure known as the main enclosure, and a lower south-eastern enclosure that is surrounded on three sides by cliffs. This is known as the "annexe". In total, the two enclosures encompass an area of 11 hectares.

Prior to 2008, the hillfort was substantially covered by conifer woodland. In 2008, under the Overlooking the Wye HLF project this conifer woodland was carefully removed. The removal was guided by an archaeological survey (Rimmington, 2008) that highlighted the diversity of visible archaeological features on the hill. These features included features contemporaneous with the monument type, such as the hut stances in the "annex" area, and later uses such as pillow mounds for medieval rabbit farming and shafts for post-medieval iron ore extraction.

The removal of the conifer permitted views out from the site over the Forest of Dean (Figure 2) and enabled better interpretation of the earthworks present on the site. In 2009, the hillfort was subject to a detailed measured analytical earthwork survey by English Heritage's archaeological survey and investigation team (Bowden, 2009). This survey better defined the heritage assets identified in the earlier survey and highlighted important features such as the probable rampart bank and ditch defining the western limit of the "annexe" area that was the subject of the 2011 excavation.

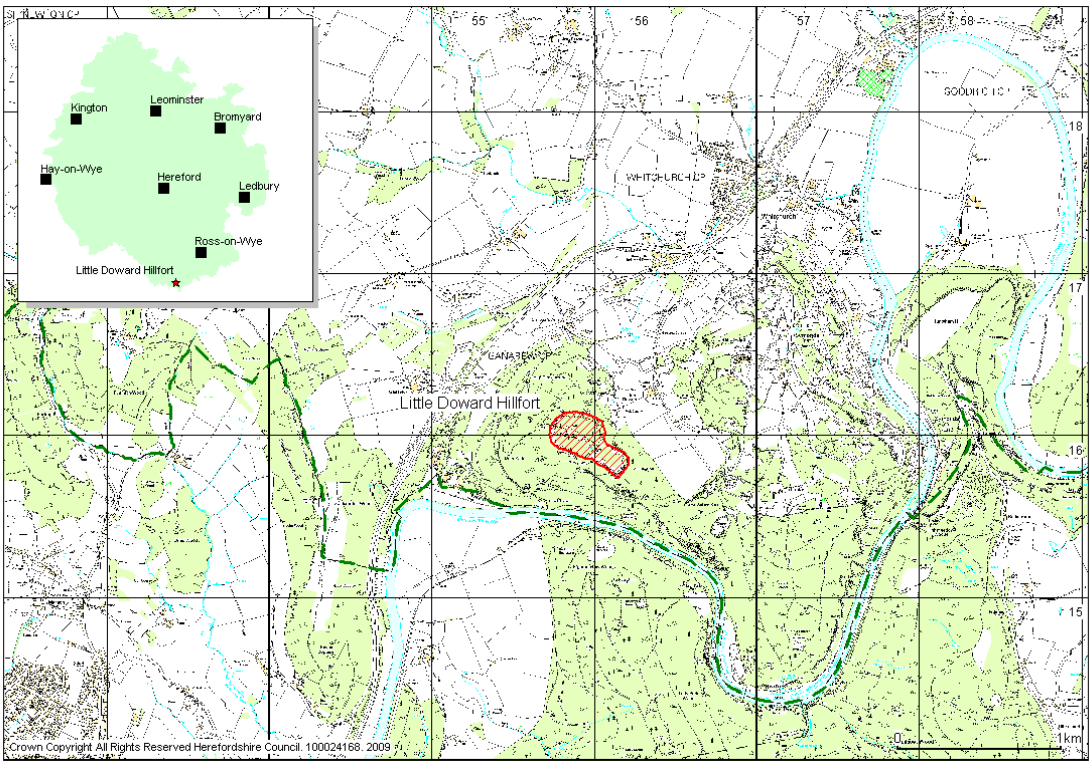

Figure 1: Location map of Little Doward Camp

Figure 2: View southwards over Forest of Dean from within the main enclosure of the hillfort

In the winter of 2008/09 a veteran beech tree was blown over in the “annexe” at SO54111590, adjacent to one of the hut stances. The upheaval of the root plate of the tree exposed prehistoric pottery and animal bones, which became the interest of some informal illicit (and illegal) digging on the site. In order to address this uncontrolled loss of archaeological information from the site, English Heritage provided funding for Herefordshire Archaeology to excavate the area of the root plate. Through discussion with English Heritage and the Woodland Trust, and with funding support from Overlooking the Wye it was agreed that the excavation area would be extended over part of the hut stance to better define the context of the material and improve understanding of the hut stances. This excavation was carried out in October 2009.

In May 2011, a further excavation was carried out. This excavation was located at SO54011590 on the probable rampart bank and ditch that defined the west limit of the “annexe” area. The English Heritage survey had highlighted that the “annexe” area may have been the site of the primary settlement enclosure, perhaps dating to the Bronze Age. The excavation was therefore aimed at testing the hypothesis that there was a rampart bank and ditch that enclosed an early settlement at the site.

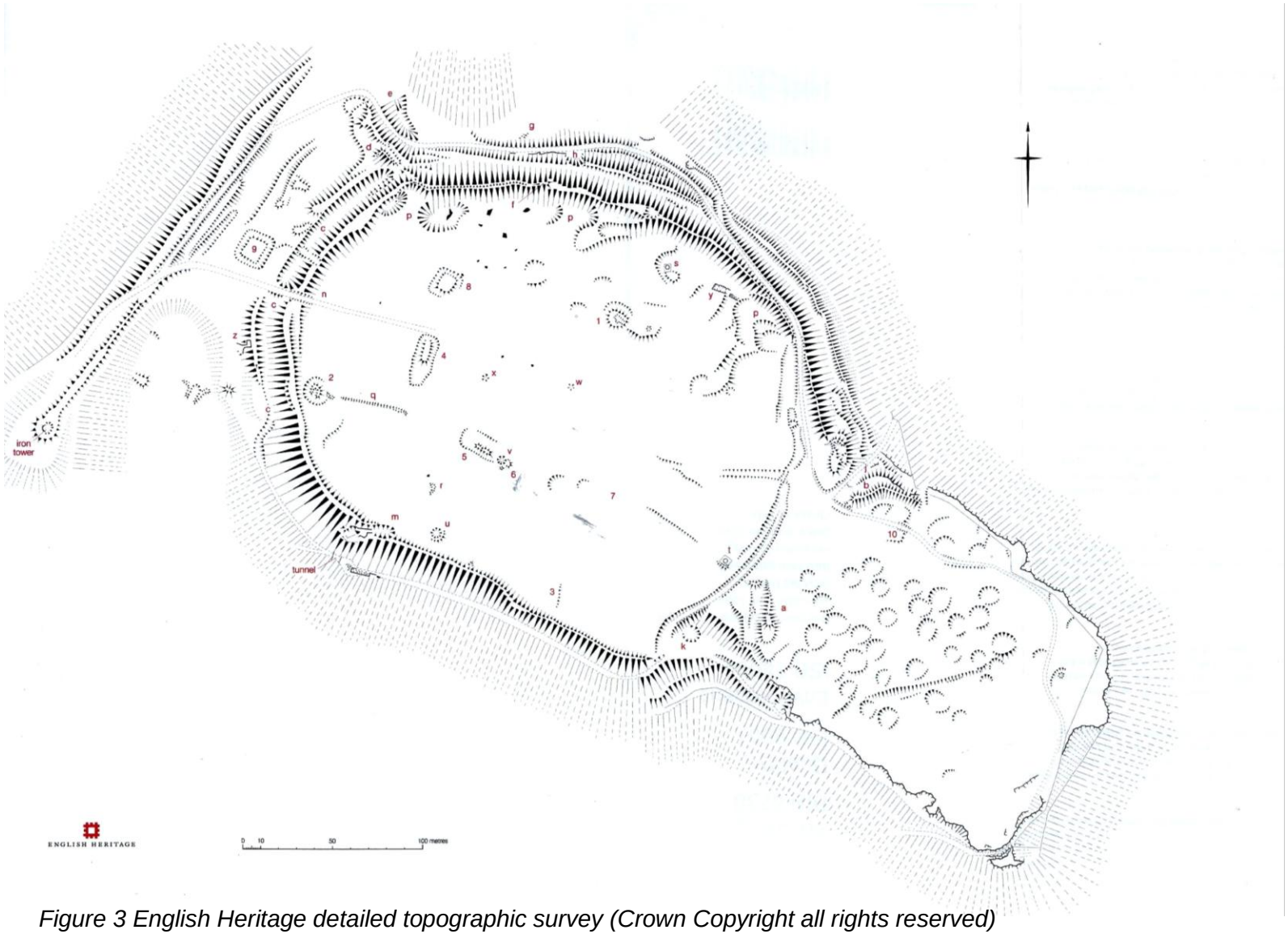

Figure 3 English Heritage detailed topographic survey (Crown Copyright all rights reserved)

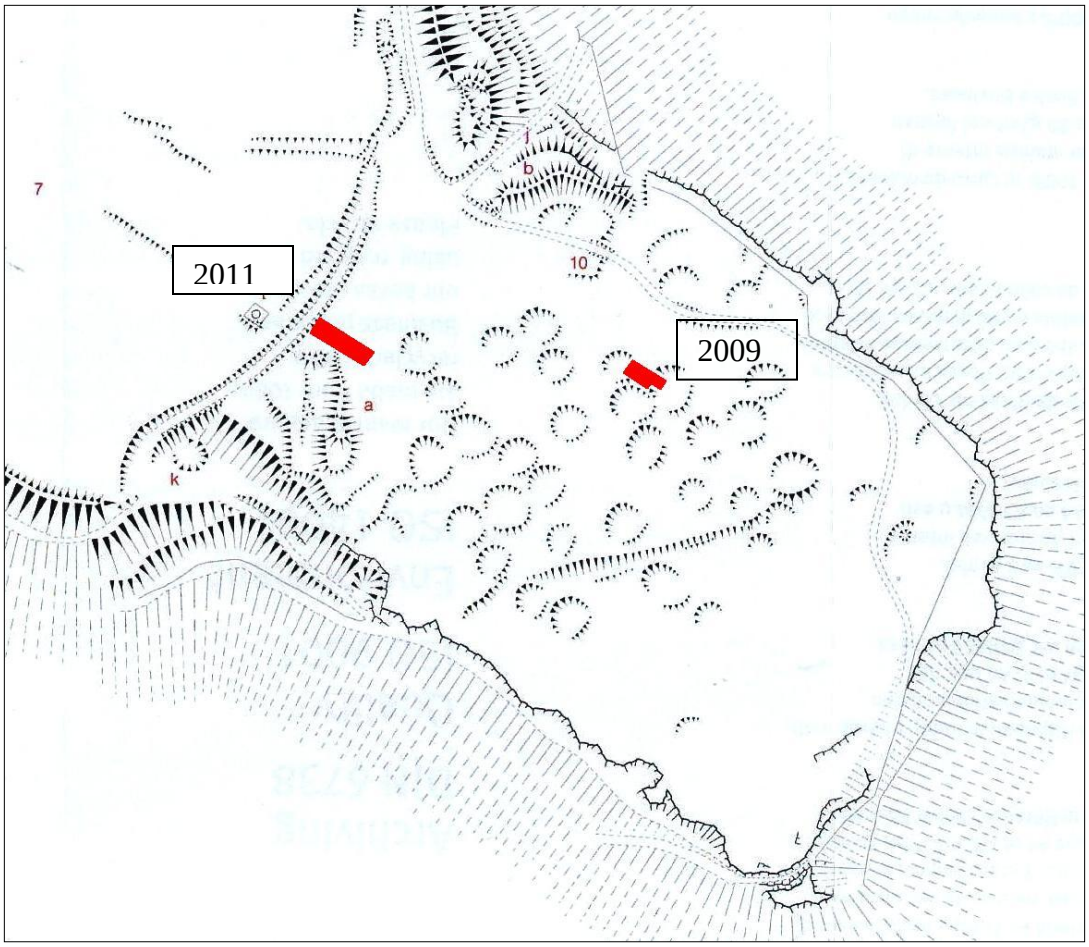

Figure 4 Trench locations (Crown Copyright all rights reserved)

The 2009 Excavation

Julian Cotton

Excavation scope and method

As discussed in the introduction to this report, a single excavation trench excavated during the 2009 season was located immediately adjacent to where animal bone and Iron-Age pottery had previously been revealed by a tree throw. The trench was positioned on a north-west – south-east alignment, and originally measured 10.00m x 4.00m in extent. The main roots of the fallen tree were centred approximately 6.00m south-east of the north-east corner of the excavation area. The trench was positioned to consider the potential for further finds in the immediate locality, to provide an appraisal of root / tree throw damage and to explore the putative terraced 'platforms' between two of which the large tree had stood.

As is shown in Figure 4, the platforms in question are two of the numerous low sub-rounded earthworks in this part of Little Doward and they are assumed to have been original Iron Age features. The trench attempted to assess the nature and purpose of a clearly visible upper (i.e. northern) terrace and an adjacent lower (i.e. southern) terrace. It was anticipated that a potentially interesting rear 'cut' of the lower terrace might be visible within the area of the excavation, and also any deliberately constructed 'front' of the upper terrace. It was understood from the outset however that the trench would be insufficient in length to provide a full profile of both terraces.

During the course of the excavation it became clear that there was a high density of harmful and obstructive roots even at some distance from the former location of the fallen tree. It was also evident that the likely 'back cut' of the lower terrace was located further to the south than originally expected. For this reason, and also because of the significant number of finds being made at the southern end of the trench (see below) the decision was taken to extend the trench southwards. The extension comprised an additional 4.00m x 3.00m area to the south-east. Following this operation, the maximum length of the trench therefore amounted to some 14.00m.

Excavation was undertaken by hand, utilising mattock and shovel, spades, and trowels as appropriate. The trench was taken down to the underlying limestone bedrock (09/029) only in some locations, owing to time constraints generally and to the problematic presence of numerous very large roots in the central part of the trench especially. The extension area, and the western edge of the trench, was wholly excavated to bedrock, as was some of the northern end. The deepest part of the southern extension achieved a maximum depth of some 0.65m from previous ground surface; the mid part of the trench was shallower, at 0.35m; at the far northern end of the trench, bedrock was encountered at a depth of only 0.25m below the ground surface.

Figure 5 Overview of the 2009 trench, the people are in the centre of the upper terrace, the back of the terrace can be seen behind them. The extension in the foreground is at the back of the lower terrace.

The upper terrace

The limited and shallow stratigraphic sequence revealed on the upper terrace can be described as follows. The top of the bedrock here displayed extensive small-scale cracking, and was weathered with some clay formation on its upper surface. Therefore, it is thought unlikely that this locality was subject to pronounced artificial down-cutting at any time. The largely flat appearance of the natural deposits here probably reflects its broad original profile with only minor levelling having taken place subsequently. It is likely that more intensive down-cutting may have taken place in the more northerly parts of this terrace, beyond the excavation area.

Buried soil, and cobbles

Interestingly, a limited area potentially representing a tiny survival of original 'buried' soil was discovered above the weathered bedrock, some 1.50m from the north-west corner of the trench (See Geo-archaeology section below). The

reason for this survival (a very thin soil horizon approximately 1.00m x 2.00m in plan-form extent) is probably linked to the protection afforded by the dense and confined spread of cobbles (09/009) identified immediately above it. These cobbles, consisting of medium rounded and sub-rounded limestone pebbles in a sparse matrix of dark brown silt, had smooth, 'polished' upper faces and formed a likely artificial surface of some kind, albeit very localised in distribution. These cobbles possibly represent some minor preservation of constructed Iron Age levels here, although – unfortunately – it was not possible to provide a clear date for them.

Figure 6 Differential wear patterns on the limestone surface on the upper terrace

Post holes

It was discovered that in two locations the cobbles were cut through by what may be regarded as post-holes or post-settings (09/015) and (09/016). Broadly similar, these post- holes measured 0.30m x 0.20m in plan-form and were up to 0.30m in depth. Sandstone 'post packing' was present in both cases. Clearly, these post holes are later than the cobbles they are dug through but how much later is a moot point. As far as it can be established, the fills of the post holes seemed to be sealed by later silts, but this could not be proven, and there is therefore a risk that the postholes may be much later than the cobbles.

Silting, and later soils

As already mentioned, above all these deposits and features on the upper terrace was an extensive and comparatively sterile layer of silt. This silt (09/008-09/012) consisted of a mid-yellowish-brown silt loam, greatly disturbed by root action and animal burrows. The silt varied between 0.10m and 0.15m in thickness. Above the silt were the most recent deposits present in this part of the trench, humic woodland soils and surface leaf mould (09/002-09/003), generally some 0.10m in thickness. Given the high level of disturbance and closeness to the current ground surface, finds from the silt layer and overlying soils cannot be regarded as being reliably in context.

Between the terraces

The very limited and shallow stratigraphic sequence at and near to the intersection of the terraces was severely disturbed and compromised by the close proximity of the former tree. The level of disturbance was such that it was very difficult to define and understand clear contexts above the very weathered bedrock here. A silty layer (09/010) similar to the silts on the upper terrace was present, overlain by a more recent and humic woodland soil and leaf-mould (09/004). In one location, a small pit (09/006) appeared to be just definable, cut through the silt. Although it contained Iron Age pottery, this pit (if a genuine feature at all) may well be an intrusive hole of significantly later date.

At the apparent junction of the terraces, it initially appeared that there was a low 'bank' of stony material sloping down to the south. However, on investigation during the trench extension, it was seen that this bank (09/007 composed of sparse dark brown silt with numerous small to medium fragments and sub-rounded cobles of broken limestone) actually formed part of the sequence of 'midden' infill deposits discussed below. The reason it was originally interpreted as a bank related to its apparent profile in its location at the far southern end of the trench as originally laid out. It was not appreciated at the time that 09/007 was in fact formed above the lower terrace cut.

The lower terrace

The sequence of deposits revealed in the lower terrace (i.e. in the extension, but also to some extent in the original southern end of the trench) was deeper and more complex than anywhere else in the trench. On excavating within the extension, it quickly became apparent that the underlying bedrock was dipping steeply to the south east, by up to 0.60m within 0.40m horizontal distance. The appearance of the bedrock as revealed was clean-edged, blocky, fractured and stepped, consistent with having been artificially cut through or quarried out in this particular location.

The midden

Overlying the bedrock was a succession of humic silty loam deposits (09/022-09/028, 09/007, 09/014, 09/017) characterised by a generally dark brown appearance, and very frequent occurrence of animal bones, with ceramics and other finds. Some of the layers present were particularly stony. Others had a more pronounced organic content or a more significant inclusion of clay. The consistent axis and tilt of the these 'midden' deposits seems to indicate that their build-up followed broadly the same process over time, although it does need to be emphasised that the trench as excavated examined only a very small percentage of the likely full extent of these deposits. There is certainly a risk of over-interpretation from limited evidence here.

Figure 7 The extension to the trench onto the lower terrace and the location of the midden material following excavation. The scale is 1.00m

Having said that, and in spite also of the appreciable level of root disturbance in the trench, a clear and readily legible stratigraphic sequence did appear to be present. The radiocarbon samples (Table 1 and The Radiocarbon Results section below) taken from items of animal bone found within this sequence, provided what might be regarded as a consistent and reliable C14 dating bracket in the middle Iron Age between about 400 and 100 cal BC. Three out of the four dates fell within the range 410 to 180 cal BC, while only the upper sample gave a later date. The bone can be seen as representing a coherent and significant assemblage. Pottery and briquetage, principally of middle Iron Age date, were also present.

Accordingly, although the use of the term 'midden' here is a convenience rather than a final interpretation, it is nevertheless a useful provisional label for the materials and process represented. As indicated in the bone report (see The Animal Bone – 2009) the full amount of animal bone recovered from a very limited area of excavation was substantial, amounting to over 10Kg in total weight, and comprising 2104 individual items.

Context	Calibrated Result	Lab Number	Result BP
09/017 Top of midden	360-90 cal BC	NZA-37805	2150±25
09/014	370-180 cal BC	NZA-37804	2195±25
09/022	410-230 cal BC	NZA-37803	2283±25
09/023 Base of midden	370-200 cal BC	NZA-38815	2222±15

Table 1 Radiocarbon dates from the midden

As also shown, it seems clear that the nature of the bone and other finds can justifiably be regarded as indicating a regular and rapid discard over a reasonably prolonged period of time. In general therefore, whilst acknowledging that the 2009 investigation of this midden was limited in scope and compromised to some extent by a number of practical factors, the investigation can be regarded as an intervention of clear interest and value.

Summary of site development, and discussion

The principal obstacles in trying to assess the development and phasing of this part of Little Doward (through the features revealed in the trench) are the generally very shallow nature of the deposit profile and the significant amount of post-depositional disturbance. Particularly in relation to the upper terrace and mid part of the excavation area, it is very difficult to achieve a definitive understanding of the date and nature of the processes involved.

Whilst it does seem to be the case that the upper 'terrace' is a genuine constructed feature of likely Middle Iron Age origin, clear proof is lacking. It would appear that the terrace cut was comparatively slight, such that some pre-terrace soils survived. It would also seem that some artificial surface formation and the digging of cut features took place on this terrace subsequently, before abandonment sometime possibly in the late Iron Age or early Roman period.

As regards the 'midden' area this can be regarded as representing firstly a more pronounced cut to form the rear of the lower terrace, probably dating to c 500 - 400BC, followed by the accumulation of debris against the back face of this cut in the period up to c100BC. Abandonment of the area seems to have occurred soon afterwards. Whilst a little more confidence can be placed in the midden results than those in other parts of the trench, it does need to be emphasised that the sample percentage was still very small.

The Finds 2009

The full details of the finds are included in the specialist reports provided below.

Ceramics

As regards the ceramic assemblage, an appreciable number of sherds of pottery were recovered, mainly earlier Middle Iron Age in date, but also including some possible earlier and later forms. The briquetage, of which again there was an appreciable amount, was also generally consistent with a Middle Iron Age date.

Only two sherds of Romano-British material were recovered. A small abraded sherd of south Gaulish samian ware pottery and an un-diagnostic sherd of Severn Valley ware.

Animal bone

A substantial amount of animal bone was recovered from what in essence was a very small area. The clear majority of the bones discovered were in the midden sequence, although bone was also present in other contexts. On the upper terrace, the bone was less well preserved than from other areas and had been subject to a greater degree of post-depositional damage. As far as dating of the bones is concerned, a range of 400 – 100BC can be suggested with reasonable confidence.

In terms of species, the bones were almost exclusively from the 'normal' domestic ungulates with sheep/goat bones the most numerous. There was a significantly high percentage of pig bones present, which has some parallels on other west of England/border sites.

Worked Bone

Peter Dorling

Among the finds in 2009 were an interesting group of worked bone artefacts comprising a bone rod (a on Figure 8, context 09/022) possibly a blank for a die, a parallelopiped die (b, context 09/011), a perforated bone (c, context 09/018) and an antler toggle (d, context 09/012).

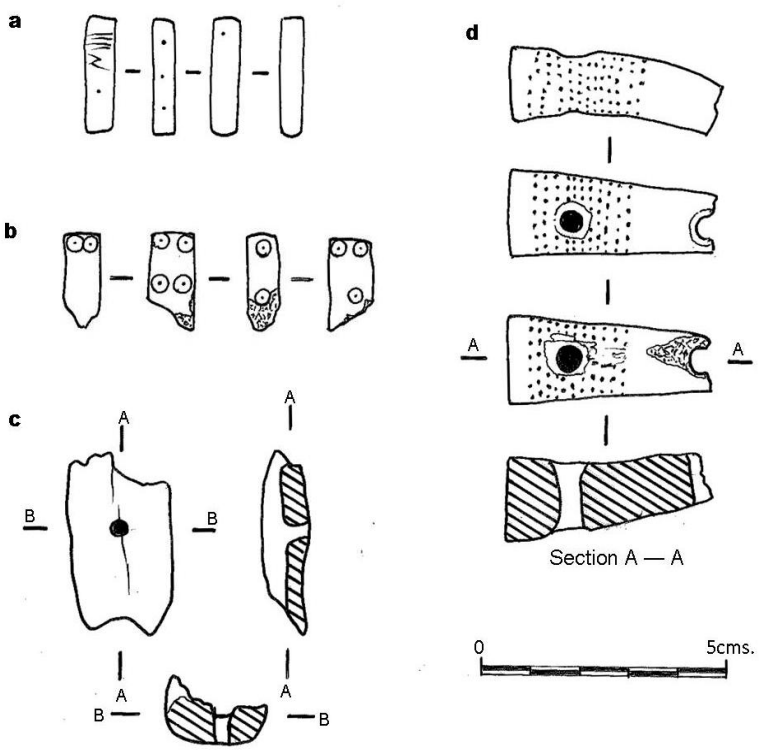

Figure 8 The worked bone

The rectangular sectioned parallelopiped bone die (b) is made from solid piece of bone deliberately cut and shaped. Broken in antiquity it is now 18mm in length but was probably originally c 22mm long, the broad faces are 8mm wide and the narrow ones 6mm wide. The numbers are created by incised ring and dot motifs and consisted (probably) of 4–6–3–5[1]. This arrangement of numbers appears to be the most common sequence in other recorded prehistoric dice though the sequence varies and other numbers have been recorded (Clarke, 1970 and Sharples, 2012).

Clarke refers to 21 examples from Scotland and a further 17 from England and Wales, the majority from south-west England. Interestingly a piece of bone (a rib) with ring and dot motifs was discovered during the 1929 excavation at Merlin's Cave located in the cliffs immediately below Little Doward (Phillips, 1931). In this case there were five rings and dots in two groups (three and two). This was found in association with ceramics that were believed to be Iron Age.

Another cut and shaped bone (a) may be a blank for a dice. This rod shaped piece is 22mm in length and approximately square sectioned (three sides 5mm and one 4mm wide). Three equally spaced dots on the smaller face appear to be laying out marks. A perforated half round split bone (c) may be part of a handle

[1] It is assumed that the patterning on the dice was symmetrical.

or a fragment of an artefact such as a bone comb. The antler toggle (d) is decorated with ten bands of dots running around the circumference.

Metalwork

A Bronze needle came from context 09/007 (Figure 9, c). Almost complete it is 35mm in length and made from a piece of bronze wire with a flattened end for the eye perforation (now broken).

Six fragmentary iron objects were found. Two may be the remains of small nails the others are unidentifiable.

Slag and ore

Some quantity of what appears to be iron working slag and iron ore was recovered from the 2009 excavations in all amounting to 660gms of material. This material has yet to be assessed and analysed.

Fired clay (Figure 9, a)

The only identifiable piece of fired clay was part of a loom weight.

Flint (Figure 9, b)

Flint knife on large flake came from 09/011, the silt soils below the topsoil on the upper platform.

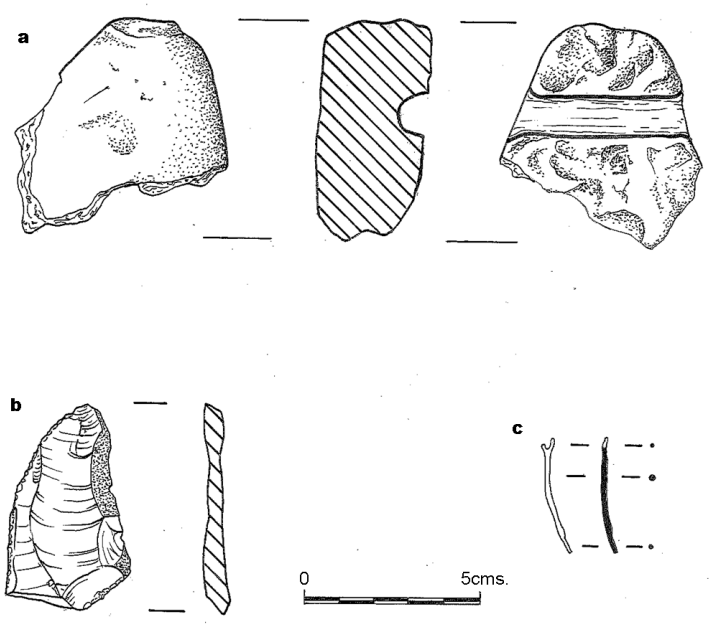

Figure 9 Other small finds from 2009

The 2011 Excavation

Peter Dorling

The 2011 excavations were carried out in order to test the hypothesis that the south-eastern promontory, the so called "annexe," is in fact the earliest phase of enclosed settlement at the site and a typical later prehistoric promontory fort. If this hypothesis is correct the promontory, defended by naturally steep slopes and cliffs on three sides, might be expected to have been defended by a bank and ditch across the neck. It had been suggested (Bowden, 2009) that parts of this may survive as remnant earthworks at the north-west corner of the "annexe" (a on the EH survey plan: see Figures 3 and 4, this report) and within the configuration of earthworks on the southern side of the gateway at the north-eastern corner (b on the EH survey plan)[2]. It was assumed that the remainder of any bank would have been removed and the ditch backfilled, probably deliberately, during the lifetime of the hillfort in order to make best use of the two areas together.

The excavation trench was placed just to the north of the south-western earthworks in order to have the best chance of detecting any remnant rampart material and recovering information about its construction and date (Figure 4). Both ditch and rampart were found to be present and were excavated and recorded with other features relating to the ditch but also possibly earlier and later features as well. Radiocarbon dating has provided a useful, and within Herefordshire a unique, series of dates which has helped to provide an insight into the phasing and archaeology of Little Doward hillfort.

The total area opened was 23.00m by 3.00m. Removal of the overlying brash mulch and thin topsoil and testing of deposits was carried out by hand prior to machine cutting in the area of the ditch only. The results are described in three sections, a potential palisade slot, the ditch itself and the area to the east of the ditch – the area of the rampart and interior.

[2] See the Discussion section for a more detailed account of Bowden's thesis.

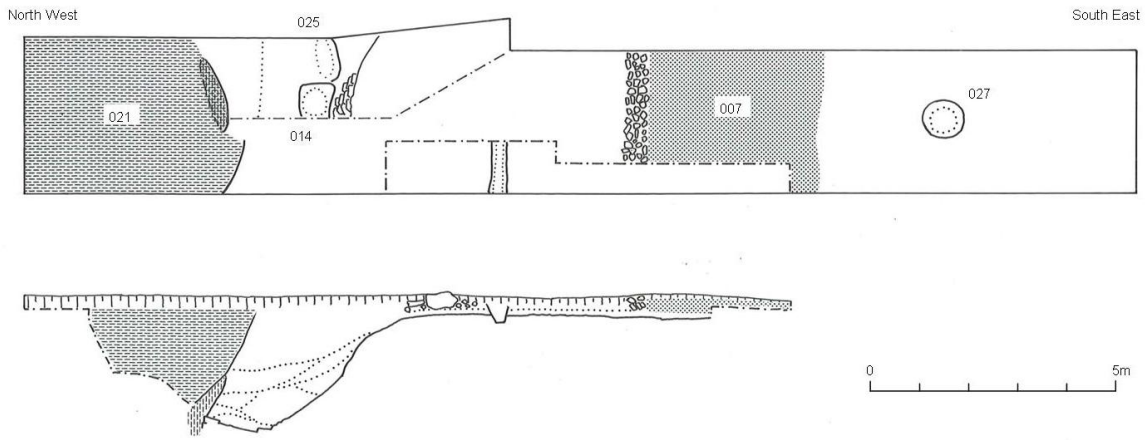

Figure 10 Schematic plan and composite section of the 2011 excavation

The buried soil (043, Figure 13)

A buried soil (043) was found to partially survive below the rampart and other deposits in the north-western part of the trench (Figure 13). It survived to a maximum of 0.16m deep. The reddish brown almost stone-free silty clay / silty clay loam had a very weak small blocky sub-angular structure and probably represents the buried B horizon of a truncated shallow woodland brown earth soil. Charcoal within it suggests activity on the site probably well before the Iron Age. The truncation may have taken place at the time of the initial woodland clearance or be associated with the construction of the hillfort (see Geo-archaeology and palaeo-environmental assessment for a full description).

Slot (044 and 045, Figures 11 and 13)

The earliest dated feature within the excavation was a slot (045) running from south-west to north-east across the width of the trench. This was approximately 1.60m south-east of the edge of the ditch at this point but ran tangentially to it. It measured 0.36m wide at the top, 0.16 across the base and was 0.40m deep. It had been cut through the buried soil (043) and into the underlying limestone natural to a depth of 0.20m. The fill (044) contained a number of large stones that appear to have acted as packing stones (Figure 11). The position of these stones suggested that the slot may have held split rectangular timber planking. Its location, if not its orientation, might suggest a connection to the ditch and rampart and that it may have formed a revetment to the rear of the latter. However this would only allow for a rampart with a maximum width 1.60m.

Short-lived round wood hazel charcoal from the base of the slot returned a date of 770-420 cal BC (2475±20 BP, NZA-38136), though it is quite likely to be in the earlier part of that range i.e. 760-540 cal BC (Allen, below). The date does suggest that this feature is not associated with the ditch and rampart. Although only a 1.00m length was recorded and excavated it does seem likely that this is a trench for a timber palisade perhaps defining the enclosure prior to the construction of the bank and ditch. The stratigraphic relationship with the rampart material is unclear as only remnant rampart material survived at this location. Further work would be needed to confirm its real character and determine its relationship with the ditch.

Figure 11 The slot 045 during excavation showing the packing stones

The Ditch and associated features and deposits (Figures 10 and 12)

A large ditch (039) was cut into the limestone bedrock, (Figure 12). The ditch fills represent typical primary, secondary and tertiary fills. However, the western portion, perhaps one quarter, had been removed by later mining activity and there is evidence of possible industrial activity taking place within the partially silted up ditch itself. Assuming that it had a symmetrical profile the ditch can be reconstructed to give a broad U shaped ditch with an original width of just under 6.00m (5.80m), the base of the ditch was 2.80m below present ground level.

Primary Fills (036, 033, 024, 018, 035, Figure 12)

The lower fills comprised a number of interleaved clay and stone deposits. The lowest primary fill (036) was a dark red-brown clay from which was recovered a single though un-abraded sherd of late Bronze Age or early Iron Age angular quartz tempered ware pottery. Three deposits of stone were differentiated by stone size, matrix and voiding. 033 represents natural primary fill of limestone probably weathered from the ditch edge, this deposit is interleaved with 024 a red clay with brown flecking accumulating from the western side of the ditch. Two further stone deposits (018 and 035) may represent deliberate deposits placed into the ditch. 018 is a voided angular limestone deposit with a maximum thickness of 0.38m, a few crumbs of pottery, also angular quartz tempered ware, and some quantity of bone was recovered. Radiocarbon dating of the bone has provided a date of 410-390 cal BC (2343±15 BP, NZA-38806) from the base of the deposit and 410-370 cal BC (2310±20 BP, NZA-39130) for the top. These dates are clearly statistically indistinguishable but do date the deposit to the very

end of the early Iron Age or the very beginning of the middle Iron Age. A compact deposit of angular limestone in a matrix of red-brown gritty silty clay (035) overlay 018 on the western side.

A reasonably sizable assemblage of snails was recovered from context 018. It is dominated by shade-loving species (87%) that are some of the most common species in rock-rubble, or trogolophile, micro-habitats (see specialist report below). It is likely therefore that this assemblage represents the micro-environments of the primary fills, existing in an established open landscape, rather than recently cleared ancient woodland.

Upper Primary Fills (022, 032, 023, Figure 12)

Above the stony primary fills the nature of the deposits change. On the eastern edge of the ditch and overlying 018, are deposits 022 and 023. These are made up primarily of small limestone chippings and form a very firm almost cemented horizon. They are separated by a thin lens of small and medium limestone pieces within a colluvial matrix (032). These distinctive horizons may be derived from a specific activity that produced a waste product of small limestone fragments.

Secondary Fills (040, 013, 013a, Figure 12)

These are made up of colluvial deposits 040, 013 and 013a. All are stone free clay loam deposits which accumulated to a maximum depth of *c* 0.25m before stabilising and forming a thinly vegetated topsoil 013a (the latter was identified during post-excavation analysis from a monolith sample, see Geo-archaeology and Palaeo-environmental Report below). Snails from the charcoal horizon just above 013a (017) were predominantly open country species (see report below). The assemblage compares well with those of trampled grassland and the lack of shade-loving species and specialised taxonomic range contrast with faunas from the early stages of grassland succession.

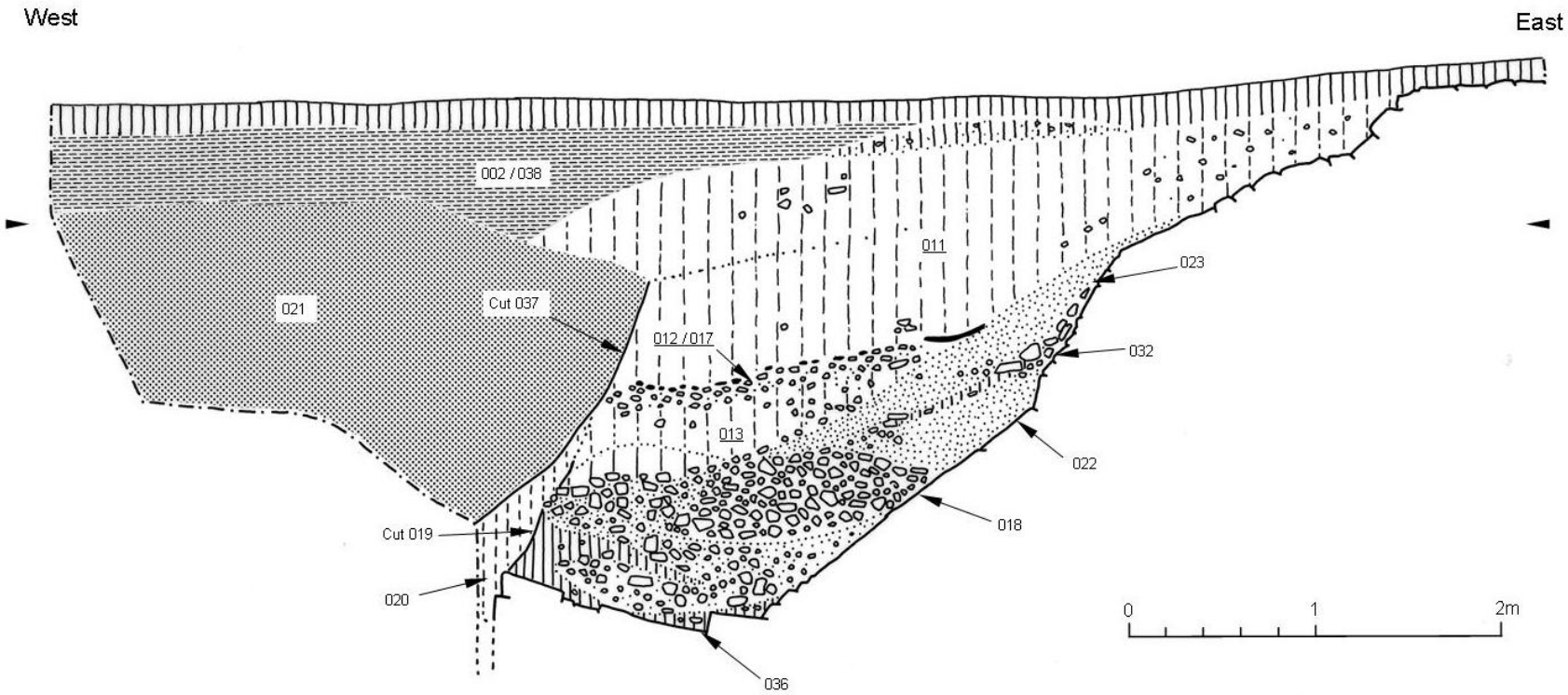

Figure 12 Detail of the ditch 039 and its fills

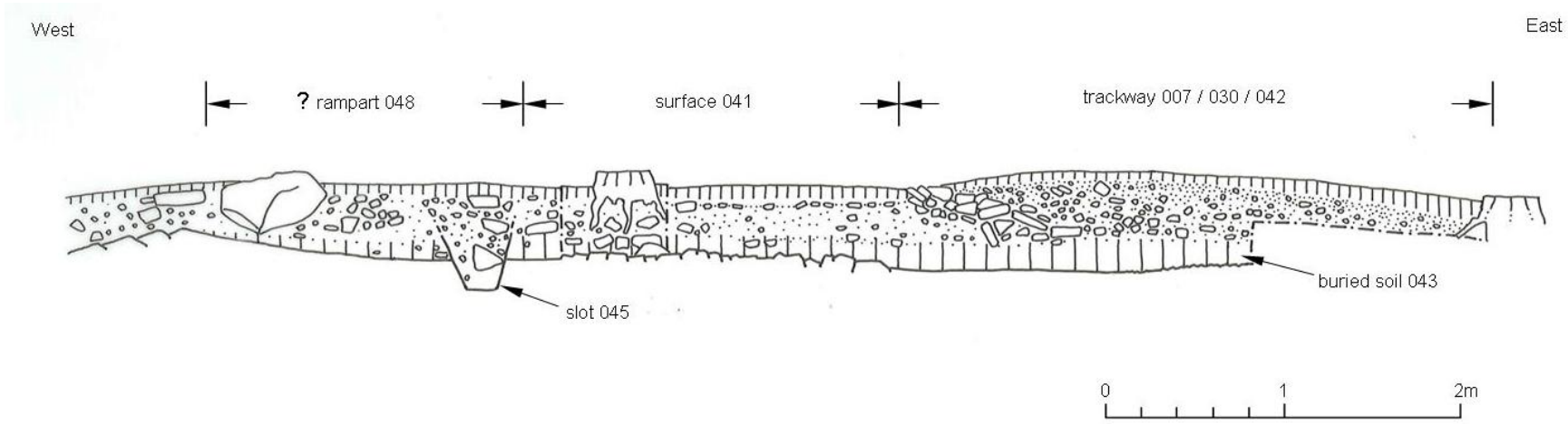

Figure 13 Section through the remnant rampart material, the slot and the trackway

Industrial activity (012, 017, 019, 020, 025, 026, 014, 016, 015 Figures 10, 12 and 14)

On top of the stabilised horizon 013a a stony layer (012) had accumulated or was deliberately laid. This was associated with a layer of charcoal (017) and two pits (014 and 025) cut into the underlying ditch deposits (Figure 10). The latter was little more than a concave step or scoop cut into ditch fill 023, it measured 0.60m (min) north – south by 0.40m east – west and was 0.19m deep. The fill (026) was charcoal-rich red-brown clay. Feature 014 was a more substantial pit 0.80m (min) north – south by 0.70m east – west with a maximum surviving depth within the ditch fills of 0.25m. It had been cut through deposit 023/022 and into the top of the rubble deposit 018 (Figure 14). The eastern side of the pit was formed by the bedrock back wall of the ditch itself, giving an effective depth of *c*0.40m. Burning had taken place within the pit and both the underlying stone fill (018) and the bedrock were discoloured by heat. The pit was sealed by an upper fill of red-brown clay surviving to c 0.17m deep below which was a charcoal rich layer 0.02m thick (016)[3].

Figure 14 Pit 014 on completion of excavation Scales 1.00m and 0.30m

Carbonised cereal grains from within layer 017 returned a date of 360-170 cal BC (2173±20 BP, NZA-38134).

Charcoal from 017 and 014 was exclusively heartwood oak. It was therefore specifically selected to produce high temperatures which would have been useful for an industrial rather than a domestic use. There was no short-lived charcoal within the sample. However, a C14 date of 750-400 cal BC (2436±20 BP, NZA-38135) was obtained which confirms that the timber being used was mature oak of around two or three hundred years growth.

The western quarter of the ditch fills and the western ditch side had been completely removed by the sinking of what appeared to be a circular shaft (019) some 2.40m in diameter[4]. This cut through the primary ditch fills 024, 035 and

[3] It was not possible to ascertain the original depth of 014 as the fill above was removed by machine.
[4] The diameter is calculated from only a small portion of the circumference, the size of trench and overlying unstable rubble fills prevented further excavation and exposure.

040 and possibly through the secondary fill 013 however this relationship had in turn been removed by a further cut (037) from higher up in the deposit of tertiary fills (see below). The fill of the shaft (020), a stone free greyish brown silty clay, apparently of colluvial origin, was tested by augering and found to extend to a depth of 2.15m below the base of the ditch at this point (i.e. more than 5.00m below the modern ground level). It is perfectly possible that the sinking of this shaft was linked with the industrial activity taking place within the ditch. However, there is no clear proof of this connection.

Context	Calibrated Result	Lab Number	Result BP
044 palisade slot	770-420 cal BC	NZA-38136	2475±20
018 primary ditch fill base	410-390 cal BC	NZA-38806	2343±15
018 primary ditch fill top	410-370 cal BC	NZA-38130	2301±20
017 industrial activity	360-170 cal BC	NZA-38134	2173±20

Table 2 Radiocarbon results from the slot and the ditch deposits

Tertiary Fill (011), Later Industrial and other activity (037, 021, 038, 002, Figure 12)

Following the industrial activity described above, further colluviation took place and this accumulated as a tertiary ditch fill (011) to a depth of 0.58m when it was cut by another shaft (037). It is likely that this represents post-medieval iron ore mining. Four definite and a further three possible shafts were identified during the recent English Heritage survey (Bowden, op cit). It was suggested that they probably date to the late 18th to early 19th centuries, but an earlier date cannot be altogether ruled out. It is possible that the site of the earlier shaft was still visible as a depression and was partially re-excavated during prospecting for iron stone deposits during the post-medieval period.

This later shaft was (apparently quickly) backfilled with angular limestone rubble in a matrix of reddish brown loose silt to coarse silty sandy loam (021). This material may be spoil derived from the still open shaft that lies only some 12m to the west. Further colluviation and accumulation of 011 took place to a final depth of 1.15m.

The colluvium (011) and the limestone rubble fill of the later shaft (021) are both subsequently overlain by 038 and 002, both angular limestone rubble deposits that may represent rubble spoil from the cutting of the adjacent carriage drive as part of the 19th century landscape works carried out by estate owner Richard Blakemore.

The Rampart and Interior

The Rampart and buried soil (048, 043, Figures 10 and 13)

To the east of the ditch, in the area of the putative rampart and interior, a number of features and deposits were recorded. On the eastern, inner edge, of the ditch an area initially thought to be in-situ limestone bedrock proved on excavation to be re-deposited. It included one massive block of limestone measuring some 1.20m by 1.00m and 0.45m thick. This and further large limestone blocks formed a deposit (048) that overlay the buried soil (043). This is likely to be the basal course of the rampart constructed from material excavated from the adjacent ditch (039). It was not however apparent in the northern half of the trench and it may be that we are seeing just the tail of surviving rampart material at this point. Because it only survived to one course deep (albeit a massive course) there was no surviving evidence of any structural complexity.

Stone surfacing and probable trackway (041, 007, 030, 042, Figures 13 and 15)

To the east of slot 045 was a stone surface of rounded limestone nodules/cobbles (041). It is not clear if this is deliberate surfacing or simply a result of weathering and worm sorting of surface stone. The eastern edge of this surface was defined by, though probably not associated with, a linear deposit of largish angular limestone blocks up to 0.20m – 0.25m (030) running north to south across the width of the trench. This feature formed a formal kerb to a surfaced area of hard standing or more probably a track. In section the kerb deposit was overlain by a limestone rubble sub base (042) below a compact surface of finer limestone chippings 0.03m – 0.04m in size (007) Figure 13. Excluding the kerb this surface was around 3.30m to 3.40m west to east though a large part of the eastern edge was obscured by the stump and roots of a large tree. The camber of the surface is suggestive of a trackway running roughly north – south. A large chunk of iron ore contained within the rubble sub base (042) might suggest this feature to be connected with the iron ore mining or limestone quarrying on the hill although there is no direct evidence for this.

Figure 15 The trackway after cleaning and part sectioning Scale 1.00m

An elongated pebble utilised as a whet stone was found within the larger stones of the kerb 030.

Other feature/s (027, Figure 10)

The only other humanly-constructed feature within the eastern part of the trench was a pit (027). This measured 0.70m north – south by 0.80m east – west and was cut 0.39m into the limestone bedrock, its stony fill (031) gave no clue to function though two small abraded sherds of quartz tempered ware were recovered from bulk soil samples during processing supporting the attribution of a prehistoric date for the feature.

The Finds 2011

Flints (006, 007)

A stubby struck flake of white flint with some use wear on one side came from the natural soils 006 overlying surface 041. A wasted core of blue grey mottled white flint came from the surface of the trackway 007 during initial cleaning. Neither is likely to be in its original context.

Ceramics (018, 020, 031, 036)

Given the context of the excavation and the abundance of ceramic material from the trench in 2009 there was disappointingly little pottery from the 2011 excavation. Pottery was however recovered from four different contexts. The primary ditch fill 036 produced a single sherd of angular quartz tempered ware. Fragmentary sherds, little more than crumbs, of the same fabric were recovered from 018 and 020, the latter (from the fill of shaft 019) is likely to be residual and derived from the ditch fills cut through by the shaft. Two small abraded sherds of the same fabric came from 031, the fill of pit 027.

It is difficult to draw any firm conclusions from such a small assemblage. It is interesting however that all the pottery associated with the ditch is of a fabric that is likely to be late Bronze Age or early Iron Age. There was none of the Malvernian fabrics that were so abundant from the 2009 excavation. It is however possible that this early material is residual.

Bone (016, 018)

Two small fragments (<0.02m) of sheep/pig sized rib were recovered from 016, the fill of pit 014. A small quantity (nine fragments) of bone came from within the voided stony ditch fill 018. These included cattle (4), pig (3) and sheep (2). See bone report below for further comment.

Stone (024, 030, 042)

A small chunk of fairly fine quartz conglomerate was recovered from the otherwise stone free clay primary fill of the ditch (024). Although there is no definite surface it could be a fragment of quern stone.

A fragmentary elongated water worn pebble 26mm x 31mm and 59mm long utilised as a whetstone. Although difficult to date it came from the kerb of the trackway (030) and is therefore likely to be post medieval.

A number of pieces of iron ore were found during the excavation, the largest came from the rubble sub base (042) of the possible trackway. The others were either unstratified or from modern contexts.

Discussion

Peter Dorling

Although the work carried out over the two seasons was small-scale the results have given us a number of insights into the structural sequence and into some of the activities taking place within the fort during prehistory. The corollary of this however is that the interpretation is in some cases preliminary and /or tentative.

Pre hillfort activity

The presence of a slot with apparent packing stones (045) may indicate an early phase of the enclosure defined by a palisade. Hazel charcoal from the basal fill provided a date of 770-420 cal BC, although it is quite likely to be in the earlier part of that range, i.e. 760-540 cal BC (see Radiocarbon dating report below), indicating that this activity pre-dates the construction of the internal ditch 039 by potentially several centuries. The interpretation of this as a palisade however must be very tentative at this stage as it is based on an excavated segment of only 1.00m.

The presence of the angular quartz tempered ware pottery also hints at settlement or at least activity on the promontory in the late Bronze Age or earliest Iron Age. This fabric has been dated at Wellington in Herefordshire to the late Bronze Age (see Evans, below), although early Iron Age ceramics are poorly defined and it is possible that the fabric could continue into this period. If this is the case this fabric may be associated with the putative palisade slot. The Malvernian ware also included a sherd in a distinctive, coarse fabric variant, similar to dolerite-tempered ware (see pottery report below). A similar fabric has been noted in Middle and Late Bronze Age assemblages in Worcestershire and at Moreton-on-Lugg in Herefordshire.

The structural sequence of enclosure

In proposing a sequence of construction and occupation it is acknowledged that there are still major questions to be answered. Foremost among these is the dating of the construction of the larger (north-west) enclosure bank and ditch. What follows is based on a number of assumptions and it is acknowledged that further work would be needed to confirm the developmental sequence proposed below.

In his discussion of the detailed topographic survey Mark Bowden set out four reasons why he thought the south-east enclosure was likely to be the earliest (Bowden, op cit p11-12). These were that 1. The natural defences of cliffs on three sides mark it out practically and phenomenologically as a key location in the landscape. 2. House platforms are visible in the south-east enclosure and

completely absent from the north-western one. 3. Certain lengths of rampart (a and b on the EH plan, Figure 4) can be read as defending the south-eastern enclosure and additionally there are marked differences in form between b, now the southern earthwork of the only recognised entrance, and j, part of the main enclosure earthwork forming the northern side of the same entrance. Bowden argues that this difference may indicate a different build and date. 4. The lack of main enclosure earthwork at the south-east leaving the north-western enclosure open to that aspect suggests that the north-western enclosure is either contemporary with or later than the south-eastern enclosure.

The confirmation by the 2011 excavation of the presence of a major ditch (5.80m wide and 2.80m deep) and rampart that would appear to link to Bowden's earthworks a and b, coupled with the fact that this was out of use, was allowed to fill in and was used for industrial activities still within the middle Iron Age (360-170 cal BC) would appear to add credibility to Bowden's proposition. If the larger north-western enclosure is later in date then its construction may coincide with the evidence for cessation of secondary colluvial deposits and the stabilisation and grass growth within the ditch. That is to say cultivation of the area to the north-west may have ceased upon, or immediately prior to, the act of enclosure.

The industrial activity

The industrial activity taking place within the partially silted up ditch appears to confirm its obsolescence as a protective or defensive feature by that time. Soil and molluscan analysis together suggest that the ditch contained trampled established grassland at this time and it may have been undifferentiated from the surrounding area of the hillfort interior.

Although there was no evidence for precisely the type of activity represented by the pits and burning, an industrial process is indicated by the selective use of heartwood oak. When well-seasoned this would produce a high heat and long slow burning times. It may be that the adjacent shaft and the activity are unconnected however given the fact that iron ore is available on-site a metal working connection cannot be ruled out and roasting of ore prior to smelting might be suggested. Small quantities of slag were recovered from the 2009 excavation but no metallurgical residues came from the 2011 work.

The possibility that the site was linked to the supply of iron was suggested in connection with the wider than normal trading links hinted at by the ceramic assemblages (see below). It would be surprising if the local ores were not being exploited in the Iron Age but further work is needed to gain evidence of this.

The C14 results not only date the industrial activity, but provide an indication of the duration of ditch fills and time between the construction of the ditch (410-370 cal BC) and its obsolescence, (360-170 cal BC), if the presence of industrial activity in the ditch can be taken to indicate this (see C14 Report below, Table 2

and Figure. 2). A single result on charred cereal grain calibrates to 360-160 cal BC, but has a clearly bimodal distribution with distribution probabilities of 360-280 cal BC (57.7%), 260-240 cal BC (1.6%) and 240-170 cal BC (36%). Thus the most likely dates for the industrial activity are either 360-280 cal BC or 240-170 cal BC indicating that this occurred either about three generations (i.e. *c* 70 years), or about two centuries later than the construction of the ditch.

The platforms

It is interesting that although there are a few examples of platforms in the larger north-western enclosure Bowden describes these as "more doubtful" (Bowden, op cit page 7). The other 35 or so well defined examples are all within the apparently earlier enclosure suggesting that they belong with that phase of construction. Further work would be needed however to verify this. Several of the platforms are placed in short rows or terraces along the contour. The location of the recorded platforms leaves a gap running south-east to north-west through the platforms that could be a roadway. If so it would have led roughly to the centre point of the early rampart and this might indicate the location of an original entrance.

Although the earliest date for the deposition of the midden material on one platform is around 400 cal BC, this does not necessarily tell us anything about the date of the platforms themselves. If it is accepted that they were constructed to take buildings would the midden be accumulating here at the same time as a building occupied the platform or are we looking at the use of space after the redundancy and/or removal of a building? If this is the case then the platforms themselves are more likely to be contemporary with the definition of the promontory by the ditch and rampart or possibly even with the earlier palisade. Clearly further work is required before we can definitively date the construction of the platforms.

Ceramic material

The ceramics from the site provide some interesting insights into possible trading links and connections. The forms of the Malvernian wares are consistent with an earlier middle Iron Age date which is supported by the C14 dates from bone within the midden material. Though interestingly there are none of the stamped wares that are typical of the Middle Iron Age assemblages of the region. In terms of fabrics the assemblage is dominated by Palaeozoic limestone tempered ware (70%). With a probable source in the Woolhope Hills area Little Doward is on the southern edge of its recorded distribution[5].

[5] From Woolhope to Little Doward however it is only 20km as-the-crow-flies and the two are linked directly by the River Wye and a journey of some 50km.

Perhaps more notable is the quantity of Cheshire VCP in comparison with Droitwich briquetage, with a 61% to 39% by weight and 76% to 24% by count representation respectively. As discussed above it is possible that the availability of iron ore and consequently iron in the immediate area is connected with wider than normal trade patterns.

The bone

It is fairly unusual for there to be good preservation of bones on sites in Herefordshire. However, a number of sites, mainly with limestone geology, have produced well preserved bone and Little Doward can now be numbered among these.

The majority of the assemblage came from what is interpreted as a midden deposit. The species reflect a mixed husbandry with sheep/goat (39%), pig (35%) and cattle (26%) all represented. Horse and dog were also identified by three and one bone respectively though interestingly there were no wild animal or bird bones in the deposit. The anatomical distribution indicates the disposal of bones was from all parts of the carcase, the deposit is not a concentration of prime meat bones, waste/low value bones, tanning or working waste (Hamilton-Dyer, below).

Although the assemblage is not very large it is considered sufficient for general comparisons. Whilst higher proportions of pig bones have been recorded from sites in Wales and the west compared to areas such as Wessex, where sheep then cattle then pig are most numerous, these have generally been from sites of late Iron Age or early Romano-British periods and higher proportions of pig have been interpreted as indicating an increased Roman influence. This is clearly not the case at Little Doward where the deposit is securely dated to the earlier part of the middle Iron Age. It may be that local topography and associated environmental factors play a part. The dissected plateau of the Forest of Dean and lower Wye Valley has an abundance of steep slopes that are unsuitable for cultivation and that continue to support extensive oak and beech woodlands, access to woodlands and plentiful pannage may have been a factor in the importance of pigs in the economy in the middle Iron Age.

Environment and land use

The excavations have provided some evidence of the environment both before and during the Iron Age. The buried soil that survived below the rampart and other deposits in the 2011 trench probably represents the buried B horizon of a truncated shallow woodland brown earth soil. Very fine and small charcoal fragments were present within its matrix suggesting human activity at some considerable time prior to its truncation. The truncation was possibly due to the act of woodland clearance itself, later cultivation or preparation of the land for activities associated with the Iron Age hillfort.

Pollen was very poorly preserved within the buried soil and the ditch deposits. The few recorded pollen grains and fern spores reflect differential preservation rather than a true picture of the species present on or around the site. This lack of preservation, due to oxidation within the iron rich soils, has unfortunately been recorded at other recent hillfort excavations i.e. Credenhill and Dinmore Hill (Scaife in Dorling, 2009 and Dorling, et al forthcoming).

Atypically for Herefordshire there was some survival of snail shell at Little Doward where the overlying Crease Limestone creates some specific conditions allowing for survival. However shell was only present in two contexts, 017 and 018. Analysis has shown that the ditch 019 was probably cut in a landscape already cleared of trees. As Allen states (see report below for full commentary) that "The shade-loving assemblage [in 018] is typically restricted and troglophile (Evans & Jones 1973), and does not contain the range and diversity of species expected in a long established woodland. We can tentatively suggest, therefore, that this assemblage represents the micro-environments of the primary fills, existing in an established open landscape, rather than recently cleared ancient woodland."

The shell in the charcoal horizon 017 on the other hand represents well established open grassland with "a short-turved and trampled grassland sward around the ditch, if not within it". Both 018 and 017 are dated and are separated by either 70 or 200 years, between the two is a stone free colluvial type deposit that might reflect cultivation prior to the establishment of the grassland indicated by both the stabilisation horizon 013a and by the snail assemblage.

The charcoal horizon 017 and some other contexts also contained cereal remains. Wheat and barley grains are identified along with relatively fragile elements of chaff suggesting that cereal processing was taking place on site and that there was therefore relatively local production. Charred weed seeds are also present though not in quantities to provide evidence of the types of cultivation or the harvesting techniques involved (see Clapham, below).

Charcoal from a number of species was present in various soil samples. Analysis suggests the presence of woodland which was dominated by oak with a scrubby element of birch, hazel, apple/pear/whitebeam/hawthorn and field maple. This may suggest the presence of secondary woodland which has re-colonised previous cleared ground. However the use of two to three hundred year old oak in the industrial process within the ditch illustrates that mature oak was still available and growing reasonably locally.

The general picture from the above is therefore one of woodland clearance, then occupation and enclosure of the promontory and the hill-slope above perhaps interspersed by periods of localised arable agriculture allowing colluviation followed by stabilisation and vegetation / soil formation suggesting cessation of ploughing and grassland establishment. Wheat and barley were grown and processed locally and the local woodland may have been predominantly oak with

understory and/or ecotones of a more scrubby nature. The colluvial tertiary ditch fills suggest further periods of cultivation possibly in the Medieval period.

Summary of a proposed sequence of activities represented by the archaeological deposits

- Late Bronze Age / Early Iron Age ceramics
- Possible palisade slot – 760-540 cal BC
- Cutting of ditch, rampart construction – promontory fort
- Primary infilling of ditch – 410-370 cal BC
- Secondary infilling (colluviation = local cultivation or bare ground)
- ? Construction of main hillfort enclosure
- Stabilisation of fill (cessation of cultivation or re-vegetation of bare ground) trampled grassland indicated by snail assemblage
- Midden deposition on platform – 410-180 cal BC
- Industrial activity
    - ? Shaft quarried into base of redundant ditch
    - Burning / Industrial activity – 360-280 or 240-170 cal BC
- Tertiary infilling (resumption of colluviation / cultivation)
- Later Industrial Activity, possibly 18th – 19th Century
    - Track construction
    - Prospecting shaft
    - Rubble infilling
- Further colluviation (continued period of cultivation)
- Deposition of limestone rubble from carriage drive (designed landscape) – 19th century

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The excavation was assisted by a number of volunteers over the two years, their dedication and hard work contributed in no small part to the amount of work achieved. Over the course of the two excavations this included Colin Archer, Julie Bowen, Clyde Hoare, Barbara Joss, Elwyn Lloyd, Sharon Powell, Elaine Savage, Ros Skelton, David Tidley, and Peter Yates. Various staff from Herefordshire archaeology assisted with the excavations, the supervisors were Lucie Dingwall, Lara Bishop, Neil Rimmington, Chris Atkinson and David Williams. Further assistance was provided by Ian Bapty, Natalie Cook, and Keith Ray who also provided guidance and advice throughout the project.

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Geo-archaeology and palaeo-environmental assessment 2011 and review of LD 09

Michael J. Allen

The excavation at Little Doward hillfort (LD 011) was visited on 17th and 22nd May 2011, to provide geo-archaeological and palaeo-environmental scientific advice and reporting, and to describe and sample the ditch and buried soil profiles. Two profiles were described, and three undisturbed monoliths taken for geo-archaeological examination and subsampling for pollen. These were augmented by ten bulk sediment samples and two small hand collected soil and charcoal samples taken by the excavator for assessment of charred plant remains, charcoal and radiocarbon potential.

This report deals with the geo-archaeology and pollen assessment (Part One), and the processing and assessment of the 12 bulk sediment and hand collected charcoal samples (Part Two). The assessment from the 2009 excavations is reviewed in light information from 2011 and revised proposals and recommendations made for the palaeo-environmental programme for the 2009 and 2011 excavations (Part Three).

Topography, Geology and Soils

Lying on a moderate slope with a south easterly aspect overlooking the Wye valley, the site lies within managed woodland, but the majority of the hillfort itself has been recently clear felled. The hilltop supports shallow loamy brown ranker soils of the Crwbin Association over Carboniferous limestone (Finlay *et al.* 1984). The soil within excavated area, and the hillfort as a whole, suffers considerable bioturbation by extensive rooting. The moderate slope shows evidence of medieval and post-medieval mining and other disturbances, and the ditch profile examined had been partially cut away by such activity.

Part one Geo-archaeology and Pollen Assessment

Geo-archaeology

The excavation sectioned the ditch, the area of the former rampart and exposed an area immediately behind the rampart. The buried soil (043) and ditch profiles were cleaned and described following notation outlined by Hodgson (1976), to characterise the deposits and provide the basis of geo-archaeological interpretation (see below). Undisturbed samples were removed from the ditch (monolith 2, 25cm; and monolith 3, 50cm) and a kubiena tin (1) from the buried soil.

Monolith/ kubiena	***context***	***Description***	***Monolith size***
Kubiena 1	buried soil 043	Stone-free	16cm
M2	024 (and 020)	Stone-free early ditch silt	25cm
M3	013, 013a 012	Stone-free ditch silt with stasis at top	50cm

The exposed faces of the undisturbed samples were cleaned and described prior to further more detailed observation and description, and sampled at 1cm band-widths for pollen. Full descriptions as made in the field are presented in Appendix 1

The buried soil and rampart

The rampart survived somewhat truncated and a remnant of the buried soil (043) was present surviving c.160mm thick. The reddish brown almost stone-free silty clay / silty clay loam had very weak small blocky sub-angular structure, and probably represents the buried B horizon of a truncated shallow brown earth soil. Very fine and small charcoal fragments were present within its matrix suggesting human activity at some considerable time prior to its truncation and its burial under the rampart of the hilltop enclosure hillfort.

Depth cm	***context***	***Unit samples***		***Summary description***
			pollen	
0-16+	ols 043		0cm **4cm** **8cm** 12cm 16cm	Reddish brown (5YR 4/4) almost stone-free silty clay / silty clay loam with few small and rare medium stones, very weak small blocky subangular structure, inclusions of yellowish red (5Y 5/6-4/6),fine charcoal fragments present from 4cm, rare fine fleshy roots bB: buried soil under thin remnant rampart

Samples in bold were assessed for pollen (see below)

Ditch profile

The ditch profile was partially truncated on its western side by later mining activity (cut 019 and 037), and the ditch itself had been cut into prior to this by an apparent mine shaft (cut 019 and 037). The surviving and exposed deposits of the Iron Age ditch (cut 039) displayed a relatively typical tripartite ditch infilling sequence; the lower deposits in the centre of the later ditch cut (cut 019) were not exposed but augering indicated fills (context 020) extended 2.15m below the base of the ditch at this point (Fig. 1).

The exposed ditch profile contained primary fills comprising a series of banded limestone rubbles (036, 033, 018, 035) largely originating from the weathering of the eastern ditch side and limestone rubble rampart. Interspersed within this is a soil-derived stone-free, rubified, iron-rich silty clay loam infill (024) originating from the western (outer) side of the ditch (Fig. 1). The secondary fills consisted of a stone-free, soil-derived silty clay (040, 013 and 013a) capped with a stony wash and surface with charcoal-rich deposits (012 and 017). The whole sequence was sealed by a thick almost stone-free tertiary fill colluvium or ploughwash (011).

Depth cm	***context***	***Unit samples***		***Summary description***
			pollen	
0-8	012			Brown (7.5 4/4-3) firm silty clay matrix with common-abundant small and medium limestone fragments, abrupt boundary Stony inwash/infill – top of secondary fills
8-12	013a		8 10 **12**	Dark brown (7.5YR 3/4) silty clay loam with weak to moderate small blocky structure, rare woody/fibrous vertical roots 1.5-2.0mm ∅, common very small charcoal flecks, clear to abrupt boundary Stasis; Soil forming in the top of upper 13 – secondary fill
12-16	013		14 16	Dark brown (7.5YR 3/4) silty clay loam no structure observed rare woody /fibrous vertical roots 1.5-2.0mm ∅, few very small charcoal flecks, clear to abrupt boundary Secondary fill
16-50	040		18 24 **32** 40 48	Dark reddish brown to reddish brown (5YR 3/3 – 4/4) firm massive (but possible very weak medium blocky structure) silty clay loam, essentially stone-free, but a few medium stones towards base at 45cm+, rare woody/fibrous vertical roots 1.5-2.0mm ∅ Rapid upper stone-free ditch infill – secondary fill

Monolith 3 (50cm) sampling the stone-free secondary fills. Samples in bold were assessed for pollen (see below)

Depth cm	***context***	***Unit samples***		***Summary description***
			pollen	
	020		**2**	Brown (7.5YR 4/4-3) stone-free almost greyish massive silty clay, rare fine fibrous roots, abrupt boundary Later mine shaft infill in cut 019, cutting 24, 13a, 13 and 40
	024		8 **16** 24	Dark reddish brown to reddish brown (5Y 3/4 to 4/4) stone-fee silty clay loam – very weak medium blocky structure, few small stones rare medium stones especially towards base, rare fine fibrous roots. Rapid lower stone-free ditch fill – within primary rubble

Monolith 2 (25cm monolith) sampling the stone-free deposit within the primary fills. Samples in bold were assessed for pollen (see below)

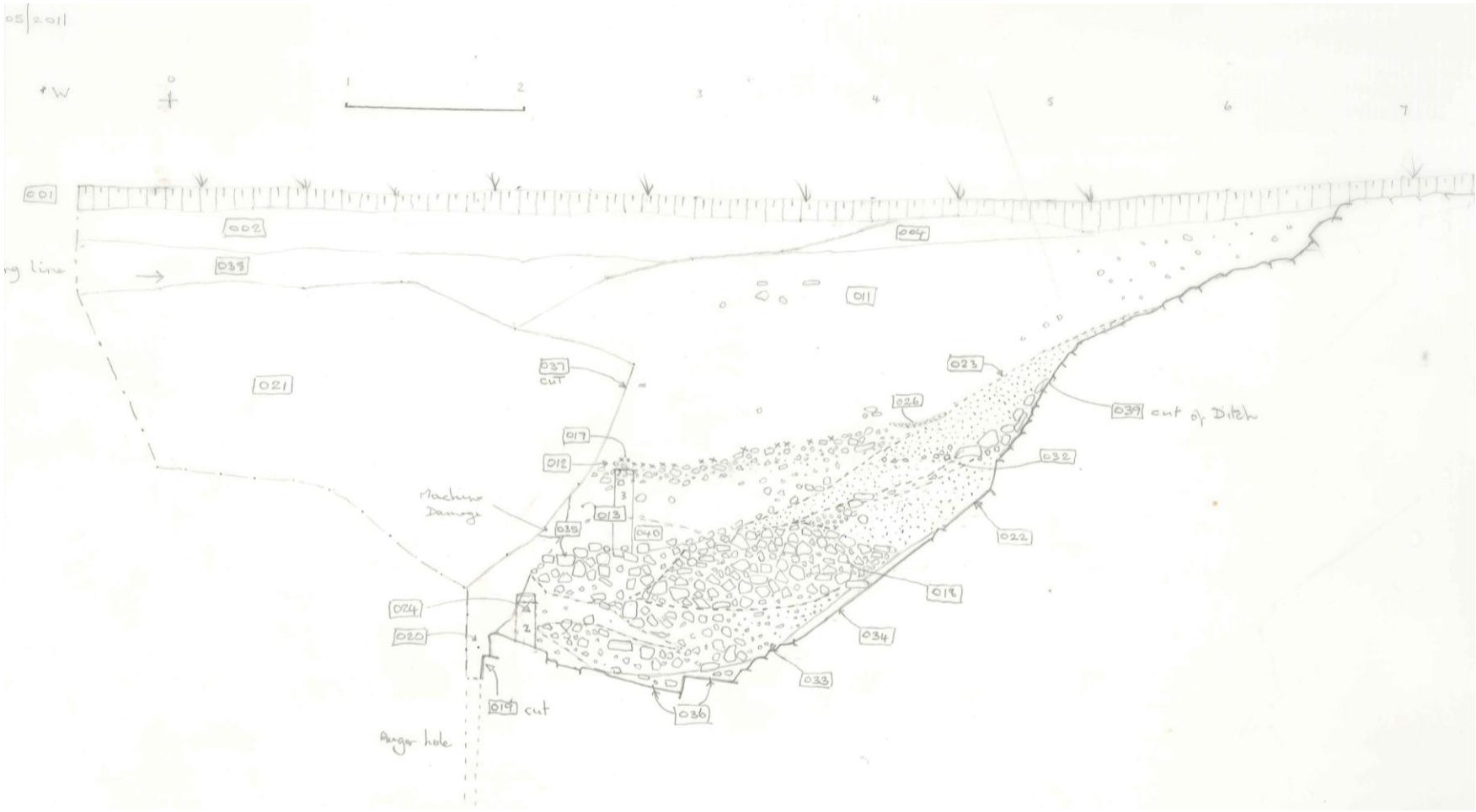
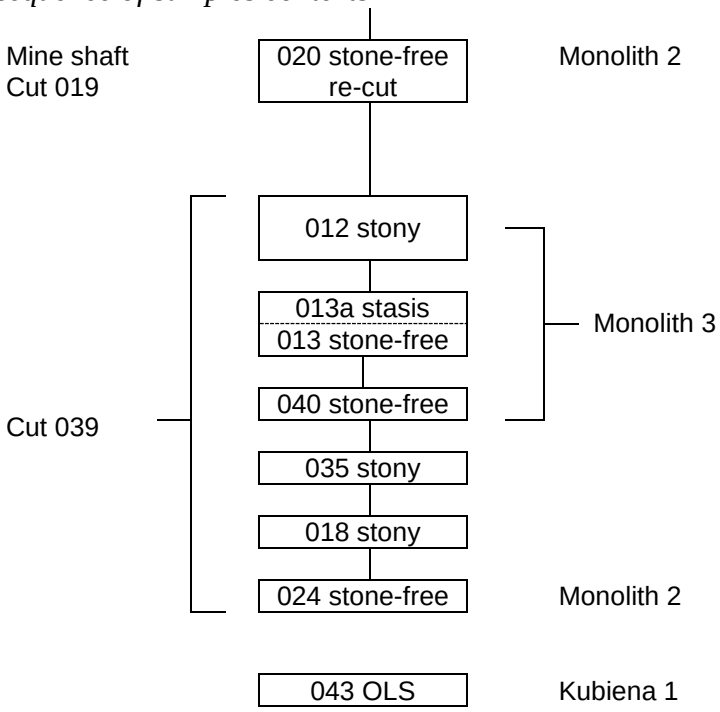


Figure 1. Field section drawing of the sampled ditch profile showing the location of monoliths 2 and 3. (Dwg P. Dorling Hereford Archaeology)

Stratigraphic sequence of samples contexts



Soil micromorphology assessment

Sample kubiena 1 was taken from the remnant of the base of the buried soil 043. Manufacture of a soil micro-morphological slide and its analysis has the potential to confirm the identification of a brown earth soil and confirm its severe truncation. The soil micro-fabrics will contain evidence of the soil history, but that immediately prior to construction of the rampart is lost by the severe truncation.

Summary geo-archaeological history / site land-use development

Examination and consideration of the field descriptions and detailed geo-archaeological descriptions along with the palaeo-environmental assessment enable a provisional site event history and summary to be tentatively postulated. This is combined with provisional interpretation from the 2009 season (Allen 2009)

1. Preliminary site land-use event history

1.1) Brown earth / brown forest soil = former woodland (LD 2009 profile 2)

1.2) Clearance and disturbance (possibly in the Bronze Age) (LD profile 2 and charcoal in bB horizon of buried soil (LD 2011)

1. 3) Truncation of the former woodland soil by activity; possibly the act of woodland clearance itself, or preparation of the land for activities associated with the Iron Age hillfort (LD 2009, profile 1 and 2) and buried soil 043 (LD 2011)

1.4) Development of grassland soil; ?pasture (LD 2009 profile 1) and brown earth soil (LD 2011, 043)

2. Ditch and Rampart event history

2.1) Excavation of the ditch and construction of the rampart sealing the former land surface (043)

Main primary fills

2.2) Weathering of the ditch sides producing typical primary (*sensu* Evans 1972, 321-8; Limbrey 1975; 290-300) rubbles (context 033, 018, 035), and the erosion of former old land surface and soil material exposed by the cutting of the ditch, into these primary fills (context 036 and 024)

Upper primary fills

2.3) Finer weathering and wash of the ditch sides (and possibly off the rampart) comprising upper primary fills (context 022, 032 and 023)

Secondary fills

2.4) Secondary fills and the erosion of soil-derived material (context 013) contemporary with the use of the hilltop and including burning activities as evidenced by charcoal observed within and throughout in context 013 – probably settlement and other contemporary (Iron Age activities such as settlement (LD 09), and pits (LD 11)

2.5) Stasis and stabilisation, slowing and cessation of ditch sedimentation enabling for formation of a soil in the top of the secondary fills (context 013a), but with continued local activity evidence by charcoal flecks

Prehistoric Industrial activity

2.6) Renewed activity resulting in erosion of limestone pieces into the ditch (012), the creation of a surface, and burning activity on this surface (017 and 026, and possibly pit 014), possibly relating to roasting of iron ore

2.7) Mine shaft cut from the lower tertiary fills (011) and through the ditch fills and the base of the ditch (cut 19 (and 037))

2.8 and 2.11) Tertiary fills, colluviation and ploughwash (011) infilling much of the ditch indicating an open, and possibly tilled, landscape

2.9) infilling of the shaft, with primarily soil-derived material (020) rather than limestone rubble

Late Industrial activity / Mining
2.10) cut in top of shaft (037)

2.11) deliberate backfilling of mine shaft with limestone rubble (021)

Continued land-use and ditch infill
2.12) renewed colluviation (upper 011), but siltier indicating deflation and winnowing (wind blow) of open tilled probably or overgrazed land locally

Part Three: Review of LD 09 and LD 11 Recommendations for future Work

Geo-archaeology
LD09 and LD 11: The reporting and descriptions provide the basis for site interpretation and reporting.
No further analytical work recommended.
The report and data provide the basis for publication reporting.

Soil micromorphology
The soil micro-morphological sample from 043 (LD 11) is probably not worth progressing – no further work recommend. That from LD 09 might, however, be of greater archaeological value. The thin section should be prepared of this (3 months) and analysis considered.

Pollen
Pollen preservation poor (LD011) and it is assumed pollen preservation from LD09 will be similarly poor. No further work recommended

Magnetic Susceptibility
A magnetic susceptibility profile was consider useful for the sequence sampled in LD 09 (Allen 2009), however, the value of this is deemed only moderate and other elements should be prioritised in its favour, such as soil micromorphology.

The land snail evidence (local palaeo-environmental and land-use history)

Michael J. Allen

Direct proxy palaeo-environmental evidence from archaeological contexts on prehistoric sites in Herefordshire is relatively rare. Assessment of the pollen at Little Doward and Credenhill hillforts for instance have produced no, or poor and sparse, pollen preservation negating analysis. Land snails are rarely preserved in archaeological contexts Herefordshire, even on the calcareous limestone geologies. The slow-weathering of limestone does not produce base-rich (calcium carbonate-rich) soils and thus the preservation of snail shells is often poor; nevertheless moderate to good shell preservation has been recorded in patches on other sites on limestone in south west and western Britain (Bell 1984; 1987) and including recently in Hereford at Hill Croft Field, Bodenham, albeit largely of more robust hand collected species (Mann 2007). The hilltop supports shallow loamy brown ranker soils of the Crwbin Association over Carboniferous limestone (Finlay *et al.* 1984). The soil within excavated area, and the hillfort as a whole, suffers considerable bioturbation by extensive rooting.

Snail shells were not readily observable, except they were noticed in the primary limestone rubble fill (context 018) of the hill-top enclosure ditch during excavation (LD 11).

One sample (from the buried soil, LD 09 sample 1) was taken specifically for land snails and processed following standard methods (Evans 1972). It contained no shells (Table 1). Shells were, however, noticed during the processing by wash-over flotation of 4 of 12 bulk samples from the 2011 trench (LD 11). Where shells were noticed in the flots, the residues were retained on 0.5mm mesh, fractionated and sorted. Two of the limestone clast-rich samples (primary ditch fill, context 018, and charcoal layer 017) in the ditch were particularly rich and two other samples produced a few shells (Table 4). Shells were extracted and sorted from the flots and all the residue fractions, and shells identified under a stereo-binocular microscope at ×10-×30 magnification following nomenclature given by Anderson (2005), and habitat ascriptions follow Evans (1984).

Two samples from the ditch produced assemblages of over 100 shells with completely different characteristics. The assemblage from the primary fill of the ditch is dominated by shade-loving species (87%), in particular *Discus rotundatus*, and the Zonitidea; *Oychilus cellarius* and *Vitrea* spp. (Table 4). Although these mesic species are commonly found in shady and woodland habitats (Evans 1972; Kerney 1999) and particularly ground leaf litter of deciduous woods on base-rich soils, they are also some of the most common species in rock-rubble, or troglophile, micro-habitats (Evans & Jones 1973). Nevertheless, the presence of *Trochulus striolatus, Aeopinella nitidula* hint at the presence of mesic habitats and shade other than that provided by rock rubble. Indeed, the lack of open country species (9%), which are only represented by *Vallonia costata* and *Vallonia excentrica*, superficially suggests little established open country and xerophile habitats. Admittedly the deep ditch and clast-dominated primary fill creates a special microhabitat and ecological niche, but the taphonomy of the deposits, and of the molluscan assemblage, is significant. We would potentially expect the primary fill to contain shells derived from the soil through which the ditch as cut as well as those from the environment around the ditch. In this case of this Late Bronze Age or Iron Age ditch we might expect woodland clearance to have taken place and a number of more open country species to be present representing the more open landscape we assume might have prevailed. However, one of the marked characteristics of rock-rubble fauna is the paucity or absence of open country species, even where they occur in otherwise open

environments (Evans & Jones 1973, 125). From a single sample, however, despite its rarity, it is therefore, difficult to provide more secure interpretation.

The second assemblage from the charcoal layer at the top of the secondary fill (context 017) high in the ditch filling sequence is, however, an almost complete contrast to that from the primary fill, and may be separated by several, to many, centuries from that in the primary fill. It is dominated by open country species (78%) with a small shade-loving (9%) and catholic or intermediate (13%) components, with a super-abundance (i.e. >50% of the assemblage, cf. Thomas 1985) of *Vallonia* spp., largely *V. excentrica*. Other open country taxa include *Vertigo pygmaea* and the xerophile *Truncatellina cylindrica* typical of open dry short grassland conditions. Even the more mesic components of this assemblage such as *Carychium tridentaum, Punctum pygmaeum* and *Nesovitrea hammonis* are probably a part of the grassland fauna (Evans 1972; Kerney 1999). The assemblage compares well with those of trampled grassland (Chappell *et al.*1971), and the lack of shade-loving species and specialised taxonomic range contrast with faunas from the early stages of grassland succession (Cameron & Morgan-Huws 1975). The absence of the xerophile *Helicella itala* and the common grassland and bare-earth species *Pupilla mucscorum* is superficially surprising, except that these species are poorly represented in Herefordshire (Kerney 1999, 182 and 103 respectively). The deposit itself is a charcoal-rich dump or trampled horizon over a gravelly limestone wash (012); the latter is colluvial and wash from the rampart rather than tillage. The assemblage from 017 is also unlikely to represent tillage.

Discussion and conclusions

In view of the lack of pollen, the isolated land snail assemblages provide a limited indication of the local land-use and environment. Although the primary limestone rock-rubble (context 018) contain a significant numbers of shells (157) the assemblage was, unfortunately, predominantly that of the micro-habitat of the rock-rubble itself. Often primary fills contain an element of that ecological niche, but the inclusion of other shells eroded from the old land surface or the ditch edges provide information about the contemporaneous environmental and land-use. The lack of these indicates the presence of weakly calcareous soils and the lack of preservation of shells, but not of the lack of contemporaneous shells from the immediate ditch edges. Nevertheless, the shade-loving assemblage is typically restricted and troglophile (Evans & Jones 1973), and does not contain the range and diversity of species expected in a long established woodland. We can tentatively suggest, therefore, that this assemblage represents the micro-environments of the primary fills, existing in an established open landscape, rather than recently cleared ancient woodland. Certainly by the time of the accumulation of the top of the secondary fills, open grassland had been long and well-established, with evidence of a short-turved and trampled grassland sward around the ditch, if not within it. Although perhaps not the most startling nor unexpected results, this does provide one of the first and few palaeo-environmental data sets relating to later prehistoric hilltop enclosures and hillforts in Herefordshire.

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TABLES

Site	LD09	LD11	LD11	LD11	LD11
Phase		Iron Age			Post med
Feature	buried soil	primary ditch fill	charcoal layer	slot 045	Shaft 037
Context		018	017	044	021
Depth (cm)	10-15	Spot	Spot	Spot	Spot
Wt (g) / Vol (L)	885g	8.5 L	3.75 L	5 L	4.5 L
MOLLUSCA					
Carychium tridentatum (Risso)	-	4	8	-	-
Cochlicopa cf. *lubrica* (Müller)	-	-	2	-	-
Cochlicopa cf. *lubricella* (Rossmässler)	-	-	1	-	-
Cochlicopa spp.	-	1	-	-	-
Trucatellina cylindrica (Férussac)	-	-	+	-	-
Vertigo pygmaea (Draparnaud)	-	-	4	-	-
Vertigo spp.	-	-	1	-	-
Vallonia costata (Müller)	-	6	21	-	-
Vallonia cf. *excentrica* Sterki	-	8	68	-	[1]
Vallonia spp.	-	-	1	-	-
Merdigera obscura (Müller)	-	1	+	-	-
Punctum pygmaeum (Draparnaud)	-	-	6	-	-
Discus rotundatus (Müller)	-	73	-	1	1
Vitrea crystallina (Müller)	-	17	-	-	-
Vitrea contracta (Westerlund)	-	7	2	-	-
Vitrea spp.	-	-	1	-	1
Nesovitrea hammonis (Ström)	-	1	2	-	
Aegopinella nitidula (Draparnaud)	-	2	-	-	1
Oxychilus cellarius (Müller)	-	27	-	-	1
Limacidae	-	-	1	-	-
Clausilia bidentata (Ström)	-	1	-	-	-
Trochulus striolatus (C. Pfeiffer)	-	5	-	-	-
Trochulus hispidus (Linnaeus)	-	4	3	-	-
Cepaea spp.	-	-	1	-	-
Taxa	0	14	13	1	4
TOTAL	**0**	**157**	**122**	**1**	**4**

Table 1. Land snails from Little Doward

Sample	Context	Total wt	4mm	2mm	1mm	>0.5mm	<0.5mm
LD 09: 1		885	3	1	0	0	881

Weight of residue fractions (in grams) from the land snail sample LD 09: sample 1

samle no	no. shells	Shells per litre		Zonitidae	*D. rotundatus*	*C. tridentatum*	Other shade-loving	Catholic	*T. Hispida*	*V. pygmaea*	*Truncaellina*	*V. Costata*	*V. excentrica*		*C. aculia*		% shade	% intermediate	% open
17	122	14.3		2	-	6.5	-	11	2	4	+	17	56		-		9	13	78
18	157	41.6		33	47	3	4	2	3	-	-	4	5		-		87	4	9

Percentage values of Mollusca from two samples discussed in text

Pollen Assessment

Rob Scaife

A series of 25 pollen subsamples were taken from the two monoliths and a kubiena sample by M.J. Allen, and 6 were selected for initial assessment. Samples were examined from a number of soil contexts/horizons. These included the old land surface (context 043); and horizons in the hilltop enclosure ditch including soil-derived deposits in the primary fill (context 024), stabilisation and soil development in the stone-free secondary fill (context 013a) stone-free secondary fill (context 013), as well stone-free fill of the post-medieval shaft (context 20) cutting the prehistoric ditch fills. Sub-samples of 2ml volume were processed using standard techniques for extraction of sub-fossil pollen and spores. Standard techniques for pollen concentration of the sub-fossil pollen and spores were used on the selected subsamples of 1.5ml volume (Moore & Webb 1978; Moore *et al*. 1992). Because these samples were highly minerogenic this included micromesh sieving (at 10μm) and addition of hydrofluoric acid for the removal of the silica fraction. Extracted pollen was identified using Olympus biological research microscope.

Unfortunately, pollen was not present in countable numbers, with only occasional Lactucoideae (dandelion types) and a single *Tilia* (lime) noted in context 024 (soil-derived deposit in primary fills) during scanning of the slides. Occasional fern spores (monolete *Dryopteris* type) were also observed. These are the last vestiges of extremely poor pollen preserving conditions and differential preservation of only the most robust forms. The absence of pollen here is probably attributable to oxidation of what appear to be iron-rich soils (as indicated by red colouration). Similar pollen-poor preservation has been recorded at Credenhill hillfort (Scaife 2009).

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Charred Plants and Charcoal Samples

Michael J. Allen

A series of 13 bulk samples and 2 hand collected pieces of charcoal were recovered from excavation at Little Doward hillfort (LD 011). Samples larger than 1L were processed by wash-over flotation from which stones >20 or >16mm were removed by sieving prior to processing. Samples were pre-soaked and floated with flots retained on 0.5mm mesh and residues on 0.5mm or 1mm mesh. Residues were fractionated into 1mm, 2mm and 4mm elements, and the coarse fraction (>4mm) was sorted, weighed and discarded. Smaller samples of hand-picked charcoal or localised charcoal-rich deposits were laboratory floated onto 0.5mm and 2mm mesh sieves and the remaining residues gently washed on sieves of 0.5mm and 2mm mesh aperture, dried.

Following assessment (Allen, 2011) four samples were selected for analysis of the charred plants and four for identification of the charcoal. This was for both palaeo-ecological/economic information and radiocarbon potential.

Charred Plants and Charcoal

A.J Clapham

The samples provided for analysis are shown in Table 1. Six samples from five contexts were provided for analysis as well as two hand-picked charcoal samples from context 044. All of the samples were analysed except for context 016 which was scanned for charred plant and charcoal remains. The aims of the analysis were to determine whether the charcoal fragments were from domestic hearths (a wide range of taxa) or industrial (a narrow range of selected high temperature burning taxa). The charcoal fragments may also indicate woodland management practices and the local environment. The presence of any charred plant remains both cereal and weed species may indicate the presence of agricultural activity within the area.

Methods

The flots were scanned using a low power MEIJI stereo light microscope and plant remains identified using modern reference collections maintained by the Service, and a seed identification manual (Capper *et al.* 2006). Nomenclature for the plant remains follows Stace (1997). For the charcoal remains, the cell structure of all the non-oak identification samples was examined in three planes under a high power microscope and identifications were carried out using reference texts (Hather 2000) and reference slides housed at the Worcestershire Historic Environment and Archaeology Service. Some of the samples could be identified to species level, either anatomically or because only one species of a genus was likely to have been present on the site at the time of deposition. Identification has been taken only to genus level in cases where there is more than one native species of a genus and the cell structure of these is very similar (e.g. *Salix* sp.). Other identifications included more than one species of a genus because similarities in the wood structure make it difficult to separate them to species level (e.g. Maloideae).

Charred Plant Remains

Few charred plant remains were identified from the contexts provided for analysis (Table 2). Cereal remains were recovered from all five contexts examined. Preservation was adequate enough to determine identifications. Wheat (*Triticum* sp.) chaff in the form of glume bases identified from pit fill 016 and wheat grains were recovered from ditch fills 017 and 018 but only in low numbers. A hulled barley grain (*Hordeum vulgare*) was identified from slot fill 044. Small numbers of indeterminate cereal grain fragments were present in the ditch fills (contexts 017 and 018) slot 045 (context 044) and the buried soil (context 046). Cereal chaff in the form of single finds of a culm node and culm base was found in the buried soil (context 046).

Weed seeds were present in two of the samples but again not in large quantities. In pit 014 (fill 016) fat hen (*Chenopodium album)* was the commonest find along with lesser finds of pale persicaria (*Persicaria lapathifolia*), cinquefoil (*Potentilla* sp.) and a vetch/pea fragment (*Vicia/lathyrus* sp.). The only other context to contain a weed flora was ditch fill 017 which contained single finds of a small grass (Poaceae), black bindweed (*Fallopia convolvulus),* and rye-grass (*Lolium* sp.).

Charcoal

Charcoal was recovered and identified from all of the contexts analysed and two handpicked samples from slot 045 (context 044) were also identified (Table 2). Preservation of the charcoal fragments was variable, with some being more fragile than others. Large fragments, those over 4mm were rare and in most cases the smaller fragments were too small to produce an accurate identification.

Five taxa were identified from the contexts and included oak (*Quercus* sp), birch (*Betula* sp), hazel (*Corylus avellana*), pear/apple/whitebeam/hawthorn (Maloideae) and field maple (*Acer campestre*). Oak was the commonest taxon identified followed by hazel, field maple, Maloideae and birch. The fill of Pit 014 (fill 016) consisted only of oak charcoal fragments this was also the case for ditch fill 017. Oak was also found in ditch fill 018 along with hazel and Maloideae fragments and the buried soil 046 along with two fragments of field maple. The fill 044 of slot 045 contained fragments of hazel and field maple.

The two handpicked charcoal fragments were from the primary fill 044 of slot 045 and were of birch and Maloideae.

Discussion

The presence of charred cereal remains can suggest agricultural activity, but once seeds become charred they are very resilient to decay and therefore can hang around for long periods of time and become redistributed through later activity on the site. The small numbers of remains do suggest a 'background flora', but the presence of more fragile items such as the chaff remains may indicate that crops were grown and processed in the area which included a glumed wheat, either emmer (*Triticum dicoccum*) or spelt (*Triticum spelta*). Hulled barley was also grown. The weed seeds identified provide very little evidence to the types of soil cultivated or even the harvesting techniques involved.

The charcoal on the other hand can give slightly more information on the human activity and environment at the site. The dominance of oak charcoal in the pit 014 (fill 016) suggests some kind of industrial activity. Oak when seasoned can provide a great deal of heat with little flame for a prolonged period and therefore can be used in industrial processes such as ore roasting. It is possible that this pit may have been used for that purpose. The other taxa identified indicate the presence of woodland nearby but the lack of round wood makes it difficult to determine if coppicing was being carried out. The species do suggest the presence of woodland which was dominated by oak with a scrubby element of birch, hazel, apple/pear/whitebeam/hawthorn and field maple. This may suggest the presence of secondary woodland which has re-colonised previous cleared ground. The presence of oak and field maple charcoal in the buried surface may represent the original woodland cover of the site or may have become incorporated through later activity.

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TABLES

Feature	*Context*	*Description*	*Fill/phase*	*Sample vol*	*Analysis*	
					Plant remains	*Charcoal*
Ditch 039	017	Charcoal layer associated with surface 012	secondary	3.75 L	✓	✓
Pit 014	016	Lower charcoal-rich fill	secondary	6 L	-	✓
Ditch 039	018	Stony primary fill	primary	8.5L	✓	✓
Slot 045	044	N. half lower fill	primary	5.5L	✓	✓
	046=043	Buried soil below	primary	10L	✓	-
Slot 045	044	Base of slot	primary	hand	-	✓
Slot 045	044	Mid fill ?timber slot		hand	-	✓

Table 1. Samples analysed for charred plant remains and charcoal

		Feature type	OLS	Slot	Ditch	Ditch	Pit
		Feature	-	045	039	039	014
		Fill	1ry	1ry	1ry	2ndry	2ndry
Latin name	**Common name**	**Context**	046	044	018	017	016
Charred Plant Remains		**Habitat**					
Triticum sp glume base	wheat	F	-	-	-	-	+
Triticum sp grain	wheat	F	-		1	2	-
Hordeum vulgare grain (hulled)	barley	F	-	1	-	-	-
Cereal sp indet grain (fragment)	cereal	F	1	1	1	9	-
Cereal sp indet culm node	cereal	F	1	-	-	-	-
Cereal sp indet culm base	cereal	F	1	-	-	-	-
Poaceae sp indet grain (small)	grass	AF	-	-	-	1	-
Chenopodium album	fat hen	AB	-	-	-	-	++
Persicaria lapathifolia (fragment)	pale persicaria	AB	-	-	-	-	+
Fallopia convolvulus	black bindweed	AB	-	-	-	1	-
Potentilla sp	cinquefoil	BCDE	-	-	-	-	+
Vicia/Lathyrus sp (fragment)	vetch/pea	ABCD	-	-	-	-	+
Lolium sp	rye-grass	AB	-	-	-	1	-
Charcoal							
Quercus sp	oak	C	4	-	1	25	+++
Betula sp	birch	C	-	1	-	-	-
Corylus avellana	hazel	C	-	2	2	-	-
Maloideae sp	pear/apple/whitebeam/hawthorn	C	-	1	1	-	-
Acer campestre	field maple	C	2	1	-	-	-

Table 2. Plant remains

KEY. A = cultivated ground; B = disturbed ground; C = woodlands, hedgerows, scrub etc; D = grasslands, meadows and heathland, E = aquatic/wet habitats, F = cultivar. + = 1-10; ++ = 11-50; +++ = 51-100; ++++ = 101+

The Prehistoric and Romano-British Pottery and fired clay

C. Jane Evans

The pottery, briquetage and fired clay considered in this report come from various stages of fieldwork at Little Doward (Table 1). The majority of finds came from the 2009 excavation of a tree-throw area (DW09). This had been subject to disturbance and was not, therefore, well stratified. Prior to the 2009 excavation, archaeological deposits in the area of the tree throw had been identified when small quantities of pottery were discovered. This unstratified material, recorded using GPS co-ordinates, is also included in the report, along with unstratified surface finds from LD1, 2 and 3. Also included is a very small quantity of stratified pottery from the 2011 excavation (LD11), and a small quantity of unstratified material from a watching brief on the route of a water pipe, also recorded using GPS co-ordinates.

site ref	briquetage			pot			fired clay		
	count	weight (g)	average weight	count	weight (g)	average weight	count	weight (g)	average weight
DW09	80	649	8	247	967.5	4	267	1518.5	6
LD1	0	0	0	14	18	1	0	0	0
LD2	0	0	0	2	20	10	0	0	0
LD3	0	0	0	3	33	11	0	0	0
LD11	0	0	0	5	20	4	6	34	6
Unstratified	2	31	16	8	35.5	4	1	17	17
Total	82	680	8	279	1094	4	274	1570	6

Table 1: Summary of the ceramic finds by fieldwork area

The pottery

The assemblage comprised mainly earlier Middle Iron Age pottery. Two sherds of Roman pottery are discussed briefly below, and the 10 sherds of post-medieval pottery recovered (402g) are not included in this analysis.

Roughly 65% of the pottery from the 2009 excavation came from the area of the stony bank and midden, associated with a quantity of animal bone and briquetage. Nearly all of this came from layers tipped into the midden (contexts 7, 11, 13, and 14), with only 22 sherds recovered from lower fill 17, and 23 sherds recovered from the bottom fill (contexts 17, 23 and 28). LD11 produced only 5 sherds of WHEAS Fabric 5.4, from contexts 18, 31 and unstratified.

context	count	% count	weight(g)	% weight	average weight(g)
0	4	2%	11	1%	3
1	3	1%	10	1%	3
4	3	1%	8	1%	3
5	3	1%	4	0%	1
6	12	5%	52	5%	4
7	36	15%	108	11%	3
8	5	2%	11.5	1%	2
10	6	2%	18	2%	3
11	28	11%	159	16%	6
12	12	5%	27	3%	2

13	27	11%	83	9%	3
14	23	9%	83	9%	4
15	1	0%	2	0%	2
17	22	9%	103	11%	5
18	1	0%	2	0%	2
20	1	0%	3	0%	3
22	37	15%	187	19%	5
23	15	6%	56	6%	4
28	8	3%	40	4%	5

Table 2: Summary of pottery from the 2009 excavations (DW09)

Methodology

The pottery was analysed using x20 magnification. Fabrics were recorded using the Worcestershire County series (Hurst and Rees 1992, 200-209; www.worcestershireceramics.org), formerly the Herefordshire and Worcestershire County Series (Table 4) cross-referenced with the series for Kenchester (Tomber 1985) and *Ariconium* (Willis forthcoming). The assemblage was quantified by sherd count and weight. Rim diameters and percentages, for calculating rim EVEs (Estimated Vessel Equivalent), were recorded where possible, but the pottery was handmade and often fragmentary, so this was not consistently recorded. The assemblage included a number of diagnostic rim sherds, which provided useful dating evidence. Forms were recorded with reference to the form series produced for the major Iron Age assemblage from Beckford, Worcestershire (Evans *et al* in preparation). Evidence for decoration, manufacture, repair, use or reuse was sought, but most of the pottery was extremely abraded and fragmentary, the latter being reflected in low average sherd weights (Tables 1, 2 and 4). The data were analysed using Microsoft Access 2002 and Microsoft Excel 2007.

Fabrics

Only four fabrics were identified (Tables 2 and 3), excluding the briquetage which is discussed separately below. The distinction between two of the fabrics, the Palaeozoic limestone-tempered ware (WHEAS Fabric 4.1) and mudstone-tempered ware (WHEAS Fabric 9) was not always clear; the inclusions in both are prone to 'leaching,' leaving a vesicular fabric. Where sherds had any evidence of soft reddish brown inclusions, rather than white or cream, these were classified as mudstone-tempered ware.

WHEAS code	Name	Description	Kenchester code	Ariconium code	NRFRC
3	Malvernian group A, handmade	Peacock 1967, Peacock 1968	Malvernian Group A/ Malv HM	G11	MAL RE A
4.1	Malvernian, group B1, handmade	Peacock 1967, Peacock 1968	Palaeozoic Group B1	C11	-
5.4	Angular quartz, fine	www.worcestershireceramics.org/	-	-	-
9	Group D, Mudstone tempered	Morris 1982 Group D; cf Moreton on Lugg MoL4	Mudstone Group D	-	-

	ware				
12	Severn Valley ware	www.worcestershireceramics.org/	SVW/SVW allied	O10-O24	SVW OX 2
43.1	south Gaulish Samian	La Graufesenque	SG Samian	S01	LGF SA

Table 3: List of pottery fabrics represented (excluding briquetage; Ox = oxidised)

Period	WHEAS code	count	% count	weight(g)	% weight	average weight.
Prehistoric	3	18	6%	101	9%	6
	4.1	207	75%	796.5	73%	4
	5.4	9	3%	38	3%	4
	9	43	16%	152	14%	4
Totals		*277*	*100%*	*1087.5*	*100%*	*4*
Roman	12	1		6		6
	43.1	1		0.5		1
Totals		*2*		*6.5*		*3*

Table 4: Summary of pottery by fabric (excluding briquetage)

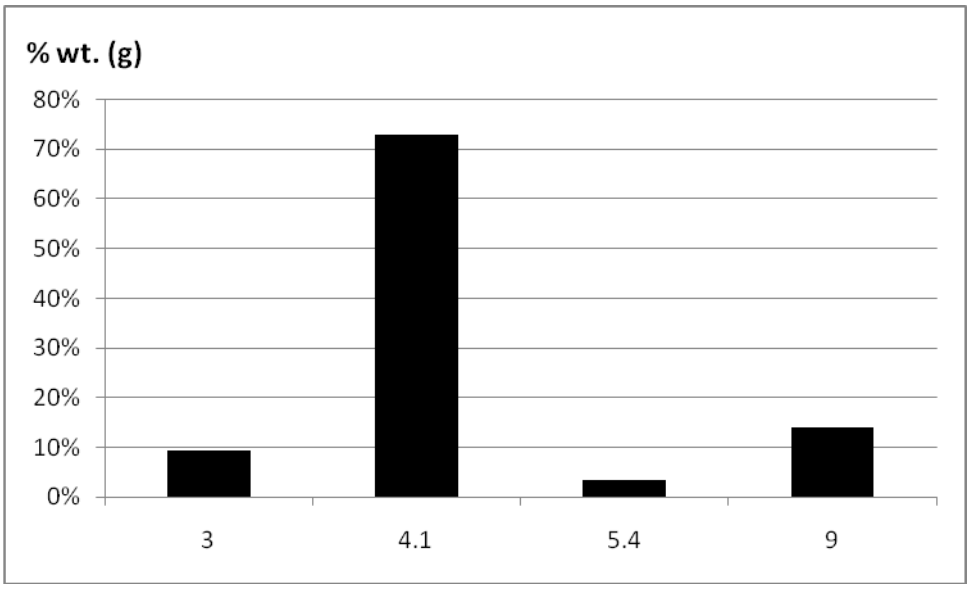

Figure 1: Prehistoric fabrics (% weight)

The assemblage was dominated by Palaeozoic limestone-tempered ware (WHEAS Fabric 4.1; Table 3, Figure 1). Petrological analysis of this ware and analysis of its distribution suggest a source in the Woolhope Hills area (Morris 1983, 116-22, figs 4.17-4.18). At Sutton Walls the fabric makes up more than 90% of the assemblage (op. cit.). Little Doward is to the south of its main distribution (Morris 1982, figs 3.2-3.3).

The second most common fabric, occurring in much smaller quantities, was Group D mudstone tempered ware, with a source in the Martley area of Worcestershire (Morris 1983). This was produced from the mid-5th century BC through to the latest Iron Age, but not into the Roman period (Morris 1982, 1983; Tomber 1985, 113-5). It has been noted in varying proportions elsewhere in the county: Credenhill 73%, Dinedor 40%, and Croft Ambrey 11%

(Tomber 1985, 120). More recently it has been noted at The Leen, in the Arrow Valley (38%; Evans 2003), Wellington quarry (Griffin pers. comm.) and Bradbury Lines, Hereford (seen by this author).

Handmade Malvernian ware (Group A, WHEAS Fabric 3) was present in smaller quantities. This ware is typical of both Iron Age and Roman assemblages in the region, continuing in use into the 2nd century AD (Peacock 1967; 1968). The Malvernian ware included a sherd in a distinctive, coarse fabric variant, similar to dolerite-tempered ware (WHEAS Fabric 6). A similar fabric has been noted in Middle and Late Bronze Age assemblages in Worcestershire (Evans *et al* in preparation, Mullin and Ixer 2010), and Herefordshire, at Moreton on Lugg (Jackson, pers. comm., fabric MoL5).

Nine sherds in a fine, angular quartz tempered ware were also noted. This ware is similar to fabrics noted in the, as yet, unpublished late Bronze Age assemblage from Wellington North (Wellington W1; Robin Jackson, pers. comm.) and has parallels on sites in Worcestershire (WHEAS Fabrics 5.4 and 5.8). The date range of this ware could perhaps extend into the Early Iron Age as ceramic assemblages of this date are poorly defined in this region.

Catalogue of illustrated forms (Figure 2)

Group B1, Palaeozoic limestone-tempered ware (WHEAS Fabric 4.1)

1 Beckford type 1.2, open bowl, rounded outwards at rim. Diameter 170mm, which is within the range noted at Beckford (140-260mm). DW09, context 014. Database record 35

2 Beckford type 2.21, barrel-shaped bowl or jar with simple upright, slightly pinched rim. A characteristic form in this fabric at Beckford. Diameter 110mm, toward the smaller end of the range at Beckford (90-200mm). DW09, context 013. Database record 3

3 Similar form to no 2, with a rounded rim. Diameter uncertain. DW09, context 011. Database record 24

4 Beckford type 2.23, barrel-shaped jar with a lipped to beaded rim, with a gently curving profile. This form is particularly common in this fabric at Beckford. Diameter uncertain. DW09, context 006. Database record 94

5 Beckford type 3.41, barrel-shaped jar with rounded rim and one internal facet. At Beckford this form is typically decorated. Diameter uncertain. DW09, context 014. Database record 36

6 Beckford type 3.42, barrel-shaped or globular jar with an angular, flat-topped rim and a poorly defined internal facet. This form is typically decorated at Beckford. Diameter 160mm, at the small end of the range noted at Beckford (140-390mm). DW09, context 023. Database record 14

7 Beckford type 3.5, barrel-shaped jar with flattened, 'long bead' rim, and linear tooling. For Beckford, the use of linear tooling has been interpreted as indicative of a later Middle Iron Age date. Diameter uncertain. DW09, context 022. Database record 22

8 Lid, with an angular rim. Diameter 160mm. DW09, context 011. Database record 25

9 Base with tooling around the lower wall. Diameter 120mm. DW09, context 017. Database record 78.

Group D, Mudstone-tempered ware (WHEAS Fabric 9)

10 Beckford type 2.21, barrel-shaped bowl or jar with simple, upright rim. Diameter 120mm, towards the smaller end of the range at Beckford (see 2 above). DW09, context 017. Database record 43

11 Beckford type 2.22, globular bowl or jar with simple upright rim. Diameter uncertain. DW09, context 011. Database record 31

12 Beckford type 2.23, barrel-shaped bowl or jar with a lipped rim (see 4 above). Diameter uncertain. DW09, context 011. Database record 30

13 Necked, shouldered jar; with a flat-topped rim thickened outwardly and, to a lesser degree, inwardly. Most similar to Beckford type 3.12, a late Bronze Age/early Iron Age type, although at Beckford this form does not occur in this fabric. Diameter uncertain. DW09, context 011. Database record 32

Group A, Malvernian ware (WHEAS Fabric 3)

14 Fragmentary everted rim from a jar. There are no good parallels for this form from Beckford. DW09, context 014. Database record 34

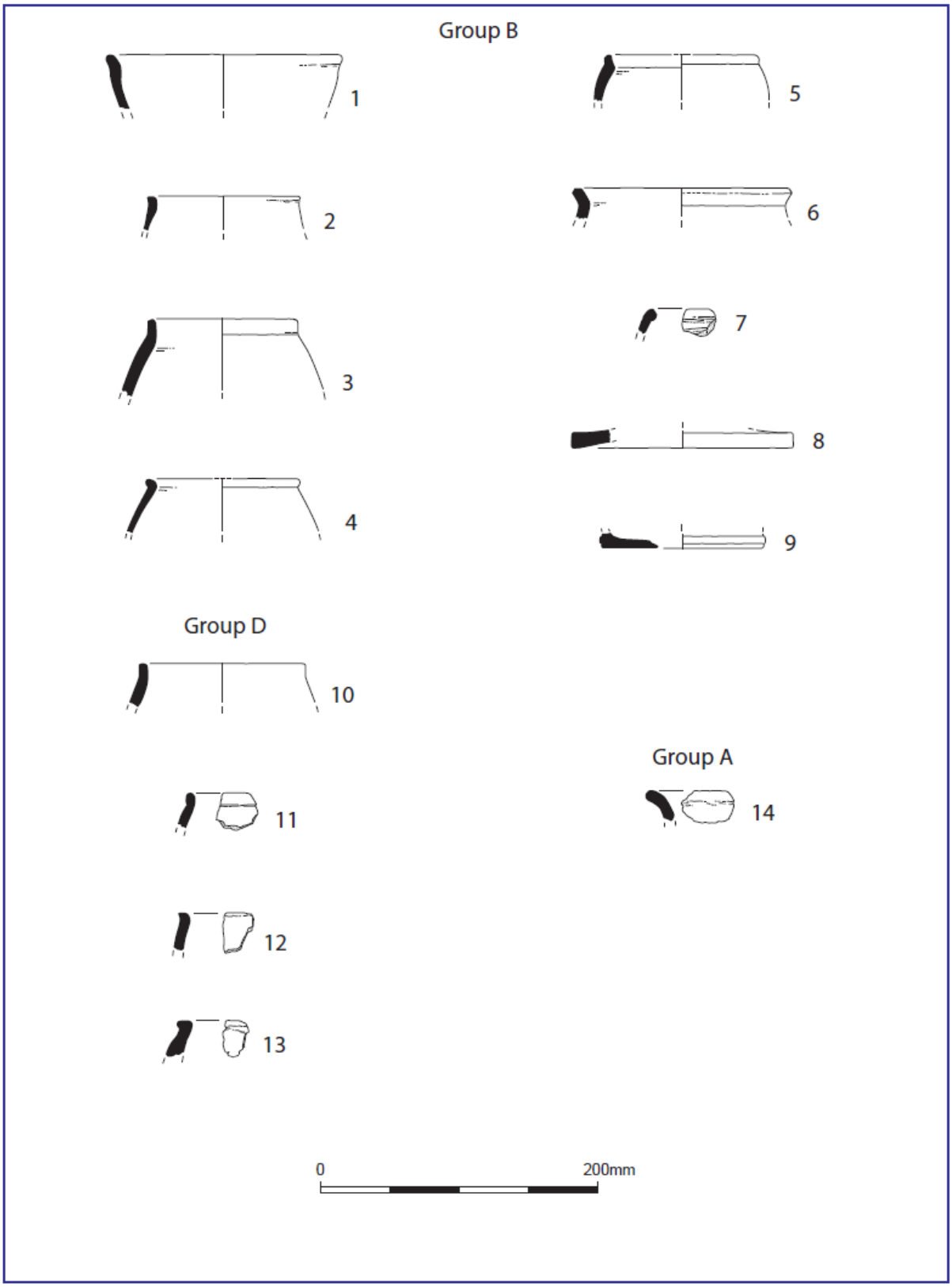

Figure 2 The prehistoric pottery

The Roman pottery

The presence of a sherd of south Gaulish samian (WHEAS Fabric 43.1) hints at 1st century activity in the vicinity, though the sherd was very small and abraded. The sherd of Severn Valley ware (Fabric 12) is not diagnostic and could date from the 1st to 4th centuries AD.

Briquetage

The most interesting material amongst the other fired clay was the briquetage, the great majority of which came from the 2009 excavations (Table 1, DW09). It should be noted that the briquetage identified is likely to represent the minimum quantity present; further fragments could well be included amongst the un-diagnostic fired clay discussed below.

Elsewhere, briquetage has been noted with white-buff surfaces, caused by chlorine in the salt bleaching the iron in the clay. This seems to be a sign of excessive exposure to brine during salt manufacture so that it saturated the fabric (as noted in Lincolnshire fenland salt production (Morris 2007, 439-40); and more locally eg Blackstone, Worcs; Morris 2010, section 4.3.3;). Only one fragment in the Little Doward assemblage had such a bleached surface.

As with the pottery, most of the briquetage from the 2009 excavation (roughly 70%) came from the area of the stony bank and midden, associated with a quantity of animal bone. Nearly all of this came from layers slumping into the midden (contexts 7, 11, 13, and 14), with only 2 fragments recovered from both the lower fill (context 17) and bottom fill (context 23).

context	count	% count	weight(g)	% weight
0	2	3%	9	1%
1		0%		0%
3	1	1%	11	2%
4		0%		0%
5	9	11%	69	11%
6	1	1%	10	2%
7	6	8%	44	7%
8		0%		0%
10	1	1%	10	2%
11	9	11%	74	11%
12	7	9%	72	11%
13	16	20%	161	25%
14	22	28%	132	20%
15		0%		0%
17	2	3%	23	4%
18		0%		0%
20		0%		0%
22	2	3%	16	2%
23	2	3%	18	3%
28		0%		0%
	80	100%	649	100%

Table 5: Summary of the DW09 briquetage by context

	fabric code	count	% count	weight(g)	% weight	average weight
Droitwich briquetage	1	3	4%	51	8%	17
Droitwich briquetage	1.1	1	1%	4	1%	4
Droitwich briquetage	2	16	20%	208	31%	13
Cheshire 'VCP'	140	62	76%	417	61%	7
Total		84	100%	680	100%	8

Table 6: Summary of the briquetage by fabric

Four briquetage fabrics were represented (Table 6, Figure 3 and 4). Most common by far was the 'stony VCP,' from the brine springs in the Cheshire plain (WHEAS Fabric 140; Morris 1985, 352). Sherds in this fabric, which is characterised by abundant, angular rock inclusions (Morris 1985, 355-66, tables 2-4), included a number of diagnostic form sherds (Fig. 4, 1-4). Little Doward is very much at the southern edge of the later distribution of Cheshire briquetage, in an area where Droitwich briquetage is usually far more common (Morris 1985). The relatively high proportion should, therefore, be significant, albeit this is quite a small assemblage.

Amongst the Droitwich briquetage fabrics, the organic-tempered ware (WHEAS Fabric 2) was most common. This and the sandy briquetage (WHEAS Fabric 1) are the typical Droitwich fabrics (Morris 1985, 342-5; Hurst and Rees 1992, 200-1). A single fragment, with two surviving surfaces and tempered with clay pellets, was also identified as briquetage. This is likely to be a Droitwich fabric 1 variant as described by Morris (1985, 342-3, fabric 1a), and thought to be an earlier fabric variant, based on the evidence from Beckford (Derek Hurst, pers. comm.).

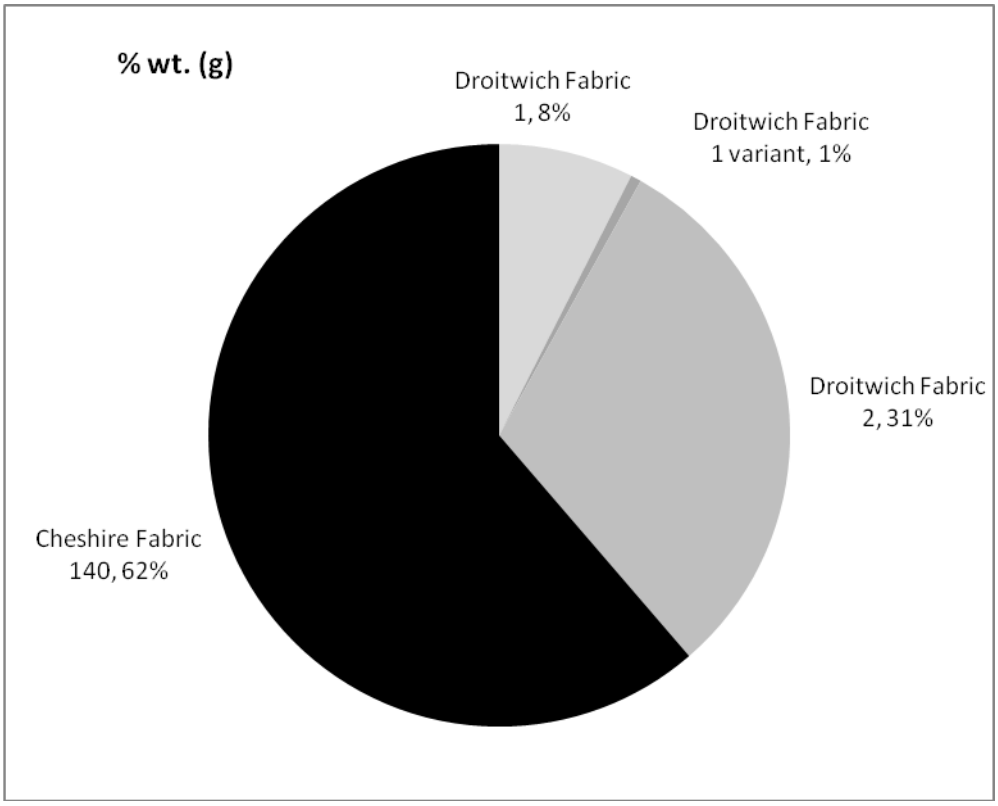

Figure 3: Briquetage fabrics by source/fabric (% weight)

Cheshire 'VCP' (WHEAS Fabric 140)

1 Fragmentary rim with finger impression on top (cf Morris 1985, 353), and wipe marks internally. DW09, context 013. Database record 124

2 Fragmentary rim with pinched-over internal edge and finger impression. DW09. Context 014. Database record 139

3 Fragmentary rim with pinched-over internal edge, similar to an example illustrated from Fisherwick (Morris 1985, fig. 7.11). DW09, context 022. Database record 143

4 Sloping coil break. DW09, context 014. Database record 140

Droitwich organic briquetage (WHEAS Fabric 2)

5 Indented base, similar to an example published from Droitwich, Friar Street (Morris 1985, fig. 3.21). DW09, context 011. Database record 151

Figure 4 Briquetage

Miscellaneous fired clay

Quantities of less diagnostic fired clay were recovered, in addition to the pottery and briquetage (Table 7). Most of this had no defining features and was classified as 'unidentified'. Some fragments had wattle marks, suggesting they came from some type of structure (eg a daub building or a clay oven). These were broadly classified as 'structural'. Most of the fired clay came from the 2009 excavations (DW09), primarily from the area of the midden (contexts 7, 11, 13, 14, 17, 23 and 28; 57% of the DW09 assemblage by weight). The majority of this came from the layers of tipping, particularly the silty layer (contexts 11 and 13) which produced 92 fragments weighing 510g.

site ref	object specific type	count	% count	weight (g)	% weight	average weight
DW09	structural	12	4%	195	13%	16
DW09	unidentified	255	93%	1323.5	85%	5
LD11	unidentified	6	2%	34	2%	6
Unstratified	unidentified	1	0%	17	1%	17
Total		273	100%	1552.5	100%	6

Table 7: Summary of the miscellaneous fired clay by fieldwork area

Discussion: date and function

Although a relatively small group, and poorly stratified, the assemblage included a number of diagnostic forms that provide useful dating evidence. The forms are consistent with an earlier Middle Iron Age date, or perhaps even an early Iron Age date; the pottery of which is not well defined in this region. The assemblage includes none of the stamped pottery so typical of Middle Iron Age assemblages in this region, though one sherd (Fig. 2.7) was decorated with linear tooling, which at Beckford is interpreted as diagnostic of later Middle Iron Age vessels (Evans *et al* in preparation). It would be very helpful to test the ceramic dating with C14 dates, if this is possible, though no obvious residues useful for this purpose were noted on the pot.

Analysis of pottery and briquetage fabrics is interesting. The proportion of Palaeozoic limestone-tempered ware (WHEAS Fabric 4.1) seems high, given that the site is towards the south of its main distribution. The same is true of the Cheshire briquetage. It may be worth considering, in future synthetic studies, whether Little Doward hillfort is linked in with wider than normal trade patterns, perhaps reflecting its proximity to a major source of iron.

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The Animal Bone 2009

S. Hamilton-Dyer

Animal Bones from the 'midden'

Excavation of a terrace and platform in the south western enclosure uncovered several deposits including a 'midden' rich in animal bone. Just under ten kilograms of bone, totalling over 2600 pieces of 2104 individual bone specimens, was made available for analysis. Four bones were selected for radiocarbon dating.

Methods

Taxonomic identifications of the material were made using the author's modern comparative collections. All fragments were identified to taxon and element where practicable with the following exceptions: ribs and vertebrae of the ungulates (other than axis, atlas, and sacrum) were identified only to the level of cattle/horse-sized and sheep/pig-sized. Undiagnostic shaft and other fragments were similarly divided. Any fragments that could not be assigned even to this level have been recorded as mammalian only. Where possible sheep and goat were separated using the methods of Boessneck (1969), Payne (1985) and Halstead & Collins (2002). Recently broken fragments were joined where possible and have been counted as single bones. Tooth eruption and wear stages of cattle, sheep and pig mandibles were recorded following Grant (1982). Measurements mainly follow von den Driesch (1976) and are in millimetres unless otherwise stated. The archive includes details of metrical and other data not presented in the text.

Results

The assemblage has been split into four groups for the purposes of analysis; the main contexts of the midden (midden south), other contexts in this area (south other), contexts of the northern terrace (north) and unstratified material. The condition of the bone from all areas is generally good but rather soft and many bones have minor excavation damage to edges. Several bones were recovered in pieces. A few bones had been burnt and there is some evidence of dog gnawing. Three of the bones, all from context 12 (silt below topsoil and above the main midden contexts), are so well preserved that they have an ivoried appearance. The bones from this group (south other) were also less fragmented and eroded (Table B1). Very few of the larger bone elements in the assemblage as a whole are complete. This is not modern breakage in the main but largely occurred at some time prior to recovery. Most specimens (over 80%) are less than 5cm in length and only 27 are over 10cm; the majority of cattle, sheep and pig anatomical elements are larger than this. Some of this breakage is, or is assumed, from butchery, the bulk may have occurred through trampling prior to final covering; some may be from soil and stone pressure on the bones as they decomposed. There is a difference in fragment size between the groups with material from the north area averaging smaller than from elsewhere and with no bone over 10 cm long (Table B2).

Apart from a single dog bone and three of horse, all the bones identified to taxon are of the main domestic ungulates; cattle, sheep/goat and pig (Table B3). Overall the bones of sheep/goat are numerically the most frequent with pig almost as common and cattle in third place.

Horse is represented by just three bones; isolated upper molars from contexts 22 and 8 and an eroded fragment of metapodial from context 13.

The dog bone came from context 14 of the midden and is a fragment of pelvis. In addition, there is indirect evidence for the presence of dog as there are 34 bones with canid gnaw marks, mainly from the midden. Two other bones have the partly digested appearance characteristic of bones swallowed by dogs and passed through or regurgitated, these also from midden contexts.

Bones positively identified as cattle number 164. In addition there are another 427 recorded as cattle-sized. These include cattle ribs and vertebrae along with fragments of large mammal ribs, vertebrae and limb bones. With horse remains negligible, it can be assumed that all of these are of cattle. Cattle bones are slightly more frequent from the north area contexts but the differences are small and are greater between individual contexts than between areas. Most anatomical elements are represented with a typical bias in favour of the most robust bones. Loose teeth are slightly more frequent in the north area, which may explain the higher overall cattle count (Table B4). There is no evidence of selective deposition, for example of head or foot bones. Butchery marks are visible on some bones, mostly around the ankle area and indicating removal of the foot. There is no evidence of bulk meat stripping, as might be seen in Romanised sites, but axial and sub-axial chopping of axis vertebrae and sacrum indicates the splitting of at least some carcasses. This implies dividing a carcass hung from a beam rather than on-ground processing. The few measurements available are of typically small animals, the five astragali have a range of 53.7 – 62.9 and a mean of 56.4 similar to Iron Age material elsewhere (Maltby 1981) but also overlapping ranges from earlier and later data. One of the astragali is notably larger than the others and this is also true of a few other bones, probably indicating the presence of some male animals. Information on aging is negligible; tooth-wear data are limited to a handful of loose lower third molars, all in wear, and fusion data merely indicates that there are bones from adult and sub-adult animals but none of calves.

There are 209 ovi-caprid bones overall including one partial mandible that is probably a goat. All the other bones were either comparable with sheep or could not be distinguished between the two. Sheep/goat bones are slightly more frequent in the midden than in the other contexts but the difference is not great. A mixture of anatomical elements is present with a bias towards loose teeth. In the northern area sheep/goat are only slightly less frequent but the count is almost entirely of loose teeth (Table B5). In comparison with the cattle bones there are surprisingly few measurements available, for example only three from the distal tibiae, usually the most common measurement in assemblages. Aging data are also limited but the bones indicate a mixture of animal ages including a few neonates. The few mandibles that still retain teeth and the loose teeth found do not include examples from such young animals but do cover a range of eruption and wear stages from about 9 – 12 months upwards. Butchery marks, where visible, are mainly of knife cuts but also include sub-axial splitting of the vertebra. One fragment of metatarsus from context 22 shows evidence of tendon removal with long knife cuts down the length of the shaft. These may have been made when cleaning the bone prior to working but there is no evidence of further work and tendons are a useful resource in themselves.

Pig bones at 192 specimens are almost as common as those of sheep/goat. The remains from the northern area are again dominated by loose teeth; the mandibles and maxillae and other head elements, usually common, are represented by just one fragment of a mandible (Table

B6). Foot bones are typically common but there are many elements in each pig foot and the number of individuals represented is low. Aging information from the assemblage is very limited with few mandibles or complete bones present but these, together with loose teeth and maxillary remains, are mainly of adult and sub-adult animals. Remains of young piglets are absent apart from a neonate radius from context 28. The teeth, whether loose or in the jaws, include several canines that indicate the sex of the animals; both males and females are represented with females slightly more frequent. Butchery marks are few and restricted to splitting of the axis vertebrae, spiral fracturing of the humerus (no blade mark but assumed to have resulted from a rough blow to the shaft) and knife marks on the head of a femur showing where the hind leg was removed from the hip joint. Few measurements are available and none from complete and fused limb bones. This is quite common for pig, a meat animal with little waste and few secondary products; most individuals being killed before full maturity.

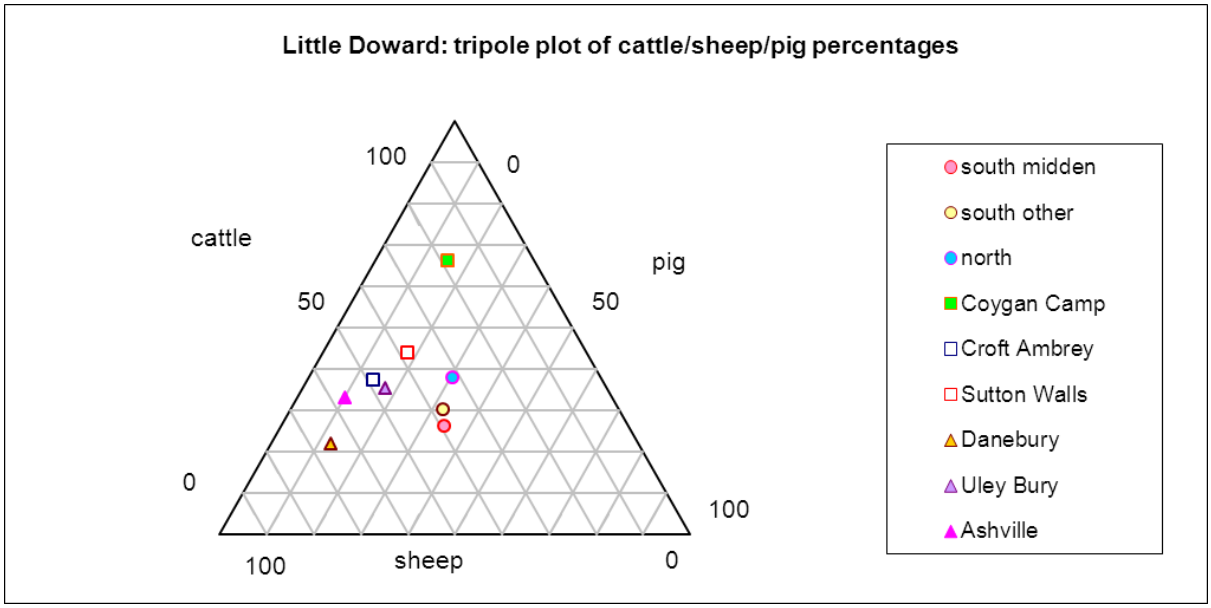
Discussion

The animal bones are, for this area, relatively well preserved and mainly from a discrete area of deposition, possibly a midden, rather than material from a variety of pits, ditches and other features. The bones are mainly of cattle, sheep/goat and pig together with a few of horse and one of dog. No remains of wild mammals or of birds were found. There are some differences between the bone from the north part of the excavation and that from the 'midden' deposit. Bone from the north is on average in smaller pieces than that from the midden and loose teeth are frequent. This implies that taphonomic processes have had a greater impact on remains from this area, although the differences are slight. The material may derive from the same or related episodes of disposal but that from the north area has suffered a greater amount of breakage or trampling. Making allowance for taphonomic losses, the anatomical distribution indicates the disposal of bones from all parts of the carcase, not a concentration of prime meat bones, waste/low value bones, tanning or working waste. None of the bones were found in association, in other words the remains are not of whole or even partial bodies but of disarticulated bones, probably from many different animals. The size of the assemblage and lack of aging data makes it inappropriate for detailed analysis of the animal economy but the bones in this group appear to best match a general, mixed, husbandry. The bone assemblage appears to represent the disposal of domestic rubbish, perhaps the clearance of an accumulated midden. The remains are all of domestic livestock with some evidence of the dogs that might have been used to herd or guard them. There is no evidence in this assemblage of the use of wild animals, not even remains of shed antlers used for tools.

Although numerous Iron Age hillforts or camps are recorded for Herefordshire, there are few published reports on faunal remains from these sites. Many have yet to be systematically excavated and recorded. Where excavations have taken place, the acidic soils have often been found not conducive to bone preservation. Excavations at Coygan Camp, Croft Ambrey and Sutton Walls did recover animal bone and these reports are available for comparison with Little Doward (Westley 1967; Whitehouse & Whitehouse1974, and Cornwall & Bennet 1954). They do, however, require some caution in their use as the excavations and faunal analyses were carried out some time ago (1950s to 1960s) and details of the methodologies are not available. They are also limited in scope. A simple comparison of the relative proportions of cattle, sheep/goat and pig using NISP (number of individual specimens) can be undertaken (Table B7 and tripole chart). The data for the three older excavations are taken from the Iron Age synthesis by Hambleton (1999). Even these Figures may not be exactly comparable as it is not known how rigorous bone collection was, nor which fragments and

levels of taxonomic identification were included in the counts. Hambleton noted that, although there were few sites for comparison, the proportions for sites from Wales and the west tend to have a higher proportion of pig than in other regions. The Little Doward data stand quite clear even from these previous observations with an even higher amount of pig. On the tripole chart three other sites have been included for reference; Danebury, Ashville and Uley Bury. Danebury shows what can be considered as a typical 'Wessex' pattern with a very high level of sheep and a low level of pig. The Thames Valley site of Ashville has more cattle. Uley Bury in Gloucestershire has similar proportions to Croft Ambrey. Sutton Walls has a similar amount of pig but higher cattle. Coygan Camp appears to stand alone, in this case the level of pig is again similar but the number of cattle bones is exceptionally high. How much this reflects preservation, recovery bias or other influences is unknown. The three groups from Little Doward all show much higher levels of pig, above 30%. In Hambleton's comparisons from different areas, sites with high levels of pig are generally of LIA-ERB date and might indicate increasing Roman influence. The high levels of pig in the west, however, could be an indication of a regional difference in husbandry strategy.

The assemblage from Little Doward is not a very large one but it is sufficient for general comparisons. It is of particular value in contributing a dataset from a recent excavation in a region that does not have many others for reference. The analysis also supports the previous suggestion that pig is more important in this region than elsewhere and that the level of pig in an assemblage may be subject to other influences apart from 'Romanisation'.



The Animal Bone – 2011

S. Hamilton-Dyer

A small assemblage of 11 animal bones was recovered from two contexts in ditch 039. Taxonomic identifications were made using the author's modern comparative collections. Recently broken fragments were joined where possible and have been counted as single bones (Table 1).

Bone catalogue

Fill 16 – Iron Age
Two small fragments of sheep/pig-sized rib, these have recent breaks and are probably from the same bone.

Fill 18, primary fill- top
Partial frontal bone of a calf skull. A small horn core bud is present and may have been gnawed.

Fill 18, primary fill
Cattle
Midshaft fragment of metacarpus, calf/juvenile. Possibly gnawed.
Mandible fragment, area just behind alveolus of M3, probably adult.

Sheep
Partial horn core, tip and base missing. Shape and texture indicate an immature ram.

Pig
Left tibia midshaft fragment, probably gnawed.
Left mandible, two recently broken fragments probably from the same bone, one from near the symphysis the other containing the third molar. The tooth is well worn and has a length of 27.3 mm.
Molar fragment, unerupted or in process of erupting and therefore not belonging to the same animal as the third molar listed above.

Sheep/pig-sized
Fragment of rib, proximal articulation damaged, possibly gnawed.

Fill 18, primary fill- bottom
Left ilium shaft fragment, matches immature cattle, canid gnawing visible on dorsal and ventral edges of fragment.

Discussion

Reports on animal bone from Iron Age hillforts and other Iron Age sites in the Hereford area are absent or minimal, largely because the soil conditions are not conducive to bone survival. These eleven bone fragments are, therefore, of interest although clearly provide insufficient for detailed analysis of the animal economy. In poor soil conditions the faunal assemblage is usually biased in favour of teeth and the largest, most sturdy, bones such as those from mature cattle and horse. Ditch fill 018 in contrast contains quite well preserved bone including part of a calf skull. In addition to bones of cattle, sheep and pig there is indirect evidence for dog in the gnaw marks on at least one of the bones. There has been much analysis of faunal remains from hillforts in the Wessex region, where sheep usually dominate the assemblages. In other areas the relative percentages of the main domestic ungulates can be more variable and often

with a higher percentage of cattle. In assemblages from Western England and Wales pig can be more frequent than in other areas but assemblages of any size are few (Hambleton 1999). The presence of pig in these few fragments is therefore of note. The relatively good preservation of the bones suggests that further work at the site might recover larger samples for analysis.

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		cattle	sheep/goat	pig		
Little Doward south midden		**88**	**130**	**116**		334
% cattle, sheep, pig		***26.3***	***38.9***	***34.7***		
Little Doward south other		**37**	**46**	**40**		123
% cattle, sheep, pig		***30.1***	***37.4***	***32.5***		
Little Doward north		**30**	**36**	**29**		95
% cattle, sheep, pig		***31.6***	***37.9***	***30.5***		
		cattle	**sheep/goat**	**pig**		
Coygan Camp Iron Age Total		**434**	**121**	**101**		656
% cattle, sheep, pig		***66.2***	***18.4***	***15.4***		
Croft Ambrey Iron Age Total		**656**	**855**	**247**		1758
% cattle, sheep, pig		***37.3***	***48.6***	***14.1***		
Sutton Walls Late Iron Age		**863**	**752**	**355**		1970
% cattle, sheep, pig		***43.8***	***38.2***	***18.0***		

NB data taken from (Hambleton, 1999) for Coygan (Westley, 1967), Croft Ambrey (Whitehouse, 1974) and Sutton Walls (Cornwall & Bennet-Clark, 1954).

The Radiocarbon Results

Michael J. Allen

A series of 11 AMS radiocarbon results were obtained from the excavations; a set of five from ditch 039 and features on its immediate interior (LD11), and four from the midden deposits (LD09). In all cases material was carefully selected to be short-lived material and that was functionally related to the events we wished to date with as little residuality as possible. In some cases not all criteria could be met, and one sample was submitted at the request of the archaeologists. A brief assessment of each sample is provided (Tables 1 and 3).

Calibration

The calibrations of the results, relating the radiocarbon measurements directly to calendar dates, are given in Table 2. All have been calculated using the calibration curve of Reimer *et al* (2009) and the computer program OxCal v4.1.7 (Bronk Ramsey 1995; 1998; 2001; 2009). The calibrated date ranges cited in the text and table 1 are those for 95% confidence. They are quoted in the form recommended by Mook (1986), with the end points rounded outwards to 10 years, if the error term is greater than or equal to 25 radiocarbon years or to 5 years if it is less (Table 1).

Ditch (LD 09)

The aim was to date the construction of the ditch, a phase of activity in the ditch represented by a series of hearths (context 17 and shallow pits (pit 14)) in the secondary fill of the ditch, and features on the interior associated with the use of the hilltop enclosure (e.g. slot 45). The material available for consideration was limited. The charred plant remains comprise low numbers of grain which may be residual. None of the bone was articulated or placed; all the bones are individual items so some residuality may exist especially as many are dog gnawed (see Hamilton-Dyer). Nevertheless most of the bone in the primary fill is species consistent, and is likely to be a part of local 'settlement-related' activity which had relatively rapidly found its way into the primary fill. Some, but limited, residuality might be expected. These items relate to the activity relating to soon after the construction of the rampart ditch. No suitable material was found in or on the buried soil.

Fill 18, top of primary fill: Left ilium shaft fragment, matches immature cattle, canid gnawing visible on dorsal and ventral edges of fragment.

Fill 18, bottom of primary fill: Partial frontal bone of a calf skull. A small horn core bud is present and may have been gnawed.

Although both of these are slightly dog gnawed they look like domestic waste discarded and relatively rapidly incorporated into the primary fill.

Secondary fill, charcoal-rich context 017: A concentration of nine cereal caryopses indicates a discrete discarded deposit with probably little time between charring and discard. They are from a charcoal-rich layer dominated by oak heartwood wood charcoal.

Pit 14, context 16: charcoal-rich pit / hearth in secondary fill. Although the majority of the charcoal is heartwood oak, a small quantity of round wood hazel with 4 annual growth rings was recovered from the base of the feature

Feature	***Context***	***Description***	***Fill/phase***	
Slot 045	044	Timber slot associated with settlement activity on interior	Activity ? = secondary	Heartwood oak charcoal and small round wood hazel charcoal with 4 annual rings SELECT: hazel charcoal
Ditch 039	017	Charcoal layer associated with surface 012	secondary	The charcoal is only heart wood oak which is unsuitable, but the presence of 9 cereal grains (along with the charcoal) suggest dumped deposits SELECT: 1 cereal grain
Pit 014	016	Lower charcoal-rich fill	secondary	The charcoal is only heart wood oak which is unsuitable, and only one worn small isolated bone that could be residual NOT SUITABLE MATERIAL
Ditch 039	018 top	Stony primary fill	primary	Cattle pelvis(illium) fragment SELECT
Ditch 039	018 bottom	Stony primary fill	primary	Frontal part of cattle skull SELECT

Table 1. Assessment of material submitted from LD09

Results

No suitable material was present in the basal-most contexts of the ditch (036, 033 and 034 etc), but a number of young cattle bones were present in the main limestone rubble primary fill (context 18, Fig. 1). Results from cattle bones at the base (calf skull) gave a date of 410-390 cal BC (2343±15 BP, NZA-38806) and top (cattle illium) gave a date of 410-370 cal BC (2310±20 BP, NZA-39130). These two results are statistically indistinguishable, and suggest construction of the ditch not long before 410-380 cal BC.

Two features in the secondary fill (charcoal-rich layer 017 and pit 014) gave results of 360-170 cal BC (2173±20 BP, NZA-38134) and 750-400 cal BC (2436±20 BP, NZA-38135). The charred grain from the layer in the secondary fill fall later than those in the primary fill by either *c.* 20-80 or 180-220 years (Fig. 2). The heartwood oak charcoal from pit 014 however is considerably earlier than all three other dates from the ditch and must have a large offset of several hundred years due to the fact it is dating the heartwood. It cannot, therefore contribute to the dating of the Iron Age activity here. It does however illustrate the age of timber being used for the activity being carried out in pit 014.

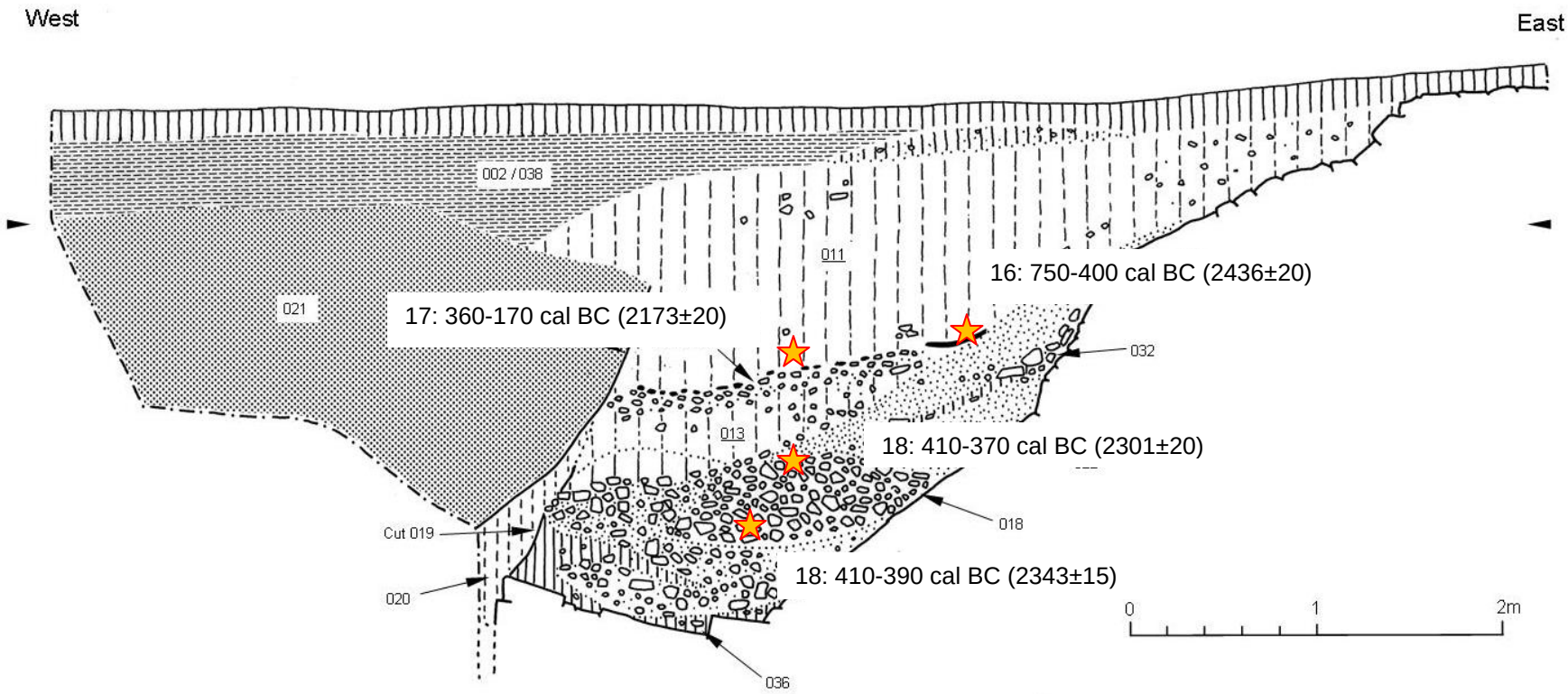


Figure 1 Location of radiocarbon results

The timber slot 045 and activity related to it, however, provide a date of 770-420 cal BC, though it is quite likely to be in the earlier part of that range, i.e. 760-540 cal BC (Fig. 2, Appendix 1), indicating that this activity pre-dates the construction of the internal ditch 039 by potentially several centuries.

Site	*feature*	*context*	*material*	*Lab no*	*results BP*	*delta C13*	*Calibrated result*
LD 11	Pit F14	16	oak charcoal	NZA-38135	2436±20	-26.3	750-400 BC
LD 11	Ditch 039	17	charred cereal grain	NZA-38134	2173±20	-23	360-170 BC
LD 11	Ditch 039	18 top	cattle ilium	NZA-38130	2301±20	-21.5	410-370 BC
LD 11	Ditch 039	18 bottom	calf skull	NZA-38806	2343±15	-25.2	410-390 BC
LD 11	Slot 45	44	hazel charcoal	NZA-38136	2475±20	-25.2	770-420 BC
LD 09	Midden	17	Bos astragulus	NZA-37805	2150±25	-22.4	360-90 BC
LD 09	Midden	14	Bos phalange	NZA-37804	2195±25	-22.1	370-180 BC
LD 09	Midden	22	Sus humerus	NZA-37803	2283±25	-21.4	410-230 BC
LD 09	Midden	23	Bos tooth	NZA-38815	2222±15	-22.2	370-200 BC

Table 2. List of radiocarbon determinations and calibrated results

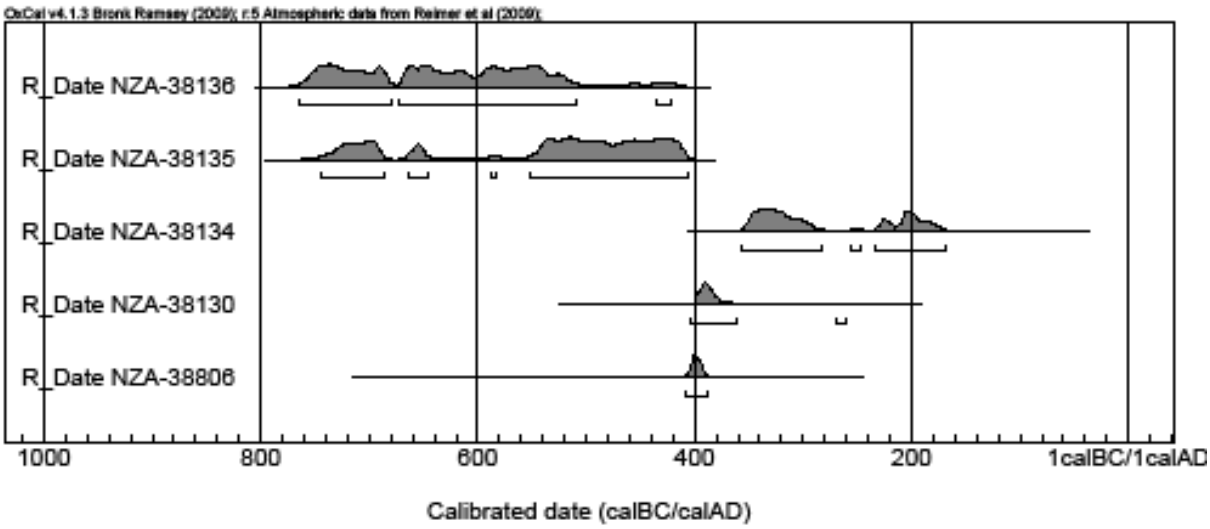


Figure 2 Histograms of probability distributions from LD11 (ditch 039)

Midden and occupation deposits (LD09)

The aims of the dating programme associated with the midden and midden-rated deposits were to:-

- Date the activity of the creation of the midden, and thus the occupation activity on site
- Date the duration of the midden accumulation and this the minimum length of occupation at this location

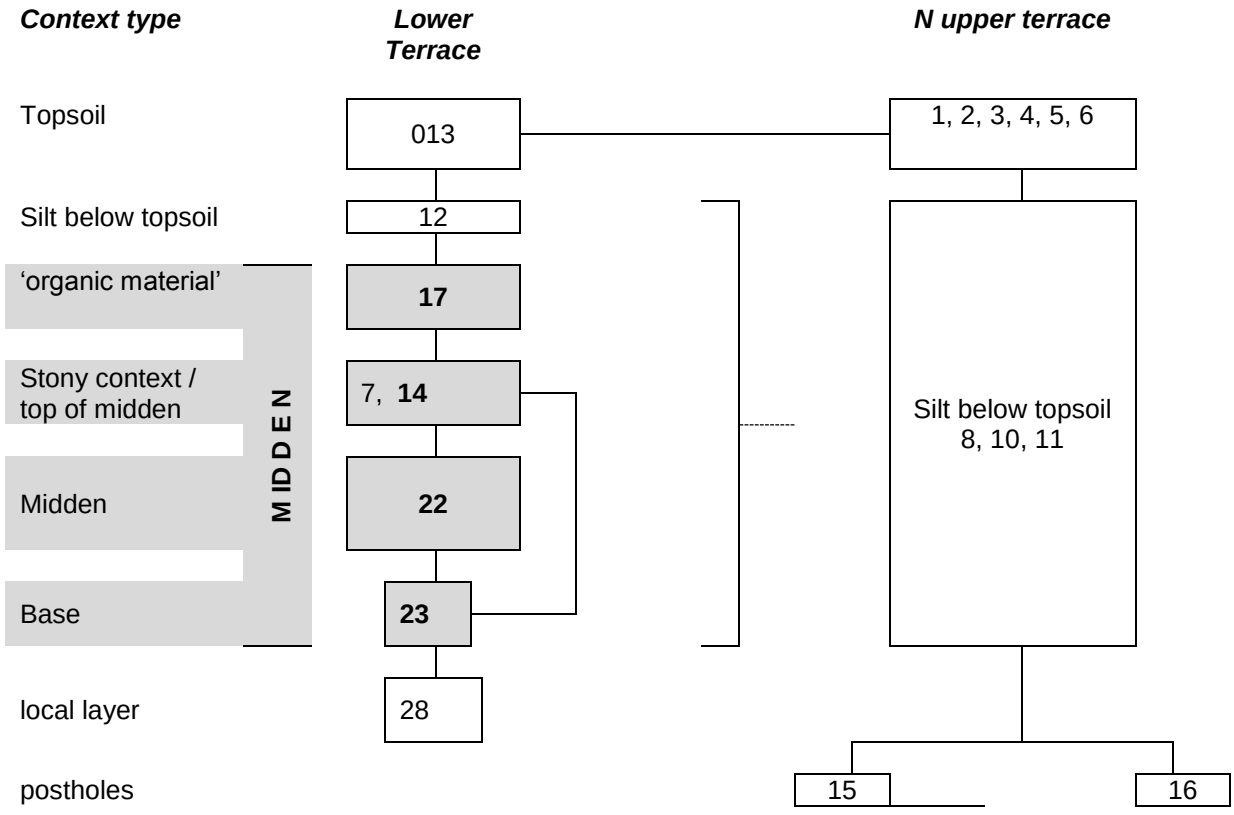
- Date the structural activity on the northern terrace and confirm is this is contemporary with, or significantly earlier than the midden-related activity

- Relate the date of the occupation activity here with the date of activity from the ditch (LD 11)

Selection

There being no articulated remains, the potential that any individual bone may be residual from an earlier phase or earlier part of the occupation activity is high. Nevertheless, bone survival outside the midden is very poor. Following examination of the assemblage all bone selected for consideration was in a good state of preservation with no evidence of weathering and no, or very little, gnawing – thus we assume that they were not residual for any great length of time before being incorporated and buried in the context.

The bone in the stony context above the midden (context 007) was generally in a poorer state of preservation, presumably exposed and trampled, and taphonomically may well have derived from the midden and this was considered will not date this context with any reliability. Postholes and structural evidence on the northern terrace contained a few bone small bone fragments. Again these probably are derived from the midden and probably post-date the use of the posthole and the timber it support. It was considered that the bone will not date the post-hole event. This left just material through a sequence of stratified deposits of the midden.



Context	*Material*	*Phase*	*Context type*	*taphonomy*	*Confidence that material will date the event*	*Questions addressed*
017	Cow astragalus	Top of midden	Securely stratified on top of midden	Refuse, discarded soon after use, and buried relatively rapidly	Good to high SUBMITTED	End of the midden Use of the midden Duration/longevity of midden activity
014=007	Cow phalange	Midden	Midden / occupation layer	Refuse, discarded soon after use, and buried relatively rapidly. 014 is more secure.	Good to high SUBMITTED	Use of the midden Duration/longevity of midden activity
022	Pig humerus	Midden	Midden / occupation layer	Refuse, discarded soon after use, and buried relatively rapidly	Good to high SUBMITTED	Use of the midden Duration/longevity of midden activity
023	Cow rib	Base of midden	Midden / occupation layer	Initial refuse, discarded soon after use, and buried relatively rapidly	Good to high SUBMITTED	Beginning of the midden Use of the midden Duration/longevity of midden activity
016	Cow tooth	Posthole N terrace	posthole	Unknown, may be derived from midden contexts	Poor to nil	What is the date of the posthole structure on the N terrace
028	None selected	Possibly pre midden	layer	unsure	Unknown, probably low	Start of midden or pre-midden activity

Table 3. Assessment of material from the midden (LD11)

Samples were only submitted from the midden-related contexts and contained a sequence of four samples from the base of the midden (context 023), the main midden (022 and 014) and top of the midden (017).

Results

Four bones were submitted, and all fall between 400 and 90 cal BC, and most probabilities fall within the period 400 to 190 cal BC (Fig 3; Appendix 2), and these lie later than the activity dated within the area demarked by ditch 039, and later than the excavation of ditch 039, and broadly contemporary with the activity in its secondary fills (i.e. layer 017 and pit 104) see Figure 4.

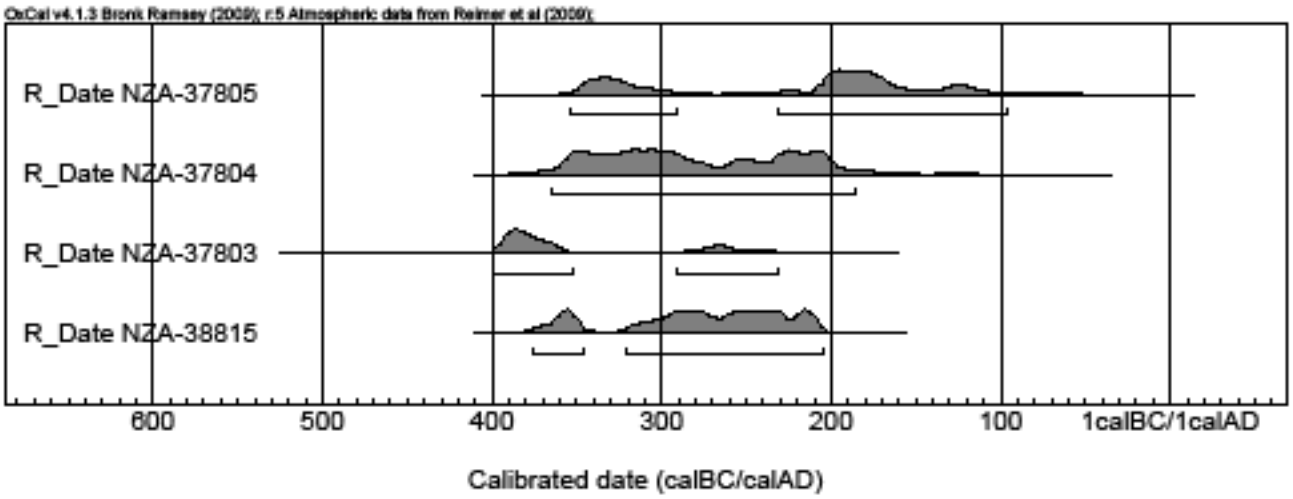
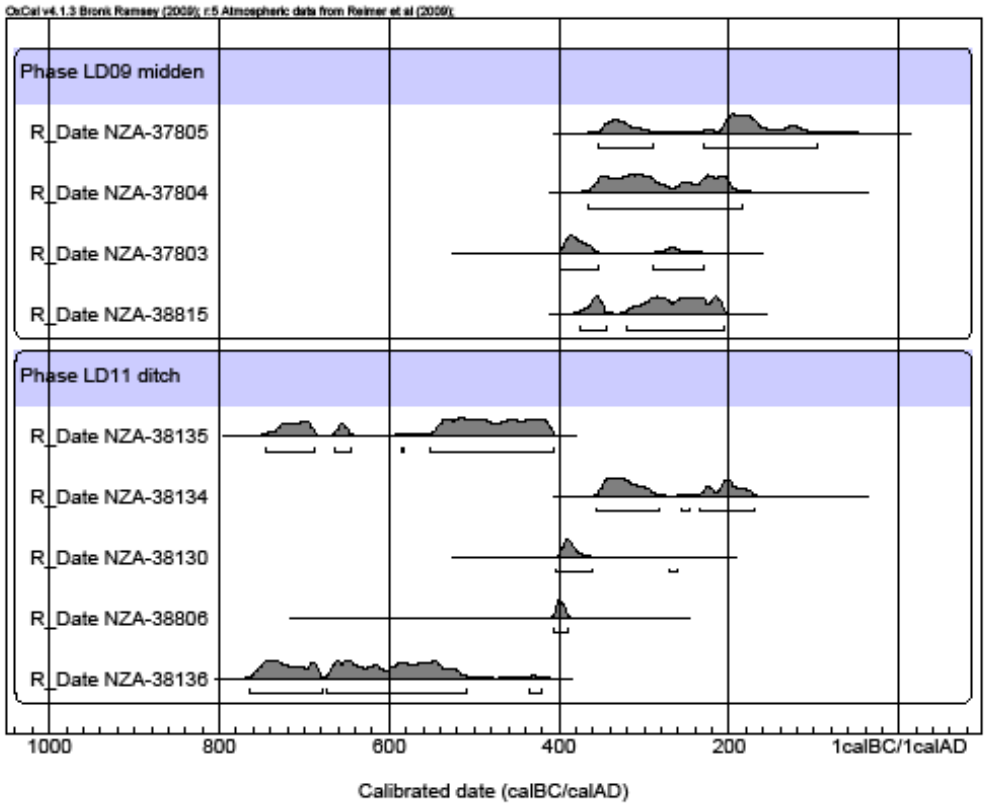


Figure 3 Histograms of probability distributions from LD09 (midden)

The midden accumulated over a maximum of about two centuries (Fig. 3), but greater precision is hampered due to the nature of the radiocarbon calibration curve at this time.

Conclusions

Three distinct phases of dated activity can be seen (Fig. 3). The first being that associated with the timber slot (045) within the enclosure at 950-400 cal BC, the digging of the enclosure ditch 039 pre 410-390 cal BC, and activity both within the enclosure ditch 039 (layer 017 and ?pit 014) and the midden activity at *c.* 380-200 cal BC. The radiocarbon result from pit 014 (NZA-38135) clearly dates heart wood charcoal which may have an offset of up to *c.* 350+ years and dates the growth of the tree and not its burning or use at Little Doward. It does however illustrate that type of timber being used and seems likely to confirm the industrial nature of the activity.



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APPENDIX 1: Radiocarbon calibration data from LD11 (ditch 039)

OxCal v4.1.3 Bronk Ramsey (2009); r:5
Atmospheric data from Reimer et al (2009);

NZA-38806 R_Date(2343,15)
68.2% probability
404BC (68.2%) 395BC
95.4% probability
408BC (95.4%) 390BC

NZA-38130 R_Date(2301,20)
68.2% probability
398BC (68.2%) 381BC
95.4% probability
404BC (92.6%) 361BC
271BC (2.8%) 261BC

NZA-38134 R_Date(2174,20)
68.2% probability
351BC (49.5%) 299BC
228BC (3.1%) 223BC
210BC (15.6%) 192BC
95.4% probability
357BC (57.7%) 283BC
257BC (1.6%) 247BC
235BC (36.0%) 170BC

NZA-38135 R_Date(2436,20)
68.2% probability
716BC (9.6%) 695BC
540BC (30.9%) 481BC
469BC (27.7%) 415BC
95.4% probability
746BC (20.1%) 688BC
665BC (4.7%) 647BC
587BC (0.4%) 583BC
553BC (70.2%) 407BC

NZA-38136 R_Date(2475,20)
68.2% probability
751BC (20.9%) 706BC
695BC (3.6%) 687BC
667BC (14.7%) 637BC
622BC (3.0%) 614BC
595BC (26.0%) 540BC
95.4% probability

764BC (32.0%) 680BC
674BC (62.1%) 510BC
436BC (1.2%) 422BC

APPENDIX 2: Radiocarbon calibration data from LD09 (midden)

OxCal v4.1.3 Bronk Ramsey (2009); r:5
Atmospheric data from Reimer et al (2009);

NZA-37805 R_Date(2150,25)
68.2% probability
347BC (21.5%) 319BC
207BC (44.2%) 165BC
128BC (2.5%) 123BC
95.4% probability
355BC (30.0%) 291BC
231BC (65.4%) 97BC

NZA-37804 R_Date(2195,25)
68.2% probability
356BC (47.1%) 286BC
234BC (21.1%) 202BC
95.4% probability
366BC (95.4%) 186BC

NZA-37803 R_Date(2283,25)
68.2% probability
397BC (60.9%) 361BC
271BC (7.3%) 263BC
95.4% probability
401BC (66.6%) 354BC
291BC (28.8%) 231BC

NZA-38815 R_Date(2222,15)
68.2% probability
361BC (7.6%) 352BC
297BC (21.8%) 271BC
263BC (29.9%) 229BC
221BC (8.9%) 211BC
95.4% probability
376BC (15.4%) 346BC
321BC (80.0%) 206BC

APPENDIX 3: Radiocarbon calibration data from LD09 & LD11

OxCal v4.1.3 Bronk Ramsey (2009); r:5
Atmospheric data from Reimer et al (2009);

NZA-37805 R_Date(2150,25)
  68.2% probability
    347BC (21.5%) 319BC
    207BC (44.2%) 165BC
    128BC (2.5%) 123BC
  95.4% probability
    355BC (30.0%) 291BC
    231BC (65.4%) 97BC

NZA-37804 R_Date(2195,25)
  68.2% probability
    356BC (47.1%) 286BC
    234BC (21.1%) 202BC
  95.4% probability
    366BC (95.4%) 186BC

NZA-37803 R_Date(2283,25)
  68.2% probability
    397BC (60.9%) 361BC
    271BC (7.3%) 263BC
  95.4% probability
    401BC (66.6%) 354BC
    291BC (28.8%) 231BC

NZA-38815 R_Date(2222,15)
  68.2% probability
    361BC (7.6%) 352BC
    297BC (21.8%) 271BC
    263BC (29.9%) 229BC
    221BC (8.9%) 211BC
  95.4% probability
    376BC (15.4%) 346BC
    321BC (80.0%) 206BC

(Phase LD09 midden
LD09 midden Phase()
) Phase LD09 midden

NZA-38135 R_Date(2436,20)
  68.2% probability
    716BC (9.6%) 695BC

540BC (30.9%) 481BC
469BC (27.7%) 415BC
95.4% probability
746BC (20.1%) 688BC
665BC (4.7%) 647BC
587BC (0.4%) 583BC
553BC (70.2%) 407BC

NZA-38134 R_Date(2174,20)
68.2% probability
351BC (49.5%) 299BC
228BC (3.1%) 223BC
210BC (15.6%) 192BC
95.4% probability
357BC (57.7%) 283BC
257BC (1.6%) 247BC
235BC (36.0%) 170BC

NZA-38130 R_Date(2301,20)
68.2% probability
398BC (68.2%) 381BC
95.4% probability
404BC (92.6%) 361BC
271BC (2.8%) 261BC

NZA-38806 R_Date(2343,15)
68.2% probability
404BC (68.2%) 395BC
95.4% probability
408BC (95.4%) 390BC

NZA-38136 R_Date(2475,20)
68.2% probability
751BC (20.9%) 706BC
695BC (3.6%) 687BC
667BC (14.7%) 637BC
622BC (3.0%) 614BC
595BC (26.0%) 540BC
95.4% probability
764BC (32.0%) 680BC
674BC (62.1%) 510BC
436BC (1.2%) 422BC

(Phase LD11 ditch
LD11 ditch Phase()
) Phase LD11 ditch

Validation
Herefordshire Archaeology operates a validation system for its reports, to provide quality assurance and to comply with Best Value procedures.

This report has been checked for accuracy and clarity of statements of procedure and results.

Dr Keith Ray, County Archaeologist