Burry Holms, Gower, Wales, U.K.: the prehistory of an island

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ABSTRACT

Sites dating to the early Mesolithic in Wales have only rarely been excavated under modern conditions. In 1998 the opportunity arose to examine such a site on the small tidal island of Burry Holms, Gower, South Wales. The aim was to investigate the context of an assemblage of lithic artefacts recovered from the island over the last 100 years held by Amgueddfa Cymru – National Museum Wales. The work resulted in the discovery of an important campsite with a long history of use spanning most of the Mesolithic period. This research has generated rich new environmental data and a series of radiocarbon dates that suggest the site was used at least four separate times during the Mesolithic period. The range of stone tools recovered from the excavations demonstrates that most of the early industry is typically of a Deepcar type; a 100% sieving strategy has provided new evidence of the micro- and macro-debitage.

This paper also incorporates the first publication of excavations undertaken in 1925 of a Bronze Age barrow and looks in detail at evidence for the Iron Age use of the island. A surprising discovery, revealed during the recent excavations, was an Iron Age roundhouse and other later prehistoric features including associated pits and post-holes. These have provided a new assemblage of palaeoenvironmental data and the first radiocarbon dates from an Iron Age settlement on Gower.

Introduction

Burry Holms is a small tidal island at the northern end of Rhossili Bay, Gower, Wales, U.K. (SS 399 925). The island possesses a rich archaeological context: a Mesolithic site was first recorded here in the 1920s set adjacent to visible later prehistoric monuments including a Bronze Age barrow and an Iron Age promontory fort. The remains of a Medieval monastic settlement also lie on the island.

The island's prehistory stretches back to the Late Glacial with a single find of a Final Palaeolithic penknife point, but it was in the Mesolithic when it became the site of a seasonal campsite which was used by a hunter-gatherer-fisher community on several occasions over the millennia between *c*. 8240 and 3770 cal. BC. The Burry Holms research programme began in 1998 following a review of all the Mesolithic artefacts held by Amgueddfa Cymru – National Museum Wales. New excavations were considered to have potential to provide palaeoenvironmental and dating evidence about this important Mesolithic site. The assemblage recovered provided significant new data about the landscape, the environment and the activities of the Mesolithic people. Charred plant remains and charcoal add important insights into the understanding of Mesolithic diet and environment and these specimens have been used to generate new dating for the Mesolithic campsite. These dates suggest a key interrelationship between the settlement on Burry Holms and the burial of their dead within Worms Head Cave just three miles away.

This paper also provides a review and analysis of Bronze Age and Iron Age activity on the island. The excavations, by chance, exposed the remains of a later prehistoric roundhouse. This discovery led to a refocusing of the project to excavate and record this structure and its associated features (Figure 1). The roundhouse lies outside the boundary of the island's Iron Age promontory fort, but radiocarbon dates and palaeoenvironmental data recovered from this work suggest they were likely contemporary. Combined with a reevaluation of probable later prehistoric features discovered underlying the stone Medieval ecclesiastical buildings on the east of the island, the paper provides an important new interpretation of this period. The first modern study, dating and publication of the earlier twentieth-century excavation of a Bronze Age barrow on the island is also presented. Finally, the paper draws together all the new data with the reports and reanalysis of historic excavations to provide a first full interpretation and discussion of the island's regional and wider British significance. [EN1]

The Historical Context for the Project

The Earlier Prehistoric Evidence

The first record of finds from Burry Holms is a collection of flints from the Mesolithic site donated to Swansea Museum in 1908 (Acc. No. A.908.1; RISW 1908–1909, 65). In 1919 excavations were commenced by two friends from Wellington School, Tom Lethbridge and Humphrey David, when both were aged around 18 or 19. Lethbridge later became Honorary Keeper of Anglo-Saxon Antiquities at the Cambridge University Museum of Archaeology and Ethnography and David became a Chartered Land Agent and Surveyor in Cardiff. Their finds have variously found their way into both Swansea Museum and Amgueddfa Cymru – National Museum Wales' collections, with a handful in the Cambridge Museum of Archaeology and Anthropology.

Humphrey David kept notebooks which collated his birding, beetle and flint collecting activities around Europe (Welbourn 2011; A. David personal communication, 2017). Lethbridge and David explored Burry Holms on occasions between 1919 until 1925. The following undated entry in David's notebook was written sometime after 1st April 1922 and provides his most comprehensive description of the Mesolithic site.

> ‘Burry Holmes
> Tom discovered a floor on the S.W. part of the island containing many flints a few of which are quite good implements. The section appears to be something as follows.
> [Figure 2 goes here]
> The majority of the implements are pigmy points not unlike some of the Upper Aurignation Gravett [sic] points from Paviland and they may have developed from that culture …’

This can be linked to a map in the David family archive showing where the flints were found. The section (Figure 2) can be matched with the stratigraphy recorded in the recent excavations. The finds recovered during their work on Burry Holms are incorporated into the analysis that follows.

James G. Rutter investigated the site between 1946 and 1948 and found Mesolithic artefacts above the glacial drift (Rutter 1948, 33). Further artefacts were recovered by Douglas B. Hague during his excavation of a Medieval ecclesiastical site on the island 1965–1969 (Hague 1965, 1966a, 1966b, 1967, 1968, 1969, 1973, 1978). Since then people have collected and reported lithic artefacts found on Burry Holms all of which have added to the distribution across the island. These data show there were distinct areas where lithic artefacts were concentrated, suggesting these may be the locations of campsites. The focus of the recent excavations has been to examine these areas through archaeological excavation and test-pitting resulting in a fuller understanding of Mesolithic activity on the island.

The Later Prehistoric and Medieval Evidence

The eastern and southern fringe of the island is a relatively sheltered flat plateau. The north-eastern corner of this plateau is occupied by the remains of the Medieval ecclesiastical site which was excavated by the Royal Commission on the Ancient and Historical Monuments of Wales 1965–1969 to help provide background knowledge for their survey of the county of

Glamorgan and subsequent Inventory (RCAHMW 1976b, 1976c). Unfortunately, the excavations were never fully published although the structural and artefactual evidence is recorded through a series of interim statements and an unpublished provisional account (Hague 1965, 1966a, 1966b, 1967, 1968, 1969, 1973, 1978). A complex of buildings dating from at least the 11th to 15th century AD was revealed including a church, built first in timber then replaced by stone, which was contained within an earth and stone enclosure or 'cashel' built in two phases. Mesolithic flints were also found during the excavations as well as a small assemblage of Roman pottery and a possible Iron Age sherd suggesting that the Medieval site overlay an earlier Iron Age or Romano-British settlement. In fact, immediately to the south of the cashel two timber-built oval 'huts' were identified beneath the later 12th century buildings (Figure 3). The western-most hut was defined by eight post-holes which formed a structure around 3.3m by 4m. Two of the post-holes overlay the first phase of the cashel and so this structure must be Medieval in date. The eastern hut was smaller, represented by an arc of five shallow post-holes just 2.5m in diameter. It was stratigraphically earlier than the western hut and a scatter of round pebbles, possibly Iron Age sling-stones, was found adjacent to it. Hague initially considered this eastern hut to be Iron Age (Hague 1966b, 40, 1973, 32; RCAHMW 1976c, 14) although was latterly more hesitant and favoured a Medieval date (Hague 1978, D-1). Given the findings during the recent excavations an Iron Age date seems the more likely with the post-holes perhaps representing just the inner ring of a more substantial structure.

Immediately to the west of the ecclesiastical site the land rises sharply to around 30m OD and is surrounded by steep cliffs. It is occupied by a promontory fort formed by a bank and ditch running north to south for 100m at the mid-point on the island, creating an enclosure of 1.2ha. A causeway, just south of the centre, forms a simple entrance gap through the earthwork. To the north of the entrance the bank and ditch are accompanied by a counterscarp bank, but no such feature is evident to the south. Initially the promontory fort was not included in the programme of excavations at the ecclesiastical site, but after the identification of possible prehistoric occupation it was targeted for a small exploratory investigation (Hague 1966b). A narrow trench was cut across the inner bank, which showed it to be 1.2m in height and constructed in two phases (Figure 4). No revetment was identified although this could have collapsed into the ditch or been robbed. A small, triangular-shaped, sondage was excavated into the ditch and produced a single sherd of Roman greyware. Another sherd of Roman pottery, dating from the 2nd to 4th century, had also been found in a rabbit scrape in the southern section of ditch in the 1930s (Williams 1939a, 29). Unfortunately, neither sherd provides convincing dating evidence for the construction of the enclosure since the ditch was presumably recut when the bank was raised, and the counterscarp created. Within the interior, around 30m south of the entrance, on a slightly levelled area, a 3m by 3m trench was also excavated, but it produced no finds and only a single, shallow post-hole was recorded. Hague (1978, 1) speculated that the Iron Age occupation may have always been located on the more sheltered eastern fringe of the island, with the promontory fort merely a refuge in times of trouble, but the areas excavated were so small, and the dating evidence so meagre, that such a hypothesis cannot be substantiated.

Contained within the promontory fort is a small barrow, roughly circular in plan, around 8m in diameter and 0.6m in height (SS 3986 9260). It is located at the top of a steep cliff at the highest point on the island, towards its western tip. From the eastern approach the barrow is not apparent until one enters the promontory fort, but it is highly visible on the skyline from the seaward side to the north. It was excavated in 1925 by Tom Lethbridge and Humphrey David. The excavation showed that the barrow was constructed of earth and stone with a stone-lined cist at its centre (Figure 5). The cist contained cremated human and animal bone and a small pin of hammered bronze wire, 3.2cm in length, with a head formed by a double twist of thin bronze ribbon (David and Lethbridge 1925). The cist was possibly sealed by several large stones that convinced the excavators that the burial had not been disturbed. However, material thrown up from the diggings contained a piece of lead and two sherds of probable Roman pottery, as well as two rusted iron nails attached to a piece of decayed wood. The wood is almost certainly of more recent origin and suggests some later disturbance. The cremated bone was submitted for assessment at the time to Sir Arthur Keith who identified that most of the remains belonged to an adult, possibly a woman, but also contained two small bone fragments, probably from a child, and the bones of a goat and bird. Keith (in David and Lethbridge 1925) argued that the adult was the primary burial and the other bones were 'mixed-in' when the remains were gathered together. Recent reassessment of the remains identified two additional adults whose bones were differently oxidised to that of the primary burial and interpreted as further remnants of previous cremations at the pyre site (McCarthy 2009 and below).

The excavators were unable to provide a date for the barrow's construction. Lethbridge favoured a Roman age (Letter from T.C. Lethbridge to H. David July 28, 1925), but no date was offered in the unpublished excavation report. Further analysis of the bronze pin may have helped to provide a *terminus post quem*, but unfortunately it was subsequently lost. It appears that Lethbridge and David did not have permission from the landowner, Norman Helme, to undertake the excavation (Letter from Norman Helme to Humphrey David September 17, 1925). Upon discovering their diggings, Helme naturally demanded the return of the finds, including the pin (but not the bones), and refused permission to publish the findings. However, Lethbridge supplied a sketch of the pin to the RCAHMW for their *Glamorgan Inventory of the Stone and Bronze Ages* (1976a). The pin is described as 8cm in length and to have resembled a Late Bronze Age example from Heathery Burn Cave, County Durham (RCAHMW 1976a, 53). The dimensions seem at odds with the original description and the Late Bronze Age date is problematic given that a sample of the cremated bone of the primary burial sent for radiocarbon dating as part of this project produced a date of 2029–1881 cal. BC (95.4%) (OxA-35676; 3588 ± 29 BP). It seems most likely that the barrow is Early Bronze Age and probably preceded the construction of the promontory fort by over 1,000 years.

Geomorphology and Geology – Richard Mourne and David Case

Burry Holms is formed of Carboniferous Limestone, predominantly the High Tor Limestone Formation (Arundian), with smaller outcrops of Gully Oolite Formation (Chadian) and Hunts Bay Oolite (Holkerian – Arundian). The High Tor Limestone outcrop extends through to the mainland but displays a north to south running fault that has been exploited by marine erosion to create the tidal channel (Figure 1). The shore platform is of Cenozoic age and probably represents the product of marine erosion throughout the Quaternary and possibly earlier, the sea level occupying a similarly high level on many occasions during Quaternary interglacials.

Gower experienced ice masses from two distinct sources; a northern ‘Welsh’ source and a westerly and north-westerly ‘Irish Sea Basin’ source (George 1932, 1933). The earliest glaciation recorded in the area, assigned to MIS12 (~400,000 BP) deposited till of Irish Sea and Central Welsh provenance on Gower (Bowen 1970, 1999; Campbell and Bowen 1989; Bowen et al. 2000). Sediments overlying the raised cemented beach gravels (Hunts Bay Member) are assigned to the Devensian and Holocene and define two sedimentary provinces, enabling the establishment of the Late Devensian Maximum ice limit. Following the identification of glacigenic sediments of possible MIS2 age in Broughton Bay and Rhossili Bay (Campbell, Andrews and Shakesby 1982; Campbell 1984) Burry Holms is confirmed to lie within the glacial province (see Shakesby and Hiemstra (2015) for an account of the changing proposed ice limit on Gower).

Early Devensian climatic cooling and sea level fall is marked locally, for example, on Worms Head, by an accumulation of red silts and sands on the raised cemented beach deposits. These represent soil erosion of rubified interglacial soils from the limestone plateau and contain evidence of further soil formation during MIS5.4 and MIS5.2 (Ball 1960; Case 1993). The youngest glacial event has a Welsh source and is ascribed to the Late Devensian (MIS2). Glacial sediments related to this event have traditionally been termed 'newer drift'. Continued cooling initiated large-scale frost shattering and talus slope development at the foot of the Old Red Sandstone and Carboniferous Limestone cliffs. The resulting head deposits are in places buried by shelly and stony diamicts interpreted as tills with outwash deposits extending from the glacial into the extra-glacial environments. The maximum extent of this ice sheet occurred during the Late Devensian, a ^{36}Cl rock exposure age of 23,200 ± 2,000 BP having been obtained from Arthur's Stone, a large erratic located on Cefn Bryn at the ice limit (Bowen et al. 2002). Loess deposition was extensive in the region at this time with notable deposits capping the head at Horton, and elsewhere constituting a significant mineral component of modern soils (Case 1983; Diddams 2009). Climatic amelioration during the Holocene saw sea level rise and the transfer of sediment to the present-day coastline with the aggradation of beaches, coastal dunes and estuarine silts and clays. The sea levels at each of the key periods discussed in this paper are represented in Figure 6.

The 1998–2001 Excavations

Background and Methodology

The current research project, directed by EAW, commenced in 1998 with subsequent annual field seasons 1999–2001. David's map indicated that he and Lethbridge had collected flints from exposed sections on the west of the island. These deposits are eroding as they face what would once have been a stream or river valley, now a sea inlet. The soils that once filled the valley have largely been washed away by high tides over the millennia leaving sections standing that have experienced undercutting and the slumping of the upper deposits down around this edge. The fieldwork sought to investigate the Mesolithic site, so four trenches were placed close to the uppermost eroding edge of the island where the majority of the earlier finds were made (Figure 1 and Figure 7).

In all the trenches the Mesolithic deposits were excavated using a 50cm x 50cm grid across the site. This grid linked into the site survey and all finds were individually plotted. Sediment was bagged according to square and context using a spit system, usually of 2cm depth and wet-sieved. Mesolithic archaeology was recovered from three areas of the site: Trench 1, Trench 4 and 3 a cutting through the standing section immediately above the slumped deposits (Figure 1).

Throughout the project a 100% wet-sieving strategy was adopted for all sediment recovered from Mesolithic contexts. Later prehistoric features were half-sectioned and all fills were wet-sieved. Attempts to undertake flotation were abandoned early on, due to the quantity of modern root growth retrieved. Residues were hand-sorted in the National Museum Cardiff.

In 1999 a transect was placed across the width of the island to establish whether there might be an outlier to the main site, as indicated in David's 1920s notebooks and map. Five test pits, each 1m x 1m, were dug to bedrock.

Mesolithic Archaeology

Mesolithic archaeology was found in three of the excavation trenches and the stratigraphical sequence can be matched across these (Trenches 1, 3 and 4) see Table 1.

Trench 1

Trench 1, initially opened as a test pit 3m x 3m, was located on a grassed area in the lee of a tump rising on the south-western edge of the island. It lay inland of the eroding edge. In 1999 it was expanded by an additional metre and, for recording purposes, was known as Trench 1 (north) when a further 4m x 4m trench was opened a metre to the south of the original trench, Trench 1 (south), the intention was to remove the baulk at a future date. The sequence of deposits (Figure 8 and Table 1) comprised a humic layer beneath the root mat which lay on a grey gleyed sand (context 2) overlying a red sand layer (context 3) this wind-blown sand contained the later prehistory. At its base was what appeared as a buried turf horizon which merged into a clay loam deposit (context 5) containing a lot of charcoal and evidence for root and worm activity and Mesolithic artefacts. Beneath lay a darker layer (context 6) containing more clasts, patches of sandstone and Mesolithic artefacts. This overlay context 7, glacial till with a yellow clay matrix and lots of clasts. A sandier layer (context 10) directly overlay bedrock.

Mesolithic lithic artefacts and palaeoenvironmental data were recovered throughout Trench 1. Some lithics were found residually in the red sand (context 3) with more found in context 5. The latter layer is mixed and both early and later Mesolithic artefacts have been recovered from it. It is the layer beneath this, context 6, in which the Mesolithic archaeology originated. This layer is a palimpsest of both early and later Mesolithic finds. Any former stratigraphic distinction between finds of each period is indistinct and the sediment has become sorted with heavier pieces, e.g. cores, predominantly found deeper in the sequence. The base of this layer, overlying the glacial till, contained a Final Palaeolithic penknife point. A few finds had become incorporated into the surface of the glacial till (context 7) but mostly rested on its interface with the base of context 6. The northern part of the trench contained the least disturbed deposits excavated anywhere on the site. This trench did not contain any later prehistoric features and so was undisturbed. No Mesolithic features were recorded. AMS radiocarbon dates were obtained on two hazelnut shells and one lesser celandine tuber from context 6. The dates (below) confirm the mixing of this layer.

Trench 2

Trench 2 was placed parallel to the eroding edge on the eastern side of the sea inlet. This 9m x 2m trench was deliberately sited across a change in vegetation. Its northern end contained a homogeneous brown sand layer directly overlying glacial till, whereas the southern end showed a sequence of deposits less distinct than those in Trench 1, but which can be directly related to it. A pile of stones lying between the two areas marked the change in vegetation and may have been an enclosure boundary wall or field relating to the Medieval site further east on the island. The wall has, however, been robbed, possibly for the construction or repair of a later building.

This trench generated 20 worked pieces of flint, all knapping debitage. Three pieces were recorded from the brown sand (context 2), 14 from the red sand (context 3), one from the top of the glacial till and two unstratified flints. In the absence of any diagnostic pieces that are of any other date all these pieces would be acceptable within the general Mesolithic assemblage and are considered as such in the analysis of the lithic assemblage that follows.

Trench 3

Trench, or Area 3, is an area of deposit that has slumped through undercutting, around the eroding edge of a sea inlet on the west of the island. Test pits were sited close to, and through, this eroding edge. They were recorded on site as 3A, 3B, 3C and 3D. Test Pit 3C was later incorporated into Trench 4 and will be discussed as part of that trench description below. Reference to this trench is cited as Trench 3 throughout this paper.

A section was cut through these deposits as this was the area previously investigated by David and Lethbridge and later by Rutter (1948, 33). The cutting was designed to expose the stratigraphy and nature of the eroding edge. It showed the same sequence of deposits as recorded in Trench 1 but is complicated by the slumping. A separate cut made through the uppermost section of this area (3) generated the same sequence as Trench 1 and contained a number of Mesolithic artefacts (from context 53).

Trench 4

Trench 4 began as a 1m x 1m test pit (3C). In 2000 a 4m x 4m trench was opened up south of the test pit. Its northern side ran parallel with the edge of the actively eroding edge, while its western side abutted a small natural tump. In 2001 this was expanded to incorporate the earlier test pit in a trench of trapezoidal shape which, at its maximum dimension, was 8m x 7m, designed to capture the entirety of a roundhouse discovered the previous season. The primary sequence of deposits was similar to that contained within Trench 1 and is described in Table 1. Soil micromorphological analysis undertaken by Obbe Boersma and Maja Kooistra suggests that the top of context 46 was marked by a burning episode which led to the loss of deposit and a prolonged period during which the bare surface suffered loss of soil. The base of the sequence (equating with context 7 in Trench 1) has a coarser silt component with some angular sand inclusions; it appeared to be well-sorted and is probably a till (context 47). Beneath this was a thinner layer (context 48) which was also similar in colour and texture to context 47. A further context (145) was recorded in one corner of the trench. These three contexts (47, 48 and 145) are now deemed to be part of the same basal deposit.

The deposits in this trench were extensively disturbed by the cuts of later prehistoric features. Mesolithic artefacts from the red sand deposits and occasionally from within the fills of features are therefore residual. This trench contained the highest density of Mesolithic artefacts, coming mainly from contexts 44 (which equates to context 5 in Trench 1) and 46 (as context 6 in Trench 1), but no associated Mesolithic features were observed. As in Trench 1 there was no stratigraphic distinction between tools of early or later Mesolithic age. Palaeoenvironmental data were recovered from the trench and two AMS dates were obtained (see below). Optically stimulated luminescence dating was also undertaken through the sand deposits in this trench and a sequence, including a Mesolithic date, was obtained (see below).

Later Prehistoric Archaeology

The majority of the evidence of later prehistoric activity was encountered in Trenches 1 and 4. Both were located at the southwestern extremity of the plateau that forms the island's fringe on its eastern and southern sides, outside of the enclosed area defined by the promontory fort.

Trench 1

Five post- and stake-holes (Figure 9) were sealed by a red sand (context 3) that contained an opaque yellow annular glass bead (SF125) of probable Middle to Late Iron Age date, three sherds of prehistoric pottery (possibly Middle Bronze Age), four sherds of Roman pottery, an iron nail, fragments of iron slag and a clay-pipe stem. The mixed nature of the finds suggests this is probably a relict plough soil similar to context 43 encountered in Trench 4. The extent of the trench was too small to reveal coherent plans of any structures. However, the largest cut feature (11) was similar in size and depth to three large post-holes (58, 83 and 118) encountered in Trench 4. The fills of this post-hole also contained a relatively high concentration of cereal (wheat) grains, one of which produced a radiocarbon date of 376–177 cal. BC (OxA-31385; 2272 ± 26 BP). All these features cut through a darker clayey sand (context 5) which contained a blue glass bead (SF279) of Iron Age date, an iron rivet, iron smithing slags and several sherds of probable Middle Bronze Age pottery.

Trench 4

Structural features belonging to at least two phases of later prehistoric, probably Iron Age, occupation were sealed by a relict plough soil (context 43) that contained a sherd of Samian ware, two copper alloy objects and a fragment of iron slag (Figure 10). The inter-relationship of these structural features was uncertain because of later truncation, most likely a result of cultivation, but the following sequence seems most likely.

Phase A

This consisted of a small, but well-defined roundhouse. It was represented by a circular wall gully (54, 114 and 134) 5.8m in diameter, and nine post-holes (60, 79, 87, 102, 116, 121, 125, 127 and 132) arranged concentrically within the outline of the gully. Conceivably the post-holes may represent a rebuild of the house, but most likely they added structural support perhaps taking the weight of the roof. A possible entrance setting, defined by post-holes 102 and 87, faced to the east. No floor surface was identified within the interior, but a charcoal spread (57), possibly the base of a hearth, was located slightly off centre. A carbonised wheat grain from the hearth produced a radiocarbon date of 351–54 cal. BC (OxA-31386; 2146 ± 32 BP). To the north and south of the hearth were two lines of stake-holes which, if linked by wattle hurdles, would have physically separated the internal space of the house into a northern, central and southern area. A radiocarbon determination from a spelt glume base recovered from the fill of the roundhouse wall gully provided a date of 354–53 cal. BC (OxA-31343; 2148 ± 32 BP).

Phase B

This phase was represented by three large post-holes (58, 83 and 118) arranged in a line in the eastern half of the trench. They survived to some depth (0.35 to 0.5m) and possessed fills relatively rich in carbonised cereals. A hulled wheat grain from post-hole 83 produced a date of 358–103 cal. BC (OxA-31384; 2167 ± 28 BP) and charcoal from post-hole 118 a comparable date of 352–55 cal. BC (OxA-31383; 2149 ± 27 BP). The limit of the excavated area meant that the three post-holes did not form a coherent structure, but the presence of cereals suggests they could conceivably have formed part of the structural remains of two four-post storage buildings.

Results of the Test Pit Excavations

Five test pits were dug along a transect across the island in an attempt to identify further Mesolithic evidence (Figure 1).

Test Pit 1

This test pit had a humic layer beneath the turf lying on red sand. This overlay some heavily decayed surface limestone bedrock which was easily removed to reveal a calcite-rich deposit containing a possible early Neolithic pot sherd (SF280; see report below) and a piece of metalworking slag (SF282). The calcite overlay a thin clay lens above bedrock.

Test Pits 2, 3 & 5

These three test pits all had identical stratigraphy comprising a brown-loamy sand underlying the humic layer beneath the turf. This overlay broken and decayed surface limestone bedrock above bedrock. Test Pit 2 generated just one find, a piece of undated metalworking slag (SF281), from the base of the clays. No finds came from Test Pits 3 or 5.

Test Pit 4

Test Pit 4 also showed a sequence comprising a humic layer beneath the turf lying on red sand. A natural pit in the underlying bedrock contained fragments of burnt clay and charcoal.

This was thought to be a cooking pit; however, no dating has been obtained for it and it contained no diagnostic finds.

The Finds

The Lithic Assemblage

The lithic assemblage totals 7,779 pieces recovered from the excavations, historic collecting and recent surface collection. All underwent macroscopic analysis where key attributes were recorded and detailed descriptions undertaken. Debitage was divided into categories and recorded by size in accordance with Andrefsky (2005). Refitting of the assemblage was not undertaken.

Raw Materials – Jana Horák

The raw materials were identified and recorded in the field by Heather Jackson and the final determinations, used here, were made by JH. Flint is dominant with 7,647 pieces, comprising 98.3% of the total assemblage. Most of the flint is patinated. Eight varieties of chert were identified. Other materials include four varieties of silicified limestone, two of arenite and one sandstone. A number of pieces were impossible to categorise and so were recorded as stone. Table 2 shows the relative proportions of each of the raw materials in the assemblage by tool type.

The Provenance of the Raw Materials – Tim Young

Provenancing the materials used in the Burry Holms lithic assemblage entailed a survey of the artefacts held in Amgueddfa Cymru – National Museum Wales' collection and field examination at localities in Broughton Bay and Rhossili Bay. The analysis was undertaken macroscopically without thin-sectioning. The field investigation yielded material equivalent to those represented amongst the Burry Holms lithic artefacts, and they could represent potential sources.

The lithic assemblage is dominated by flints with a white patination with very good conchoidal fracture and a very fine texture, some show recrystalisation and frequent vugs of euhedral quartz within burrows and fossil moulds. The majority of the preserved cortical fragments are smoothed (57%), commonly with impact marks (41%) suggestive of reworking of the flints within a fluvial or beach environment, rather than simply glacial transport. Only a very small proportion (6%) of the artefact collection is formed from strongly-coloured, usually yellowy-brown, flint with an abraded and/or impacted surface. Similarly, only 5% of the cortical material is strongly coloured, and a further 6% shows a pale chalky cortex with a thin brown or yellow coloured zone in the flint immediately beneath.

All the lithologies present in the lithic assemblage could have been sourced locally. Although comparisons can be made between the lithic assemblage and clast population of local Quaternary deposits, this may be of only limited utility. The most flint-rich deposits are not presently accessible, but would have been in Mesolithic times. Those flint-bearing deposits seen today are simply later reworking of Irish Sea drift, by the valley glaciers moving into Carmarthen Bay from the north and north-east. It is suggested that it is in those areas of the (now off-shore) earlier tills, and any river deposits reworked from them, that the source of the Burry Holms lithics should be sought.

The Composition of the Lithic Assemblage – Elizabeth A. Walker

Hammerstones and cores

There are two sandstone hammerstones; a large, oval hammerstone with heavy use on one end (SF835) and an elongated pebble with evidence for limited use at one end (SF2409) (Figure 11). The 71 cores have been categorised according to the presence and siting of their striking platforms (Ballin 1999; Table 3). Cores were made on cortical flint pebbles and the average sizes of all blade cores is 29.9mm. An interesting feature is the presence of ten ‘micro-cores’. These have been defined here as having a core height of less than 10mm. Other indicators of core preparation are the 51 core rejuvenation pieces, predominately crested blades and plunging flakes.

Blades and Blade Fragments

The average Burry Holms blade is 2.3 times as long as wide. Two hundred and eighty-one complete blades and 765 blade fragments are recorded. Fragments were identified by the presence of parallel flake scars running the length of the piece typically struck from prismatic cores. These are further divided according to whether they form the proximal (bulbar) or distal ends of the original blade, or if they are a mid-section of the blade. There is an even distribution across the site between proximal, medial and distal ends of blade fragments.

Flakes, flake fragments, spalls and general debitage

The knapping debitage, other than the blades and blade fragments described above, have been categorised into; flakes, flake fragments, spalls (flakes of less than 5mm x 5mm) and general unclassifiable knapping debitage (Table 4). The 100% sampling and wet-sieving strategy has resulted in the retrieval of most of the micro-debitage or spalls. These comprise 66.7% of the total lithic assemblage. Few complete blades or flakes have total cortical cover and could indicate that there has been some processing of the raw material elsewhere as the cortical flakes only comprise 16.7% of the total number in the assemblage.

There appears to be little vertical separation between tools of early and later Mesolithic date. There is settling of material through the deposit with heavier pieces, in particular the cores, tending to be found deeper with lighter pieces such as microliths more evenly spread through the layer. Any original separation between the early and later Mesolithic phases is unclear and the site has become a palimpsest of activity throughout the Mesolithic period.

Final Palaeolithic Tools

Penknife points are a distinguishing tool amongst assemblages of Final Palaeolithic age (Barton and Roberts 1996, 252). A retouched fragment of chert (type H), a white opaque chert with prominent quartz grains, is interpreted as the base of one of these (SF1770; Figure 12). It was found at the base of context 6 in Trench 1(S), lying on the surface of the glacial till, and provides the sole unequivocal evidence for Palaeolithic activity at the site.

One burin, of dihedral form (SF601), is also made of the same chert as the penknife point and so could also plausibly be contemporary with this tool. Burin forms of Upper Palaeolithic and Mesolithic ages are difficult to separate as the burin is frequently found in and amongst Late and Final Glacial assemblages such as Hengistbury Head (Barton 1992) and into the Mesolithic, where sites such as Nab Head and Star Carr contain a range of forms (David 2007, 101–104; Conneller et al. 2018).

Mesolithic Tools

The Mesolithic tools have been assessed in the light of current thinking about Mesolithic assemblages in Wales where it remains the case that assemblages can generally be attributed to either an early or to a later Mesolithic (Jacobi 1980; David and Walker 2004; David 2007; 2020). Much of this is, however, to be qualified by the fact that there remain few well-dated sites in Wales and any detailed distinctions may be obscured by this fact. Some sites, for example, Prestatyn, Denbighshire (David 2007) and Snail Cave, Great Orme (Smith and Walker 2014) have resulted in the identification of microliths that may span a transition between the periods, however, in the absence of evidence to the contrary amongst the Burry

Holms assemblage, it has been assessed in line with the traditional thinking with both early and later Mesolithic periods represented at the site.

Eighty-one microliths have been recovered from Burry Holms. Sixty-five are classified as early Mesolithic, 11 later Mesolithic and five are unclassifiable. Fifty-three of the early Mesolithic forms are obliquely blunted points; 42 of which are partially-backed and 11 have leading edge retouch; two are convex-backed; two straight-backed; one scalene triangle, one isosceles triangle and seven unclassifiable fragments (Table 5). One of the obliquely blunted points is made of chert A, all others are of flint.

Three early Mesolithic microliths display impact fractures; two tips (SF720 and 34.568/51). A basal fragment (SF187) suggests that tools were curated, with broken items returned to the campsite for repair (Figure 13). The later Mesolithic forms comprise five crescents, two narrow-blade obliquely blunted points, one *bec* and three unclassified fragments (Figure 14). The *bec* (SF564) is a blade on which a point, curved in outline, has been developed by bi-lateral retouch (Figure 14; David 2007, 141), these have been recorded at a number of Pembrokeshire sites but are rarely seen elsewhere. The seven microburins in the assemblage confirm microlith manufacture took place on Burry Holms.

Organic survival on Burry Holms is poor, yet one early Mesolithic microlith of obliquely blunted point form, SF1197, (Figure 15) was found to preserve evidence of a hafting residue or glue. The residue was recorded, examined and analysed by Mary Davis at Cardiff University. The scanning electron microscope (SEM) was used to identify the location of the residue on the tool's surface. This was photographed (Figure 16) and analysed using Fourier-transform infrared spectroscopy (FTIR) to generate a plot of the various organic compounds in the glue.

Residues survive on stone tools at a number of prehistoric sites in Britain. Graham Clark was first to record traces of residue adhering to stone tools amongst the Star Carr assemblage (Clark 1954, 166–167). Analysis and experimental work show that resins adhering to tool surfaces can survive a spectrum of burial environments and conditions (Croft et al. 2016). Shannon Croft's analysis of residues on Star Carr artefacts suggests that pine, most likely, *Pinus sylvestris*, compounds were present on nine tools (Conneller et al. 2018, 494). Traces of residue survive on two stone tools from Goldcliff, Newport. Here, Annelou van Gijn was able to identify patches of black residue which she interpreted as wood tar found on the edges opposite those showing use-wear (van Gijn 2007, 118).

Alfred Pawlik has undertaken experimental work to produce birch tar resin for hafting (Pawlik 2004). His work offers a useful comparison for the Burry Holms residue. He found that the cellular structure of birch bark was preserved when he sought to produce tar using a distillation technique. When he compared his results with those created using a sealed retort to contain the tar, he was able to see that tar produced in this way was far more homogenous and glass-like, indicating the complete transformation of the bark to tar (174). Such glass-like tar is quite likely to be very hard, whereas a more cellular structure might suggest that the microlith, when stuck in its haft, would have had a longer life as a projectile as it had some cushioning and was less brittle. Pawlik's published photographs can be compared with the SEM photographs taken of the Burry Holms residue and similarities with the glass-like resin can be observed suggesting this was how it was made.

All the 29 scrapers are of flint and are predominantly made on flakes (Figure 17). Scrapers were curated; two double end-scrapers were re-sharpened to extend their use before they were eventually discarded (SF537; Figure 17). Scrapers are notoriously difficult to date but end-scrapers are typical of the early Mesolithic; these have radial retouch and are neatly worked to give shallow, graduating ends (Table 6); and double-ended forms are characteristic. Whilst it is suggested that the Burry Holms scrapers are predominantly early

Mesolithic in age, given the known mixing of later Mesolithic material into the assemblage it is not possible to say with certainty exactly how many scrapers might be of which date.

Twenty-two microdenticulated blades are distinguished separately from the utilised blades in the assemblage (Figure 18). They have at least one deliberate saw-like edge of very small, closely spaced, notches (Jensen 1994, 50). The tools are all made on blades and 18 of the 24 are denticulated along a concave edge (Table 7). Discussion about the function and dating of microdenticulates has led Helle Juel Jensen to conclude they had a plant-processing function (68). Her use-wear analysis suggests that these tools were used in a transverse motion; perpendicular, or at an oblique angle, to the edge, with distinctions observed at different points along the length, according to the intensity of the tool's use (61). This could be associated with working vegetable fibres in ways that may have required a chemical and mechanical process to do so, possibly an agent such as ash (67). Linda Hurcombe's *chaîne opératoire* approach to tool function combined ethnographic, archaeological and experimental work. She concluded that serrated edges are useful as they do not dig too deeply into fibres as they work by scraping off the outermost layer, usually the bark, in plant processing (Hurcombe 2007, 62). There are no clues amongst the palaeoenvironmental evidence for any direct link to plant processing at Burry Holms. Study of the Burry Holms assemblage for use-wear by Randolph Donahue in 2002 failed to identify any due to the heavy patination of the tools which makes it impossible to draw a definite conclusion about their use. Plant processing must have had a role to play at the site despite the invisibility today of this record (Hurcombe and Emmerich Kamper 2017). At Burry Holms, it is suggested the microdenticulates are early Mesolithic in age, given their association with similar toolkits found at other sites around the U.K. (Reynier 2005).

There are five burins and five burin spalls; three of which are made of chert. Three are dihedral burins, one burin on lateral retouch and one on a transversal break (Inizan et al.

1999). Burins are a key component of assemblages of both Mesolithic and earlier ages and as such their presence amongst the Burry Holms assemblage is to be expected.

Four truncations are all made on distal ends of blades; one straight truncation, two oblique and an oblique concave truncation (Figure 19). There is also one sandstone bevelled pebble with a double bevelled end (SF2409). These are typical finds of later Mesolithic rocky coastal sites (David and Walker 2004, 323–325) and, although occasionally found inland, may have been associated with seal processing (Jacobi 1980; David 2007, 147).

Bronze Age/Iron Age Tools

Two retouched knife fragments are present in the assemblage. One (SF2804) is the proximal end of a blade with scalar retouch along a straight length. A further mesial fragment of a knife made on a blade with a cortical surface has regular retouch running along one length (SF2816). Both knife fragments have snaps at their distal ends and are interpreted as Bronze Age. This also applies to three unstratified finds from the 1920s without precise find-spots: one (34.568/61) is a fragment of a burnt Early Bronze Age plano-convex knife and may originate from a cremation burial. Another (34.568/82) is serrated, having distinct denticulations that alternate between the dorsal and ventral surfaces of one edge. The third is a tiny ‘button’ scraper which has been reworked through an older patina and would also sit well in an Early Bronze Age assemblage (57.94/20).

A micaceous sandstone whetstone (SF2202) and a second fragment also made of sandstone (SF3153) were recovered during the excavations. Both are of later prehistoric age, possibly contemporary with the roundhouse. The tools have a square section and SF3153 has two very heavily smoothed and worn sides, typical of a stone that has been used for sharpening, whereas SF2202 is less heavily worn.

Other Worked Lithics

There are 17 worked pieces with miscellaneous retouch that are of uncertain age and a further 17 blades and one flake with evidence for utilisation, rather than deliberate retouch or microdenticulation. These pieces have a series of small, non-invasive chips and minor edge damage usually irregularly located on both the dorsal and ventral surfaces. In the absence of any possibility of achieving results from use-wear analysis, it is not possible to determine what, if any, use these blades and flake may have been put to. The number of utilised blades would have been far greater, if extrapolations based on use-wear analysis of seemingly unmodified flakes and blades at Star Carr are made. At Star Carr, analysis determined that macroscopic traces on flakes and blades is a good indicator of used pieces; however, when blades without visible signs of use were analysed a number of them were found to have been used. These were multi-functional; used to scrape, cut, pierce, peel, bore and butcher a range of materials (Conneller et al. 2018, 531). The Burry Holms assemblage has only been assessed macroscopically. Had it been possible to apply use-wear methodologies to this assemblage it would seem likely that more used pieces may have been identified amongst it.

The Prehistoric Pottery – Jody Deacon

Twelve small sherds of prehistoric pottery weighing 29g were recovered during the excavations. Two sherds (SF72) from the base of the red sand in Test pit 1 are of particular interest as they represent a small thick-walled vessel with applied bosses on its external surface and a heavy base (Figure 20). Small tub-like vessels usually with four applied circular bosses are characteristic of Deverel Rimbury-influenced assemblages in Wales and are also found within Trevisker-related groups in south-west England. Good parallels for this type of vessel can be found at Lesser Garth, Cardiff (Hussey 1966), East Holme, Devon (Quinnell 2013, fig. 2), Llanmaes, Vale of Glamorgan (Gwilt et al. 2016) and at Welsh St Donats

Barrow 3, Vale of Glamorgan (Ehrenberg, Price and Vale 1982); the examples from Welsh St Donats are not accurately illustrated in the 1982 report and were identified by the author during recent re-assessment. A radiocarbon date was obtained for the East Holme vessel of 1437–1282 cal. BC at 95.4% probability (SUERC–49294; 3104 ± 30 BP; Quinnell 2013). The vesicular fabric, likely to be leached-out calcite or dolomite inclusions finds a good parallel within the Middle to Late Bronze Age pottery group from nearby Culverhole Cave, Llangennith (Savory 1980, 88).

A body sherd (SF280), from red sand in Test Pit 1, has thin walls, fine finish and reduced appearance so could possibly indicate an early Neolithic date (post 3700 cal. BC). White quartz tempered and finely-made fabrics similar to this sherd are well documented at early Neolithic sites with Developed Bowl pottery such as Carreg Coetan Arthur, Pembrokeshire (Gibson 2012, 120), Ty Isaf, Powys (Grimes 1939) and Cwm Meudwy, Ceredigion (Deacon 2006, 38–41). A later date cannot, however, be discounted as quartz tempered vessels are occasionally found within Early Iron Age assemblages in South Wales. Where quartz has been identified within Middle to Late Bronze Age assemblages such as Lesser Garth, Cardiff and Llanmaes, Vale of Glamorgan, there is a tendency for it to be combined with grog rather than used in isolation.

The slightly incurving, flattened rim of SF1250 from Trench 1 context 5, could derive from one of several types of vessel spanning the Early and Middle Bronze Age although the latter would be most likely (Figure20).

Iron Age Glass Beads – Jody Deacon

Two glass beads were recovered from Trench 1 during the excavation, both of types which are found at sites across Wales and have a wide chronological span from the Early Iron Age to the 1st century AD.

A small undecorated annular bead, (SF279), was recovered from the uppermost part of context 5, the mixed layer underlying the main Iron Age contexts. This bead is slightly flattened on both its upper and lower surfaces and is thicker on one side (Figure 21). A dark cobalt blue colour, the bead is translucent and probably complete (although only the two main fragments have been conjoined). Breaks appear fresh. This bead would be assigned to Group 7 (iv) (Guido 1978, 70) or Type 102 (Foulds 2017, 259). Beads of this type have a long currency in the archaeological record with dates ranging from the Early Iron Age to the Roman period (74). A bead from Ffynonwen, Ceredigion, associated with radiocarbon dates spanning the eighth to the fourth centuries BC may be a particularly early example (Gwilt 2011, 282). Similar blue beads have been recovered from numerous sites in Wales including the Middle Iron Age phases (400–200 cal. BC) at Twyn y Gaer, Monmouthshire (Probert 1976; Guido 1978, 161), the Romano-British period at Sudbrook, Monmouthshire (Nash-Williams 1939, fig. 9.15–16, 57) and within the fused cluster of glass bead of Roman date from Porth y Rhaw, Pembrokeshire (Sablerolles and Henderson 2010, 78–79).

A second small annular glass bead, recovered from context 3, the red sand, is slightly flattened on both upper and lower surfaces (SF125; (Figure 21)). It is opaque yellow in colour. The bead shows no evidence for wear. This bead would be assigned to Guido's Class 8 distributed from Meare, Somerset (Guido 1978, 73). These were apparently in circulation from the Early Iron Age into the Early Roman period (Foulds 2017, 75). This bead is best paralleled by the group of similarly sized yellow beads from Twyn y Gaer, Monmouthshire, from a Middle to Late Iron Age context.

Metallurgical analysis of slags – Tim Young

This assemblage is small (eight pieces) but is apparently consistent in its evidence for iron-working of Iron Age date that produced small smithing hearth cakes. These appear iron rich, so cakes of an approximately 250g original weight would contain perhaps 150g of iron metal, a significant loss of metal to the hearth in each work period. The small smithing hearth cakes would appear unlikely to be associated with iron production, but rather to be residues from blacksmithing (Young 2017). All the pieces of slag were recovered from the red sand layer in Trench 1. Sites with a wide range of dates from Roman to early Medieval have produced smithing hearth cakes assemblages with maximum weights of up to 850g and with mean weights of around 220–350g. These assemblages are interpreted as the waste from periods of continuous, mostly high temperature, smithing and are thus most commonly associated with urban smithies or those on larger estates. Other assemblages of similar age range only up to maximum smithing hearth cakes weights of 200–250g, with mean weights in the range of 100–150g. These would be associated with lower temperature work and/or shorter work periods; they have thus been associated with the less active estate/settlement forges. The present material is much too sparse to determine comparative statistics but lies within this general blacksmithing range and probably within the heavier part of the range. The tasks being undertaken are therefore likely to have involved a significant proportion of forge welding, for the loss of iron is greater when at high temperature.

The presence of coal on blacksmithing sites is typically an indicator of a post-Iron Age date. In this instance, however, the six finds of coal from Burry Holms are not directly related to the iron working (for which the direct evidence is for the use of charcoal as fuel) and there is a significant possibility of the coal having arrived on the site through entirely natural agency.

The Environmental and Human Evidence

Palaeoenvironmental Analysis: charred plant remains and charcoal – Julie Jones and Dana Challinor

Palaeoenvironmental evidence was retrieved through the sieving programme. Given the quantity of material retrieved, the authors were asked to analyse residues taken from all Mesolithic contexts from a half metre wide transect through both Trenches 1 and 4 and the residues of the fills of all the later prehistoric features. Full listings of the species recovered are provided by context in Tables 8 and 9.

Mesolithic

Charred plant remains

The plant remains from the Mesolithic contexts are dominated by two species, hazelnut shell fragments and celandine tubers. In addition are several finds of sedge (*Carex*) and grass (Poaceae) stem fragments, plus some unidentified root fragments.

Hazelnuts (Corylus avellana): The Burry Holms hazelnut shells are highly fragmented, with no complete or half shells. Sample S1892 produced 249 broken shells, the largest quantity from the samples examined. Here shells averaged 4.35mm x 3.07mm. Hazel scrub formed part of a mixed deciduous woodland where oak, lime and birch were regionally dominant, forming the vegetation cover from the early Mesolithic period. Woodland provided seasonal productivity with many potential edible plants ranging from tree products such as hazelnuts, through to berries, fruit, fungi and roots and tubers of herbaceous woodland flora (Roberts 2000). Hazelnuts ripen in autumn (Edlin 1985). Their kernels have a high energy value and so would have been an important component of the Mesolithic diet, with more than 60% fat, 15% protein and 17% carbohydrate (Holst 2010, 2871).

The importance of plant foods in Mesolithic subsistence communities are recognised with substantial quantities of hazelnuts, their charred remains suggesting some form of processing for consumption and to prolong their use by storage. At Duvensee, Germany, hearth structures with thick layers of hazelnut shells have been interpreted as roasting facilities (Holst 2010, 2872). Roasting experiments have shown this must be undertaken without direct contact to open fire, but with glowing charcoals, mixed with sand and the hazelnuts then buried and roasted in the hot sand. Roasting takes just a few minutes in sand heated to nearly 300°C. Roasting helps to destroy contaminants, improves flavour and extends the life of the hazelnuts allowing for storage in leaner months. Additionally, roasting makes shells easier to crack and grind and processing would have reduced the volume by 50% making them easier to store and transport by these mobile societies. Experimental roasting found that if the shell became charred, the kernel was of no value as it disintegrated into a greasy pulp when the nut was opened and that when roasting in pits, 10–25% of nuts in any one roasting event were likely to become charred and therefore of no value (Score and Mithen 2000). Experimental work by Bishop (2019) suggests that kernels are less frequently found on sites owing to them disintegrating upon roasting or nutshells exploding when heated, if they had not been dried beforehand. This suggests that finds of charred hazelnut shells such as those at Burry Holms represent only a proportion of the original discarded shells, the remaining less robust non-charred shells having since decayed.

Lesser Celandine (Ranunculus ficaria) tubers: Lesser celandine is a member of the buttercup family, a low-growing perennial, with heart-shaped fleshy leaves and bright yellow flowers in spring. It is widespread today in deciduous woodland, hedgerow and damp grassy habitats (Blamey and Grey-Wilson 1989). The roots form between 7 and 20 tubers per plant and sometimes bulbils, which form at the base of the leaf stalks. Tubers can be 5mm–8cm long and 5–7mm wide; they tend to swell towards the base of the tuber to form a rounded end

(Hather 1993; Figure 22).

Most finds of *Ranunculus ficaria* have been interpreted as food remains, accidently preserved through cooking or drying. Ethnographic evidence suggests the use of *Ranunculus* species as a foodstuff (Gunther 1973; Mason and Hather 2000). The tubers would have been a useful source of starch and as Mears and Hillman (2007) suggest once dried could last indefinitely, useful for transportation, but could then be easily rehydrated and cooked as if fresh. The discovery of *Ranunculus* as a foodstuff across northern Europe is now being well recognised and despite a paucity of Mesolithic sites containing such remains in Britain, this is being attributed to a bias in the data retrieval, rather than the absence of this foodstuff in the archaeological record (Bishop, Church and Rowley-Conwy 2013; Kloos et al. 2015).

Wood charcoal

A total of 117 samples contained identifiable charcoal. Despite there being meagre preservation of wood charcoal in the samples, most produced at least a few identifiable fragments which form an important record for the period.

The charcoal is seemingly dispersed and spread throughout the Mesolithic contexts in small quantities, rather than in deliberate dumps of spent fuelwood. Ubiquity analysis on the taxa recorded reveals an overwhelming dominance of *Quercus* (oak), followed by *Corylus* (hazel). This suggests that oak-hazel woodland was dominant in the area, with evidence for marginal or scrub type taxa, *Prunus* (blackthorn/cherry) and Maloideae (hawthorn/apple/pear/service/whitebeams etc.). There are minor indications of *Pinus* (pine), *Ulmus* (elm) and *Fraxinus* (ash). There is little *Alnus* (alder), which flourishes on damp ground and riversides, although there could be more represented in the undifferentiated *Alnus/Corylus* category.

The source of the wood charcoal is ambiguous, for it could originate either from domestic fires and/or woodland clearance activities so the anthropogenic activity on the site cannot be interpreted from these remains. The pollen from Burry Holms was too poorly preserved to provide direct environmental evidence for the site (Tinsley 1999), but studies of pollen cores from around the Preseli Hills area indicates the expansion of deciduous woodland taxa around 8170–7630 cal. BC; oak, elm and hazel woodland, with some remnant woodland of birch and pine in the wider region (Fyfe 2006, 574).

Later Prehistoric

Charred plant remains

The charred plant remains from the later prehistoric features are mostly cereals; including wheat (*Triticum*) and barley (*Hordeum*). Preservation was generally poor with both the grain and chaff fragmented due to the charring process. Most of the grain is wheat, with some of the better-preserved grains showing the long slim form characteristic of a glumed wheat, either emmer (*Triticum dicoccum*) or spelt (*Triticum spelta*). Most of the accompanying chaff was not preserved well enough to confirm which species was likely to be present, apart from a single spelt glume base from context 54, the drip gully of the roundhouse. Barley grain only occurred in four features, with only one more angular grain showing traces of the fused lemma and palaea designated as hulled barley. The only weed seed is a single brome (*Bromus*), a typical contaminant of arable fields.

The evidence recovered from the later prehistoric contexts shows the change to an economy based on cereals. These were utilised by the inhabitants of the roundhouse and wheat crops in particular, with barley to a lesser extent, brought to the site and used there. The lack of weed seeds, many species of which are often found as crop contaminants in association with prehistoric cereal remains, also suggests cultivation away from the site, with ears of grain brought to the site to be processed for cooking as required. The fairly even distribution of hazel and occasional finds of celandine may be residual but may also suggest they continued to hold some dietary importance later on.

Wood charcoal

The assemblages from the later prehistoric features are notably diverse in character, with no single assemblage (of more than 5 fragments) producing only one taxon and the richer assemblages averaging 6 taxa per sample. A notable characteristic of the assemblage as a whole was the prevalence of apparently small diameter and immature wood.

Quercus (oak) and *Corylus* (hazel) are most commonly found amongst the later prehistoric features, there are also regular occurrences (present in >40% of samples) of *Alnus* (alder), Maloideae, *Prunus* (blackthorn type) and *Fraxinus* (ash). It is interesting to note that alder and Maloideae may be relatively frequent but were not present in great quantities. This may relate to deliberate selection of wood for fuel. Alder, for instance, is considered a poor fuelwood (Edlin 1949, 156), but it may also relate to local species availability.

These samples came from cut features, with some at least representing deliberate deposits of waste fuelwood. The character of the assemblages, with a relatively diverse taxonomic composition comprising small diameter branchwood, is consistent with domestic fuelwood gathering activities. In all likelihood the assemblages probably derive from mixed origins, with the tentative possibility that the post-holes include some burnt structural or artefactual remains.

The later prehistoric charcoal record at Burry Holms indicates a persistence of the oak-hazel woodland recorded in the earlier Mesolithic period. However, the range of species may indicate that it was necessary to harvest wood from a variety of habitat types. Of particular interest is the identification of *Ulex* (gorse) or *Cytisus* (broom) as these are heathland plants and indicate a potential shift in vegetation or exploitation. The presence of *Pinus sylvestris* (pine) charcoal fits with indications elsewhere in the environmental record that local, but significant, stands of pine woodland survived into the Iron Age (Fyfe 2006, 575).

Sediment Analysis – Richard Mourne and David Case

Figure 8 shows the excavation stratigraphy in section. The sediment from each major context was sampled and analysed by colour, particle size, clast lithology, clast shape and the surface condition of the clasts.

Trench 1(S)

Contexts 2 and 3 are well-sorted fine sands. Most likely they are windblown in origin. Context 2, being closer to the present-day land surface, shows the stronger evidence of soil forming processes in its high organic matter content (5.7%) and higher fine silt/clay component in relation to context 3.

Context 5 appears to be a mixed transitional layer between contexts 3 and 6.

Context 6 has a very similar fines particle size distribution to context 7 below and also has a relatively high organic matter content (3.2%). It is likely that this unit represents soil development upon and within context 7.

At the base of the sequence context 7 is a matrix supported mixed lithology gravel. The lithology of this unit is dominated by fine grain sandstone with a minor component of red sandstone. The lithology is consistent with till of northern (i.e. Welsh) origin. The clast density of the unit is variable and a sample was taken of a matrix-rich zone which gave a very similar fines particle size distribution to the clast-rich zone. The poorly-sorted character of this deposit implies direct deposition by glacial ice. It is possible, though, that this material may have been mobile at a stage/stages post-deposition through solifluction.

Trench 4

Contexts 42 and 43 are dominated by very well-sorted fine sand, most likely windblown.

The fines particle size distribution of context 46 is similar to that of context 47; however, it shows a peak in the fine sand rather than the very fine sand. The organic matter content of context 46 is relatively high (3.26%), an indication that this context may represent soil development.

Contexts 46, 47, 48 have a bimodal fines particle size distribution, rich in medium silt but with a clear peak in the sand fraction. It is likely these units represent the development of a soil upon and within the underlying gravel. Soil development would be likely to be influenced by the transfer of fine particles downslope (from the higher ground to the west) through surface wash and creep. Context 47 shows a peak in the very fine sand rather than the fine sand: this may be related to a blown sand input or transfer downslope.

At the base of Trench 4 is a matrix supported gravel which was not exposed during the sediment sampling period. It is possible that this unit correlates with context 7 in Trench 1(S).

Sequence of events

A likely sequence of events for the formation of deposits across this site would be:

(1) Deposition of till from a northern (Welsh) origin.

(2) Movement downslope of the till, or the surface layers of the till through solifluction and wash processes. A fine example of a solifluction terrace can be seen beneath Rhossili Down.

(3) Possible input of loess and fine sand to the sediment units developing above the till/soliflucted till.

(4) Soil development with much reduced addition of fines through wind, slope wash and creep.

(5) Relatively rapid accretion of fine grain sand. The archaeological evidence from Burry Holms would suggest this happened between the Mesolithic occupation and the Iron Age occupation.

Blown Sand – Richard Mourne and David Case

The most likely source of the sand which accreted on Burry Holms after the Mesolithic period is the till deposited during MIS2. It would have been separated from the till by wave and current action during the post Glacial sea level rise and blown landwards upon drying when exposed in the intertidal zone.

The depositional history of the dunes at Broughton Bay was studied by Lees. Humic bands, exposed within the dunes, are interpreted as buried soils and discontinuous bands have been observed along the sea cliff exposure and within the dune system. One section of the cliff, containing three buried humic bands, was examined in detail (Lees 1982). Their higher silt/clay content, higher organic matter content and lower calcium carbonate content is attributed to soil forming processes during periods of stability.

Lees reports the presence of a soil overlying the glacial drift. The Whitford Point dunes represent a landward movement of sands reworked from glacial debris first by the sea and then by aeolian processes, during the post Glacial period. Penniman (1934) writes of Bronze Age remains on top of the clay and beneath the dunes which fringe Broughton Bay and Romano-British remains resting on the overlying sand. This is an indication that sand migrated inland in the first millennium BC. A stable period followed, allowing soil formation processes (as evidenced by the middle humic band). Following this stable period renewed sand inundation took place. Stable conditions returned around AD1100 (Lamb 1972) resulting in the formation of the upper buried soil recorded by Lees. From the 14th century, climate deteriorated and once again sand inundated various localities along the South Wales coast including north-west Gower. The old village of Rhossili was buried sometime after the 12th century and contemporary accounts record devastating sand movements in the 13th to 15th centuries corresponding to a period of known climatic deterioration involving an increased magnitude and frequency of storms (Lees 1982).

Cremation Remains from the Bronze Age Barrow – Rósín McCarthy

Osteoarchaeological assessment of the Burry Holms cremation burial revealed evidence of possible re-use of a pyre-site and inconsistency with regards the efficiency of cremation between each cremation event. The primary burial deposit represented by an adult of unknown sex (*contra* Keith (in David and Lethbridge 1925)) appears to have been relatively completely oxidised in comparison to the skeletal elements belonging to the remaining two adults where only slight charring and no burning at all were observed respectively. A further two bone fragments consistent with an infant or young child were also present and showed complete oxidisation. These latter skeletal elements are interpreted here as remnants of previous cremations interred later at the pyre site after the primary adult cremation. The incompletely cremated remains of a probable pig were also identified along with an unburned bird bone (possibly one of two originally recorded by Keith).

Dating

AMS Dating – Elizabeth A. Walker

Samples were selected for AMS dating following the completion of the palaeoenvironmental assessment. AMS dating was undertaken to address specific questions. Hazelnut shells and celandine tubers were used to date the Mesolithic activity in both Trenches 1 and 4. A date was obtained from a cremated human bone obtained from the Bronze Age barrow to enable its interpretation. Grain and charcoal were selected from key later prehistoric features to establish the age of the roundhouse and associated features to phase the later prehistoric activity at the site. The results obtained are in Table 10[EN2]. They are contextualised and discussed fully later in this paper.

Optically Stimulated Luminescence Dating of Sand Grains – Ed J. Rhodes and Jean-Luc Schwenninger

A series of OSL samples was collected in September 2001 with associated *in situ* NaI gamma spectrometer measurements. Opaque PVC tubes were tapped into cleaned vertical sections at the edge of excavations. Five of these samples, collected from two sections within Trench 4, were processed to isolate fine sand-sized (180–212μm) quartz grains and measured using a single aliquot regenerative-dose (SAR) OSL protocol (Murray and Wintle 2000). The two sections comprise one at the east end of Trench 4, sampling directly into the trench wall, and the other in Test Pit 3C, later incorporated into Trench 4 when it was extended. The sample highest in the stratigraphy that was measured (OSL-05) came from near the base of context 43 at the east end of Trench 4. Further samples that were measured include one from context 44 (OSL-07; east end of Trench 4), and two samples were collected from context 46 in the two different locations (OSL-08; test pit, Trench 4 and OSL12; east end of Trench 4). Contexts 44 and 46 represent the horizons richest in Mesolithic artefacts. A final sample (OSL-09; test pit, Trench 4) was from context 47, the unit that lies beneath the principal Mesolithic layers.

These five samples were prepared with standard OSL procedures (e.g. Rhodes et al. 2003), and fine sand-sized (180–250μm) quartz grains measured using a conventional multiple grain SAR approach on Risø automated readers incorporating a preheat before natural and regenerative dose OSL measurements of 10s at 220° (PH1), and preheat before test dose OSL response of 10s at 200° (PH2). Subsequently, for the two samples from context 12 (OSL-08 and OSL-12) the prepared quartz was further sieved to a range of 180–212µm, and single grains from these fractions were measured using a similar SAR protocol incorporating identical preheat treatments using a Risø XY single grain attachment fitted to one of the automated Risø readers.

In-situ NaI gamma spectrometer measurements were taken at sampling locations. Age estimates were determined for several archaeological contexts (Table 11). The measured OSL signals were typical of quartz, displaying rapid decay, and moderate to high sensitivity. The conventional multiple grain OSL results displayed a clear central peak used for age estimation, with some aliquots having higher or lower equivalent dose values that were excluded from the analysis. Sample BH01-OSL07, lab code X0764, from context 44 displayed two distinct age populations, and both estimates are provided in Table 11. These effects are thought to result from incomplete signal zeroing at the time of deposition (higher equivalent dose values), and the effects of later disturbance (lower equivalent dose values) by human activities or bioturbation.

In order to explore these incomplete zeroing and mixing effects more closely, single grains were measured for the two samples from context 46, BH01-OSL08 (X0765) and BH01-OSL12 (X0769). Both samples displayed two apparently distinct groupings of single grain equivalent dose values, plus some scattered higher values considered to represent incomplete zeroing; consequently, two age estimates were calculated for each of these samples (Table 11). The older single grain OSL result from sample BH01-OSL08 (X0765) from the test pit location, 7910 ± 760 years BC is very similar to that of C-14 OxA-33722 of 8242–7941 cal. BC on a charred *Corylus* nutshell from context 46 or 47 in Trench 4, while the younger OSL estimate of 3570 ± 400 years BC is similar to OxA-31192 at 3954–3768 cal. BC measured on the charred *Ranunculus ficaria* tuber from context 46 in Trench 4. Single grain OSL age estimates for sample BH01-OSL12 (X0769) from context 46 at the east end of Trench 4 overlap in age within the dating uncertainties with the single grain OSL results from sample X0765 and are a little younger than the younger ends of the two radiocarbon age estimate distributions from OxA-33722 and OxA-31192.

The distinct nature of the single grain OSL results and the close match with the C-14 results mentioned in the previous paragraph perhaps suggest that this pair of age ranges, roughly 8240–~7000 BC and 3950–~3500 BC may represent significant discrete events at the site, probably sediment deposition for the older range, and site disturbance for the second.

Discussion

The Early Prehistory of Burry Holms – Elizabeth A. Walker

After the Last Glacial ice advance Gower gradually began to be repopulated by groups of Late Glacial hunters. Caves continued to provide shelter, yet occasionally chance open-air finds are recorded; there may be Late Glacial finds from Worms Head (Davies 1989, 86) and the Final Palaeolithic penknife point from Burry Holms is most likely to be a hunting tool. Such tools have been found elsewhere across South Wales at Nanna's Cave and Potter's Cave, Caldey Island; Priory Farm Cave, Pembrokeshire (Walker 2016, 15); Cophill Farm near Chepstow and Goldcliff, Newport (Walker 2015, 116–118). The distribution of these finds suggests most were lost during hunting at times during the warmest part of the Late Glacial interstadial or Allerød chronosome (Barton and Roberts 1996, 252; Jacobi and Higham 2011). The environment at this time was dense woodland with red deer a dominant species (Jacobi and Higham 2011, 235).

The start of the Holocene is dominated by rapidly changing landscapes and the establishment of what became rich, dense woodland cover. The contemporary sea level was lower than it is today, with Burry Holms, Worms Head and Caldey Island all inland hills (Figure 6). The Burry Holms excavations have retrieved evidence suggesting the landscape at this time was mixed deciduous woodland dominated by oak and hazel, with pine, elm and ash (Jones and Challinor above).

As the soils are not conducive to organic preservation there are no remains of the Mesolithic people or bones from the animals or fish they hunted surviving on Burry Holms. However, human remains have been found three miles away in Worms Head Cave. Rick Schulting has dated four human bones from Worms Head Cave plus two purportedly originating from Mewslade Bay. All generated Mesolithic dates (Table 12; Schulting 2009, 355, 2020). Dietary analysis using stable isotopes indicates the four Worms Head Cave individuals had terrestrial dominated diets with a small amount of marine sourced food (Schulting 2009, 355). This varies with Schulting's earlier analysis of human remains from Caldey Island where marine resources formed a far greater element of the Mesolithic diet. He suggests that the difference may be due to the Worms Head Cave individuals living further from the sea than those on Caldey Island. They may have been an inland group who were more reliant upon the terrestrial resource of aurochs, deer and boar, with fish possibly coming from rivers rather than the sea. He suggests this may indicate two population groups living separately from one another at this time (358).

The dating of the Burry Holms hazelnut shells suggests there may be a period of contemporaneity between the site and some of the human remains from Worms Head Cave, (Table 12). The dating for Burry Holms is reliant upon the charred plant remains, due to the lack of other organic preservation on the site. Consequently, when selecting samples to date it is context that is important, rather than any direct connection to an anthropogenic source. The specimens dated, however, are mainly from hazelnut shells and come from concentrations on the site. Julie Jones suggests that the hazelnuts were a food resource and that the charred nutshells may represent only a proportion of those originally roasted for consumption and storage. They were collected locally and taken to the site for processing and storage (Jones 2012). The important role that hazelnuts play in human diet as a source of vitamins, protein and fats is recognised by their presence across many Mesolithic sites and as such hazelnut shells are by far the most recovered plant food from Mesolithic sites (Bishop, Church and Rowley-Conwy 2013). Their presence has often been used to suggest autumn occupation when the nuts are ripe and ready for harvesting (Dark 2004). However, their value as a seasonal indicator is diminished by the potential of roasting the nuts as is seen at both Staosnaig and Duvensee for possible longer-term storage and transportation (Mithen et al. 2001; Holst 2010; Jones 2012). Evidence suggests that in a natural hazel dominant woodland the quantity of hazelnuts would far exceed the amount required for both human collection/consumption and as food for nuciverous creatures (Bishop, Church and Rowley-Conwy 2013, 50). Preservation and storage of nuts was most likely to have been an important aspect of these peoples' activities.

Burry Holms has the first record of lesser celandine found on a Welsh Mesolithic site (S. Burrow personal communication, April 23, 2020). These have been found in Mesolithic contexts as far away as Staosnaig, Colonsay, Inner Hebrides (Mason and Hather 2000) and are recorded on the Mesolithic site at Northton, Harris (Bishop, Church and Rowley-Conwy 2013, 39; Kloos et al. 2015). The richness of lesser celandine tubers makes these an important dietary addition. These, along with nuts and berries provided a plant basis to the later Mesolithic diet. Their bulbils or roots are recommended as a food but should be cooked before eating (Bishop, Church and Rowley-Conwy 2013, 39). Lesser celandines and hazelnut shells have been found together at several sites of Neolithic date across Northern Europe, yet they are represented less frequently on Mesolithic sites, which may be a factor of collection bias (Kloos et al. 2015). It is therefore a strong possibility that those discovered on Burry Holms were part of the plant food resource and their dating to the later Mesolithic fits with this thinking. However, as these come from general contexts, rather than archaeological features, their presence apparently relates to two separate periods of human activity on the site during the later Mesolithic.

The relationship of stone tools found at Burry Holms that could be used for plant processing is also to be noted. The elongated pebbles, including a hammerstone and some of the denticulated tools, may well have held a plant processing function; possibly for the breaking of hazelnut shells or cutting of plant stems (Bishop, Church and Rowley-Conwy 2013, 38).

Dana Challinor’s work suggests that the charcoal may have originated from wood used for huts or for fuel in hearths (Challinor 2013). As is typical of many Welsh Mesolithic sites, evidence for structures is absent on Burry Holms. Such structures are often hard to see, small stakes pushed into the ground, or poles propped against each other, will largely be invisible in the archaeological record (Hurcombe and Emmerich Kamper 2017, 59). This is apparently the case at Burry Holms where no stake-holes or other Mesolithic features were identified. Evidence for Mesolithic structures in Wales is generally poor and is often only hinted at by distributions and scatters of lithic artefacts. At Goldcliff, Newport, possible later Mesolithic simple hut structures 3m in diameter with central hearths were observed as circular concentrations of artefacts with clusters of tools and animal bones (Bell 2007, 233). No such patterns were observed at Burry Holms. In Pembrokeshire a possible hearth at Nab Head II is dated to 6416–6063 cal. BC (OxA-860, 7360 ± 90 BP; David 2007, 135) and possible later Mesolithic stake-holes are recorded at Brenig, Denbighshire (Lynch 1993, 30).

As with so many Mesolithic sites the interpretation of the settlement on Burry Holms still relies heavily upon the stone tools. The Burry Holms lithic artefact assemblage contains tools of both early and later Mesolithic forms that correspond with the dating for the site. The assemblages can be compared directly with those from other Mesolithic sites around the country. What is particularly interesting about the Burry Holms early Mesolithic assemblage is that it is comprised solely of microliths, (predominantly obliquely blunted points), microdenticulates, scrapers and a small number of burins. This limited range of tools accompanied by broken and reworked pieces, and evidence for knapping, reinforces the thinking that this was a task-based settlement where tool manufacturing took place.

In Wales early Mesolithic lithic artefact assemblages conform to two groupings. These, the Star Carr and the Deepcar type assemblages are named for sites in North Yorkshire and are groupings that can be recognised across England and Wales. Star Carr type microlith assemblages are dominated by simple obliquely blunted points, large isosceles, large scalene triangles and trapezes (Radley and Mellars 1964; Reynier 2005). In Wales such assemblages are found at several Pembrokeshire sites including; Nab Head I, Daylight Rock and Valley Field, Caldey Island. As well as microliths their assemblages contain *mèche de forets*, burins, scrapers, and a core axe/adze (David 2007, 68).

Deepcar assemblages contain microliths forms, dominated by obliquely blunted points, often slender in form, with leading edge retouch. They contain fewer rhomboids and triangular forms than Star Carr type assemblages. Microdenticulates, scrapers and burins are also common tools amongst such Deepcar type assemblages (Radley and Mellars 1964; Reynier 2005). In Wales Rhuddlan, Denbighshire and Trwyn Du, Anglesey, both have assemblages dominated by such forms (White 1978; Berridge 1994). The Burry Holms assemblage also conforms to the Deepcar type being dominated by obliquely blunted points, microdenticulates and scrapers. Burins are present in far smaller numbers at Burry Holms than at comparable early Mesolithic sites. There is also an absence of axes/adzes and any evidence for their local manufacture (e.g. sharpening flakes) at Burry Holms; such tools would have been useful for woodland clearance and woodworking activities. Also absent are *mèches de foret*, or drill bits, presumed for use in activities such as the manufacture of beads, although these are more typical of Star Carr type sites, as at Nab Head I (David and Walker 2004; David 2007).

Sites with Deepcar type assemblages are slightly later than those with the Star Carr type (Reynier 2005). The application of Bayesian modelling on datasets for early Mesolithic microlith assemblages might suggest that the Deepcar type assemblages first appeared *c*. 9460–8705 cal. BC and come to their end *c*. 8200–7240 cal. BC (95% probability: Conneller et al. 2016). Indeed the dating for Burry Holms fits well into this model with three early Mesolithic dates; 8242–7941 cal. BC (OxA-33722; 8895 ± 45 BP); 8216–7811 cal. BC (OxA-31190; 8854 ± 38 BP) and 7587–7374 cal. BC (OxA-33907; 8445 ± 45 BP) conforming to this period (Table 10). Assessing similar sites in Wales is hampered by the fact that the few available dates from Rhuddlan and Trwyn Du are all from amalgamations of charcoal fragments or hazelnut shells (Table 13; David and Walker 2004, 303). Looking beyond Wales, similarities may be drawn with other U.K. sites including Marsh Benham, Berkshire and Oakhanger VII, Hampshire (309). In Somerset similar toolkits were found at Shapwick and Middlezoy and at Dozmare Pool, Cornwall (Wainwright 1960).

Whilst it is perfectly possible that the Burry Holms people were able to access Somerset or Cornwall by boat and this connection is highlighted by the contemporary coastline (Figure 6). It is interesting that no other sites with such a lithic composition have been recorded across South Wales. The links therefore across the Bristol Channel are significant and indeed comparison of tools from the Somerset sites and Burry Holms reinforce this connection. Locally, the coincidence of the dating of the people whose remains were recovered from the cave on the end of Worms Head and Burry Holms is of interest. At this time in the early Mesolithic could the Burry Holms population have used Worms Head Cave for the burial of their dead? Such an inter-connectedness between the two sites is certainly possible. There are also caves on Burry Holms itself, which may once have also been used for burying the dead; however, these are all now washed clear of any deposit they once held, all lying below high-water mark. At Greylake, Middlezoy, Somerset, human remains, representing at least five individuals, have been recovered and dated to the early Mesolithic. Their dating coincides with remains from Aveline's Hole, Mendip, Somerset, suggesting that both open-air and cave burial took place at this time (Brunning 2013, 70). This movement of people between South Wales and Somerset was fully viable and the closest parallels for sites lies between the two, for interestingly there are no Deepcar type sites lying further to the West in Pembrokeshire. This despite the rapid rise in sea-level during the early Mesolithic which must have impacted on the movement of people across to what is now Somerset, which itself would have been experiencing considerable marine transgression at this time (Sturt, Garrow and Bradley 2013, 3973).

It is suggested that what has been excavated and studied at Burry Holms is the edge of what could once have been a far larger settlement, the centre of which may since have eroded away. The quantity of finds recovered from the eroding edge of the sea inlet suggest that the centre of the site lay may have lain where there has been substantial loss of deposits through erosion. If correct, the original Mesolithic settlement was sheltered lying in what was the edge of a valley leading down to the plain. Hunting forays could have taken place from here and it created the routeway between the settlement on the island and places further afield. Overall, the dating for the Burry Holms early Mesolithic site suggests episodic use by a seasonally mobile hunter-gatherer-fisher group. The three AMS dates might each indicate a separate use of the site, although statistically OxA-33722 and OxA-31190 are the same (S.

Burrow personal communication, May 25, 2020). Mithen and Wicks have suggested similar evidence may be found at many Mesolithic settlement sites and have argued that as dating will only capture some of these periods of use the term minimum number of events should be used to describe the results (Mithen and Wicks 2018, 94). Applying this model to the Burry Holms dating it is possible to identify two separate events spanning 8242–7374 cal. BC, a minimum number, given the few dates available for the site.

Later in the Mesolithic, activity at Burry Holms was more ephemeral based on the much smaller quantity of stone tools. The two AMS dates obtained both come from lesser celandine tubers; 5309–5203 cal. BC (OxA-33906; 6240 ± 40 BP) and 3954–3768 cal. BC (OxA-31192; 5047 ± 30 BP; Table 10). These two dates are well separated in time, if they truly represent individual events and activity on Burry Holms. The Welsh later Mesolithic toolkit is generally dominated by small scalene, straight- and convex-backed and lanceolate microlith forms. Less well-refined scrapers, retouched flakes and blades, burins, denticulates, notched, nosed and truncated pieces, choppers and bevelled pebbles are also commonly found (David and Walker 2004, 314; David 2007; David and Painter 2014). However, scalene forms are completely absent amongst the Burry Holms assemblage where the 11 microliths, admittedly a small number, are dominated by the convex-backed form. By looking at other sites with later Mesolithic assemblages from the locality we can determine possible other sites of similar date. Several new lithic scatters have been recorded on Gower through the Portable Antiquities Scheme Cymru; however, none of these has yet been investigated archaeologically. Excavation at Foxhole Cave, Gower, has uncovered an assemblage of human remains and microliths for which there are later Mesolithic dates (Schulting et al. 2013, 11). A human humerus from Paviland Cave has also been dated to the later Mesolithic (Aldhouse-Green, Pettitt and Stringer 1996; Schulting et al. 2013, 12). The closest large later Mesolithic site is at Ogmore-by-Sea, Vale of Glamorgan (Webley 1976; Hamilton and

Aldhouse-Green 1998). The full results of recent excavations are unpublished; however, examination of finds from earlier work at the site suggest the assemblage is similar in composition to Burry Holms, although with a number of microliths of small scalene triangle form amongst the assemblage.

The quantity of Welsh sites with later Mesolithic archaeology has increased, but the sites at Goldcliff, Newport, remain the best contributors of new data, given the preservation of organic remains in the peat beds of the intertidal zone of the Severn Estuary Levels (Bell, Caseldine and Neumann 2000; Bell 2007). Goldcliff shows a distribution of specific task areas and provides a basis for understanding how later Mesolithic settlements were arranged. Such detail is far harder to deduce from other Welsh sites where such preservation is lacking. Nab Head II, Pembrokeshire, is predominantly a scatter of lithic artefacts where a feature, interpreted as a shallow pit, is recorded (David 2007, 135). David interprets this site, with its shallow deposits, as a possible palimpsest of occupation taking place over periodic short-term stays throughout the later Mesolithic (159). At Nant Hall Road, Prestatyn, later Mesolithic shell-middens are suggestive of small-scale short-term activity taking place in the autumn and winter months (Bell 2007, 313). Areas rich in later Mesolithic evidence, particularly in Pembrokeshire, and in Denbighshire, include e.g. Rhuddlan (Berridge 1994), Brenig (Lynch 1993), Llyn Aled Isaf (David and Walker 2004, 331), and Tandderwen (321). Inland, in the eastern Black Mountains, surface collecting has brought to light several concentrations of lithic artefacts (Olding 2000; Walker 2004). Such small assemblages, even from surface collecting are important in enhancing the distribution patterns of later Mesolithic campsites around the country. The recent collecting by Tim Painter and others has begun to shift focus for the understanding of later Mesolithic Wales away from its coastal fringes to river-side localities in areas such as central Pembrokeshire (David and Painter 2014).

The later Mesolithic settlement on Burry Holms would therefore seem to be a part of a wider landscape continuum. People were mobile, moving around the country on a seasonal basis; they even left their footprints in the peat deposits at Port Eynon Bay, Gower and further afield in Pembrokeshire and the Gwent Levels (Murphy et al. 2014; Bell 2020, 95). Here, complexities of the Mesolithic lifestyle indicates an inter-relationship between the wetland and dryland zone (Brown 2002). Similar landscape relationships existed between the inland and coastal zones with seasonality and procurement of natural resources all placing their pressures on human survival. In later Mesolithic times the Burry Holms campsite was closer to the coast with the settlement sheltered in a hollow protected from the prevailing winds. The exact nature of this later Mesolithic settlement on Burry Holms remains hard to decipher from the limited evidence available. It would be reasonable to suggest that it was used intermittently as a short-term campsite throughout the later Mesolithic.

The Later Prehistoric Archaeology – Oliver Davis

The recent excavations have provided valuable new evidence of later prehistoric activity on Burry Holms. Neolithic remains are conspicuously absent on the island although the recovery of a possible Early Neolithic pottery sherd (SF280) from Test Pit 1 may be indicative of episodic activity. That this part of Gower continued to be exploited during this period is attested by a pair of Neolithic burial chambers (Sweyne’s Howes North and South) located around 3km south-east of Burry Holms on Rhossili Down, and may suggest that further Neolithic remains await discovery in a hitherto unexplored part of the island.

The barrow on the island was likely constructed in the Early Bronze Age (2025–1885 cal. BC) and is one of over 60 such monuments known in west Gower (RCAHMW 1976a, fig. 16). All but four concentrate on three ridges – Rhossili Down, Llanmadog Hill and Cefn Bryn (50–53). Little is known about any of these clusters and none of the cairns have been excavated under modern conditions. However, fragments of urns and calcined bones have been recorded from antiquarian diggings on Llanmadog Hill and Rhossili Down (53), suggesting at least some are burial places belonging to the Bronze Age. If the presence of Bronze Age funerary monuments is indicative of contemporary 'living' populations, the locations of their settlement sites have remained elusive. Early to Middle Bronze Age settlement sites are known from elsewhere in South Wales such as Stackpole Warren, Pembrokeshire (Benson et al. 1990) and Atlantic Trading Estate, Barry, Vale of Glamorgan (Sell 1998). Here the occupation areas are characterised by unenclosed, and relatively ephemeral, timber-built roundhouses associated with scatters of Early and Middle Bronze Age ceramics and lithics. In this context, the Early Bronze Age plano-convex knife and scraper, as well as the Deverel-Rimbury-influenced sherds recovered during these excavations on Burry Holms could indicate the presence of similar Bronze Age occupation somewhere on the island.

Gower is famed for the survival of its Iron Age hillforts and enclosures, yet little is known about their chronology, use and function. Aside from some limited antiquarian diggings most of our knowledge is derived from an important campaign of excavation carried out by Audrey Williams at three Gower promontory forts in the 1930s and 1940s: The Knave (1939b), High Pennard (1941) and Bishopston Valley (1940). Although only small areas were excavated several, tentative, roundhouses were identified and small assemblages of Iron Age and Romano-British ceramics recovered, along with animal bone, metal-working debris and the shells of marine molluscs. Roundhouses and metal-working debris were also recorded by the RCAHMW during small-scale excavations at the hillfort of Harding's Down West in the 1960s (Hogg 1973). This rather fragmentary dataset has largely remained the sum of our knowledge of the Iron Age on Gower for the last 50 years. Apart from a small number of investigations at caves which have yielded Iron Age material (e.g. Schulting et al. 2013), there have been no further excavations at Iron Age sites on Gower, let alone under modern conditions. No radiocarbon dates from any structural sequence exist and the absence of quantified archaeobotanical and zooarchaeological assemblages means that even basic questions about the relative chronological, social and economic differences between sites is unclear. While new enclosed settlements continue to be discovered through aerial reconnaissance, Iron Age open settlements on Gower are virtually unknown. In this context, the limited, but important, evidence of Iron Age activity and occupation on Burry Holms derived from this work makes a significant contribution to our understanding of the period in this region.

Given the presence of a promontory fort on Burry Holms and the possible Iron Age hut identified by the RCAHMW during their investigations of the ecclesiastical site, it was perhaps to be expected that Iron Age remains would be encountered during the recent excavations. Nonetheless, the quality of the surviving structural evidence was surprising in such an exposed location. The small roundhouse was defined by a narrow wall gully and concentric ring of posts, and possessed an entrance facing to the east. Within the house was a hearth, positioned slightly to the west of centre, and surrounded by two lines of stake-holes that apparently divided the interior into three zones. Similar wall gully-defined roundhouses have been identified elsewhere in Wales such as at Woodside Camp and Dan-y-Coed, Pembrokeshire (Williams and Mytum 1998), although the houses at these sites are larger (*c.* 10m diameter) and multiphase. The best parallel for the Burry Holms roundhouse is probably 'hut 1' identified by the RCAHMW during excavations at Harding's Down West (Hogg 1973). A cluster of post-holes exposed within the interior of the hillfort was argued to represent a roundhouse, around 10m in diameter. A central setting of four large post-holes was interpreted as a support structure for the roof, while a narrow curving gully provided an internal gutter for the building (Figure 23). Hogg (1973, 60) admitted in the excavation report that he was unsatisfied with the interpretation of the structural evidence as too many features lay unaccounted for. In light of the ground plan of the roundhouse at Burry Holms an alternative reading of the evidence would be of a much smaller wall gully and post defined structure *c*. 6m in diameter, while the central setting of four post-holes is more likely to represent a storage building of a later phase.

The later prehistoric exploitation of arable crops on Gower has been assumed, but never demonstrated, and so while the assemblage of charred plant remains from Burry Holms is small it is nonetheless important. The identification of carbonised cereals, primarily emmer and spelt wheat and barley, confirms that these crops were being cultivated on the peninsula during the Iron Age. The nearest cultivable land to Burry Holms is located more than 1km away, and the low density of weed seeds amongst the charred assemblage suggests that the initial processing of cereals may have taken place in fields some distance from the site before being brought to the island as semi-clean spikelets for storage and/or consumption. The presence of hazelnut shells and tubers of celandine within Iron Age contexts may be residual, but if not, then it indicates that wild plants were also still important resources within the later prehistoric subsistence regime.

Unfortunately, the animal bone from Burry Holms is too fragmented and poorly preserved to provide information about the faunal economy. However, the bones of cattle, sheep and pig were recovered during excavations at The Knave, High Pennard and Bishopston Valley (Williams 1939b, 1940, 1941). The saltmarshes around the Burry inlet would have provided good grazing land for livestock and we should assume their exploitation as such, particularly for sheep and cattle.

The material assemblage associated with the occupation of the roundhouse is small. Iron Age pottery is absent, although this is unsurprising given its relative paucity throughout south-east Wales where containers made of wood and other organic materials must have predominated (Davis and Sharples 2020). Iron slag was recovered from the sandy deposit sealing the roundhouse and indicates Iron Age iron working on site. Similar iron working slags were recovered from Harding's Down West (Hogg 1973) and Bishopston Valley (Williams 1940). In all cases the quantities are meagre and likely represent important, but short, periods of blacksmithing activity rather than production. The most intriguing objects recovered are the two glass beads. Although glass beads have been found across South Wales they remain relatively uncommon finds on Iron Age settlement sites. They are unlikely to have been of local manufacture and given the rarity of raw material it has been argued (Guido 1978; Henderson 1992) that glass beads were luxury objects whose presence can be taken to indicate the relative status of a site and its occupants. Such a straightforward correlation has been challenged by Foulds (2017) who suggests they may have reflected regional identities rather than an individual's status. Although neither bead at Burry Holms was discovered *in situ,* they are likely to be associated with the occupation of the roundhouse. It would be unwise to read too much into the presence of these beads with regards to the status of the site, particularly given how little we know about other sites on Gower, but they do provide a rare glimpse of the personal adornment of the occupants of Burry Holms and suggest the existence of wide-ranging contacts with communities along either side of the Bristol Channel.

The chronological and social relationship between the roundhouse discovered during these excavations, the possible structure beneath the ecclesiastical site and the promontory fort is unclear. Similar promontory forts are known on a small number of other islands around the Welsh coastline. A small example, South Castle, is evident on the Pembrokeshire island of Skomer where it is associated with a complex suite of roundhouses, field boundaries and small cairns outside of its boundaries (Barker et al. 2012, 290–291). Another promontory fort is known on Sully Island, Vale of Glamorgan (RCAHMW 1976b, 71) where the eastern end of the island is defined by two outer boundaries enclosing an area of around 0.4ha. A third, inner, rampart encloses a small scarp at the very eastern edge of the island where a low mound, probably a barrow, had been constructed. Despite potential morphological similarities, a major issue is that neither the promontory forts on Skomer and Sully, nor that on Burry Holms have been dated. A small number of radiocarbon dates do exist from coastal and inland promontory forts on the mainland such as those from Porth y Rhaw (Crane and Murphy 2010) and Dale Fort (Benson and Williams 1987) in Pembrokeshire which suggest construction and occupation between the 8th and 5th centuries BC. Ceramic assemblages from others however, such as Coygan Camp, Carmarthenshire (Wainwright 1967) suggest a Romano-British focus. Porth y Rhaw was also apparently reoccupied at this time after a Middle to Late Iron Age hiatus (Crane and Murphy 2010). The chronological range of promontory forts on Gower is poorly understood, but a small assemblage of South-Western Decorated ware from the Knave (Williams 1939b) and Roman-period sherds from High Pennard and Bishopston Valley (Williams 1940, 1941) may suggest late origins. Interestingly, midden-type deposits were discovered beneath the ramparts of these three Gower promontory forts (Williams 1939b, 1940, 1941) suggesting preceding, unenclosed, occupation at these sites. Conceivably then the promontory fort on Burry Holms may represent an early or a late feature of the Iron Age occupation of the island. Either case raises a range of interesting questions. If it was constructed in the Late Bronze Age or Early Iron Age then why did settlement apparently spill out of the enclosure onto the eastern half of the island during the Middle Iron Age? Was the promontory fort merely a refuge in times of trouble, or was there a social difference between the occupants living within and outside of the enclosure? On the other hand, if it possesses a Late Iron Age or Romano-British date then why was there a need to enclose occupation at this time when the tidal nature of island already afforded the inhabitants considerable natural protection? The evidence from Burry

Holms is intriguing and confirms that future investigations of promontory forts need to look beyond just the boundaries and internal areas.

Conclusions

Burry Holms is a very beautiful and special place to those who visit it today. The research presented in this paper demonstrates that Burry Holms has been important to people's lives since prehistoric times. The landscape and environment may have changed dramatically from the inland hill overlooking a wooded plain during the Mesolithic, to the tidal island with the sweep of the Bristol Channel surrounding it on the northern end of the spectacular Rhossili Bay with its landward sand dunes of today. But regardless of when people stopped here, they saw it as a place of some significance to their lives.

This small island holds a richness of important prehistoric archaeology dating to times between the Palaeolithic and the Iron Age which this paper has brought together for the first time. There remain breaks in the time periods represented, there is a gap between the early and the later Mesolithic and no evidence has yet been recorded of Neolithic use of Burry Holms. The recovery of later prehistoric material within the test pits and trenches of the recent excavations was anticipated from the outset given the proximity of the promontory fort and barrow. However, the presence of the structural remains of a roundhouse within Trench 4 on the south-western periphery of the island was totally unexpected. The roundhouse was surprisingly well-preserved in such an exposed location and coupled with the associated assemblages of charred plant remains and smithing debris has provided rare insights into later prehistoric daily life on Gower.

The Mesolithic activity has been revealed through the assemblage of lithic artefacts which can now be placed within a U.K. wide context and dated for the first time. These artefacts hold biographies, those of the tools themselves, many of which have been carefully made using locally sourced raw materials and curated by the people who used them. The site was a place where exhausted tools were discarded and where broken items were returned to the campsite for repair. The rare discovery of hafting residue on one of the obliquely blunted points encourages us to begin to look more systematically for the preservation of traces of organics on other stone artefacts from Welsh sites. The postulated relationships between Burry Holms and the burial of some of the Mesolithic dead within the cave on the end of Worms Head is of interest, as are the inter-relationships between sites on Burry Holms and further afield in Somerset and further east and north has always hinted that there remain gaps in the understanding of the distributions of such early Mesolithic sites. The fact that the later Mesolithic evidence can be linked to other local sites too may indicate that a number of sites may now lie buried beneath what today is the Bristol Channel. The environmental evidence from Burry Holms has provided an insight into some of the natural resources that these people utilised in their diets, including hazelnuts and the lesser celandine in the later Mesolithic. Such evidence has only rarely been retrieved from sites in Wales and as such opens up the possibility that further evidence may survive and be available for future study if we revisit some of the findspots where assemblages of stone tools lying in museum collections came from. By continuing to utilise these collections and to link them to new excavations at their findspots, in the way Burry Holms has, we can highlight the potential that may exist to move other unstratified assemblages of stone tools into ones that can contribute towards our increased understanding of the early post Glacial period.

EN1: This paper has been prepared from detailed reports received from all contributors. Each section has been edited, but all details of methodologies used and the full results can be found in the excavation project archive which is housed in Amgueddfa Cymru – National Museum Wales accession number 2001.36H.

EN2: Radiocarbon measurements cited in this report were calibrated against the IntCal20 calibration curve (Reimer et al. 2020) using OxCal v4.4.2 (Bronk Ramsey 2009).

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Trench 1	*Trench 3*	*Trench 4*	*Context Description*
1	1	1	Humic layer beneath root mat
2	Not present	42	Grey sand (containing modern glass, plastic and some flint)
3	51	43	Red sand very similar (except in colour) to the grey sand above. Upper levels of this context contained a clay pipe. Lower levels of this context contained undiagnostic worked flint, an Iron Age bead, a Roman potsherd
5	52	44	A mottled layer of clay loam seemingly a mix of the layer above (3) and the darker layer below (6). It contains a lot of charcoal and marram grass roots and is richer in lithic finds than the red sands above. No modern finds. It is possibly an active zone of mixing directly below an older ground surface.
6	53	46	A dark layer of sandy-clay containing a lot of clasts and patches of decayed local sandstone. It contains infrequent charcoal. This is interpreted as the main early Mesolithic horizon.
7	Not dug	47; 48 and 145	Soliflucted deposits. A yellow clayey matrix with lots of clasts. Some lithic artefacts in the very uppermost spits (including a single Late Upper Palaeolithic backed blade fragment).
10	Not present	Not present	A sandy clay layer overlying bedrock

Table 1. The stratigraphic sequence.

	Flint	*Chert A*	*Chert B*	*Chert C*	*Chert D*	*Chert E*	*Chert F*	*Chert G*	*Chert H*	*Silicified limestone*	*Pale silicified limestone*	*Dark silicified limestone*	*Sandstone*	*White quartz arenite*	*Pale-grey fine-grained*	*Stone*	*Totals*
Debitage	6333	17	1	0	1	1	29	5	2	3	5	5	4	2	1	5	**6414**
Blades	261	0	1	1	0	1	2	4	5	0	0	4	0	2		0	**281**
Blade frags	748	0	1	0	0	1	2	4	5	0	2	1	1	0	0	0	**765**
Cores	70	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	**71**
Core rejuvenation pieces	49	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	**51**
Upper Palaeolithic Penknife point	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	**1**
Burins	3	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	**5**
Burin Spalls	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**5**
Microliths	80	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**81**
Microburins	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**7**
Microdents	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**22**
Utilised blades	16	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	**17**
Scrapers	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**29**
Truncations	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**
Misc. retouched	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**17**
Worked stone	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	**5**
Later prehistoric knives	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**
Totals	**7647**	**18**	**4**	**1**	**1**	**4**	**35**	**13**	**15**	**3**	**7**	**11**	**10**	**4**	**1**	**5**	7779

Table 2. The breakdown of the Burry Holms lithic artefacts by tool form and raw material.

	3 (43) (51)	**5 (44) (52)**	**5/6 (44/46)**	**6 (46)**	**6/7 (46/47)**	**7 (47)**	**Residual**	**Unstrat.**	**Totals**
Single Platform	4	6		13	12	2	1	13	51
Opposed platform				3			1	3	7
Right angled				3				1	4
Multi-directional	2	1		3				2	8
Unclassified			1						1
Totals	**6**	**7**	**1**	**22**	**12**	**2**	**2**	**19**	**71**

Table 3. The distribution of the cores by context.

	Blades	***Blade Fragments***	***Flakes***	***Flake fragments***	***General Debitage***	***Spalls***	***Totals***
2 (42)	4	14	3	3	3	34	**61**
2/3 (42/43)					1		**1**
3 (31) (43) (51)	7	24	15	9	23	91	**169**
3/5 (51/52)						10	**10**
5 (44) (52)	26	75	36	18	88	925	**1168**
5/6 (44/46)	10	37	17	4	31	399	**498**
6 (46)	122	395	197	75	380	2338	**3507**
6/7 (46/47)	22	60	25	4	61	591	**763**
7 (47) (145)	16	35	23	7	27	504	**612**
47/48					4	34	**38**
48 (145)						8	**8**
Residual	9	29	13	2	27	228	**308**
Unstratified	65	96	55	19	27	55	**317**
Totals	**281**	**765**	**384**	**141**	**672**	**5217**	**7460**

Table 4. The distribution of the categories of knapping debitage by context across the site.

	2 (42)	***3 (43)***	***5 (44) (52)***	***5/6 (44/46)***	***6 (46)***	***6/7 (46/47)***	***7 (47)***	***Residual***	***Unstrat.***
Early forms									
Obliquely Blunted	1				20	4	3	2	23
Isosceles					1				
Scalene			1						
Straight					1				
Convex					1				1
Unclassified				1	2	2			2
Later forms									
OBP		1							1
Convex			1		3	1			
Bec					1				
Unclassified					1				2

Table 5. The distribution of early and later Mesolithic microlith forms through the stratigraphy.

	5 (44) (52)	*6 (46)*	*6/7 (46/47)*	*7 (47)*	*Unstrat.*
Mesolithic					
End-scrapers – on blade		3			3
End-scrapers – on flake	1	3		1	3
End- and side-scrapers – on flake	1	2			1
Side-scrapers		3	1		
Double scrapers		2			2
Later Prehistoric					
Side-scrapers		1			
'Button' scrapers					1
Undated					
Scraper fragments	1				

Table 6. Scrapers by context and age.

	2 (42)	*3 (43)*	*5 (44) (52)*	*5/6 (44/46)*	*6 (46)*	*6/7 (46/47)*	*7 (47)*	*Residual*	*Unstrat.*
Left length					4		1		2
Right length					3	1		1	8
Both lengths					1	1			

Table 7. The position of the microdenticulations on the microdenticulates.

Trench		1						4				
Context		3	5	5/6	6	6/7	7	44/46	46	46/47	47	47/48
No. of samples		2	17	1	20	4	5	1	26	8	5	1
Charcoal												
Pinus sylvestris	Scot's pine								(x)			
Coniferous									x			
Ulmus sp.	elm									x		
Quercus sp.	oak	x	x		x		x	x	x	x	x	
Corylus avellana	hazel		x	x	x	x		x	x	x		x
Alnus glutinosa	alder		x		x							
Alnus/Corylus	alder/hazel	x	x		x				x	x	x	
Betulaceae	birch family								x	x		
Prunus spinosa	blackthorn	x	x									
Prunus sp.	cherry type		x						x			
Maloideae	hawthorn group		x						x	x		
Fraxinus excelsior	ash								x		x	
Acer campestre	field maple				(x)							
Macrofossils												
Corylus avellana	hazel		x		x	x	x	x	x	x		x
Ranunculus ficaria	lesser celandine		x		x				x		x	
Carex	sedge		(x)									
Poaceae	grasses		x						x			

Table 8. Mesolithic charcoal and macrofossils. x=present; (x)=cf. identification

	Trench	1							4															
	Feature type	pit		drip gully	pit		spread	feature	posthole											pit				
	Feature number	11		54	58		-	79	60	83		94	96	102	116	121	132	134	142	104	106	118		127
	Context number	12	13	55	59	78	57	80	61	84	89	95	97	103	117	122	133	135	143	105	107	119	120	128
	Charcoal																							
Pinus sylvestris	Scot's pine		(x)		(x)																	x		
Quercus sp.	oak	x	x	x	x		x	x		x	x		x	x						x	x	x		x
Alnus glutinosa	alder	(x)		x			x			x	x		x	x								x		x
Corylus avellana	hazel	x		x	x		x	x		x	x		x	x						x	x	x		x
Populus/Salix	poplar/willow						x			x														
Prunus spinosa	blackthorn	x								x	x											x		
Prunus sp.	cherry type	x		x																				x
Maloideae	hawthorn grp	x		x							x		x							(x)	x			x
Cytisus/Ulex	broom/gorse													x								x		
Fraxinus excelsior	ash	x			x		x			x			x	x										
Sambucus nigra	elder												(x)											
	Macrofossils																							
Quercus sp.	oak	x																						
Corylus avellana	hazel		x		x	x	x		x		x	x	x	x	x	x	x	x	x	x	x		x	x
Ranunculus ficaria	lesser celandine			x			x				x	x		x					x	x				
Triticum sp.	wheat	x	x	x	x		x	x	x	x	x	x	x	x	x	x			x	x	x	x	x	x
Triticum spelta	spelt wheat			x																				
Hordeum sp.	barley									x	(x)		x							x	x	(x)		
Bromus sp.	cereal	x												x										
Cereal indet.	cereal	x		x			x	x	x	x	x		x	x	x					x	x	x		
Poaceae	grasses						x			x			x											

Table 9. Charcoal and macrofossils from later Prehistoric features. x=present; (x)=cf. identification.

Ref. No.	*Lab. No.*	*Identification*	*Date BP*	*Date Cal. BC*
S1892 Trench 4 (46/47)	OxA-33722	charred *Corylus* nutshell	8895 ± 45	8242–7941
S237 Trench 1 (6)	OxA-31190	charred *Corylus* nutshell	8854 ± 38	8216–7811
S851 Trench 1 (6)	OxA-33907	charred *Corylus* nutshell	8445 ± 45	7587–7374
S249 Trench 1 (6)	OxA-33906	charred *Ranunculus ficaria* tuber	6240 ± 40	5309–5203
S1440 Trench 4 (46)	OxA-31192	charred *Ranunculus ficaria* tuber	5047 ± 30	3954–3768
25.222	OxA-35676	cremated human bone	3588 ± 29	2029–1881
S923 Trench 4 (97) Fill of posthole 96	OxA-31189	charred hulled wheat grain	2272 ± 26	398–208
S366 Trench 1 (12) Fill of pit 11	OxA-31385	charred wheat grain	2209 ± 29	376–177
S1653 Trench 4 (46)	OxA-31191	charcoal *Quercus*	2169 ± 24	356–111
S799 Trench 4 (84) Fill of posthole 83	OxA-31384	charred hulled wheat grain	2167 ± 28	358–103
S1716 Trench 4 (119) Fill of pit 118	OxA-31383	charcoal *Ulex/Citisus*	2149 ± 27	352–55
S648 Trench 4 (55) Fill of drip gully of roundhouse	OxA-31343	charred spelt glume base	2148 ± 32	354–53
S407 Trench 4 (57) hearth 56	OxA-31386	charred hulled wheat grain	2146 ± 28	351–54
S1181 Trench 4 (46)	OxA-31466	charcoal cf. *Pinus*	2128 ± 25	343–53

Table 10. The AMS radiocarbon dates from Burry Holms.

Field code	***Lab. Code***	***Context No.***	***Depth from surface (cm)***	***Location***	***Sediment description***	***Equivalent dose (Gy) at 1 sigma uncertainty***	***Total dose rate (mGya-1) at 1 sigma uncertainty***	***Age estimate (years before AD 2020) at 1 sigma uncertainty***	***Age estimate at 1 sigma uncertainty***
Conventional multiple grain quartz SAR results									
BH01-OSL05	X0762	43	45	East end T4	Fine sand	2.50 ± 0.19	1.71 ± 0.08	1,460 ± 130	AD 560 ± 130
BH01-OSL07	X0764	44	59	East end T4	Darker silty sand	8.46 ± 0.21	1.91 ± 0.09	4,420 ± 230	2,400 ± 230 BC
BH01-OSL07	X0764	44	59	East end T4	Darker silty sand	18.4 ± 0.4	1.91 ± 0.09	9,600 ± 500	7,580 ± 500 BC
BH01-OSL12	X0769	46	66	East end T4	Silt or silty sand	14.4 ± 0.7	1.99 ± 0.09	7,250 ± 480	5230 ± 480 BC
BH01-OSL08	X0765	46	80	Test Pit 3C	Silt or silty sand	18.7 ± 0.7	2.11 ± 0.12	8,880 ± 620	6860 ± 620 BC
BH01-OSL09	X0766	47	96	Test Pit 3C		26.4 ± 0.7	2.12 ± 0.10	12,500 ± 700	10,400 ± 700 BC
Single grain quartz SAR results									
BH01-OSL12	X0769	46	66	East end T4	Silt or silty sand	11.3 ± 1.1	1.99 ± 0.09	5,090 ± 570	3,070 ± 570 BC
BH01-OSL12	X0769	46	66	East end T4	Silt or silty sand	18.0 ± 1.2	1.99 ± 0.09	9,060 ± 730	7,040 ± 730 BC
BH01-OSL08	X0765	46	80	Test Pit 3C	Silt or silty sand	11.9 ± 0.5	2.11 ± 0.12	5,590 ± 400	3,570 ± 400 BC
BH01-OSL08	X0765	46	80	Test Pit 3C	Silt or silty sand	19.7 ± 1.0	2.11 ± 0.12	9,930 ± 760	7,910 ± 760 BC

Table 11. Sample details, parameters used and age estimates derived for OSL samples, provided as years before AD2020 and as AD/BC.

Site	*Lab. No.*	*Identification*	*Date BP*	*Date Cal. BC*
Worms Head Cave	OxA-13131	adult human scapula	9920 ± 160	10,020–9117
Worms Head Cave	OxA-16607	child human cranium	9294 ± 49	8701–8341
Worms Head Cave	OxA-19844	adult human femur	9255 ± 45	8618–8326
'Mewslade Bay'	OxA-19845	adult human mandible	9235 ± 40	8561–8303
'Mewslade Bay'	OxA-16604	adult human mandible	9077 ± 49	8453–8223
Worms Head Cave	UB-6817	adult human tibia	9030 ± 45	8305–8180
Burry Holms	OxA-33722	charred *Corylus* nutshell	8895 ± 45	8242–7941
Burry Holms	OxA-31190	charred *Corylus* nutshell	8854 ± 38	8216–7811
Worms Head Cave	OxA-4024	adult human ulna	8800 ± 80	8206–7641
Burry Holms	OxA-33907	charred *Corylus* nutshell	8445 ± 45	7587–7374

Table 12. Early Mesolithic AMS radiocarbon dates from Gower.

Site	*Lab. No.*	*Identification*	*Date BP*	*Date Cal. BC*
Nab Head I	OxA-1495	charred *Corylus* nutshell	9210 ± 80	8622–8285
Nab Head I	OxA-1496	charred *Corylus* nutshell	9110 ± 80	8561–8202
Daylight Rock, Caldey	OxA-2245	charred *Corylus* nutshell	9040 ± 90	8481–7951
Daylight Rock, Caldey	OxA-2246	charred *Corylus* nutshell	9030 ± 80	8456–7953
Daylight Rock, Caldey	OxA-2247	charred *Corylus* nutshell	8850 ± 80	8246–7714
Ogof-yr-Ychen	OxA-10616	Human bone	8760 ± 55	7968–7599
Rhuddlan Site E	BM-691	Bulk *Corylus* nutshells	8739 ± 86	8015–7591
Daylight Rock, Caldey	OxA-7686	charred *Corylus* nutshell	8655 ± 60	7836–7581
Trwyn Du	HAR-1194	Bulk *Corylus* nutshells	8590 ± 90	7868–7482
Rhuddlan Site M	BM-822	Bulk *Corylus* nutshells	8528 ± 73	7733–7467
Trwyn Du	Q-1385	Bulk hazel nutshells	8460 ± 150	7832–7075
Trwyn Du	HAR-1193	Bulk hazel nutshells	7980 ± 140	7201–6568

Table 13. Dates from other Welsh early Mesolithic sites.

Figure 1. The location of Burry Holms. Showing the monuments and locations of the and excavation trenches and test pits.

Figure 2. Original section drawing 1922. Reproduced with the permission of Dr Andrew David.

Figure 3. Plan showing the location of the hut beneath the Medieval stone buildings. © Crown copyright: RCAHMW.

Figure 4. Unpublished sketch plan of excavations at the promontory fort and section through the bank (Hague 1978). © Crown copyright: RCAHMW.

Figure 5. Section through the barrow drawn by David and Lethbridge. Reproduced with the permission of Dr Andrew David.

Figure 6. Estimates of coastline at 10000, 7000, 1500BP, and present-day. Based on data in Garrow and Sturt 2017.

Figure 7. Photograph showing Trench 4 during excavation.

Figure 8. Trench 1 (S) north section showing stratigraphy.

Figure 9. Plan of Trench 1(S) showing all later prehistoric features.

Figure 10. Plan of Trench 4 showing all excavated features.

Figure 11. Photograph of hammerstones SF835 (left) and SF2409 (right).

Figure 12. Final Palaeolithic Penknife Point.

Figure 13. Early Mesolithic microliths.

Figure 14. Later Mesolithic microliths, *bec* and microburin.

Figure 15. Microlith SF1197 with traces of hafting residue.

Figure 16. Scanning electron microscope image of the hafting residue on microlith SF1197.

Figure 17. Scrapers.

Figure 18. Microdenticulates.

Figure 19. Later Mesolithic truncated blades.

Figure 20. Pottery sherds.

Figure 21. Iron Age Glass Beads.

Figure 22. *Ranunculus ficaria* Lesser Celandine tubers from Burry Holms.

Figure 23. Hogg's (1973) interpretation of the roundhouse at Harding's Down West. © Crown copyright: RCAHMW.