

MESOLITHIC-NEOLITHIC LANDSCAPES IN CEREDIGION: A NEW SITE AT LLANLLYR

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Introduction

Known Mesolithic and Early Neolithic archaeology in Ceredigion is small-scale, relatively poorly understood and, at least for the Mesolithic, has been little studied in the past 50 years. By comparison the record from nearby Pembrokeshire is rich and relatively well studied. The reasons for the paucity of material remains in Ceredigion is probably a function of relatively low development pressure in the county coupled with a largely pastoral economy and the cultural demography of the population. By comparison the rich archaeological record of Pembrokeshire may in part be a function of the 'Bluestone' story and the lure of archaeologists to the roots of Stonehenge alongside its agricultural practices.

As a consequence of these biases, with the exception of a single large site at Tanybwllch, Aberystwyth (Thomas 1912, Thomas and Dudleyke 1925), the record for Ceredigion is dominated by isolated finds, of questionable provenance, which are difficult to date. In Ceredigion we have little in the way of sustained fieldwalking projects and few large scale research projects have been conducted in the county in recent years.

In this paper we describe a new prehistoric site at Llanllyr, Ceredigion (Figures 1 and 2). The site was initially excavated as part of the undergraduate training program at University of Wales Trinity Saint David (UWTSD), Lampeter. Between 2022 and 2023 it also formed a centrepiece of

the Portalis pilot project. This project was funded by the European Regional Development Fund through the Ireland Wales Cooperation programme, as a collaboration between UWTSD and South East Technological University (SETU) in Waterford, Ireland. The project included the examination of the extant artefact records and collections, data collected from more than a decade of work in the intertidal and off-shore area of central Cardigan Bay and new survey work undertaken at a number of sites in the county. The aim of the project was to investigate the nature and distribution of archaeological material from the beginning of the Early Holocene to the end of the Neolithic, in order to better understand changes associated with marine inundation, landscape change and resource distribution and the changing human impact on the landscape.

Archaeological background

In Ceredigion, the earliest typologically Mesolithic presence is concentrated at Tanybwllch, Aberystwyth (Figure 1), where a number of broad blade microliths, including obliquely backed points were excavated from a site at the confluence of the rivers Ystwyth and Rheidol (Thomas 1912; Thomas and Dudleyke 1925). However, the assemblage also included several distinctive narrow-blade microliths, as well as 'limpet scoops' or bevelled pebbles, which are generally typical of Late Mesolithic activity (Thomas and Dudleyke 1925). This activity needs to be set against a background of major

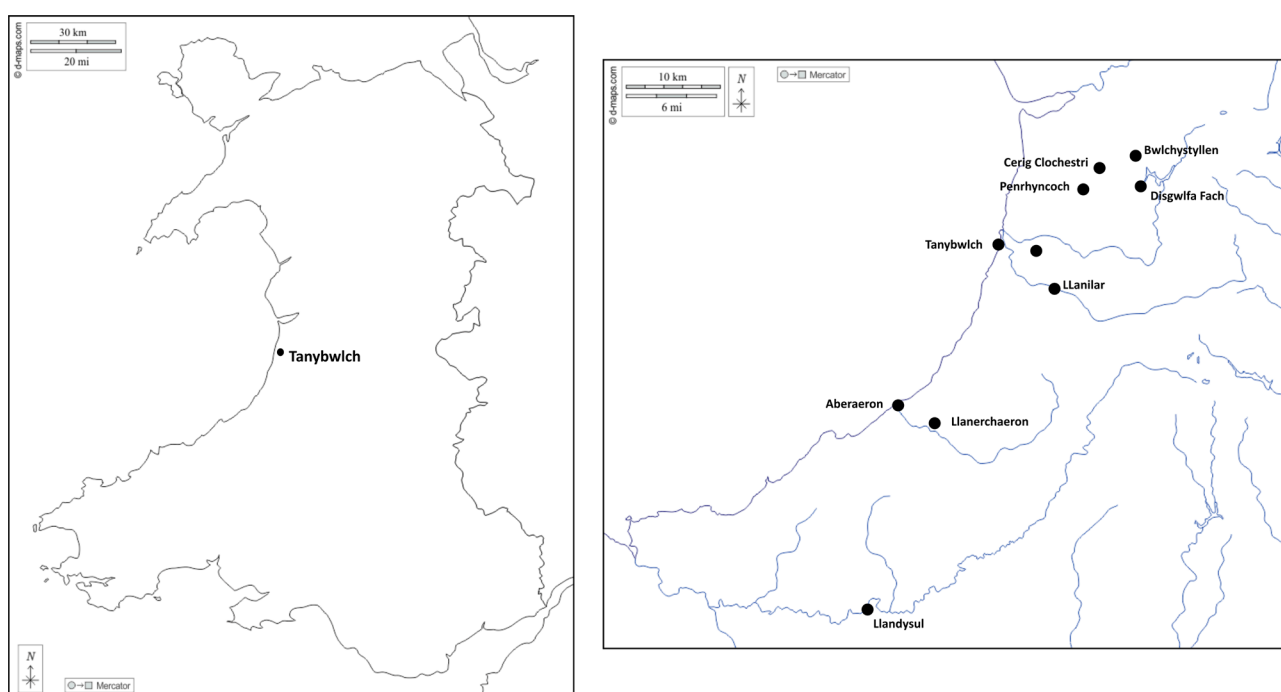


Figure 1: Site locations

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environmental change in the area, in particular the flooding of Cardigan Bay as a result of rising sea levels resulting from the melting of the ice at the end of the last glaciation. Much of the bay was probably dry land before 9000 BC with the main inundation happening between 6500 and 8500 BC (Bates *et al* in press). Evidence of this once large area of dry land in the bay is evidenced by freshwater peats showing a hazel/willow woodland at -20.5m (dated to 8200 – 7590 cal BC) in an offshore borehole west of Aberaeron (Haynes *et al* 1977). As such, it is probable that coastal sites used during the Mesolithic are now submerged within Cardigan Bay. Very few sites and artefacts can be confidently associated with radiometric dating, and the chronology mostly relies on the typology of lithic or ceramic artefacts.

Neolithic sites have largely been dated on ceramic typologies and contexts of deposition within monumental construction (*eg* Whittle *et al* 2011). Bayesian modelling has been used to model more precise dates for the building of Early Neolithic earthworks; particularly long barrows and long cairns (*eg* Whittle and Bayliss 2007) and causewayed enclosures in southern Britain and Ireland (Whittle *et al* 2011). Carinated Bowls (c4000 - 3600 BC) and Plain and Decorated Bowls (c3600 BC) are often found at causewayed enclosures, long barrows or cairns and pit sites, where organic material such as human and animal bone, or charred food residue can be radiocarbon dated (Gibson 2002). In Ceredigion there are no known causewayed enclosures, and all records of long barrows and cairns are unconfirmed. Long barrows at Crug Gynon, Llangybi, Tan-yr-orfa and Cefngranod were recorded between the 1920s and 1980s with no further authentication (Archwilio, PRN 8418, 9546, 9518, 9710). Others such as Llechwedd-dderi-isaf (PRN

9455), and Deri-goch at Llangybi, have been established as probable geomorphological features (Cook 2006). The nearest monuments of this type are the causewayed enclosures at Banc Du in Pembrokeshire (3645-3490 cal BC) and at Womaston in the Walton Basin (Powys), and the long barrow at Lower Luggy near Welshpool (c3600-3400 cal BC) (Figure 1) (Darvill & Wainwright 2016; Murphy *et al* 2010; Jones 2009; Gibson *et al* 2006). Chambered tombs or cairns may have been more widespread, although they are mainly focused in northern and central Ceredigion at Disgwlf Fach, Bwlchystyllen, Garreg Fawr and Cerrig Clochesti (Figure 1). The earliest datable evidence of a Neolithic presence comes from Llandysul (Figure 1), where both Carinated and Decorated Ware pottery were found in pits with charcoal radiocarbon dated to 3970-3510 cal BC (Murphy & Evans 2006).

Later Neolithic activity is also recorded in Ceredigion, although similarly small scale. Pits containing Impressed Ware were found during excavations at Penrhyncoch and Llanilar, and Grooved Ware at Llanilar (Murphy *et al* 2019, Briggs 1994) (Figure 1). At Penrhyncoch, a series of Neolithic pits were excavated which included n=32 sherds of typologically Impressed Ware pottery. Hazelnut shells from two of these pits produced radiocarbon dates of 3337 - 3036 cal BC, and 3329 - 2941 cal BC (Murphy *et al* 2019). A series of pit fills and hillwash contexts at the site of Gwarfelin, Llanilar produced a single vessel of probable Early Neolithic typology, n=8 vessels of Impressed Ware and n=3 Grooved Ware vessels (Briggs 1994). The earliest Grooved Ware dates in Wales are from Penmyndd in Anglesey (Lynch 2023), and the largest collection of over 50 vessels are from Llanfaethlu, also in Anglesey, where Bayesian modelling estimates dates

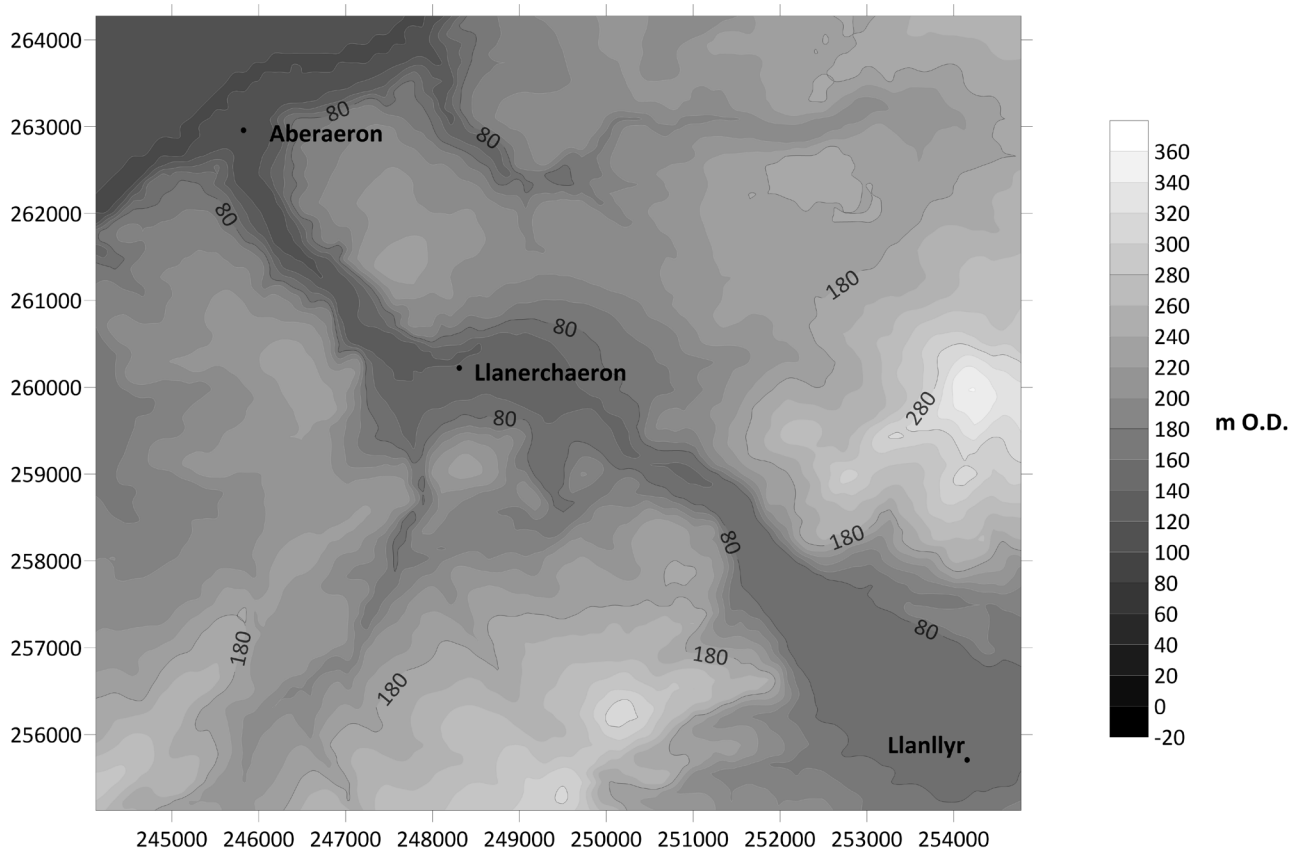


Figure 2: Aeron Valley

of 3125-2910 cal BC (Lynch 2023). Although Grooved Ware is sometimes associated with stone circles and henges, in Wales it is more likely to be associated with pits rather than monumental sites (Lynch 2023). In Ceredigion, there are no records of confirmed henges or stone circles and the nearest is Glandy Cross in Carmarthenshire (Figure 1), where two stones are left of what was once a circle of uprights (Kirk & Williams 2000).

Landscape, environment and archaeology at Llanllyr

The site of Llanllyr, Talsarn is located in the centre of the county of Ceredigion, in the Aeron Valley (Figure 2). The Afon Aeron has its source at Llyn Eiddwen in the slopes of Mynydd Bach, and follows a south-westerly direction through Talsarn, then north-west towards its mouth at Aberaeron. The origin of the valley may predate the Quaternary but it was last modified significantly around 30,000 years ago as a consequence of major ice flow during the last glacial maximum, with later meltwater, during deglaciation, creating lake Felinfach by c14.9ka BP (Glasser *et al* 2018). Prior to the start of the Holocene, this lake (Glacial Lake Aeron) became infilled with sediments and is now expressed as a wide valley floor between Talsarn and Ciliau Aeron.

Llanllyr is today positioned c11km inland from Cardigan Bay, although changes in the wetland-dryland interface, consequent with sea level rise, mean that at the start of the Holocene the coastline was much further west (Bates *et al* in press). The site at Llanllyr is well known as the location of an early medieval inscribed stone and a Cistercian nunnery

founded by Rhys ap Gruffudd in about 1180. Following dissolution of the monasteries, a mansion was built on the site which was subsequently demolished in the late 18th – early 19th century when the current house was built (Murphy *et al* 2017). The current fieldwork developed out of a student training excavation for archaeology students at the University of Wales Trinity Saint David when trial excavation was undertaken on a series of low mounds, in the surrounding farmland. These features had initially been interpreted as burnt mound features of later prehistoric age. The first excavations commenced in 2019, and six trenches were opened across a mound in the eastern fields (Mound 1, Figure 3). It was rapidly established that there was no evidence of burnt mounds and that the features were geological in nature with a thin sequence of silt units overlying a core of gravel. This sequence was overlain by a thin veneer of plough soil. Although the precise nature of the formation of these features requires further investigation they are likely to be periglacial ground ice heave structures which formed dry islands in the lake as it infilled during late glacial and early Holocene time periods. Despite their natural origins a small quantity of flintwork and a polished stone axe attested to prehistoric activity at the site.

Further excavations were undertaken in 2022 and 2023 as part of the Portalis project funded through the European Regional Development Fund as part of the Ireland Wales Cooperation Programme. This included the excavation of a further five trenches, including a second, western mound (Mound 2, Figure 3). Although the sediments were thin, some stratified deposits, including a burnt horizon in Trench 4 on Mound 1 (Figure 4), were recorded. Adjacent to Mound 1 up to 4m of stratified peats and silts lie beneath

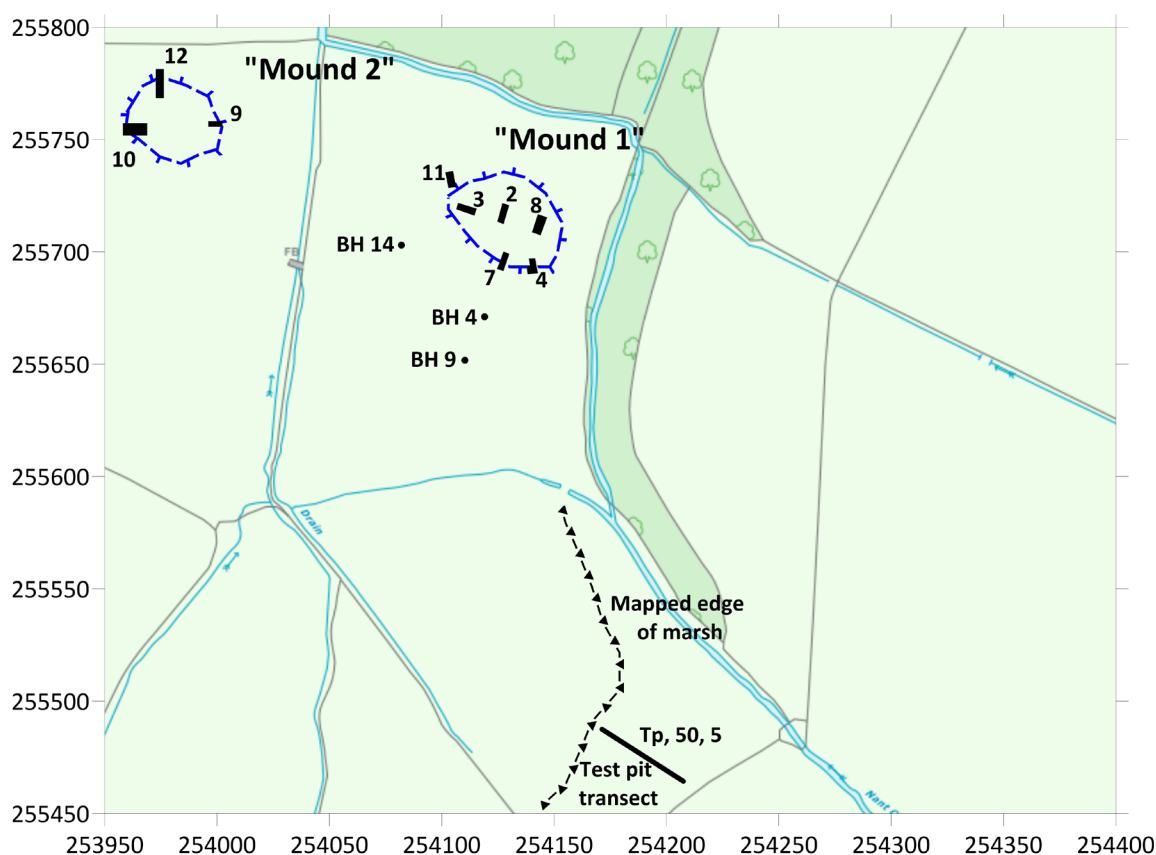


Figure 3: Location of trenches, boreholes and test pits at Llanllyr

the marsh surrounding, indicating shifting environments including open water or reed swamps at various times during the prehistoric past (Figure 5) in the remnant Glacial Lake Aeron. In 2023 a series of test pits were also excavated on the edge of the former lake (Figure 3) in an attempt to assess whether or not waterside occupation might be present in this area.

Archaeology

A total of 108 deliberately flaked artefacts were recovered from nine trenches and three test pits over three seasons of excavation (Table 1). Over 60% (n=66) were from trenches located across Mound 2, n=36 were from trenches on Mound 1 (33%), and the remainder (n=6) were from a transect of test pits running down to the mapped edge

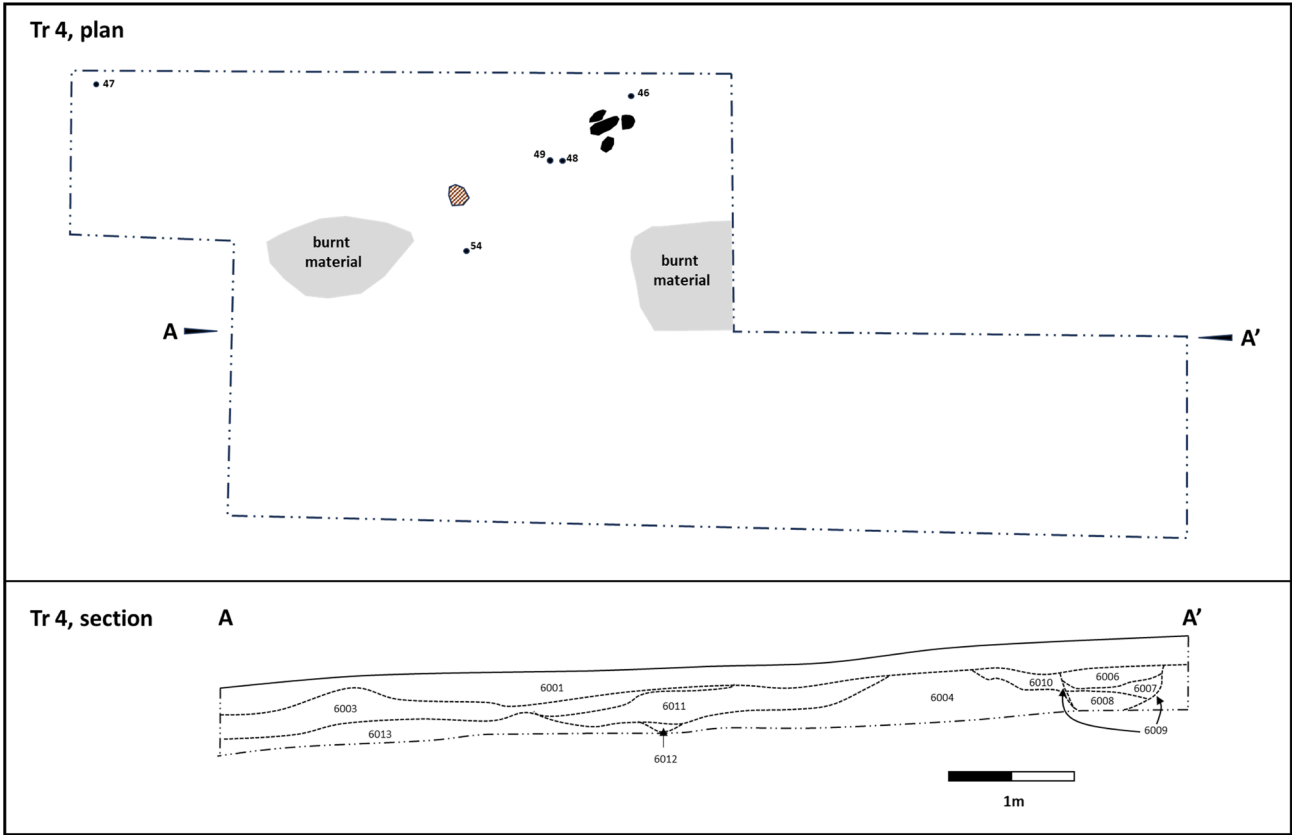


Figure 4: Trench 4 showing finds and distribution of burnt material in plan and section through the trench including the small burnt horizon (context 6012). Numbers are small finds, black shapes are large stones

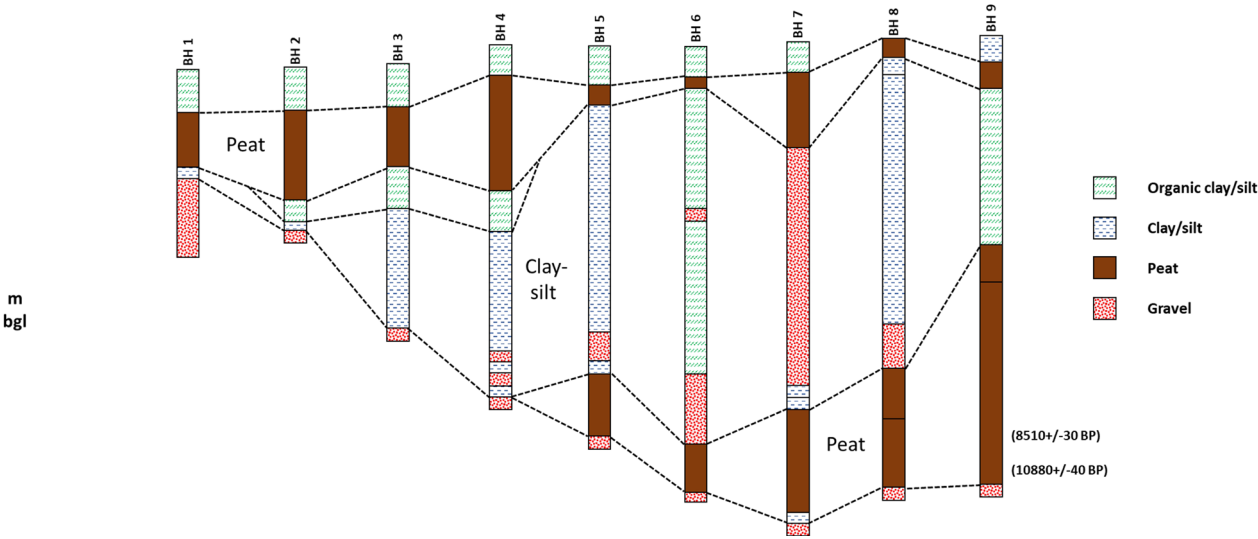


Figure 5: Profile through the marsh surrounding Mound 1

of marshland and former lake (Figure 3). The assemblage was dominated by material of a honeyed red-brown colour, and where cortex was present indicated the raw material as small pebbles measuring less than 45mm diameter. The source of this material is probably the Irish Sea Till which was deposited in Cardigan Bay during the last glaciation. The flint contained in the till was probably released by coastal erosion as sea levels rose and therefore this raw material could have been obtained from beaches or in local

depositional exposures such as river or stream beds cutting into the till when sea levels were lower.

The lithics were comprised mostly of debitage: largely flakes and spalls (76%) (Table 1). There were no unused cobbles, hammerstones, or typical cores, and very few primary flakes, suggesting the flint may have arrived in a prepared state, prior to further reduction. Hard hammer percussion is indicated by secondary and tertiary flakes with plain butts and prominent bulbs of percussion. However,

Llanllyr, Talsarn, Ceredigion Lithic material 2019-2023		Trench										Test Pit			Field	Total
		1	2	4	7	8	9	10	11	12	TP50/5	TP50/20	TP50/25	1		
Debitage	Flakes	3	1	2	3	7	2	35	1	7		1	1	1	64	
	Blades	2				1	1	1					1		6	
	Bladelets					1		1					1		3	
	Spalls					5		10		3					18	
	Fragments			1		1		1							3	
	Platform core							1							1	
	Core fragments			1				1							2	
	Bipolar core								1	1					2	
Tools	Retouched flake							1							1	
	Utilised flakes			3	1	1									5	
	Retouched and utilised bladelet										1				1	
	Microlith							1							1	
	Polished axehead	1													1	
Other	Quartz/natural				[1]	[3]		[2]			[1]				[7]	
TOTAL	(excluding quartz/natural)	6	1	7	4	16	3	52	2	11	1	1	3	1	108	

Table 1: Lithic distribution across site

it is also possible that organic and perishable materials, *i.e.* soft hammers of bone and antler, were used and may not have survived. In terms of tool technologies, Mesolithic and/or Early Neolithic core reduction is represented by a small number of blades and bladelets, core rejuvenation flakes and a single platform core. On the other hand some flakes and a couple of bipolar cores indicate pebble splitting using an anvil and hammer, a technique attributed broadly to the Neolithic or Early Bronze Age in west Wales (David 2017-18).

Mound 1

The only chronologically diagnostic artefact from this part of the site is a single polished axehead recovered during the first excavations in 2019 (Figure 6). It came from a layer of subsoil, which was possibly a very thin colluvium. A few flakes ($n=3$) and blades ($n=2$) were found in the same

trench, mainly from an adjacent topsoil context (1002). The axehead is Neolithic (*c* 4000-2500 cal BC) and may be associated with either Early or Late Neolithic dates at the site. Although the axehead could not be matched to a known source or Group, the rock type may be a fine-grained rhyolite or rhyolitic tuff or a highly indurated, fine grained, siliceous sandstone (Richard Bevins, pers comm). It has been re-worked by coarse invasive flaking along both flanks, reducing and pointing the butt, perhaps to accommodate a change of haft, and the undamaged blade suggests careful use or curation. Some additional polishing, or use-wear, seems to have taken place after the reworking.

In Trench 4, a bowl-shaped area of burnt material was identified during initial excavation in 2019, along with a possible pit at the northern end of the trench (TR4F). In 2023 this trench was extended and a further burnt patch was recorded and sampled (TR4CP). The latter contained significant quantities of oak charcoal which were radiocarbon

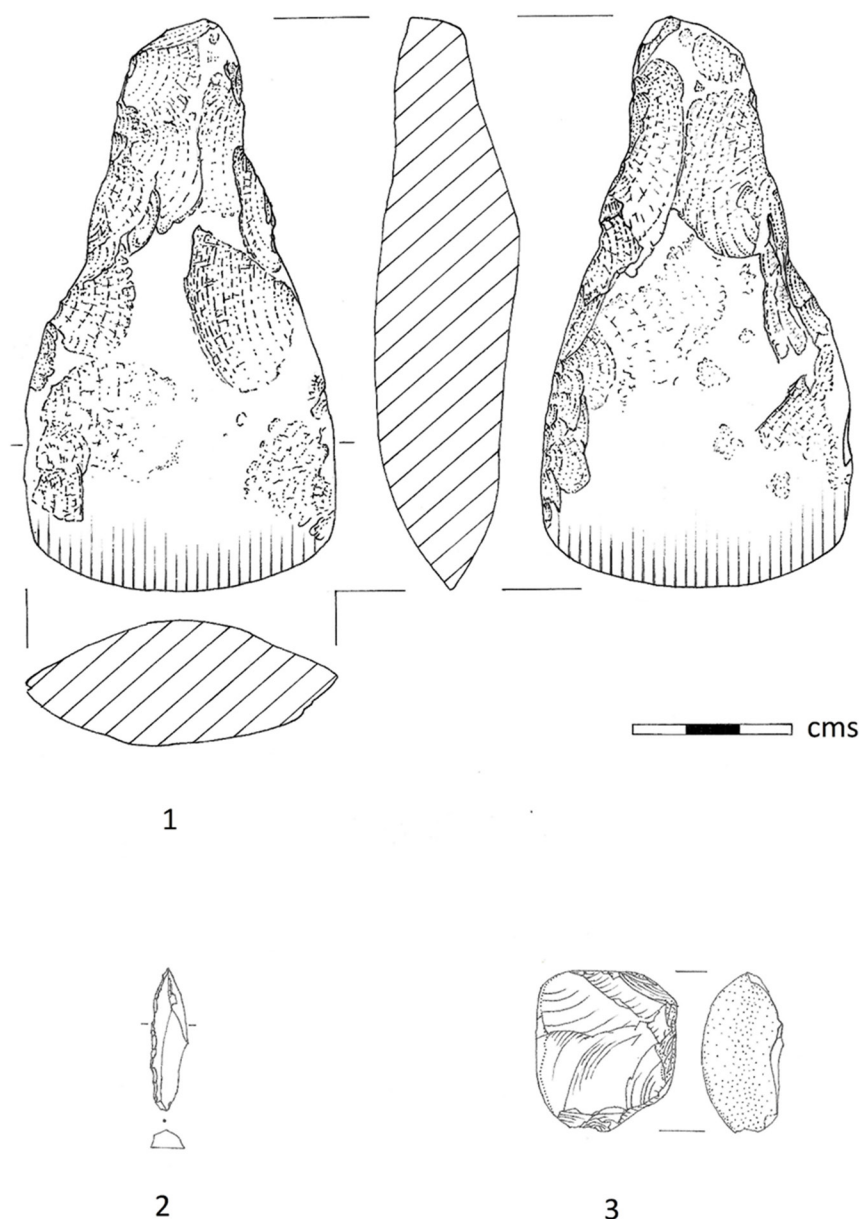


Figure 6: 1. Polished Axe. 2. Microlith. 3. Bipolar Core (David, A, 2023)

dated to the Late Neolithic (Table 2, 3, 4). Similar dates have been obtained from an anthropogenically burnt area in peat at Ynyslas (Bates et al in press). A bulk sample from the possible pit at Llanllyr consisted mainly of stone and quartz, and was difficult to confirm as a feature given the absence of any artefacts or charred plant remains. A total of n=7 lithic artefacts were clustered mainly between the two burnt areas (Figure 4) and included core fragments, a couple of potentially non-local flakes, and three flakes with signs of edge damage.

Trench 8 produced most of the flintwork from this part of the site (n=16), almost all of the tertiary material. Utilised flakes were found in both trenches 7 and 8. Mesolithic/ Early Neolithic technology may be represented by blades and a bladelet, and possibly later, perhaps Bronze Age artefacts include a 30mm, bipolar pebble core from Trench 11 (Figure 6). A single instance of re-fitting (two small flakes) suggests in situ knapping.

Mound 2

Again, only one chronologically diagnostic artefact was identified from the second mound, this time an unpatinated typologically Mid-Late Mesolithic microlith (c 8700-4000 cal BC) (Figure 6). The majority of the lithic material

(n=52 artefacts), including the microlith, came from Trench 10. Artefacts were recovered from the topsoil (context 10001) and bioturbated subsoil (10002), and are a semi-translucent honeyed redbrown colour with occasional spots of opaque grey. A smaller number of pieces (n=8) are an opaque mottled grey flint, and a couple of pieces are calcined. Most artefacts are clustered to the north-east of a charcoal patch/possible hearth (Figure 7). They are mostly flakes (n=35) and spalls (n=10), as well as a blade, an unused bladelet, a single platform core on a flake, a core rejuvenation flake and a coarsely retouched primary flake. The single straight-backed microlith is typical of Mid-Late Mesolithic assemblages in west Wales and other parts of Britain, although the minimal retouch is not particularly

Trench	TR4	TR10
<i>Quercus</i> spp. (oak)	27*	5
<i>Alnus glutinosa</i> (L.) Gaertner (alder)	-	5*

* = includes sample sent for radiocarbon dating

Table 3: Charcoal identification from Trench 4 and Trench 10

Sample	Number	Code	Material	Date BP	Cal BC/AD min	Cal BC/AD/max	Ca BP min	Cal BP max
Tr 10, Sample 2	670057	LLYR/23-5	charred material (acid/alkali/acid)	4840±30 BP	3695 BC	3530 BC	5645 BP	5480 BP
Tr 10, Sample 1	670056	LLYR/23-4	charred material (acid/alkali/acid)	4900±30 BP	3760 BC	3640 BC	5710 BP	5590 BP
Tr 4, Enviro	670055	LLYR/23-3	charred material (acid/alkali/acid)	4090±30 BP	2857 BC	2496 BC	4807 BP	4446 BP
Tr 4B, Enviro	662297	LLYR/19-1	charred material (acid/alkali/acid)	3890±30 BP	2465 BC	2239 BC	4415 BP	4189 BP

Table 2: Radiocarbon dates for Trench 10 and Trench 4

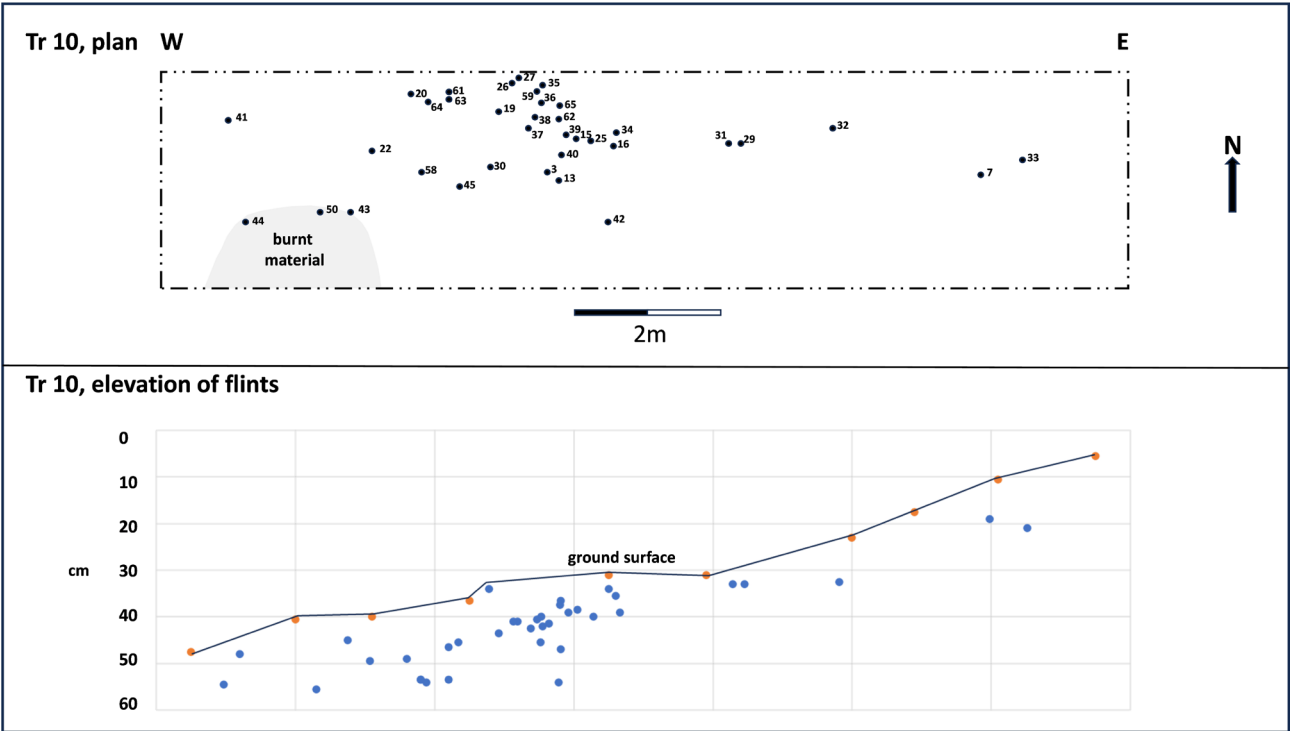


Figure 7: Plan of Trench 10 showing artefact distribution (small finds) and burnt material

Sample	TR4CP		TR4F		TR10	
Context	4022		4025		10001	
Volume litres	20		1.5		16	
Weight kg	18.2		1.9		12.2	
	Flot	Residue	Flot	Residue	Flot	Residue
Flot vol. ml	869.2		0.5		1299. 5	
Residue kg		3.5979		1.24		1.3787
Charcoal	++++	++	+	-	++++	++++
<i>Ranunculus</i> sp. fr- uncharred (buttercup)	-	-	-	-	2	-
<i>Juncus</i> spp. se - uncharred (rushes)	>400	-	-	-	>300	-
<i>Carex</i> sp. fr lenticular - uncharred (sedges)	-	-	-	-	6	-
Flower head (uncharred)	-	-	-	-	1	-
Tree/shrub bud scale (uncharred)	-	-	-	-	2	-
Plant material (roots - modern)	+++	+	+++	+	++	+
<i>Cenococcum geophilum</i> fungal sclerotia	>100	>100	>10	-	>100	>100
Invertebrate frags	+	+	-	-	++	+
Earthworm cocoons	++	+	-	-	+++	++
Stone & quartz	-	++++	-	++++	-	++
Clay	++	++	-	+	+++	+++

Key: + = rare, ++ = occasional, +++ = frequent, ++++ = abundant; se = seeds, fr = fruits

Table 4: Environmental evidence from Trench 4 charcoal patches (TR4CP) and feature (TR4F) and Trench 10 (TR10)

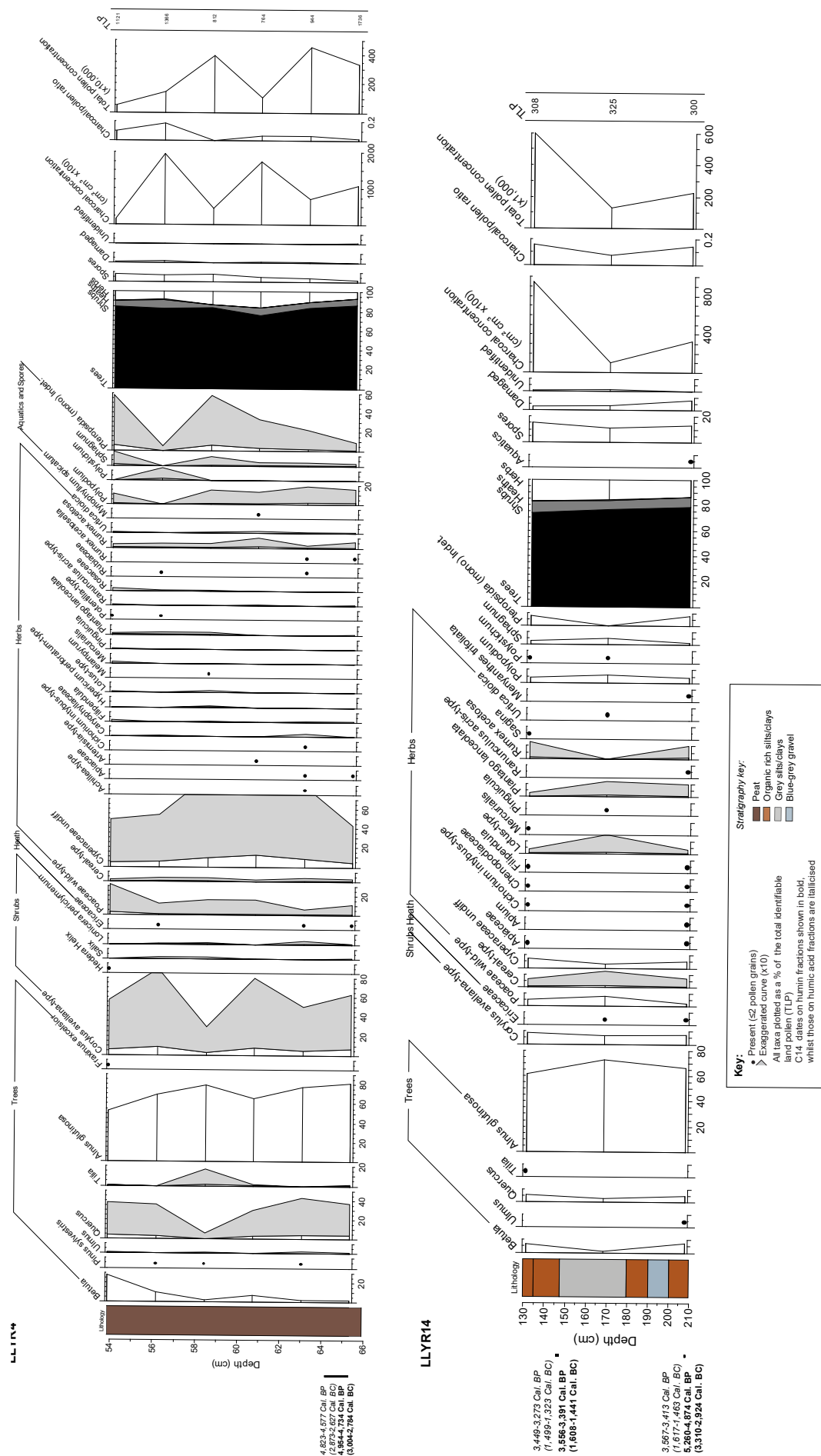


Figure 8: Partial pollen percentage diagrams for LLYR4 and LLYR14

characteristic. The fresh condition of the flints, as well as their distribution in section, suggests that there has been little postdepositional movement. Although no re-fits were identified from this part of the site, the material suggests in situ knapping of only a few cobbles.

Similarly to Mound 1, Mesolithic and later technologies are represented, the former by a microlith, blades and a bladelet, and evidence for single platform core-working. A Neolithic/Early Bronze Age presence is also indicated by a bipolar core made on a very small cobble (24mm diameter), retrieved from topsoil in Trench 12.

Marsh edge

An area leading down towards the former lake was also sampled with a transect of six test pits. Medieval organic sediments seal colluvial deposits in this location and will be the focus of work in the future. Three of the pits produced n=6 artefacts, half of which were blade/bladelets (Table 1, Figure 3). One bladelet had been retouched and came from a test pit close to the edge of the marsh (TP50.5). A single core rejuvenation flake was also recorded from a molehill in field 1, surrounding Mound 1.

Landscape and local environment in the Neolithic

Boreholes were taken from the area surrounding Mound 1 (Figure 5), that produced pollen detailing the Late Neolithic local environment (Figure 8). Bulk environmental samples were also taken from burnt areas in Trench 4 and Trench 10. Trench 4 was contemporary with part of the borehole data (Figure 8, Table 2). Trench 10, however, produced Early Neolithic radiocarbon dates of 3760-3640 and 3695-3530 cal BC (Table 2). Both oak and alder charcoal were identified, suggesting mixed deciduous woodland and wet woodland throughout the Neolithic (Table 3). Rush (*Juncus*) seeds, *Cenococcum geophilum* fungal sclerotia and low numbers of other uncharred plant macrofossils possibly suggested seasonally dry environments in the Early and Late Neolithic (Tables 4 and 5), but some remains may be later in date.

Late Neolithic radiocarbon dates were obtained from sediments at 69-70cm in borehole LLYR4 (3004-2784 and 2873-2627 cal BC), and from a sample of oak charcoal in Trench 4 (2857-2496 cal BC and 2465-2239 cal BC). Borehole LLYR4 was taken from the marsh edge, around

sample	C14 date AI/AS	uncompressed (estimated) depth (cm)	wood frags: roundwood, bark, woody roots	<i>Cenococcum geophilum</i> fungal sclerotia	<i>Rubus</i> sp. fr.	<i>Potamogeton</i> sp. fr.	monocot stem/leaf frags	<i>Carex</i> sp. lenticular fr.	<i>Juncus</i> sp. se.	earthworm cocoons	invertebrates	approximate volume of sediment (ml)
17	2660-2490 cal BP 2466-2329 cal BP	26.4-29.2	+++	+++			*	*		+	+++	85
18		29.2-32.1	+	+++	+			+			++	90
19		59.6-62.5		++		+		+	+	+	+++	50
20	4880-4821 cal BP 4825-4575 cal BP	62.5-65.3		++							+	60
CORE 4			MOSSES	WOODLAND	woodland indicator	SCRUB	GRASSLAND	GRASSLAND /WETLAND	WETLAND			
			+=occasional (1-2 items)		fr=fruit							
			++=several (3-6)		se=seed							
			+++ = frequent (7 and over)									

sample	C14 date AI/AS	uncompressed (estimated) depth (cm)	wood frags: roundwood, bark, woody roots	<i>Cenococcum geophilum</i> fungal sclerotia	<i>Rubus</i> sp. fr.	monocot frags	<i>Carex</i> sp. lenticular	Earthworm cocoons	invertebrates	approximate volume of sediment (ml)
15		30.6-31.0	++	+	++	+	+	+++	+	40
16	1391-1304 cal BP 1414-1306 cal BP	31.0-35.9	+							30
CORE 14			WOODLAND	SCRUB	woodland indicator	GRASSLAND & MARSH	WETLAND			
			+=occasional (1-2 items)		fr=fruit					
			++=several (3-6)							
			+++ = frequent (7 and over)							

Table 5: Plant macrofossils from A. LLYR 4 (Core 4), B. LLYR 14 (Core 14)

12m from Mound 2, and combined with LLYR14 (Figure 3, Figure 8) provides dates for a local and a semi-local environment. *Alnus glutinosa* dominated both samples and reflects a local area of former bog, which was densely populated by Alder Carr wetland. Open wetland is also represented by the relatively high quantity of sedge pollen (Cyperaceae) and a few grains of meadowsweet (*Filipendula*). Plant macrofossils from LLYR4 also contained rush seeds and sedge (*Carex*), indicating woodland dominance with a minor wetland element. Very little damp ground taxa in the macrofossil assemblage suggests that the soils were drying out at least seasonally (Table 5).

Oak and hazel pollen (Figure 8) also indicated areas of open, drier woodland with some birch, pine and elm, beyond the immediate locality of the site. There were a couple of grains of cereal pollen which are more likely to represent wild species than cereal cultivation, and there is no definitive evidence for farming in this Late Neolithic context. The earliest credible evidence of local agricultural activities starts in the Early Bronze Age with a rise in pastoral indicators (ribwort plantain and sorrel), followed by an increase in arable indicators (including cereal-type pollen) during the Middle Bronze Age. However, slightly higher levels of cereal-type pollen, ribwort plantain and sorrel in the Late Neolithic alluvial sequence from LLYR14 may suggest grazing and some arable activity in the wider region. The variation in the environmental record between LLYR4 and LLYR14 is likely to represent differential pollen signatures. Whilst the peat deposits in LLYR4 is likely to represent a more localised pollen signature, the contemporary alluvial sequence in LLYR14 may have pollen that has been transported from a wider area.

Interpretation

The discovery of a small, but significant, assemblage of archaeological material at the Llanllŷr site is important to our understanding of the Prehistoric occupation of Ceredigion. At present, because of the small number of diagnostic tools recovered from the excavation, it is difficult to be certain as to the cultural and/or technological affinities of the tool makers. What the evidence does clearly indicate is that human activity is clearly taking place within the wetland area of the former Glacial Lake Aeron. Because of the acidic nature of the ground conditions bone preservation is not anticipated and therefore a wider range of associated palaeoenvironmental material is unlikely to be present. Despite this it is likely that these mounds formed 'islands' within a patchwork of shallow open water, reed swamp and small streams.

The limited material culture on these islands may indicate sporadic activity perhaps associated with exploitation of natural resources such as wildfowl, fish or plants. In this case, although we often try to understand archaeological signatures by what is present, it is also useful to look at what isn't. The data indicates that Llanllŷr was not a main settlement for Mesolithic or Neolithic people, although it may represent a task-based scatter on the edge of such an area not yet excavated. The assemblage does not have the typological signature of a large hunting or settlement camp (see Jochim 1998, 2023), and an absence of scrapers, awls or piercers may indicate a short-term, season-specific event. It may not have been necessary to clean animal skins and furs

for clothing, or to provide insulation for shelters. However, burnt areas and *in situ* flint knapping means that people were making tools on these drier areas above the marsh. The geomorphological context is also important. Lowland, infilled lakes are not known in Ceredigion from this time as all open lakes are found in the uplands. This means that the infilled Lake Aeron would have been distinctive in the landscape and may have been a draw for Mesolithic and Neolithic peoples. Open wetland and marsh environments provided opportunities for fishing and trapping waterfowl, or collecting eggs from the nests of wading birds, as well as for the collection of rushes to make baskets or matting, for example. Local woodland offered hazelnuts, fungi and wild plants for food or medicinal uses, and people were probably making a few tools for foraging, fishing and trapping or hunting, with fires for cooking and keeping warm while they went about their tasks.

The dates obtained from the burnt material on both 'islands' indicate activity during both the Early and Late Neolithic periods, the Early Neolithic date derived from close to the single diagnostic microlith found on Mound 2. The dates from this mound overlap with those from the earliest dated Neolithic activity in Ceredigion at Llandysul (Murphy & Evans 2006). We can therefore tentatively identify hunting/gathering activity in the first half of the 4th millennium BC within a wetland environment in which the only identifiable artefact would typically be described as of Late Mesolithic character. At present no evidence exists for activity around the wetland margins or any features consistent with more sustained presence of human activity.

Llanllŷr in context

Until now Tanybwllch in Aberystwyth has been the only known excavated Mesolithic site in Ceredigion. Artefactually, this consisted of a large scatter distributed across two banks or bluffs, with thousands of artefacts, including microliths and microburins, bevelled pebbles, burnt stone and red ochre. Despite its significance no further work has been carried out since the original excavations in 1922 (Thomas and Dudleyke 1925) however, one of the authors (MRB) has recently identified that large parts of the site still exist and indeed the site is larger than previously thought. The only other excavated site with a possible Mesolithic element is at Llanerchaeron where excavations by the National Trust, on an area of parkland recovered n=91 flint artefacts in 2000 and a further n=13 or so in 2009 (Evans 2000 & 2003, Roberts 2009). Although the artefacts range in typology from a possible Late Upper Palaeolithic to Bronze Age, several pieces may be diagnostically Mesolithic, and some Neolithic (Lee 2000, Evans 2003). Field collections have also added to this small record of excavated material. An assemblage of flintwork was collected from the Clarach area in the 1920's and 30's by Ieuan Williams from the Geology department at University College of Wales, Aberystwyth. While the present location of the archive and artefacts is unknown, both Nantsiriol (site 'K') and Glanymor (site 'J') were revisited by Richard Evans in the 1990s and a further scatter located, now at Amgueddfa Ceredigion Museum (1999). Although the assemblage is chronologically mixed, several pieces have been identified as typologically Mesolithic (Briggs 1997, Driver and Charnock 2001). An area adjacent to Nantsiriol, at Plas Gogerddan, was also fieldwalked in the late 1990s. 54 pieces of worked flint were collected, again

with some Mesolithic and Neolithic pieces, although most are debitage, with no microliths (Driver and Charnock 2001). Further evidence for occasional finds of lithic material in Ceredigion is provided in Bates *et al* (in press).

These small, mixed scatters, including the well excavated assemblage described here, are however important. Current methods in archaeology are typically aimed at identifying large-scale patterns in movements, settlement, and material culture. As a consequence atypical signatures and sites or smaller more ephemeral scatters of material left behind by dispersed and mobile communities can be overlooked. However, in places like Ceredigion the archaeological record indicates exactly this; small travelling groups of not only Mesolithic, but perhaps also Neolithic people. While Late Mesolithic communities are associated with temporary dwellings over wide landscapes, similar lifeways persisted into the Neolithic, and pit sites suggest that dwellings continued to take the form of relatively impermanent, seasonal occupation (see Garrow *et al* 2005, 2006). Seasonal settlement was fairly widespread across Britain where some locations provided shorter-term dwellings, and some places were revisited (Whittle 1997, 2003). Pit sites at Penrhynoch and Llandysul may reflect such short-term seasonal settlement as none are associated with post-holes, gullies or other signifiers of longer-term occupations. (Murphy *et al* 2019, Murphy & Evans 2006). The significance of sites like these – and Llanllyr – is that they reflect continuation of transient and nomadic ways into the 4th Millennium BC, *i.e.* that traditionally associated with the Neolithic.

Llanllyr is a new type of site for Ceredigion. It is currently the only excavated Mesolithic-Neolithic site with radiocarbon dates and extensive palaeoenvironmental data, including new pollen records for a lowland area in Ceredigion. We have been able to reconstruct the environment which drew people to the site in the early part of the 4th millennium BC, and again during the Late Neolithic. Activity on Mound 2 may reflect some of the latest Mesolithic and earliest Neolithic in Ceredigion, and it has become increasingly common for Late Mesolithic microliths to be associated with Neolithic dates. For example, in the Yorkshire and Humberside region there is an overlap in the use of both Late Mesolithic and Early Neolithic material culture, with Bayesian dates for latest use of rod microliths modelled at 3950–3540 cal BC (Griffiths 2014). These dates are within the scope of the radiocarbon dates taken from Trench 10, where the microlith was located and the most intensive activity was focused. Other places across Britain also have early 4th millennium BC dates for Mesolithic tools including Fir Tree Field in Dorset (4160–3980 cal BC) and Lydstep in South Wales (4270–3930 cal BC) (*ibid*). The signature on Mound 1 may reflect later use of the site, possibly some time during the Neolithic-Early Bronze Age. Elsewhere in Britain bipolar techniques were used from the Mesolithic into the Bronze Age, and smaller pebbles (<32mm) have been associated with Mesolithic activity in Aberdeenshire, for example (Wickham Jones *et al* 2017, Ballin 2021). In Wales, however, this technology is considered likely to be post-Mesolithic with an emphasis in the Early Bronze Age (David 2017–18). The axehead is typologically Neolithic although tuffs and rhyolites were used for axehead manufacture in the flint-poor regions of Wales from the Early Mesolithic onwards (David and Williams 1995, David and Walker 2004). It was not an unusual practice to extend the life and function of axeheads

by reworking them, or to use them as cores to make other tools, and this axe may have been used over an extended period by several generations of people.

The site reflects movement along the Aeron Valley, following the river inland from the coast. Artefacts from Llanerchaeron are similar to Llanllyr in that they consisted of mainly surface debitage. The predominantly secondary and tertiary material, coupled with a lack of primary flakes and few cores, indicate Llanllyr was not used for the preliminary reduction stages in flintworking. This is not surprising given that flint was not an immediately local resource and may have had to be transported from the nearest area of coastline, more than 15km away, offshore from present-day Aberaeron. It is most likely that initial testing and preparation of pebbles was carried out on the beach where the raw material was picked up. Beach pebbles would have been more easily transported as roughouts or blanks (*e.g.* cores and blades or flakes), and then further worked into whatever tools were needed. This is what the Llanllyr assemblage seems to indicate, with areas of *in situ* secondary knapping identified on both mounds.

Llanllyr is a reminder of how we understand and should look for early prehistoric sites in the future, particularly in areas where longer-term settlement is not necessarily representative of communities. Neither may it be appropriate to apply rigid distinctions in material culture chronologies, when travel brought contact between people with regionally different ways of doing things at different times. Mesolithic and Neolithic archaeology in Ceredigion reflects ephemeral and task-specific signatures of mobile people, who most likely travelled from local and non-local destinations, by boat along the coastline or across the bay, and where river valley incursions may have been from places which are now submerged.

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Notes

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