

Beacon Hill Wood, Somerset – BHW08 – Plant macro-remains and wood charcoal

Charred plant remains, waterlogged plant remains and wood charcoal fragments were analysed by Ellen Simmons. The tables referred to are in **Appendix 1**.

Sampling and recovery

The flots from ten soil samples, collected with the aim of recovering charred plant remains and wood charcoal during the excavation of a round barrow at Beacon Hill Wood, were provided for analysis. Samples 7, 8, 9, 10 and 11 had been collected from the buried soil below the barrow (context 4010). Samples 1, 2, 5 and 12 had been collected from the stacked turfs used in the construction of the barrow mound (context 4008) and sample 6 was collected from the fill of a small pit (context 4012). The samples were all of a similar volume (2 – 4 litres) and had been processed for charred plant remains and wood charcoal using a water separation machine.

Two samples from the basal barrow turfs were also collected with the aim of recovering waterlogged plant remains (samples 3 and 4, context 4008). These were processed using the wet sieving method, whereby soil is gently washed through a stack of sieves. Material was collected in sieves of 1mm, 500 µm and 300 µm mesh and stored in alcohol in airtight glass jars.

Charred and waterlogged plant material was mostly examined using a low power binocular microscope (x7-x45). A sample of the charred heather fragments were identified with reference to Hather (2000) using high power binocular reflected light (episcopic) microscopy (x50, x 100 and x 400). The remaining heather fragments were identified by comparison of gross morphology using a low power microscope. Where straightforward counts of charred or waterlogged plant remains were problematic (e.g. material other than fruits and seeds), the material was quantified using a scale of abundance (- = 1 or 2 items, + = < 10 items, ++ = > 10 items, +++ = > 30 items, ++++ = > 100 items). This data is presented below in tables 1 and 2.

Wood charcoal analysis was carried out on material in sample 6 representing context 4012, sample 8 representing context 4010 and sample 12 representing context 4008. The selection of these three samples for analysis was based on the presence of more than 30 fragments of wood charcoal in them, therefore ensuring that the list of identified charred woody taxa would be as representative as possible of that which had been deposited.

Wood charcoal fragments >2mm in size were fractured manually and the resultant anatomical features observed in transverse, radial and tangential planes using high power binocular reflected light (episcopic) microscopy (x50, x 100 and x 400). In addition to identification to as high a taxonomic level as possible, a record was made, where possible, of the ring curvature of the wood in order to determine the part of the woody plant which had been burnt. Evidence for vitrification was also recorded in order to provide information concerning the condition of the wood prior to charring and the charring conditions the wood was subjected to (Marguerie, 2007: 1421). This data is presented below in table 3.

Identification of plant material and wood charcoal was carried out by comparison with material in the reference collections at the Department of Archaeology, University of Sheffield and various

reference works (e.g. Berggren, 1969; Berggren, 1981; Anderberg, 1994; Cappers *et al*, 2006; Schweingruber, 1990; Hather, 2000).

Results

Context 4008 – the barrow turf

Samples 1, 2, 5 and 12 were all collected from the stacked turfs which were used in the construction of the barrow mound. All four samples contained varying densities (less than 10 to more than 30 items per sample) of charred heather fragments (*Calluna vulgaris*), charred peat or turf (10 to greater than 100 items) and wood charcoal fragments (10 to greater than 100 items). Densities of charred fragments of monocotyledon root material were similar to that in other samples (less than 10 items). Very small amounts (1 or 2 per sample) of charred grass or sedge plant stems and fine woody twigs were present. Also present in sample 2 was a single fragment of charred hazel nutshell (*Corylus avellana*) and an unidentified charred nutshell fragment was present in sample 12. Charred possible heather buds were also present in samples 1 and 5 and sample 5 contained two fragments of some form of unidentified sugar or starch rich material.

Samples 3 and 4, which were collected for the recovery of waterlogged plant remains from the bottom layers of turf used in the construction of the barrow mound, were found to be composed largely of well humified peat with few identifiable plant remains. Rootlets and a small amount of moss were present along with wood charcoal, charred heather fragments and charred grass or sedge plant stems.

Of the 53 > 2mm wood charcoal fragments which were present in sample 12, the majority (41) were identified as oak (*Quercus* sp.), 8 were of ash (*Fraxinus* sp.) and 4 were unidentifiable. The majority of the fragments where ring curvature could be recorded, exhibited weak or moderate ring curvature. Evidence for vitrification was present in many of the wood charcoal fragments although only at level 1 (low brilliance-refractiveness) or 2 (strong brilliance) with anatomical features still largely visible (Marguerie, 2007: 1421).

Context 4010 – buried soil below the barrow

Samples 7, 8, 9, 10 and 11, which were collected from the buried soil below the barrow, contained similar densities to that found in the samples of barrow turf of charred peat or turf (10 to greater than 100 items per sample), wood charcoal fragments (10 to greater than 100 items) and monocotyledon root material (less than 10 items). Densities of charred heather fragments (greater than 10 to greater than 100 items), grass or sedge plant stems (less than 10 items) and fine woody twigs (1 or 2 to less than 10 items) were generally slightly higher than in the samples of barrow turf.

Of the 44 > 2mm wood charcoal fragments which were present in sample 8, the majority (28) were again identified as oak, 3 were of ash and 5 were unidentifiable. In addition, however, hazel was also present at a low density (6 fragments). Ring curvatures were again either weak or moderate and vitrification to level 1 or 2 was also present in many fragments.

Context 4012 – middle of semi-waterlogged pit

Sample 6, which was collected from the middle of a semi-waterlogged pit fill, was found to contain relatively high densities (greater than 100 items) of charred heather, charred peat or turf and wood charcoal fragments. Relatively high densities of charred grass or sedge plant stems (more than 30

items) were also present while the density of monocotyledon root material was similar to that in other samples (less than 10 items)

Of the 55 wood charcoal fragments present in sample 6, the majority (38) were again found to be of oak. A small number of ash fragments were also present (5) but no hazel. Fragments of bark, unidentified root or stem, and an unidentified monocotyledon were however also present in this sample. Most fragments again exhibited weak or moderate ring curvatures and many showed evidence of vitrification to levels 1 or 2.

Discussion

A broadly consistent range of charred plant remains were found to be present in soil samples from a Bronze Age round barrow at Beacon Hill Wood. Samples were collected from the turf used in the construction of the barrow mound, the buried soil beneath the mound and in the fill of a pit. Charred material, present in all samples, included fragments of heather, peat or turf, grass or sedge plant stems, monocotyledon root material, fine woody twigs and wood charcoal, in varying densities. The similarities in composition of the charred material in these soil samples suggests that the turfs used in construction of the barrow were dug from near to the location of the barrow, and were probably contemporary. Evidence that the turfs used in the barrow construction were contemporaneous was also demonstrated by the results of pollen analysis of the barrow turfs (Woodward, 2008: 4). The generally slightly higher density of the more delicate classes of charred plant material such as heather fragments, grass or sedge plant stems and fine woody twigs, in the samples from beneath the mound and from the pit fill may be due to better preservation due to the protection of the barrow turfs above.

The charred plant remains of heather, sedges or grasses, and monocotyledon root material, indicate the presence of heath type vegetation at the location where the barrow was constructed and from where the turfs were cut. The presence of tree or scrub type vegetation in the vicinity, which included oak, ash and hazel, is also indicated by wood charcoal, fine woody twigs and hazel nutshell. Pollen analysis of soil samples from the pre-barrow soil surface also provide evidence for the presence of oak, ash, hazel and ericaceous heathland in the pre barrow landscape (Woodward, 2008: 3).

The charred plant material in these samples indicates that burning had occurred at the location of the barrow mound and the location from where the barrow turfs were cut. It is difficult to ascertain however, how long before the construction of the barrow the burning had occurred, or whether burning had occurred more than once at the site. It is possible that at least some of the charred plant material in these samples represents heath burning, associated with heath management for domestic animal grazing. Heath burning fertilizes the soil, removes shrubs and stimulates growth of new heather shoots which are a nutritious source of grazing fodder for sheep and cattle, particularly during winter when fodder is scarce (Karg, 2008: 47). Such land used for grazing would have been a valuable

resource, particularly as pastoralism was an important aspect of the economy in early Bronze Age Britain.

At the early Bronze Age grave mound at Skelhøj in Denmark, soil samples from the buried soil beneath the mound and from the turfs used in construction, produced a range of well preserved charred and waterlogged plant remains, which included charred heather. Evidence that the charred heather remains were a result of heathland management by fire included the presence of dodder, a parasite of heather plants damaged by fire, and the remains of a range of plants indicative of disturbance, due to pastoralism, of a dry heath plant community (Karg, 2008: 46).

Unfortunately the samples of peat collected from the basal turfs of the barrow at Beacon Hill Wood were found to be well humified. No identifiable waterlogged plant remains were present, which would support an interpretation of heath management by fire at the site. Analysis of pollen from the barrow turfs at Beacon Hill Wood does however indicate that the pre barrow landscape was disturbed and that this was probably a result of pastoral rather than agricultural activity due to the lack of cereal pollen (Woodland, 2008: 3). Numerous charcoal fragments, indicating repeated burning, were noted in soil profiles collected during ecological studies of calcareous heaths in the South-West including Crooks Peak, near to Beacon Hill, in Somerset (Etherington, 1981: 288). However no microscopic charcoal was encountered in the pollen samples from Beacon Hill, as may be expected if heath management by burning had been practiced regularly in the near vicinity (Woodland, 2008: 5).

It may therefore be the case that the charred plant remains and wood charcoal from Beacon Hill Wood resulted from vegetation clearance prior to the construction of the mound. Such evidence for vegetation clearance by burning is not uncommon in buried soils beneath round barrows (Ashbee 1960: 58). In a detailed study of the Bronze Age barrows of the South-West, Owoc (2000: 2001) discusses a number of examples of early Bronze Age barrows where pre-mound or pre-burial rituals included burning and fires (Owoc: 2001: 195). Later activities at existing barrows also included lighting of fires and spreading of charcoal (Owoc: 2001: 196).

At the Early Bronze Age site of Davidstow1 on Davidstow Moor in Cornwall, for example, turf was stripped before the construction of the mound and charcoal deposited beneath and within the mound. Later activities on the mound surface also included fires and the deposition of charcoal, which were then covered by a further layer of earth over the mound (Christie 1988: 50-51). Evidence for the deposition of, apparently deliberately sorted, charred pyre fuel material has been noted at a number of Bronze Age round barrows (McKinley, 1997: 137). It has also been suggested that selected domestic debris, perhaps associated with feasts or ceremonies, was brought from settlements and deposited beneath and within Bronze Age barrows (Woodward, 2002: 51).

It may therefore be the case that at least some component of the wood charcoal and other charred material from beneath and within the barrow at Beacon Hill wood, was brought to the site and deliberately deposited. This material may have been charred as a component of pyre fuel or burnt on fires as part of funerary rites associated with the construction of the barrow.

The dominance of oak charcoal in the sample from the barrow turf, the buried soil beneath the barrow and in the pit fill would support an interpretation that the charcoal may in part, represent pyre fuel. Oak is commonly the sole or dominant charcoal type found in samples from Bronze Age barrows, particularly of pyre debris (Ashbee, 1960: 38). This may be partly due to the prevalence of oak in the environment but may also relate to its suitability as fuel wood. That the ring curvature of the wood charcoal was either moderate or weak indicates that the charcoal originated from large branches or logs. The presence of vitrification in many of the fragments possibly indicates burning rapidly at high temperatures, which would be consistent with a pyre. The presence of hazel nutshell and charred sugar or starch rich material in sample 5 from the barrow turfs may represent food remains, although, due to the small amount of material present, it is equally possible this material was charred accidentally.

Conclusions

Systematic sampling of both the buried soil preserved beneath the Bronze Age round barrow, excavated at Beacon Hill Wood, and of the turfs used in the mound's construction, has yielded significant information regarding the pre-barrow environment and possible human interaction with that environment. The pre-barrow environment included heath type vegetation such as heather, grasses and sedge, along with stands of trees which included oak, ash and hazel. Burning appears to have taken place at the site of the barrow mound and at the location from where the barrow turfs were cut, which it seems was likely to have been close to the site of the barrow.

The evidence for burning, particularly charred heather, plant stems, root material and peat or turf, suggest heath management by fire may have been carried out at the site in order to provide valuable grazing for domestic animals. If repeated burning had taken place at the site, however, it may be expected that microscopic charcoal would have been present in pollen samples from the pre-barrow soil surface.

It may more likely be the case, therefore, that the charred plant material represents vegetation clearance by fire prior to the construction of the mound. Vegetation clearance by burning may have been related to rituals associated with the construction of the mound. The wood charcoal in particular, which is dominated by oak and mostly from large branches or logs, may represent the deliberate deposition of fuel from pyres or fires associated with funerary ceremonies.

References

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Appendix 1 – Tables

Table 1 – Charred plant remains from Beacon Hill Wood round barrow (BHW08)

Sample Number	1	2	5	6	7	8	9	10	11	12
Context Number	4008	4008	4008	4012	4010	4010	4010	4010	4010	4008
Context Type	Barrow	Barrow	Barrow	Pit fill	Buried	Buried	Buried	Buried	Buried	Barrow
Volume of sample (litres)	turf	turf	turf	soil	soil	soil	soil	soil	soil	turf
	3.5	2.5	3.75	3	3	3	3	3	2.75	2
Non seed material (- = 1 or 2 items, + = < 10 items, ++ = > 10 items, +++ = > 30 items, ++++ = > 100 items)										
Heather (<i>Calluna vulgaris</i>) twigs	++	+	++	++++	++	++++	+++	+++	++++	+++
Monocotyledon root fragments	+	+	+	+	-	+	+	-	++	++
Charred turf / peat	++	++	++++	++++	+++	++++	++++	++	++++	++++
? Sedge / grass (cf. Cyperaceae / Poaceae) plant stems	+	-	-	++		+	+		-	-
Fine woody twigs (<1mm)	-	-	-	-	+	+			-	-
< 2mm charcoal fragments	+	++	+++	++++	+++	++++	+	++++	++	++++
> 2mm charcoal fragments	-	-	+	+++	+	+++		-	-	++++
Hazel nutshell fragments (<i>Corylus avellana</i>)		1								
Nutshell indet										1
cf. Heather bud fragments (<i>Calluna vulgaris</i>)	1		1							
cf. Seed head indet.									1	
Sugar/ starch rich material indet			2							

Table 2 – Waterlogged plant remains from Beacon Hill Wood round barrow (BHW08)

<i>Sample Number</i>	3	4
<i>Context Number</i>	4008	4008
<i>Context Type</i>	<i>Barrow turf, bottom banded sand and organics</i>	<i>Barrow turf, bottom sample</i>
<i>Volume of sample (litres)</i>	3.75	3.5
Non seed material (- = 1 or 2 items, + = < 10 items, ++ = > 10 items, +++ = > 30 items, ++++ = > 100 items)		
Rootlets	+	+++
Moss	-	
Charred heather fragments	+++	++++
Charred monocotyledon root fragment	++	
Wood charcoal > 2 mm	-	+
Wood charcoal < 2mm	++++	

Table 3 – Wood charcoal from Beacon Hill Wood round barrow (BHW08)

Sample Number: 6

Context Number: 4012

Context Type: Middle of semi-waterlogged fill of pit

Volume of Sample (litres): 3

Fragment Number	Fragment Size	Identification	Ring Curvature	Vitrification
1	> 4mm	Quercus	weak	
2	> 4mm	Quercus	weak	
3	> 4mm	Quercus	weak	
4	> 4mm	Quercus	weak	
5	> 4mm	Fraxinus		
6	> 4mm	Fraxinus	weak	
7	> 4mm	Angiosperm indet.		
8	> 4mm	Quercus	weak	
9	> 2mm	Quercus	weak	
10	> 2mm	Quercus	moderate	
11	> 2mm	cf. Quercus		
12	> 2mm	Quercus	weak	
13	> 2mm	Quercus		
14	> 2mm	Quercus	weak	
15	> 2mm	Quercus		
16	> 2mm	root/stem indet		
17	> 2mm	Angiosperm indet.		
18	> 2mm	cf. Quercus	weak	
19	> 2mm	root/stem indet		
20	> 2mm	Quercus	moderate	
21	> 2mm	Quercus	weak	
22	> 2mm	cf. Quercus		
23	> 2mm	cf. Quercus		
24	> 2mm	Angiosperm indet.		
25	> 2mm	cf. Quercus		
26	> 2mm	bark indet.		
27	> 2mm	Quercus	weak	
28	> 2mm	Monocotyledon indet.		
29	> 2mm	cf. Quercus		
30	> 2mm	Fraxinus	weak	
31	> 2mm	Quercus	weak	
32	> 2mm	Quercus	weak	1
33	> 2mm	root/stem indet		
34	> 2mm	cf. Quercus		
35	> 2mm	Quercus	weak	1
36	> 2mm	Quercus	weak	
37	> 2mm	Quercus	weak	1
38	> 2mm	Quercus	weak	
39	> 2mm	root/stem indet		
40	> 2mm	Quercus		
41	> 2mm	Quercus		1
42	> 2mm	root/stem indet		
43	> 2mm	bark indet.		

Sample Number: 6

Context Number: 4012

Context Type: Middle of semi-waterlogged fill of pit

Volume of Sample (litres): 3

Fragment Number	Fragment Size	Identification	Ring Curvature	Vitrification
44	> 2mm	Fraxinus	weak	
45	> 2mm	Quercus	weak	
46	> 2mm	cf. Quercus		
47	> 2mm	Quercus	moderate	
48	> 2mm	Angiosperm indet.		1
49	> 2mm	Fraxinus		
50	> 2mm	Quercus	weak	
51	> 2mm	Quercus	weak	
52	> 2mm	Quercus	weak	
53	> 2mm	cf. Quercus		
54	> 2mm	Quercus		
55	> 2mm	Quercus		

Sample Number: 8

Context Number: 4010

Context Type: Buried soil below barrow

Volume of Sample (litres): 3

Fragment Number	Fragment Size	Identification	Ring Curvature	Vitrification
1	> 4mm	cf. Fraxinus	weak	
2	> 4mm	cf. Corylus	moderate	
3	> 4mm	cf. Corylus		
4	> 4mm	cf. Fraxinus	weak	
5	> 4mm	Corylus		
6	> 4mm	Alnus/Corylus/Betula	weak	1
7	> 4mm	cf. Corylus	weak	
8	> 4mm	Angiosperm indet.		2
9	> 4mm	Angiosperm indet.		2
10	> 4mm	Corylus		
11	> 4mm	Angiosperm indet.		2
12	> 4mm	Angiosperm indet.	weak	1
13	> 4mm	cf. Fraxinus	weak	
14	> 2mm	cf. Quercus	weak	
15	> 2mm	cf. Quercus	weak	1
16	> 2mm	Quercus	weak	
17	> 2mm	cf. Quercus	weak	
18	> 2mm	cf. Quercus	weak	1
19	> 2mm	cf. Quercus	weak	1
20	> 2mm	Quercus	weak	
21	> 2mm	Quercus	weak	
22	> 2mm	Quercus		1
23	> 2mm	root/stem indet		
24	> 2mm	Quercus	moderate	

Sample Number: 8

Context Number: 4010

Context Type: Buried soil below barrow

Volume of Sample (litres): 3

Fragment Number	Fragment Size	Identification	Ring Curvature	Vitrification
25	> 2mm	cf. Quercus	weak	
26	> 2mm	Angiosperm indet.		1
27	> 2mm	Quercus		1
28	> 2mm	cf. Quercus	weak	1
29	> 2mm	cf. Quercus	weak	1
30	> 2mm	cf. Quercus	weak	1
31	> 2mm	cf. Quercus	weak	1
32	> 2mm	Quercus		1
33	> 2mm	Quercus	moderate	1
34	> 2mm	cf. Quercus	moderate	1
35	> 2mm	cf. Quercus	weak	1
36	> 2mm	Quercus	weak	1
37	> 2mm	Quercus	weak	1
38	> 2mm	Quercus		1
39	> 2mm	Quercus		1
40	> 2mm	Quercus	weak	1
41	> 2mm	cf. Quercus		
42	> 2mm	Quercus		
43	> 2mm	Corylus	moderate	
44	> 2mm	cf. Quercus	weak	

Sample Number: 12

Context Number: 4008

Sample Type: Barrow turfs

Volume of Sample (litres): 2

Fragment Number	Fragment Size	Identification	Ring Curvature	Vitrification
1	> 4mm	Fraxinus	weak	
2	> 4mm	Angiosperm indet	weak	1
3	> 4mm	cf. Quercus	weak	1
4	> 4mm	cf. Quercus	weak	
5	> 4mm	Quercus	weak	
6	> 4mm	Angiosperm indet	weak	1
7	> 4mm	cf. Quercus	weak	
8	> 4mm	Quercus	weak	
9	> 4mm	cf. Quercus (twisted)	weak	1
10	> 4mm	cf. Quercus (twisted)	weak	2
11	> 4mm	cf. Quercus	weak	1
12	> 4mm	Quercus (twisted)	moderate	1
13	> 4mm	cf. Quercus	weak	1
14	> 4mm	Angiosperm indet	weak	2

Sample Number: 12

Context Number: 4008

Sample Type: Barrow turfs

Volume of Sample (litres): 2

Fragment Number	Fragment Size	Identification	Ring Curvature	Vitrification
15	> 4mm	cf. Quercus	weak	1
16	> 2mm	Quercus		
17	> 2mm	Quercus	weak	
18	> 2mm	cf. Fraxinus	moderate	
19	> 2mm	Quercus	weak	
20	> 2mm	Fraxinus		
21	> 2mm	Quercus	weak	
22	> 2mm	cf. Quercus	weak	
23	> 2mm	Fraxinus (twisted)		
24	> 2mm	Fraxinus		
25	> 2mm	Quercus		
26	> 2mm	Quercus (twisted)	weak	1
27	> 2mm	cf. Quercus	weak	
28	> 2mm	cf. Quercus	weak	
29	> 2mm	Quercus (twisted)	weak	1
30	> 2mm	Quercus		
31	> 2mm	cf. Quercus		
32	> 2mm	cf. Quercus	weak	
33	> 2mm	Fraxinus	weak	
34	> 2mm	Quercus	moderate	
35	> 2mm	Quercus	weak	
36	> 2mm	cf. Fraxinus (twisted)	weak	1
37	> 2mm	Quercus	weak	
38	> 2mm	cf. Quercus	moderate	
39	> 2mm	cf. Quercus	weak	
40	> 2mm	cf. Quercus		
41	> 2mm	cf. Quercus (twisted)		
42	> 2mm	cf. Quercus		
43	> 2mm	cf. Fraxinus		
44	> 2mm	Quercus		
45	> 2mm	Quercus		
46	> 2mm	Quercus		
47	> 2mm	Quercus		
48	> 2mm	Quercus		
49	> 2mm	Quercus		
50	> 2mm	Quercus (twisted)		1
51	> 2mm	Angiosperm indet	weak	2
52	> 2mm	Quercus		
53	> 2mm	Quercus		