

ARCHAEOLOGICAL  
SERVICES  
DURHAM UNIVERSITY

on behalf of  
Solstice Heritage

High Carlingill Community Excavation  
Cumbria

palaeoenvironmental assessment

report5130  
August 2019



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## **1. Summary**

### **The project**

- 1.1 This report presents the results of palaeoenvironmental assessment of four bulk samples taken during archaeological works at High Carlingill, Cumbria.
- 1.2 The works were commissioned by Solstice Heritage, and conducted by Archaeological Services Durham University.

### **Results**

- 1.3 Evidence indicates the exploitation of heathland, ruderal and damp ground habitats for sources of fodder, bedding or thatch, and shows the use of spelt wheat and hulled 6-row barley, crops that are typically associated with Iron Age and Romano-British sites in northern England. There is a range of tree and shrub species represented in the charcoal record, giving some idea of the available woodland resources.

### **Recommendations**

- 1.4 Full analysis of the charcoal assemblage from occupation deposit [5006] could be worthwhile as it has the potential to produce a more complete species list and may provide evidence for woodland management practices. No further analysis is recommended for the other samples, due to the small quantities of palaeoenvironmental remains present. If additional work is undertaken at the site, the results of this assessment should be added to any further palaeoenvironmental data produced.
- 1.5 The flots should be retained as part of the physical archive of the site. The residues were discarded following examination.

## 2. Project background

### Location and background

- 2.1 Archaeological works were conducted by Solstice Heritage in partnership with the Lunesdale Archaeology Society as part of the Digging for Britons! HLF-funded community archaeology project investigating the Iron Age/Romano-British settlement at High Carlingill, Cumbria. A previous palaeoenvironmental assessment of bulk samples and hand-recovered charcoal from the site, produced evidence for the use of wild-gathered foods and exploitation of the local mixed woodland resource (Archaeological Services 2019). This report presents the results of palaeoenvironmental assessment of four bulk samples associated with an enclosure bank (Trench 4) and a probable roundhouse (Trench 5).

### Objective

- 2.2 The objective of the scheme of works was to assess the palaeoenvironmental potential of the samples, establish the presence of suitable radiocarbon dating material, and provide the client with appropriate recommendations.

### Dates

- 2.3 The samples were received by Archaeological Services on 13th June 2019. Assessment and report preparation was conducted between June and August 2019.

### Personnel

- 2.4 Assessment and report preparation was conducted by Dr Charlotte O'Brien. Sample processing was by Ben Matus and Jonathan Goldberg-Booth.

### Archive

- 2.5 The site code is **HC19**, for **High Carlingill 2019**. The flots are currently held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University awaiting collection. Finds were collected by The Lunesdale Archaeology Society on 1st August 2019. The charred plant remains will be retained at Archaeological Services Durham University.

## 3. Methods

- 3.1 The bulk samples were manually floated and sieved through a 500 $\mu$ m mesh. The residues were examined for shells, fruitstones, nutshells, charcoal, small bones, pottery, flint, glass and industrial residues, and were scanned using a magnet for ferrous fragments. The flots were examined at up to x60 magnification for charred and waterlogged botanical remains using a Leica MZ7.5 stereomicroscope. Identification of these was undertaken by comparison with modern reference material held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University. Plant nomenclature follows Stace (2010). Habitat classifications follow Preston *et al.* (2002).
- 3.2 Selected charcoal fragments were identified, in order to provide material suitable for radiocarbon dating. The transverse, radial and tangential sections were examined at up to x500 magnification using a Leica DMLM microscope. Identifications were assisted by the descriptions of Schweingruber (1990), Gale & Cutler (2000) and Hather (2000), and modern reference material held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University. Where comparable

anatomical properties prevent secure identification, charcoal remains were recorded to family level. Maloideae is a subfamily within the Rosaceae (rose family), comprising hawthorn, apple, pear and whitebeams, while willow and poplar are grouped as Salicaceae (willow family).

- 3.3 The works were undertaken in accordance with the palaeoenvironmental research aims and objectives outlined in the regional archaeological research framework and resource agendas (Hodgson & Brennand 2007; Philpott & Brennand 2007; Hall & Huntley 2007; Huntley 2010).

## 4. Results

- 4.1 The two samples from Trench 4 comprise small quantities of charcoal identified as birch stemwood, and hazel and Salicaceae roundwood. Traces of fired clay occur in both samples, and soil horizon [4016] contains a hobnail. The few charred plant macrofossils comprise a hazel nutshell fragment in [4016], and a twisted hulled barley grain and indeterminate cereal grain in context [4014].
- 4.2 In Trench 5, occupation deposit [5006] produced a large number of charred plant macrofossils comprising barley and wheat grains, hazel nutshell fragments, heather twigs and weed seeds of brome, wild radish, cleavers, redshank, common chickweed, sedges and grasses. Diagnostic chaff confirms the presence of spelt wheat. The single barley rachis fragment is not identifiable to species, but the twisted shape of one of the barley grains suggests the use of 6-row barley (*Hordeum vulgare*). The charcoal assemblage mainly comprises small roundwood and branchwood of hazel, Maloideae and oak, including large fragments up to 2.5cm. Finds from deposit [5006] include pottery, fired clay, corroded metal objects (mainly nails) and small quantities of burnt bone.
- 4.3 Smaller quantities of charcoal occur in context [5011], although the same range of species as [5006] is noted. Charred plant macrofossils comprise hazel nutshell (mostly <4mm), a barley grain, a sedge nutlet and a grass caryopsis. Finds include two corroded metal fragments and trace quantities of fired clay. Large quantities of modern roots, particularly in the flots of contexts [4016], [5006] and [5011], reflect the shallow nature of the features.
- 4.4 Results are presented in Appendix 1. Material suitable for radiocarbon dating is listed in Appendix 2.

## 5. Discussion

- 5.1 The charred cereal remains indicate the use of spelt wheat and hulled 6-row barley, crops that were common in Britain during the Iron Age and Romano-British periods in Britain (Greig 1991; Hall & Huntley 2007). Quantities of hazelnuts reflect the exploitation of this wild-gathered food resource. The weed flora includes arable, ruderal and damp ground species, which probably derive from a range of sources including the burnt remains of crop processing waste, fodder, hay or stable manure burnt as a means of fuel or site maintenance. Traditional uses of heather twigs include bedding, thatch and fodder (Gale & Cutler 2000; Fenton 1978).

- 5.2 Although a defined hearth was not observed in the Trench 5 roundhouse, the accumulation of charcoal and charred plant remains in context [5006] is consistent with a deposit of hearth waste. The charcoal comprises a range of tree and shrub species, with both branchwood and stemwood represented. The relatively large size of some of the charcoal fragments points to *in situ* burning in a short-lived feature. Hazel, oak and Maloideae comprise species known for their excellent firewood properties (Bishop *et al.* 2015).

## 6. Recommendations

- 6.1 Full analysis of the charcoal assemblage from occupation deposit [5006] could be worthwhile as it has the potential to produce a more complete species list and may provide evidence for woodland management practices. No further analysis is recommended for the other samples, due to the small quantities of palaeoenvironmental remains present. If additional work is undertaken at the site, the results of this assessment should be added to any further palaeoenvironmental data produced.
- 6.2 The flots should be retained as part of the physical archive of the site. The residues were discarded following examination.

## 7. Sources

- Archaeological Services 2019 *High Carlingill Community Excavation, Cumbria: palaeoenvironmental assessment*. Unpublished report **4950**, Archaeological Services Durham University
- Bishop, R R, Church, M J, & Rowley-Conwy, P A, 2015 Firewood, food and human niche construction: the potential role of Mesolithic hunter-gatherers in actively structuring Scotland's woodlands. *QuatSci Rev***108**, 51-75
- Fenton, A S, 1978 *The Northern Isles – Orkney and Shetland*. Edinburgh Gale
- Gale, R, & Cutler, D, 2000 *Plants in archaeology; identification manual of vegetative plant materials used in Europe and the southern Mediterranean to c.1500*. Otley
- Greig, J R A, 1991 The British Isles, in W Van Zeist, K Wasylkova & K-E Behre (eds) *Progress in Old World Palaeoethnobotany*. Rotterdam
- Hall, A R, & Huntley, J P, 2007 *A review of the evidence for macrofossil plant remains from archaeological deposits in northern England*. Research Department Report Series no. **87**. London
- Hather, J G, 2000 *The identification of the Northern European Woods: a guide for archaeologists and conservators*. London
- Hodgson, J, & Brennand, M, 2007 The Prehistoric Period: Research Agenda in M Brennand (ed) *Research and Archaeology in North West England. An Archaeological Research Framework for North West England: Volume 2 Research Agenda and Strategy*. *Archaeology North West* **9** (19) 31-54
- Huntley, J P, 2010 *A review of wood and charcoal recovered from archaeological excavations in Northern England*. Research Department Report Series no. **68**. London
- Philpott, R, & Brennand, M, 2007 The Romano-British Period: Research Agenda, in M Brennand (ed) *Research and Archaeology in North West England: An Archaeological Research Framework for North West England: Volume 2 Research Agenda and Strategy*. *Archaeology North West* **9** (19) 55-72

- Preston, C D, Pearman, D A, & Dines, T D, 2002 *New Atlas of the British and Irish Flora*. Oxford
- Schweingruber, F H, 1990 *Microscopic wood anatomy*. Birmensdorf
- Stace, C, 2010 *New Flora of the British Isles*. Cambridge

## Appendix 1: Data from palaeoenvironmental assessment

Sample	1	2	3	4
Context	4014	4016	5006	5011
Feature	EB	SH	OD	RF
<i>Material available for radiocarbon dating</i>	✓	✓	✓	✓
<i>Volume processed (l)</i>	10	20	70	20
<i>Volume of flot (ml)</i>	50	800	1800	400
<i>Residue contents</i>				
Bone (calcined) indet. frags	-	-	+	-
Charcoal	(+)	+	+++	+
Cracked stones	-	++	+++	+++
Fired clay	(+)	(+)	++	(+)
Metal objects (corroded – number of fragments)	-	1	5	2
Pottery (number of fragments)	-	-	18	-
<i>Flot matrix</i>				
Charcoal	++	++	+++	++
Clinker / cinder	(+)	(+)	+	-
Heather twigs (charred)	-	-	+	-
Insect / beetle	(+)	++	+	-
Monocot stems (charred)	-	-	(+)	-
Moss	(+)	-	-	-
Roots (modern)	+	++++	++++	+++
Uncharred seeds	-	++	+	-
<i>Charred remains (total count)</i>				
(a) <i>Bromus</i> sp (Bromes) caryopsis	-	-	2	-
(a) <i>Raphanus</i> raphanistrum (Wild Radish) pod	-	-	2	-
(c) Cerealia indeterminate culm node	-	-	4	-
(c) Cerealia indeterminate grain	1	-	5	3
(c) <i>Hordeum</i> sp (Barley species) grain	-	-	8	1
(c) <i>Hordeum</i> sp (Barley species) rachis frag.	-	-	1	-
(c) <i>Hordeumvulgare</i> (6-row Barley) hulled twisted grain	1	-	1	-
(c) <i>Triticum</i> cf. <i>spelta</i> (cf. Spelt Wheat) grain	-	-	5	-
(c) <i>Triticumspelta</i> (Spelt Wheat) glume base	-	-	3	-
(c) <i>Triticum</i> sp (Wheat species) grain	-	-	7	-
(r) <i>Galium</i> parvine (Cleavers) seed	-	-	1	-
(r) <i>Persicaria</i> maculosa (Redshank) nutlet	-	-	6	-
(r) <i>Stellaria</i> media (Common Chickweed) seed	-	-	1	-
(t) <i>Corylus</i> avellana (Hazel) nutshell frag.	-	1	36	62
(w) <i>Carex</i> sp (Sedges) trigonousnutlet	-	-	1	1
(x) Poaceaeundiff. (Grass family) >1mm caryopsis	-	-	1	1
<i>Identified charcoal (✓ presence)</i>				
<i>Betula</i> sp (Birches)	✓	✓	-	-
<i>Corylus</i> avellana (Hazel)	✓	✓	✓	✓
Maloideae (Hawthorn, apple, whitebeams)	-	-	✓	✓
<i>Quercus</i> sp (Oaks)	-	-	✓	✓
Salicaceae (Willow, poplar)	✓	-	-	-

[EB-enclosure bank; SH-soil horizon; OD-occupation deposit; RH-roundhouse flooring  
a-arable; c-cultivated; r-ruderal; t-tree/woodland; w-wet/damp ground; x-wide niche.

(+): trace; +: rare; ++: occasional; +++: common; ++++: abundant]



## Appendix 2: Material available for radiocarbon dating

Context	Sample	Single Entity recommended 1st choice	Weight	Notes	Single Entity recommended 2nd choice	Weight	Notes
4014	1	Charred barley grain	10mg	The grain is in good condition. The twisted shape suggests it is 6-row barley	Birch charcoal	83mg	Good condition, although slightly friable. Approx. 3 wide growth rings
4016	2	Charred hazel nutshell fragment	46mg	Good condition	Hazel charcoal	118mg	Good condition, although slight mineralisation. Roundwood with 8 growth rings of variable sizes
5006	3	Charred wheat grain	12mg	Good condition. Spelt type	Charred hazel nutshell fragment	30mg	Good condition
5011	4	Charred hazel nutshell fragment	58mg	Good condition	Charred hazel nutshell fragment	32mg	Good condition