

ARCHAEOLOGICAL
SERVICES
DURHAM UNIVERSITY

on behalf of
Swaledale and Arkengarthdale
Archaeology Group

Hagg Farm
Swaledale
North Yorkshire

palaeoenvironmental assessment

report 5240
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1. Summary

The project

- 1.1 This report presents the results of palaeoenvironmental assessment of six bulk samples taken during archaeological excavations of a Romano-British settlement at Hagg Farm, Swaledale, North Yorkshire.
- 1.2 The works were commissioned by Swaledale and Arkengarthdale Archaeology Group (SWAAG), and conducted by Archaeological Services Durham University.

Results

- 1.3 The samples contain evidence for the cultivation and/or processing of 6-row hulled barley and spelt wheat. These were the main cereal crops cultivated in northern England during the late prehistoric and Roman periods. The results are comparable to palaeoenvironmental data previously recorded from the site. The relatively high densities of charred cereal grains and near-absence of chaff or weed seeds in contexts [129] and [135] from the stone-lined pit suggests the charring of a cleaned cereal crop, perhaps accidentally during drying. It is unclear whether this material was charred *in situ*, or whether it has been charred elsewhere and redeposited into the feature. In comparison, the higher proportions of weed seeds and chaff from hulled barley and spelt wheat in building/levelling deposit [62] and ashen layer [132] are suggestive of crop-processing debris and mixed hearth waste. The charcoal assemblages reflect the use of local woodland resources, with a range of species present and this is typical of domestic hearths. Material suitable for radiocarbon dating is available for all the contexts.

Recommendations

- 1.4 No further analysis is required for these samples, but the preservation of charred plant remains indicates that other features on the site have the potential to provide further information about diet and crop husbandry practices. 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 SWAAG at Hagg Farm, Swaledale, North Yorkshire. This report presents the results of palaeoenvironmental assessment of six bulk samples taken from a levelling/foundation deposit [62], a posthole [131], an ashen layer [132], a deposit associated with a stone flagged floor [110], a fill of a stone lined pit [129] and the matrix surrounding this pit [135]. These deposits are associated with the Romano-British settlement on the site, although earlier phases of occupation are potentially present.

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 30th October 2019. Assessment and report preparation was conducted between 4th November 2019 and 9th January 2020.

Personnel

- 2.4 Assessment and report preparation was conducted by Ed Treasure. Sample processing was by Jeff Lowrey.

Archive

- 2.5 The site code is **HFS19**, for **Hagg Farm Swaledale 2019**. The flots and finds are currently held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University awaiting collection. 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 μ 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.

- 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 (Roskams & Whyman 2007; Hall & Huntley 2007; Huntley 2010).

4. Results

- 4.1 The samples contain small quantities of calcined and unburnt animal bone, coal, cinder, fuel ash, flint and pot fragments. The flots are small, with charcoal and charred plant remains present in all the samples, except context [110] where charred remains are absent. The charred plant remains include small to moderate quantities of cereal grains, cereal chaff, hazel nutshell fragments, heather stems, rhizomes/tubers and wild/weed taxa. Small numbers of uncharred seeds are present, however the presence of modern roots suggests that these are recent introductions. Palaeoenvironmental results are presented in Appendix 1. Material suitable for radiocarbon dating is available for all the contexts and this is presented in Appendix 2.
- 4.2 Levelling/foundation deposit [62] produced a small assemblage of hulled barley grains and rachises, with one rachis identifiable as the 6-row form. The sample also produced spelt wheat glume bases and a spikelet fork, alongside indeterminate wheat remains including a single grain, glume bases and spikelet forks. Hazel nutshell fragments are present in moderate quantities. Low numbers of wild/weed taxa comprise cleavers, goosefoots, docks, a member of the knotweed family, grasses and buttercup. Ash, cherries (blackthorn, wild and bird cherry), Maloideae (hawthorn, apple, whitebeams) and hazel are identified in the charcoal assemblage.
- 4.3 Pit fill [129] produced a moderate sized assemblage of charred plant remains, primarily comprising indeterminate cereal grains and barley grains. Preservation is generally poor, however the better preserved barley grains can be identified as hulled. Evidence for other cereal species comprises a single spelt wheat glume base, and an indeterminate wheat grain and spikelet fork. Hazel nutshell fragments and trace quantities of wild/weed taxa are also present. A similar, although smaller assemblage of charred cereal grains and chaff are recorded in context [135], the matrix surrounding the pit. Three heath-grass caryopses are noted in context [135]. The charcoal assemblages include ash, Maloideae and hazel.
- 4.4 Posthole [131] produced only trace quantities of charred plant remains, comprising a well preserved hulled barley grain and a member of the sedge family. Maloideae charcoal is present.
- 4.5 In ashen deposit [132], one spelt-type wheat grain and a small number of hulled and indeterminate barley grains are present. Two charred brome caryopses are also noted. Identified species in the charcoal assemblage include ash, Maloideae and hazel.

5. Discussion

- 5.1 The samples contain evidence for the cultivation and/or processing of 6-row hulled barley and spelt wheat. These were the main cereal crops cultivated in northern England during the late prehistoric and Roman periods (Hall & Huntley 2007; Greig 1991), and the results are comparable to previous palaeoenvironmental data

recorded for Hagg Farm (Archaeological Services 2014; 2017; 2018). Charred remains of heath-grass in context [135] and brome caryopses in context [132] are also typical of the late prehistoric and Roman periods.

- 5.2 The relatively high densities of cereal grains and near-absence of chaff or weed seeds in contexts [129] and [135] from the stone-lined pit suggest the charring of a cleaned cereal crop, possibly reflecting an accident during crop drying. It is unclear whether this material was charred *in situ*, or whether it has been charred elsewhere and redeposited into the feature. In comparison, in building/levelling deposit [62] and ashen layer [132], the higher proportions of weed seeds and chaff from hulled barley and spelt wheat are suggestive of crop-processing debris and mixed hearth waste (Hillman 1981).
- 5.3 Charred fragments of hazel nutshell are present in most of the samples. These remains reflect the use of wild resources, possibly as a source of food and/or the use of the nutshells as kindling/fuel.
- 5.4 The charcoal assemblage indicates the use of locally available species for firewood, with ash, cherries, Maloideae and hazel identified. A range of species such as this is typical of domestic hearths.

6. Recommendations

- 6.1 No further analysis is required for these samples, but the preservation of charred plant remains indicates that other features on the site may have the potential to provide further information about diet and crop husbandry practices. 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

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Appendix 1: Data from palaeoenvironmental assessment

Sample	33	35	37	38	39	40
Context	62	131	132	129	110	135
Feature	deposit	posthole	deposit	pit	deposit	pit
<i>Material available for radiocarbon dating</i>	✓	✓	✓	✓	✓	✓
<i>Volume processed (l)</i>	12	11	12	12	2	1
<i>Volume of flot (ml)</i>	30	10	40	140	5	5
<i>Residue contents</i>						
Bone (calcined) indet. frags	+	(+)	+	+	-	(+)
Bone (unburnt) indet. frags	+	-	+	-	-	-
Fire-cracked stones	+++	+	+	++	-	-
Flint (number of fragments)	1	1	4	2	-	-
Fuel ash semi-vitrified	(+)	-	(+)	-	-	-
Pot (number of fragments)	-	-	3	-	-	2
<i>Flot matrix</i>						
Charcoal	++	+	+	++	(+)	+
Clinker / cinder	+	-	+	-	-	-
Coal / coal shale	-	(+)	+	-	-	-
Heather twigs (charred)	+	-	+	-	-	-
Monocot stems (ch)	(+)	(+)	-	-	-	-
Roots (modern)	+	+	+	++	+	+
Tuber / rhizome (charred)	++	+	+	+	-	-
<i>Charred remains (total count)</i>						
(a) <i>Bromus</i> sp (Bromes) caryopsis	-	-	2	-	-	-
(c) <i>Cerealia</i> indeterminate (twisted) awn frag.	1	-	-	-	-	-
(c) <i>Cerealia</i> indeterminate grain	7	-	2	50	-	10
(c) <i>Hordeum</i> sp (Barley species) grain	4	-	4	42	-	6
(c) <i>Hordeum</i> sp (Barley species) hulled grain	3	1	1	17	-	3
(c) <i>Hordeum</i> sp (Barley species) rachis frag.	9	-	1	-	-	-
(c) <i>Hordeum vulgare</i> (6-row Barley) rachis frag.	1	-	-	-	-	-
(c) <i>Triticum</i> cf. <i>spelta</i> (cf. Spelt Wheat) grain	-	-	-	-	-	1
(c) <i>Triticum</i> sp (Wheat species) glume base	16	-	7	1	-	-
(c) <i>Triticum</i> sp (Wheat species) spikelet fork	2	-	-	-	-	-
(c) <i>Triticum</i> sp (Wheat species) grain	1	-	-	1	-	-
(c) <i>Triticum spelta</i> (Spelt Wheat) glume base	10	-	3	1	-	-
(c) <i>Triticum spelta</i> (Spelt Wheat) spikelet fork	1	-	-	-	-	-
(h) <i>Danthonia decumbens</i> (Heath-grass) caryopsis	-	-	3	-	-	-
(r) <i>Galium aparine</i> (Cleavers) seed	2	-	-	-	-	-
(r) Polygonaceae undiff. (Knotweed family) nutlet	1	-	-	-	-	-
(r) <i>Stellaria media</i> (Common Chickweed) seed	-	-	-	1	-	-
(t) <i>Corylus avellana</i> (Hazel) nutshell frag.	24	-	10	4	-	1
(w) <i>Carex</i> sp (Sedges) trigonous nutlet	-	1	-	-	-	-
(x) Brassicaceae undiff. (Cabbage family) seed	-	-	-	-	-	1
(x) <i>Cenococcum geophilum</i> (Soil fungus) sclerotia	9	-	3	-	-	-
(x) <i>Chenopodium</i> sp (Goosefoots) seed	1	-	2	3	-	-
(x) Fabaceae undiff. (Pea family) seed	1	-	-	-	-	-
(x) Poaceae undiff. (Grass family) <1mm caryopsis	2	-	-	-	-	-
(x) Poaceae undiff. (Grass family) >1mm caryopsis	3	-	5	-	-	-
(x) Ranunculaceae undiff. (Buttercup family) achene	1	-	-	-	-	-
(x) <i>Rumex</i> sp (Docks) nutlet / tepal	1	-	1	-	-	-
(x) <i>Vicia</i> sp (Vetches) seed	-	-	1	-	-	-
<i>Identified charcoal (✓ presence)</i>						
<i>Corylus avellana</i> (Hazel)	✓	-	✓	✓	✓	✓
<i>Fraxinus excelsior</i> (Ash)	✓	-	✓	✓	-	-
Maloideae (Hawthorn, apple, whitebeams)	✓	✓	✓	✓	✓	✓
<i>Prunus</i> sp (Cherries-blackthorn, wild and bird cherry)	✓	-	-	-	-	-
<i>Quercus</i> sp (Oaks)	-	-	-	-	-	-
Salicaceae (Willow, poplar)	-	-	-	-	-	-

[a-arable; c-cultivated; h-heathland; 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
62	33	charred hazel nutshell	53mg	-	charred wheat grain	11mg	Also present 3rd choice Maloideae charcoal (7 growth rings) (257mg)
131	35	Maloideae charcoal	21mg	2 growth rings, moderate ring curvature	charred hulled barley grain	8mg	-
132	37	charred hazel nutshell	15mg	-	charred barley grain	8mg	Also present 3rd choice Ash charcoal (4 growth rings) (30mg)
129	38	charred hulled barley grain	14mg	-	charred hazel nutshell	10mg	-
110	39	Maloideae charcoal	34mg	6 growth rings, strong ring curvature	-	-	-
135	40	charred hulled barley grain	12mg	-	Hazel charcoal	42mg	4 growth rings, strong ring curvature

[Maloideae: hawthorn, apple, whitebeams]