

on behalf of
Northern Mine Research Society

Hagg Farm
Swaledale
North Yorkshire

charcoal assessment
and C14 preparation

report 3248
September 2013

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1. Summary

The project

- 1.1 This report presents the results of assessment of 12 hand-recovered charcoal samples taken during an archaeological excavation at Hagg Farm, Fremington, Swaledale, North Yorkshire.
- 1.2 The works were commissioned by the Northern Mine Research Society (NMRS) and conducted by Archaeological Services Durham University.

Results

- 1.3 The assessment of the samples indicates a predominance of hazel (11 out of 12). The exception was sample 1 which was identified as *Maloideae*. Many of the samples comprise anatomical characteristics typical of small calibre branchwood.
- 1.4 Annual growth ring counts ranged from 14 to 36. Due to the absence of either pith or bark for the majority of the samples, only sample 6 provided a precise age.

2. Project background

Location and background

- 2.1 An archaeological excavation was conducted on a lead bale smelting site at Hagg Farm, Fremington, Swaledale, North Yorkshire by the Northern Mine Research Society and the Swaledale and Arkengarthdale Archaeology Group (SWAAG). This report presents the results of assessment of 12 hand-recovered charcoal samples.

Objective

- 2.2 The objective of the scheme of works was to identify the charcoal samples, determine their approximate age and establish their suitability for radiocarbon dating.

Dates

- 2.3 Samples were received by Archaeological Services on 9th September 2013. Assessment and report preparation was conducted between 17th and 20th September 2013.

Personnel

- 2.4 Assessment and report preparation was conducted by Lorne Elliott.

Archive

- 2.5 The site code is **HFL13**, for **Hagg Farm Leadworking 2013**. The charcoal samples were returned to NMRS on 23rd September 2013.

3. Methods

- 3.1 The hand-recovered charcoal fragments were identified, in order to provide material suitable for radiocarbon dating. The transverse, radial, and tangential sections were examined at up to x600 magnification using a Leica DM/LM microscope. Examination of the number of annual growth rings, growth ring curvature, growth ring pattern and the presence of pith and bark was undertaken. The fragments were weighed and where appropriate the diameter of roundwood was measured. Identifications were assisted by the descriptions of Schweingruber (1990), Gale & Cutler (2000) and Hather (2000), and modern reference material held in the Environmental Laboratory at Archaeological services Durham University.
- 3.2 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 2005; 2007; Huntley 2010).

4. Results

- 4.1 Apart from a few friable fragments preservation of the charcoal was generally good. The assessment of the samples indicates a predominance of hazel (11 out of 12). The exception was sample 1 identified as Maloideae, which is a subfamily that includes apple, hawthorn and whitebeams (rowan). The presence of complete roundwood and/or strong ring curvature, suggest all of the samples comprise the remains of small calibre wood. The eccentric growth ring pattern (Marguerie & Hunot 2007) and anatomical characteristics (vessel arrangement/grouping) indicate many of the samples are branchwood rather than small stemwood.

- 4.2 Due to the absence of either pith or bark for the majority of the samples, an estimation of age is recorded and a minimum count of growth rings is indicated with a plus sign (see Appendix 1). Only sample 6 comprised pith and bark providing a precise age of 14 years. The annual growth ring results ranged from 14 to 36 and were concentrated in the early to mid-20s, possibly reflecting random collection of material rather than the result of woodland management. All of the assessed material is suitable for radiocarbon dating. The results are presented in Appendix 1.

5. Sources

- Gale, R, & Cutler, D, 2000 *Plants in archaeology; identification manual of artefacts of plant origin from Europe and the Mediterranean*. Otley
- Hather, J G, 2000 *The identification of the Northern European Woods: a guide for archaeologists and conservators*. London
- Huntley, J P, 2010 *A review of wood and charcoal recovered from archaeological excavations in Northern England*. Research Department Report Series no. **68**. London
- Marguerie, D, & Hunot, J-Y, 2007 Charcoal analysis and dendrology: data from archaeological sites in north-western France. *J Archaeol Sci* **34**, 1417-1433
- Roskams, S & Whyman, M, 2005 *Yorkshire Archaeological Research Framework: resource assessment*. York
- Roskams, S & Whyman, M, 2007 *Yorkshire Archaeological Research Framework: research agenda*. York
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Appendix 1: Material available for radiocarbon dating

Sample No.	Species	No. of Annual Growth Rings	Growth Ring Curvature	Presence of Complete Boundary	Growth Ring Pattern	Diameter (mm)	Weight (g)	Pith / Bark Presence
1	Maloideae*	18+	Strong	✓	concentric	19.24	4.978	Pith – No Bark
2	Hazel	27+	Strong	✓	eccentric	19.45	3.390	Pith – Some Bark
3	Hazel	25+	Strong	x	-	-	6.455	Bark – No Pith
4	Hazel	36+	Strong	✓	eccentric	21.41	6.384	Pith – No Bark
5	Hazel	32+	Strong	x	-	-	3.351	Pith – No Bark
6	Hazel	14	Strong	✓	concentric	20.61	2.479	Pith & Bark
7	Hazel	21+	Strong	✓	eccentric	22.73	4.401	Pith – Some Bark
8	Hazel	24+	Strong	✓	eccentric	25.66	3.596	Pith – No Bark
9	Hazel	14+	Strong	✓	concentric	16.87	1.451	Pith – No Bark
10	Hazel	23+	Strong	x	-	-	5.611	No Pith – No Bark
11	Hazel	21+	Strong	x	-	-	6.345	No Pith – No Bark
12	Hazel	26+	Strong	x	-	-	2.525	Pith – No Bark

[* Maloideae – Apple, hawthorn, whitebeams]

