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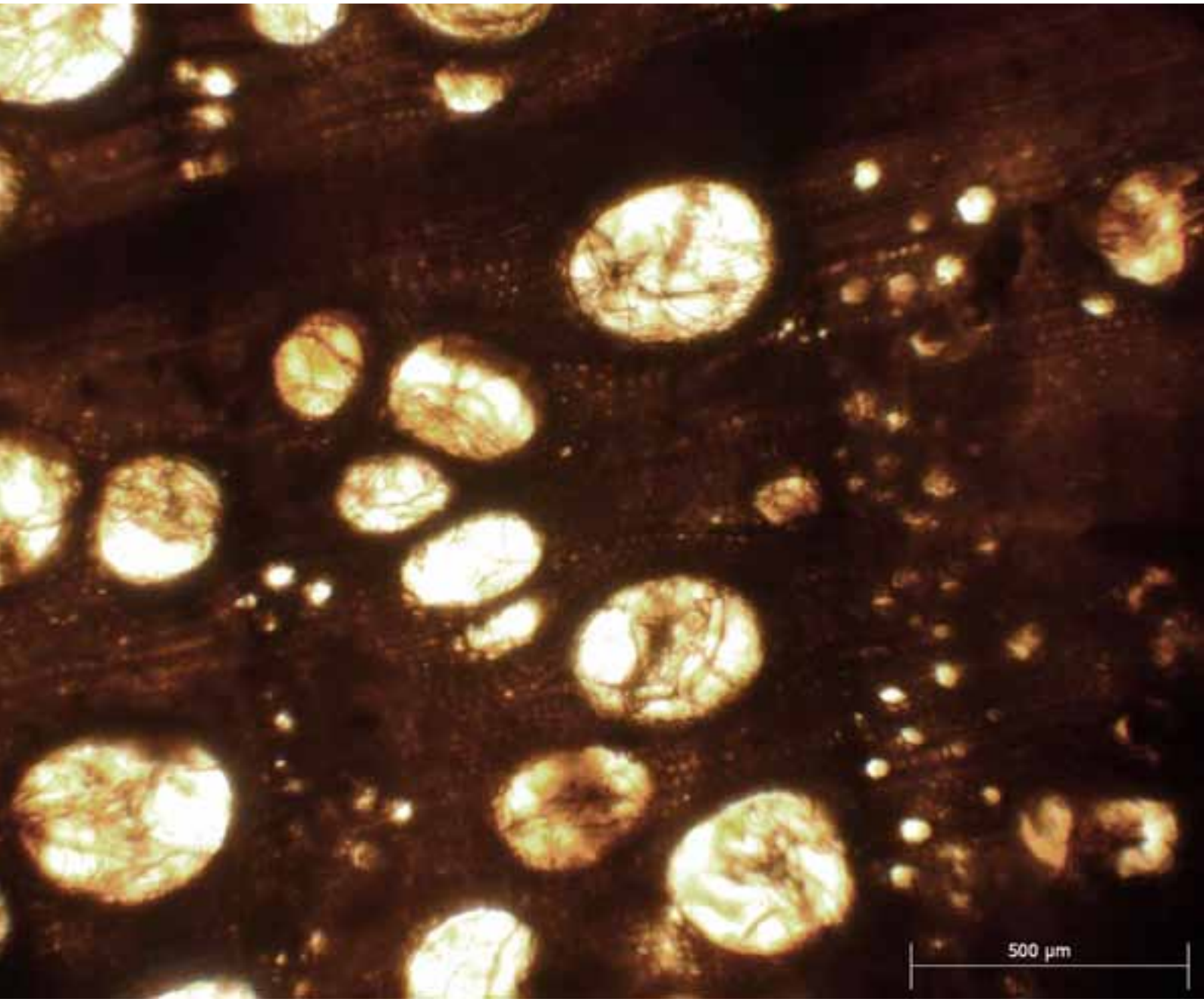
APPLETREE, NEAR BIRDOSWALD, HADRIAN'S WALL, CUMBRIA
MACROBOTANICAL ASSESSMENT OF THE VALLUM DITCH FILL; SAMPLE 901, CONTEXT 15

ENVIRONMENTAL STUDIES REPORT

Zoë Hazell and Ruth Pelling



ARCHAEOLOGICAL SCIENCE

ENGLISH HERITAGE

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Research Department Report Series 99-2010

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Macrobotanical assessment of the Vallum ditch fill; Sample 901, Context 15

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SUMMARY

In August 1999 a trench was excavated across a series of earthworks associated with Hadrian's Wall at Appletree, Cumbria (WSW of Birdoswald Fort). This included retrieval of a sample from the Vallum Ditch, a feature purported to be 6m wide and 3m deep, and bounded on each side by 6m wide, turf-faced, earth mounds. Following retrieval, the sample was not stored in cold storage and therefore has deteriorated. In October 2010, prior to its disposal, the samples were assessed for their plant macrofossil remains and worked wood fragments. The macrobotanical plant remains include grassland species likely to have been growing on the ditch bank or from the turf wall, with some indication of wet conditions within the base of the ditch. A number of hazelnut shell fragments and a complete nut may derive from food waste or brush wood recovered from the ditch. Of the worked wood debris samples examined, the majority were oak, with one possible alder fragment; these are taxa typically worked and recovered from British archaeological sites.

Key words: Archaeobotany, Roman, Plant remains, Wood

ACKNOWLEDGEMENTS

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ARCHIVE LOCATION

Sample discarded

DATE OF RESEARCH

October 2010

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INTRODUCTION

In order to facilitate completion of the project archiving from this site, plant remains (macrofossils and wood) were examined and assessed briefly, prior to disposal. The samples were in poor condition, having been stored damp – and not in cold storage – for c. 10 years.

The remains consisted of sample bags containing the separated flot and residue of sample <901> from context (15); the Vallum ditch fill. There was also a sample bag labelled as 'Heather roots' from the same context (no sample number); this was not analysed further.

Sample processing

The plant material already recovered was from a single flot and residue taken from a deposit of damp organic material within a silty clay fill (context 15) of the Vallum ditch. This fill was noted to have considerable damp organic content during excavation. A bulk sample of 40litres was processed by flotation, the flot collected onto a 250micron mesh, the residue onto a 500micron mesh. At that time, an assessment of plant and invertebrate remains from the turf bank and basal layers of the ditch was carried out by Hall (2000).

As part of this more-recent supplementary assessment and report, the flot and residue samples were sieved through 5mm sieves, and only the greater size fraction was analysed.

Nomenclatures follow Stace (1997).

MACROSCOPIC PLANT REMAINS (R. PELLING)

Methodology

The organic remains within the sample from ditch fill 15 had been preserved by waterlogging but were in a poor condition and had undergone some decomposition either during burial or subsequent to their excavation. Seeds and other macroscopic plant remains were extracted under a stereoscopic microscope and allowed to air dry completely in an attempt to limit further decomposition. The material was then identified under a microscope at magnification of x10 up to x40. Identifications were based on morphological criteria including gross morphology and surface cell structure, and by comparison with modern reference material held at Fort Cumberland.

Results and discussion

The material examined was in poor condition resulting in tentative identification in some instances. A number of worm capsules are indicative of bioturbation within the burial environment suggesting that while waterlogged conditions may have existed at some point in the past, drier conditions had prevailed in more recent times leading to the disintegration of the material. Material examined by Hall (2000) was also noted to be worn and some had appeared to have become dry.

Plant macrofossils identified are detailed in Table 1. A limited range of taxa was represented, generally reflecting that identified by Hall (ibid). Most of the material present had presumably derived from species growing within the immediate vicinity of the ditch. Nut shell fragments and at least one complete nut of hazel (*Corylus avellana*) may have derived from food waste, although feasibly could have derived from the brush wood placed or washed into the ditch. The possibility that the nuts entered the ditch with brush wood is strengthened by the presence of an immature nut, unlikely to have been deliberately collected for food.

A range of herbaceous species are represented by seeds which are appropriate within the acid grassland vegetation existing in the area of the site today. Much of the material is likely to have derived from the sides and banks of the ditch or indeed from the worn turves of the turf wall. Two species of *Ranunculus* were tentatively identified: buttercup, probably creeping buttercup (*Ranunculus* cf. *repens*) and lesser spearwort (*Ranunculus flammula*). A number of sedge (*Carex* spp.) seeds further suggest wet soils. Other plants include a number of violet seeds (*Viola odorata/hirta* type), cinquefoil (*Potentilla* sp.), alder (*Alnus glutinosa*) and bramble/blackberry (*Rubus* section *Glandulosus*). A single large seed was tentatively identified as that of an iris species (*Iris* sp.) although the seed had been damaged and had lost much of its original structure. The only native species which occurs naturally in the area is the yellow or flag iris (*Iris pseudacorus*) which could have occurred in the base of the ditch, particularly if it supported any standing, if muddy water. However, in shape the seed fitted that of the stinking iris (*Iris foetidissima*) which has a more southerly distribution. As identification was difficult due to the condition of the seed, the categorisation of this seed as iris must be regarded as tentative. Finally, small numbers of grass seeds were present, presumably derived from grasses growing on the banks of the ditch. Leaf buds and bud-scales may have derived from trees over-hanging the ditch or brush wood within the ditch.

Table 1. Plant macrofossils recovered from sample <901>, fill (15) of the Vallum ditch. Some of these were recovered from within clumped material. Nomenclature follows Stace (1997).

		Flot	Residue
Ranunculus acris/repens/bulbosus	Buttercup	9	-
Ranunculus flammula L.	Lesser Spearwort	15	6
Alnus glutinosa (L.) Gaertn.	Alder, fruit	1	-
Corylus avellana L.	Hazel nut, complete	1	-
Corylus avellana L.	Hazel nut shell frags (mni)	20 (5)	15 (2)
cf. *Corylus avellana* L.	Immature hazel nut	1	-
Viola odorata/hirta type	Sweet/Hairy Violet	8	1
Rubus section *Glandulosus*	Bramble/Blackberry	1	-
Potentilla sp.	Cinquefoils	1	-
Carex spp.	Sedges, 2-sided fruit	7	-
Poaceae	Grasses, small seeded	3	-
cf. *Iris* sp.	Iris	1	-
Indet	Fruit stone?	1	-
Ignota		6	-
Indet bud		2	-
Indet bud scale		2	1
Earthworm egg capsules		+	1
Fungal spores		+	-
Mite		1	-
Recent ceramic fragment?		-	1

Counts given are for seed, nutlet etc unless otherwise stated.
+ = present

WOOD IDENTIFICATIONS (Z. HAZELL)

Methodology

Whilst sorting and picking the plant macrofossils, three fragments of worked wood debris were selected each from the flot and residue for identification. Samples from the drier residue were soaked in water overnight to rehydrate the wood. Thin sections were then taken by hand, and mounted on a microscope slide in glycerol for examination under a high power (x100 to x400) light microscope (Leica DM2500). Identifications were carried out using a combination of the guides by Schweingruber (1982) and Gale and Cutler (2000).

Results and discussion

The flot and residue were sorted through for evidence of wood working; there were no artefacts, only worked wood debris (commonly fragments >5cm long, with at least one straight cut edge).

All the wood samples from the flot were identified as *Quercus* sp. (oak) from the combination of: a) ring porous vessel patterning, b) distinctive flame-like patterning of vessels in the latewood, c) both uniseriate and multiseriate rays and d) the presence of tyloses (indicating heartwood). One of these was slow growing, inferred from the very closely spaced rings.

Two of the wood samples from the residue were also identified as *Quercus* sp.; one securely, and one as cf. *Quercus* due to its degraded and distorted nature. The remaining fragment from the residue was identified as cf. *Alnus* sp. (alder); this was based on the combination of features: a) diffuse porous, b) radial chains, c) scalariform perforation plates (narrow bars, c 20-25) and d) mostly uniseriate rays. Again, this fragment was highly degraded, and the cell structure was hard to discern with confidence (particularly locating aggregate rays).

It is possible to say that the *Quercus* sp. (Fagaceae family) is a deciduous taxon, and within the British Isles, this includes only *Q. robur* (pedunculate oak) and *Q. petraea* (sessile oak) (Gale and Cutler, 2000). Concerning the *Alnus* sp. (Betulaceae family), the native species within the British Isles is *A. glutinosa* (Alder), and this would concur with the alder fruit identification from the same sample. Both these woods are commonly used and recovered from British archaeological sites; oak is favoured for the strength and durability of its timber and alder is soft and easy to work. It is therefore not surprising to find evidence for their working at this site.

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NOTES

Following this assessment, the sample was discarded as the poor condition of the remains meant that they had limited research value.






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