

BOTANICAL MACROFOSSIL ANALYSIS

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Methodology

Ninety-four features from the ARS Ltd excavation, comprising pits, hearths and postholes, were excavated by hand and all material excavated was processed on site by flotation. The bulk samples, of varying volumes from 10 to >100 litres, were sieved to five fractions (5mm, 2mm, 1mm 500 microns and 300 microns). Each fraction was bagged separately and assigned a unique sample number. All bagged material from each context was then bagged in one larger bag. 21 contexts were analysed by J Cotton and 20 contexts by B Johnson. Due to the absence of wetland areas at the site waterlogged plant remains would not be preserved. Non-charred material present in samples are not contemporary to the contexts and have not been analysed as these represent later intrusive material such as roots *etc.* All material was scanned at low magnifications using a Leica MZ6 microscope and identifications made with reference to modern material and published sources. The flot matrix of all samples was also recorded. For clarity, all material is discussed with relation to the context from which it derived and has been divided by period into Neolithic, Late Bronze Age and Dark Age. The period divisions have been ascribed based upon radiocarbon dating and ceramic associations.

Results

Results are tabulated in Table 8. Counts of all charred plant macrofossils were recorded. In one instance (Late Bronze Age Pit Fill 340), the very high abundance of cereal grains meant that the number present in the sample was derived by weight, by counting the number of cereal grains present in 25% of the sample and taking a mean weight that

could be used to estimate the total number of each type of cereal grain present. The flot matrix in all samples was almost entirely charred wood fragments, with most containing rootlet material. The material varied in preservation quality, with some being very well preserved and some being highly abraded, suggesting it had been moved around prior to burial. This information is presented in Table 8 and has been taken into account in the discussion. The flots were generally very clean, with little adherence of fine silts.

Neolithic contexts

Artefact-rich pit F031 produced over 1000 charred hazelnut fragments, which included fragments over 5mm in size, suggesting the material was fresh when deposited. Five grains of wheat (*Triticum* sp.) were found in the basal fill, with the remainder, from both fills, being too degraded to allow identification. Artefact-rich pit F009 contained little charred material in its upper fill, although 23 charred hazelnut fragments and six degraded cereal grains were counted. The basal fill contained over 100 hazelnut fragments and 8 wheat (*Triticum* sp) grains along with 21 indeterminate cereal grains and 28 emmer wheat (*Triticum dicoccum*) spikelet fragments. Feature F2061 contained one hazelnut fragment and moderate amounts of charred wood. Pit F2133, outside Building 3 contained charred hazelnut shell fragments, some over 5mm in size, and charred wood, suggesting the material was fresh when deposited. Pit F2168 also contained charred hazelnut shell fragments although these were small and abraded, as was the small quantity of charred wood, suggesting movement of the deposit prior to burial, or that the material was washed or blown into the deposit. Hearth feature F2013 produced one charred hazelnut fragment and one indeterminate cereal grain. Charred weed seeds were only recorded in hearth F2005, and only in low numbers. These were dominated by grasses (*Poaceae* sp.), sedges (*Cyperaceae* sp.) and knotweeds (*Polygonaceae* sp.).

Late Bronze Age contexts

Cereal grains were the most common and abundant material, with most being barley (*Hordeum vulgare*). Well-developed hulled barley grains were frequent although some from the naked variety were noted. The small amount of chaff present (rachis segments) suggest that all were from the 6-row variety. In addition there was considerable numbers of grains of emmer wheat (*Triticum dicoccum*), and its chaff, particularly as glume bases and spikelet forks. Barley was recovered from almost every context in Building 4, with the exception of posthole F355 and F361 and shallow pit F375. The most significant quantities were recovered from large, artefact-rich pit F340 however, which contained around 4000 grains. Over 550 wheat (*Triticum* sp.) grains were found in the fills of large pit F340, with over 500 of those grains coming from the upper fill of that pit. Small numbers of wheat grains were also found in hearth F342, postholes F346, F348, F359 and F365, as well as pit F352. Glume bases and spikelets from emmer wheat (*Triticum dicoccum*) were also recovered from Building 4, predominantly from the upper fill of large pit F340 and it is suggested that the wheat grains found are therefore emmer, rather than spelt (*Triticum spelta*). An apple pip (*Malus* sp.) was recovered from posthole F346, a sloe stone (*Prunus spinosa*) from hearth F342 and small quantities of charred hazelnut were found in the uppermost fill of pit F340. Barley was also recovered in small amounts from postholes F312 and F489, forming the entrance porch to Building 5, and its internal hearth F314. No wheat grains were found in Building 5, but a glume base and a spikelet from emmer wheat (*Triticum dicoccum*) were found in the large entrance pit F491. Weed seeds were uncommon throughout contexts from Buildings 4 and 5. The seeds which were present were dominated by sedges (*Cyperaceae* sp.) and knotweeds (*Polygonaceae* sp.) with some grasses (*Poaceae* sp.). Few contexts produced more than a handful of any particular weed, and they are not thought to represent specific collection practices by human action, but are thought indicative of the local environmental context.

Dark Age contexts

None of the Dark Age contexts sampled produced any plant macrofossils, other than posthole F2131 in Building 3, which contained four barley (*Hordeum* sp.) grains. Only small amounts of abraded charcoal were recovered from these contexts.

Discussion

Neolithic

The two large artefact-rich pits F031 and F009 contained slightly different assemblages. F031 contained large amounts of charred hazelnut shells, which may have been used as fuel, or formed an important food source. The material in this pit also appears fresh, suggesting the deposit had been placed into the pit immediately after the burning episode. The small number of cereal grains recovered from this pit, coupled with the absence of chaff indicates the grain deposits were incidental and that the pit was not in proximity to, or used as, a grain store and food processing and its waste deposition took place elsewhere. F009 contained smaller numbers of environmental remains than F031, but did include some charred hazelnut shells, as well as emmer wheat spikelet fragments and glume bases, which represent the waste products from processing arable crops (Hillman 1981). The presence of chaff suggests that some of the deposit comes from the waste products from nearby cereal processing, and indicates the cultivation of arable crops for consumption at, or near, the site. Only F009 produced any chaff and may suggest that wheat processing was specific to this locality on the site. The absence of chaff from the upper fill may be a result of preservation conditions, or may suggest a reduction in the production and deposition of food processing waste in this area. The small numbers of plant remains from hearth F2005, thought to be Neolithic in date, are only from weed species, with no evidence of either domesticated or wild resources being

harvested. The weeds seeds are very similar to those found in association with the Late Bronze Age buildings, and are from a grassland environment, perhaps used for stock grazing. Pits F2133 and F2168, situated externally to Building 3, both contained charred hazelnut fragments. Those in F2133 were much better preserved than those in F2168 and suggest deposition in the pit immediately after the burning episode during which they were charred. They may represent the burning of nuts for fuel, or the accidental inclusion of nuts within the wood used as fuel. Conversely, and probably most likely, they represent food waste products. The fewer, more abraded charred hazelnut fragments from F2168 could represent different depositional or preservation conditions, and it may be that the material was blown or washed into the feature, which had a different function to that of F2133.

Late Bronze Age

Large volumes of barley and emmer wheat were recovered from almost all contexts in Building 4, as well as some barley, and a very small amount of emmer wheat chaff, being recovered from two postholes and the central hearth in Building 5. The plant remains associated with the Late Bronze Age buildings show clear evidence of arable agricultural practices. The much larger volumes were recovered from Building 4, in comparison to Building 5, may be due to differential preservation conditions, and Building 5 was more heavily truncated than Building 4. Alternatively there may have been less processing and deposition of cereal crops in Building 5, when compared to Building 4. The recovery of barley and emmer wheat grains, as well as emmer wheat chaff, from almost all the pits and postholes in Building 4 indicate significant processing of cereals within this building. The deposition of botanical macrofossils within the postholes is thought to have occurred during the use of the house, as suggested by experimental archaeology (Reynolds 1995). The deposition of the material within hearth F342 shows food

processing activities around the fireplace. Pit F340 produced by far the largest concentration of macrofossils and given the presence of large volumes of broken pottery, as well as the broken quernstones, within this feature it is thought most likely that this pit contains domestic rubbish deposits. The well-preserved nature of the macrofossils is indicative of their being buried almost immediately after the burning episode during which they were charred, and that they were not moved around prior to deposition. The assemblage was dominated by barley, suggesting significant local cultivation of this cereal. Emmer wheat formed around 15% of the cereal assemblage again, suggesting significant local cultivation of this cereal, although in less quantities than barley. The small numbers of weed seeds are not thought to represent any deliberate harvesting of these plants, but were most likely accidentally incorporated into the assemblage during harvesting and processing activities. All are indicative of grasslands, probably representing areas of pasture for stock grazing, or present as weeds amongst the arable fields. The presence of a single sloe stone and a single apple pip, along with small number of charred hazelnuts, indicates the small-scale harvesting of wild resources.

Dark Age

The only plant macrofossils recovered from Dark Age building 3 were four barley seeds. These were heavily abraded and it was not clear whether they were from the hulled or naked variety. They most likely indicate local agricultural practices, but suggest that cereal processing and storage did not take place within the structures to any great extent.

