

Minchery Farm Paddock, Oxford, MP12
Carbonised Plant Macrofossils and Charcoal
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1: Introduction

A total of twenty-seven environmental sample flots taken during the 2012 excavation season at Minchery Farm Paddock, Oxford (MP12) were examined for carbonised plant macrofossils and charcoal. Potentially charred material sorted from twenty one of the sample residues was also scanned for any identifiable plant remains. Eighteen of the bulk samples originated from Trench 2 and included deposits taken from a domestic building with underlying pit, and from a work building with a hearth feature. The remaining nine samples came from Trench 3, where a structure to the West of the Priory cloister, together with associated midden layers was discovered.

Residues from the sampling programme were sorted by volunteers from EOXP and forwarded to the author for checking and rough quantification. These largely consisted of bulk items such as pottery, CBM, a few metal objects, mammal and fish bone and shell, with occasional finds of slag. This material has been counted and accurately weighed, ready to be submitted to the appropriate specialists for their identification.

Documentary evidence suggested the founding of the Priory of St. Nicholas at the site sometime during the mid-12th Century, continuing as a religious order until its closure in 1524, after which the buildings became part of a farm (Harrison pers. comm.). Archaeological investigations involved the initial clearance of a large overgrown area of brambles, with three excavation trenches subsequently located over potential structural and other features. Trench 1, an area of waterlogging / poor drainage, was opened and a number of peat samples taken (not included as part of this report). Trench 2 revealed the moat/ditch around the priory precinct - a potential further source of waterlogged material – together with two buildings inside the precinct, where the majority of environmental samples were taken. Trench 3 revealed a further building with midden material and other associated burning. The presence of hearth and pit features in Trench 2 and the burnt deposits in Trench 3 indicated a high potential for the preservation of good quantities of carbonised plant remains, enabling a strong analysis of the medieval religious economy to be proposed. The separation of resources into domestic/ kitchen and industrial/ workplace, particularly with regard to the fuel types being used and where the midden remains are being deposited, may also be possible to ascertain. Material suitable for radiocarbon dating will be highlighted in the report.

2: Methodology

Bulk environmental samples were processed by the EOXP using a Siraf style water flotation system (French 1971). The flots were dried before examination under a low powered binocular microscope. Carbonised plant remains and charcoal were found in varied amounts throughout the samples. The ditch / gully and disturbed contexts produced generally <2.5ml to 10ml of burnt detritus only, whilst the more secure deposits and deeper features, such as pit [3043] and hearth (2056), proved highly abundant with from 40ml up to 150ml of cereal grain, charcoal and other remains. Modern material was generally quite scarce, with <2.5ml to 30ml of modern roots and seeds recorded. Possibly waterlogged seeds have been recorded in the tables, but it is likely some of these may also be fairly recent in origin given the potential for flooding and the modern local vegetation cover. All identified plant remains including charcoal were removed and bagged separately by type.

Wood charcoal was examined using a high powered Vickers M10 metallurgical microscope at magnifications up to x200. The reference photographs of Schweingruber (1990) were consulted for charcoal identification. Plant nomenclature utilised in the text follows Stace (1997) for all vascular plants apart from cereals, which follow Zohary and Hopf (2000).

3: Results

Results from the flot analysis are presented in tables 1, 2, and 3, whilst the residue quantifications are given in tables 4, 5 and 6. All results are discussed below.

4: Discussion

The environmental samples from Minchery Priory produced a large assemblage of carbonised plant material, consisting mainly of cereal grain, but also including charcoal, weed seeds and burnt vesicular material (some of which may be clinker/coke, whilst some is more peat-like in appearance). Trench 2 consisted of a number of contexts from ditch and gully features producing very few charred remains, whilst more abundant concentrations of plant material were located in the internal building deposits, particularly hearth fills (2036) and (2056), pit fill (2057) and the layer spreading across the pit (2059). In Trench 3 the midden spreads (3007), (3030) and (3030) East, produced very similar types of cereal and charcoal, but not in the large quantities recorded from the primary burning locations in Trench 2. Largely this could be because material from these main hearth areas in Trench 2 was not being cleaned out frequently; although it is very likely when it had been swept out it went to form some of the midden material excavated in Trench 3. At the same time the burnt material in Trench 3 actually only formed a small component of the overall middened material being used for leveling and structural purposes, with a combination of shell, bone and pottery recorded from (3007) and (3030).

MP12 Trench 2

Eighteen samples were examined from features in Trench 2 (table 1).

The ditch or moat fills (2020) and (2018) were largely sterile of carbonised material, producing only a few trace slivers of decayed charcoal. One fragment of charcoal was identified as a Coniferous type of wood, and is probably intrusive. The flot of (2018) contained building debris, similar to **white limestone mortar**. A small amount of non-carbonised weed seeds, including *Rubus fruticosus* (bramble) and *Sambucus nigra* (elder) were probably modern and intrusive from the local environment, rather than waterlogged.

Lower ditch fill (2025) produced a small amount of charred material, with a single piece of *Quercus* (oak) and one *Triticum aestivum* (bread wheat) cereal grain, showing some degradation and probably intrusive from nearby burning activity. In the southern slot, lower ditch fill (2033) included some very poorly preserved and degraded *Triticum* sp. (wheat) grains, again suggesting intrusive material. Lower ditch fill (2039) contained only sterile sand, whilst disturbed/ demolition layer (2032) was also sterile. Demolition layer (2037) above wall foundation (2054) had a few trace remains, with a poorly preserved cereal grain and a small amount of oak charcoal. Gully (2010) produced half a vesicular cereal grain, probably intrusive and not that significant.

Six samples were taken from inside the work building and associated with deposits within and around the hearth feature [2031] or from nearby working surfaces. Sample 3 (2015) from a disturbed area

over the hearth produced some trace burnt remains, including a small amount of charcoal broadly identified as Maloideae type (**apple/whitebeam/hawthorn**) and a single nicely preserved *Triticum aestivum* (bread wheat) grain. A few fragments of industrial burnt vesicular material, probably clinker, were mixed through the deposit, and could represent a degree of industrial burning waste. Sample 8 (2035) from a working surface north of hearth [2031] produced a large quantity of *Quercus* (oak) charcoal, perhaps hinting at **industrial or other processes requiring high temperatures**. This deposit also contained a mixed scatter of very degraded and vesicular cereal grain, with some *Hordeum vulgare* sl. (barley) and *Triticum* sp. (wheat) identifiable, possibly **waste grain being re-used as fuel**.

Three samples were examined from (2036) a spread related to the fire area of the hearth. The major component of (2036) was cereal grain, with sample 11 (2036) producing very poor and degraded grain, perhaps on the periphery of activity or trampled out. Samples 9 and 14 were more fruitful with highly abundant recovery of **grain**, although as with sample 11 a large component of the grain was too vesicular and poorly preserved to identify, perhaps indicating repeat burning of material not cleared out of the hearth, or cereal waste from cooking being re-used as fuel. Interestingly the residues from samples 9 and 14 produced a large amount of **fuel ash slag**, which it would be useful to have analysed by an appropriate specialist. It was possible to identify *Avena* sp. (oat) and *Triticum aestivum* (bread wheat) from (2036), with a single *Vicia faba* (**broad bean**) also present and probably being grown as a garden cultivar for food. No weeds of agricultural land were present in these samples, indicating that the **grain was probably being produced elsewhere** and arrived at the Priory ready for consumption. Charcoal types from (2036) consisted mainly of oak used as the main source of fuel, with a small amount of probably locally growing scrub being used as **kindling** in the form of *Prunus* (cherry) and *Corylus* (hazel). A very nicely preserved fragment of hazel from 14 (2036) would be suitable for radiocarbon dating.

Directly below (2036) hearth fill (2056) contained a huge amount of cereal grain, much of it in the same degraded form seen above, but including oat, barley and bread wheat types, together with a large concentration of oak charcoal. The oak was recovered in large 'chunks' of 1-2cm, and most likely was being used to produce **high heat for industrial or other processes**. The degraded nature of the grain indicated repeat heating, concurrent with the hearth not being cleaned out, or waste from cooking being re-used as fuel. The bread wheat from here could be used for radiocarbon dating but the result could be slightly skewed from the repeat heating. A very small amount of agricultural weeds were recorded, and probably arrived with the processed grain. The residue from (2056) also produced fuel ash slag similar to that in (2036).

Floor surface 13 (2047) produced a scatter of degraded cereal and charcoal which would be concurrent with re-deposited midden material being used as floor packing, or could be trample from nearby burning.

Two samples related to pit feature [2058] in the domestic structure produced abundant amounts of burnt material, with some interesting remains identified. Sample 16 (2057) from within the pit produced a flot dominated by oak charcoal, with only a small amount of cereal grain present. The cereal largely consisted of poorly preserved barley and wheat, but with a single *Triticum spelta* (spelt wheat) grain in excellent condition. This grain stood out in contrast in both condition and type of cereal from the rest of the assemblage, and is possibly unrelated to the Priory phase of activity, or

mixed in from elsewhere. Sample 17 from (2059) which formed a layer across the structure and plunged into the pit produced a mixed deposit, highly abundant in cereal grain and with generally good preservation of cereal and charcoal. Oak and hazel were recorded, with the hazel very well preserved and suitable for radiocarbon dating. The grain included oat and bread wheat, together with a small amount of *Secale cereale* (rye), with the oat and rye possibly being used as animal feed. Interestingly a large number of *Vicia faba* (**broad bean**) were found in (2059) and were probably a garden plant grown in the grounds of the Priory. A small number of weeds of cultivated land were all large types that wouldn't have been sieved out during cereal processing and probably arrived at the site with the crop. Some **final drying or processing of the crop** could have been taking place here, but it is more likely these remains represent cooking waste disposed of in the pit, or spread across the floor.

Possible burning event or fire layer sample 18 (2060) contained a trace scatter of cereal grain amongst a large deposit of charcoal. The charcoal consisted of *Betula* (birch) and general Maloideae types in large 'chunks' of 2-3cms, with these scrub or waste ground types **quite different** to the deliberate selection of oak seen earlier, and this could indeed be a destruction layer.

MP12 Trench 3

Nine samples were examined from a pit feature, midden layers and other deposits in Trench 3 (table 2).

Demolition / rubble layer sample 9 (3004) produced modern material with one tiny stray fragment of very poorly preserved indeterminate charcoal.

Sample 1 (3026) from a silty accumulation within later drain [3029] included a trace scatter of degraded burnt remains, but mainly consisted of possibly waterlogged seeds of bramble. Given the overgrown nature of the site prior to excavation it is possible these remains have washed in at some point and are not particularly ancient.

Disturbed midden layer 2 (3017) produced only trace poorly preserved amounts of cereal and oak charcoal.

Five samples from floor layers and consolidated midden spreads produced small amounts of cereal grain and a few charcoal fragments, mainly identified as oak. Samples 4 and 5 (3030) produced small quantities of wheat and indeterminate grain, all poorly preserved, with a few *Vicia faba* (broad bean) in 4 (3030). Sample 8 (3030) East contained a similar trace scatter of burnt waste, with oak, bread wheat and barley identifiable, but in very low amounts. Sample 7 (3018) a silty layer held only trace material, including a few fragments of clinker-type vesicular remains. Below (3018), sample 6 (3007) produced a flot containing building rubble and modern chaff, together with a mixed deposit of cereal grain including bread wheat and barley, a few arable field weeds and some very large broad bean. The charcoal from (3007) was very poor and probably trampled about. Context (3007) is probably most similar in content to (2059) from Trench 2, but with fewer remains and in much poorer condition. Carbonised plant remains and charcoal do not seem to have formed the main component of the middened material used as levelling and flooring, rather there seems to have been a general mixture of **grain, bone, shell, fuel, pottery and other domestic waste such as one would expect from kitchen/ cooking waste.**

Sample 3 (3015) from the lower fill of pit [3043] was interesting as it mostly consisted of burnt vesicular material, probably peat rather than clinker, very wet and organic looking and perhaps being used as fuel although there were few other plant remains recovered from this deposit. The residue contained fragments that may be **peat ash slag**, which would be useful for a metallurgy specialist to examine.

5: Conclusion

The environmental samples from excavations at Minchery Priory produced a large assemblage of carbonised plant material, consisting mainly of cereal grain and charcoal concentrated within the two building features revealed in Trench 2. Two key focuses of burning activity were indicated by the samples – the layers and fills related to the hearth in the work building, (2015), (2035), (2036) and (2056), and the pit and other deposit from the domestic building, (2057) and (2059). The midden and other layers from Trench 3 produced similar results but in much lower quantities and generally less well preserved.

Cereal grain was identified in large amounts from (2036), (2056) and (2059), with much of this in a poor state of preservation, in particular in hearth fill (2056). It is possible that waste cereal grain from cooking was being re-used as fuel on industrial hearths, or that grain was being dried or cooked around the hearth but the waste not cleaned out regularly. Given the industrial nature of hearth [2031] located within the work building, combined with the other finds from the samples, such as large amounts of fuel ash slag in (2036) and (2056), and indeed the dominance of oak charcoal in the assemblage, it is most likely the spoiled grain was also being used as fuel. This could have supplemented meagre fuel supplies or been used as kindling.

The cereal grain was identified as mainly bread wheat, with some barley, oats and rye also present, indicating the utilization of a mixed cereal economy, with oat and rye perhaps used as feed for domesticated animals. The grain probably arrived at the Priory already processed and ready to be consumed, given the general lack of agricultural weeds or chaff. The domestic deposit in (2059) showed general cooking waste, with a few large agricultural weeds that would have survived through cereal processing, and the remains were mostly in a better state of preservation than those seen elsewhere.

Field beans and other vetches or legumes were probably being cultivated in garden plots or allotment type settings during the medieval period and this is an activity the Priory could have been undertaking in its own gardens. Certainly a number of very large *Vicia* sp. (vetches) were recorded from (2057), (2059) and (3030), probably being processed and cooked in the Priory kitchen.

Charcoal identification showed the primary use of oak as a fuel in the work building contexts, particularly around the hearth in contexts (2035), (2036) and (2056), but also present in the domestic burnt deposits in (2057) and (2059). The oak was probably the main source of fuel for industrial processes, could have been delivered to the Priory by much the same economic routes as the cereal grain, but importantly was supplemented by other wood at various points and probably stretched further by the re-use of grain as fuel. Locally growing scrub types such as hazel, cherry types and Maloideae could have been cut for fuel, indeed cherry and apple trees may have been growing in the Priory grounds originally as a food source.

It is possible to propose from the condition of the remains and the locations of recovery that the domestic building could have been the 'first source' where cereal grain and other produce were brought in. The burnt cooking waste from (2059) was certainly in the best condition. Some of this waste could have then been re-used on the industrial hearths in the work building – the material from (2036) and (2056) seems to have been reheated many times resulting in poor condition in the grain, and probably not moved on much further. Other burnt waste from cooking seems to have been middened with combined kitchen waste and subsequently this midden was spread and re-deposited in the floor and other levelling layers in Trench 3. The analysis has enabled an insight into aspects of the medieval religious economy to be obtained and largely shown a community where cereal and other consumable produce were brought in from outside, some food was probably grown at the Priory and domestic animals may have been kept, but generally resources were being re-used many times over.

Radiocarbon dating will enable a firmer sequence of events and dating framework to be obtained. The best material for dating submission would be: the hazel from 14 (2036), the bread wheat from 9 (2036), the bread wheat or barley from 15 (2056), the bread wheat from 16 (2057) and the hazel or bread wheat from 17 (2059). From Trench 3 most of the material was poor, but it might be possible to date the bread wheat or barley from 6 (3007).

Overall the environmental samples produced good quantities of carbonised plant remains, albeit sometimes with poor preservation, and indicated that further excavation work at the site has a high potential to produce further large amounts of material.

References

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