

Peterborough, Long Causeway (LCW 95): Plant Macrofossils from medieval deposits from an archaeological excavation.

Angela Monckton and Pamela Grinter July 1997. (ULAS Archive Report)

Introduction.

During excavations by Birmingham University Field Archaeology Unit (BUFAU) directed by Alex Jones of the site near Peterborough Abbey, samples were taken from deposits as bulk samples for processing by wet-sieving and as waterlogged samples for detailed investigations of organic remains.

Plant remains were preserved on the site in the waterlogged deposits as well as being present as charred remains in both waterlogged and other deposits. Remains preserved in either way can provide evidence of diet and use of plant resources in the past but the wider variety of remains preserved in waterlogged deposits can provide additional information, particularly about the environment in the past. The presence of both types of preservation on the site provided the opportunity to study of a wider range evidence from plant remains than is often available on urban sites and so the following investigation was carried out. The waterlogged deposits also contained pollen and insect remains which were analysed so that the different types of evidence, when taken together, would contribute to a more complete picture of the site in the past.

The objectives of this investigation were to contribute to information about the environment of the site during the phases 1 and 2 of 13th - 14th century date and phase 3 of the 16th century. In order to assist with the interpretation of the site it was considered important to investigate the sequence of waterlogged deposits in the ditch F579 which follows the western monastic boundary, and to compare the evidence from the North and South plots of Phase 2. It was also hoped to obtain information about the plant products used and consumed by the inhabitants of the site in the past.

As the waterlogged deposits preserved the bulk of the evidence it was decided to concentrate resources on their analysis which was carried out in consultation with Lisa Moffett of Birmingham University. The evidence from the plant macrofossils is described with reference to the possible uses and habitat types of the plants and the results are discussed in phase order. Three samples from the ditches were analysed in additional work by Pamela Grinter (Grinter 1996) at Birmingham University and the evidence from the ditches is discussed below.

Methods.

During the assessment of samples from the excavation (Moffett 1996) it was found that 16 of the waterlogged deposits had the potential to produce information about the site from the evidence of insect and plant remains. Analysis of the insect remains showed that there were two types of deposit (Smith 1996) and therefore samples from each group were selected for analysis of the plant remains. The samples selected were from the lower and upper deposits of the main ditch F579, and from a number of pits and wells also analysed for pollen (Greig 1996). Bulk samples were also taken during the excavation from both waterlogged and dry deposits. Those from the waterlogged deposits were only examined where it was indicated that charred material was present which may add to other evidence from these deposits. Assessment of samples from the dry deposits suggested that charred remains were generally at a low concentration and only a small number of samples had sufficient remains for

analysis, it should be noted, however, that detailed examination of more samples may produce further information about the plants present on the site.

Waterlogged deposits. Subsamples of 0.5 - 1 litre size from the nine selected deposits were soaked in 2% sodium bicarbonate solution and sieved with a 0.18mm mesh sieve to remove silt and clay. The whole residue was then sorted wet using a stereo-microscope and plant remains identified. The remains were counted to facilitate comparison of the deposits (Table 1). The plant names follow Stace (1991) with plants grouped in their most usual modern habitat. The remains in table 1 are seeds in the broad sense and are waterlogged unless described otherwise. In addition to the samples analysed in this way; three further samples from contexts 5290, 5258 and 5234 were analysed by Pamela Grinter by sorting the organic residues from 2 litre samples and the plants present recorded (+) in Table 1, these samples are marked (*) in the table. Furthermore during the assessment of the samples the flotation fractions and a subsample of the organic fraction of 2 litre samples were scanned (Moffett 1996) and additional plants found in these samples are recorded (#) in Table 1.

Bulk Samples. Bulk samples were processed from 44 contexts (including the above waterlogged deposits). They were selected for processing because they were from dateable deposits and were thought to have potential to produce evidence from plant or animal remains. Assessment of these (Moffett 1996) showed that six samples had larger amounts of charred material present and of these, three were suggested for analysis. Scanning of further samples produced two with more abundant remains which were also analysed. Additional information from the scanned samples is noted in the text below.

The flotation fractions collected on a 0.5mm sieve from these bulk samples were sorted dry using a stereo-microscope, the remains were identified and counted (recorded (B) in Table 1). Charred remains are recorded (ch) and seeds preserved by waterlogging are also recorded. Additional remains found during the assessment of these samples (Moffett 1996) are recorded (+) and (#). The smaller more delicate seeds are under-represented in these samples because of damage due to drying and the larger mesh size used.

The plants, possible uses and habitats.

The cereals: Charred cereal remains were found. The wheat from the site included bread wheat (*Triticum aestivum*) and rivet or macaroni wheat (*Triticum turgidum/durum*), probably rivet wheat which is more suitable for the British climate. Both are free-threshing wheats and identification can only be confirmed from the rachis (chaff). Free-threshing wheat was the main type of wheat used in the medieval and post medieval periods and rivet wheat has been found in recent years on an increasing number of sites in south eastern England (Moffett 1991). In this region it has been found at West Cotton (Moffett 1991) and at Ipswich (Murphy 1987) and is here an addition to the distribution of the cereal at this date. Rivet wheat was found here in phases one and two. Bread wheat is a high quality grain for human consumption as is rivet wheat, although the latter is not as favoured for bread making, it is a productive grain resistant to bird and fungal attack with long straw useful for thatching (Greig 1988). Other cereals include rye (*Secale cereale*) and hulled barley (*Hordeum vulgare*) including 2-row barley.

Charred cereal remains are found on occupation sites of all periods. Cereals may be parched in processing or before milling so can be burnt accidentally, also waste from their processing may be burnt for fuel or for disposal. If such processed grain is used whole there would be only a little waste chaff and weed seeds to remove from the grain and this may be burnt as waste together with any spoiled or accidentally burnt grains. The small amounts found here

suggest waste from the small scale domestic use of cereals, probably as whole grains for pottage. By the medieval period grain was milled commercially and bread in the towns purchased from bakers (Dyer 1989) so large groups of grain are unusual finds on urban sites of this date and the small quantities here compare with those from domestic waste in other towns such as Leicester (Moffett 1993, Monckton 1999).

Other food plants: Legumes are represented by peas (*Pisum sativum*), possibly beans (*Vicia/Pisum*) and possible lentil (*Lens culinaris*). Legumes do not preserve well by waterlogging and, because they are not exposed to fire in their processing, they are not found charred in large numbers so may be under-represented here. Beet (*Beta vulgaris*), identified by Lisa Moffett, was found showing the use of this vegetable. Seeds of fig (*Ficus carica*) were found possibly representing an import, although this plant will grow in sheltered conditions in this country. Other food plants include hazel nuts (*Corylus avellana*), blackberry (*Rubus fruticosus* agg), apple (*Malus sylvestris*) and plum or bullace (*Prunus domestica* s.l.). These may be collected or cultivated in the case of apple and plum Elder berries (*Sambucus nigra*) are also edible and would probably have been used but they are a ubiquitous find on disturbed urban land. Plants which may have been utilised for food could include fat-hen (*Chenopodium album*), black mustard (*Brassica nigra*) or other members of the Brassica family which are difficult to distinguish from seeds. Others may include bristly ox-tongue (*Picris echioides*) which was known as langdebeef in medieval times (Harvey 1989) and cornsalad (*Valerianella* spp) which is eaten sometimes today. Plants used as food flavourings could include opium poppy (*Papaver somniferum*), fennel (*Foeniculum vulgare*) and possibly mint (*Mentha* spp). In addition bog-myrtle (*Myrica gale*) was used to flavour beer. Flax seeds (*Linum usitatissimum*) are edible but may be used for oil or fibre so may be present here for other purposes as capsules were found in the waterlogged ditch deposits suggesting that whole plants may have been present.

Plants with other possible uses: Plants with possible trade uses are flax and weld (*Reseda luteola*) which is a dye plant. Because this site is adjacent to a monastic site the possible medicinal use of plants should be considered. This cannot be proved at this site because many plants which may have been used as herbs or medicines are wild plants which may simply be part of the natural vegetation. Such plants may arrive at a site by natural means or with other material so it is not possible to conclude that they were used. Of the plants found here vervain (*Verbena officinalis*) was known to be cultivated in the medieval period (Harvey 1992) and here may be an escape from cultivation as a herb or possibly have arrived in the ditch from cultivation in the monastery gardens nearby (Harvey 1981, p85). It has a long history of use and can be used to treat eye infections and was believed to protect against disease (Bremness 1990). Opium poppy may be a garden plant or food flavouring but can be used as a digestive or opiate. Plants such as henbane (*Hyoscyamus niger*) are rich in dangerous alkaloids and can be used with caution as an anaesthetic (Moffat 1992), but this plant often occurred on nitrogen rich soils as found near pits and cesspits. Many wild plants found here such as dead-nettles (*Lamium* spp) have medicinal uses but also occur as natural vegetation by hedges or waterside.

Weeds of arable or disturbed ground: These include weeds from the following weed communities: firstly those typical of autumn sown cereals including corn cockle (*Agrostemma githago*) and cornflower (*Centaurea cyanus*) which were probably brought with the cereals wheat and rye. Other arable weeds include stinking mayweed (*Anthemis cotula*) which grows on heavy clay soils and scentless mayweed (*Tripleurospermum inodorum*), together with shepherd's needle (*Scandix pecten-veneris*) which is now rare and throw-wax (*Bupleurum rotundifolium*) which is now extinct in this country. Secondly there are weeds of spring sown crops, gardens and settlements which include goosefoots (*Chenopodium* spp), sheep's-sorrel (*Rumex acetosella*) and chickweed (*Stellaria media*); these may originate on or

near the site or be brought with garden crops but can also be weeds of the cereals. Thirdly there are weeds of nitrogen rich ground which include mallow (*Malva sylvestris*), henbane, elder and nettles (*Urtica dioica*), and these are often found near pits and ditches and may be part of the urban flora (Hall 1988).

Other wild plants: These represent a number of different types of environment and include those of hedgerows, scrub or wood margins and may include the hedgerow fruits and nuts as well as herbaceous plants which may also grow at the ditch site. Plants of wet or damp ground in Table 1 include the aquatic plants (see below) which were probably growing in the ditches when water was present at the bottom of F579 and F551. Waterside and damp ground plants are represented and probably grew at the ditch side. Plants of damp grassland may also be found in this habitat as may buttercups (*Ranunculus* sp) but a number are from dry calcareous grassland such as wild carrot (*Daucus carota*) and vervain in its natural habitat. Some of the grassland material could have been brought to the site as fodder and some of the damp ground plants such as sedges (*Carex* spp) may have been brought to the site from elsewhere for use as flooring or animal bedding and may have included other plants mixed with it. However some of these plants could have grown in parts of the cultivated fields which were less uniform in the past.

Results and discussion by phase.

Phase 1.

This phase was represented by a sample from a rubbish pit F560 context 5216 (sample 100) which was waterlogged although seeds were not preserved in large numbers. The largest group of seeds found were those of the weeds of arable or disturbed ground, these included plants such as corn cockle and stinking mayweed which are the weeds of the cereals, together with the annual weeds of spring sown crops, gardens and settlements including weeds such as goosefoots and sheep's sorrel. The arable weed seeds were probably brought in with the crops and wheat and barley are present in the sample, wheat is usually autumn sown and barley spring sown so the mixture of weeds could be explained by this. However, some of the weeds were probably those of the settlement itself. The only other evidence of a food plant is of apple, either crab apple or a cultivated variety, this cannot be distinguished from the pip. Flax is present as an additional crop plant. A few plants of damp ground were present possibly brought in with material for flooring or animal bedding or possibly with water from the ditch. The presence of cereal bran adds to the evidence from a small number of parasite eggs (Greig 1996) for an element of latrine waste amongst the rubbish. Some domestic rubbish is suggested from the small amount of charred cereal remains together with fish bone and mussel shell. The bulk sample, 98, from this context has abundant hazel nut shell adding to this conclusion. A few additional plant taxa such as vervain were also found here and in the lowest levels of the main ditch.

Phase 1 - 2 Main Ditch.

The earliest phase of the main ditch F579 was extremely wide and the lowest central layers 5290 to 5285 have abundant aquatic and waterside plants. Aquatic plants such as duckweed (*Lemna* sp) were found at the bottom of the ditch and indicated the presence of permanent water (sample 145 context 5290) while plants which live in shallow water were found in samples 145 and 152 from contexts 5290 and 5285. The ditch sides were probably marshy suggested by the abundant seeds of celery leaved buttercup (*Ranunculus sceleratus*) and a wide variety of wild plants requiring damp or wet ground. Domestic rubbish was also present in the ditch represented by charred cereal grains and chaff which include evidence for bread wheat and rye. A charred pea with flax and flax capsules are evidence of other crops. The weeds of autumn sown cereals are present in both samples including those mentioned in

Phase 1 above. The weeds of spring sown crops and settlements are well represented particularly in sample 152 context 5285. Weeds of nitrogen rich soil are represented mainly by nettles which are abundant also in this sample. Other plants include those of hedgerow or wayside, some of which may have grown along the ditch sides.

Above this level in the centre of the ditch sample 157 context 5284 shows a decrease in the variety of damp ground plants although the plants of shallow water and marshy ground are still represented. The weeds of arable and disturbed ground are more abundant particularly those of spring sown crops and settlements which, together with nettles, may have formed the vegetation near the ditch. Domestic rubbish is represented by a very few charred cereal grains, legumes and nutshell. The small amount of these remains was confirmed by scanning a bulk sample from the same context. A sample from the west side of the ditch, sample 129 context 5258, indicates similar damp conditions and has domestic waste represented by nutshell and fruit stones.

These samples show the silting and filling of the ditch which had standing or slow flowing water at first and then became filled with silt and rubbish gradually becoming drier but still with some water and marshy areas. The evidence from the lower samples compares with the Group I insect evidence (Smith 1996) while the upper and western edge sample compare with the drier Group II.

Phase 2. North Plot: Layer s134 (5259); Well F572 s111 (5252) and s113 (5254)
Hearth F552 (5104) s42 Bulk Sample.

Sample 134 context 5259, a layer above the ditch on the North Plot, had abundant organic matter with leather fragments and mussel shell. The domestic rubbish included the cereals, bread wheat, rye and hulled barley with apple, blackberry and abundant hazel nutshell. Flax and flax capsules were also found. Abundant arable weeds included field gromwell (*Lithospermum arvense*) and scentless mayweed together with cornflower which is typical of autumn sown cereals (e.g. wheat and rye). The weeds of settlements were less abundant. Damp ground plants were found, derived either from the ditch area where the rubbish was dumped or included with the abundant sedge and reed material which possibly formed part of the rubbish itself as it was compressed and matted. This deposit may consist of a dump of flooring or accumulation of sweepings from a house or workshop, the food remains representing the remains of food preparation of the occupants.

The well F572 context 5252 sample 111 on this plot has similar cereal evidence to the previous sample with the addition of rivet or macaroni wheat, probably rivet (*Triticum turgidum*) amongst the free-threshing wheat. Few other remains were preserved in this sample but context 5254 sample 113 from the same pit had weeds including abundant elder and nettle probably representing the weeds of the settlement as both grow on nitrogen rich disturbed ground. The charred remains from the bulk sample from 5252 suggest the dumping of rubbish in the fill of this well after it went out of use.

A bulk sample from hearth F552 context 5104 (sample 42) had the most abundant cereal remains from the site (Table 2). This also has rivet wheat present together with bread wheat rachises (chaff). Barley and rye chaff is also present. Grains of the cereals were found, although not in large numbers with numerous charred grass seeds and seeds of other weeds including field gromwell and ivy-leaved speedwell (*Veronica hederifolia*). The charred deposit also included a possible lentil and charred hazel nutshell. This group of remains suggests the small scale cleaning of mixed cereals for domestic use, possibly as whole grains, the waste chaff and mainly large weed seeds being disposed of in the hearth together with other food remains.

Phase 2. South Plot Pit: F563 (5236) sS96, Post Hole F577 (5261) s128.

Both these features showed the presence of a little domestic rubbish represented by a few charred cereal remains, flax and nutshell with the addition of pea and apple from F563. This pit had abundant weeds of spring sown crops or settlements. Corn-field weeds were also present with stinking mayweed most abundant. Damp ground plants included rushes (*Juncus* sp) and spike-rush (*Eleocharis* sp) which were possibly from waste bedding or flooring material. Seeds of other damp ground plants may have been brought in with these or with water from the ditch. Similar but less abundant remains were found in F577. There was less evidence from this plot for disposal of rubbish which may be because of the poorer preservation of the deposits but may reflect a different function of the area as there appears to be less back yard activity on this plot compared with the North plot.

Phase 3. Ditch F551 (5234) S88. Wet (5149) S27 Bulk F546 (5142) S46 Bulk.

Sample 88 from context 5234 (=5183) was a waterlogged sample from the basal fill of the third phase of the main ditch. This was a recut of the main ditch as a narrower channel at the eastern side of the site and is deep enough to be below the water-table to contain waterlogged deposits at its base. Assuming that 5234 does not contain redeposited or slipped material from the base of the main ditch, F579 which it cuts, it would seem that similar conditions occur in the Phase 3 ditch as in the first phase of the ditch. The similarities are in the indications of standing or slow flowing water from the presence of the aquatic plants and the variety of shallow water and waterside plants. This would not be surprising as the plants appear to have persisted through the phases of the site (although the second phase of the ditch did not have waterlogged remains preserved). The abundance of nettles is similar and also the occurrence of weld, vervain and teasel. However there are differences including a greater abundance of docks and hemlock (*Conium maculatum*) and first occurrences of willowherb (*Epilobium* sp), common cornsalad, bristly oxtongue, opium poppy and St John's-wort (*Hypericum perforatum*). The evidence from the insect remains indicated clean conditions on the site at this time (Smith 1996) and there was little to indicate domestic rubbish in this sample except for a charred legume. However a bulk sample from context 5149 sample 27 (Table 1) from higher up the same feature did produce some charred cereal remains showing some rubbish disposal on the site contributing to the filling of this ditch later in this phase. A bulk sample from F546 context 5142 sample 46 produced some fig seeds suggesting an element of latrine waste in the pit, fish scales and an eel bone may also suggest this although the presence of sewage could not be confirmed from this evidence it was indicated from the presence of parasite eggs in the deposit (Greig 1996).

Discussion of the evidence from the ditches. (Pamela Grinter).

Three samples from the ditches F579 contexts 5290 and 5258 phase 1 - 2 and F551 context 5234 phase 3 were analysed during additional work on the samples and the results recorded in Table 1. Some of the plants could be grouped according to the growing conditions they required.

Firstly a group fresh water aquatic plants which included horned pondweed (*Zannichellia palustris*), duckweed (*Lemna* sp.) and water plantain (*Alisma plantago-aquatica*) these all require a depth of standing or slow moving water to survive. Reed sweet-grass (*Glyceria maxima*), water-crowfoot (*Ranunculus* subgenus *Batrachium*) and water pepper (*Persicaria hydropiper*) live in shallow water. The presence of both groups of water plants implies that there was standing water in the ditch of sufficient depth to permit the survival of plants requiring both deeper and shallow water. Samples from context 5290 from phase one and

context 5234 from phase three both contained plants from the first group, while the sample of context 5258 contained more plants which live in the shallower waters. This probably reflects the position of this sample within the ditch.

Secondly a group of plants that thrive in disturbed ground included common nettle, smooth sow thistle (*Sonchus oleraceus*) and red shank (*Persicaria maculosa*), these probably lived on the banks of the ditch. Plants from this group were present in all three samples.

The third group of plants are those which live in scrub land conditions and form the undergrowth to lightly wooded areas. These plants would have formed a light hedge or tangle of low scrub growth and include wild teasel (*Dipsacus fullonum*) bramble, elder and hazel. Plants which live in this type of habitat were present in all three samples. Hence it can be seen from the remains in phase one and phase three that the immediate local environment around the ditch changed little through time despite its decrease in size and recutting further west nearer to the monastic precinct.

The local geology of Peterborough is that of clay and alluvial deposits, yet many of the plants present most commonly grow on calcareous soils such as vervain, and ploughman's-spikenard (*Inula conyzae*). Others usually grow on soils of a base-rich type, but not necessarily calcareous in nature. The presence of such plants may give indications of human activities such as building and the use of lime for mortar which could have been taking place nearby. Such activities would be consistent with a town recently forced to move, since reconstruction of housing would have been necessary at this time, although towns often have lime rich soils. The results of the excavation indicate that the buildings of the town gradually encroached on the land occupied by the ditch and this may have added to the base-richness of the ditch area. Other plants present would thrive in nitrogen-rich ground, such as henbane, black nightshade (*Solanum nigrum*) and fool's parsley (*Aethusa cynapium*). The Long Causeway, one of the main streets of medieval Peterborough runs alongside the site and as this street also formed part of the site of the medieval market and it could be expected that the ditch fills contained rotting vegetation from the market, household waste and human sewage. Manure or slurry would also be present, animals of many kinds being commonplace on both the streets and market areas of medieval England.

As can be seen from Table 1 some of the plants, recorded (M), were known to have been used in the preparation of medicines during the Medieval period (Hunt, 1990). It is unlikely that these plants were being grown intentionally along the ditch for this purpose but were perhaps growing in nearby gardens or in the grounds of the Monastery and had spread to the ditch by animal or wind dispersal of seed, the monastery at Peterborough is known to have had its own infirmary (Coppack, 1993). Medieval medicine was very different to modern medicine and could be divided into prescriptions, prayers or charms. The ingredients of these medicines could be vegetable, animal, mineral or chemical, although many had no therapeutic value whatsoever and simply represent popular traditions" (Hunt: 1990, p19). However, herbal medicine has a long history and many of the plants used have active constituents and are still used today. When plants which could be used for medicine are found on a medieval site, it should be borne in mind that we have no evidence that they were actually used, so unless there is evidence for the residues of medicine no firm conclusions can be drawn.

Cultivated plants were also present in all three of the ditch samples. It is most likely these were deposited in the ditch as part of domestic rubbish or debris from the market area. The presence of flax (*Linum usitatissimum*) was also noted at the Norwich waterfront excavations (Murphy, 1983) and was considered to be a rarity on sites within the East Anglian area, although Godwin thought that the high frequencies of pollen of *Linum* which occurred in the lake sediments at Old Buckenham Mere, Norfolk implied that the cultivation of flax was of

some importance in early Medieval East Anglia (Godwin, 1968). Finds of flax at this site in Peterborough may indicate that flax was being grown in the vicinity as was proposed for the Norwich site. Flax was worked to provide hard wearing fibres which are stronger than cotton or wool. It was used for many purposes including its use in the leather manufacturing industries. Finds of leather working debris were also found in the ditch. Weld occurs in samples of 5290 and 5234 this was one of the ancient trio of plants used by medieval dyers, woad for blue, madder for red and weld for yellow. Another plant which could also be used to make black dye is gypsywort (*Lycopus europaeus*) and this also occurs in these two samples. The appearance of bog-myrtle in the sample from 5258 was of interest as this species normally occurs in bogs and wet moors and would therefore have been brought into the town. This plant which is a woody shrub was used to flavour beer prior to the common use of hops (Corran, 1975).

Examples of food plants were also found in the ditch. Bread wheat probably found its way there in household rubbish disposed in the ditch (see above). Carrot seeds were found in the sample from 5234, it is not possible to determine between wild and cultivated varieties from seed, however at this date it is likely to be from the wild plant. The fruit stones of either plum or greengage were found in the sample from 5258 but it is not possible to state with certainty which fruit the stones were from as the stones are extremely similar (Stace 1991). Several pieces of hazelnut shell were also present in this sample and these together with the fruit stones could have formed part of the food waste deposited into the ditch from the nearby houses or the market area. The appearance of corncockle and cornflower in the samples may indicate the depositing of straw into the ditch as these weeds, now rare, were commonly associated with rye or wheat cultivation and were difficult to remove from the cereal crop. It would appear from the plant macrofossils that the ditch was used as a convenient dumping place for all kinds of household, market and town waste.

Peterborough Abbey

Long Causeway is close to the site of Peterborough Abbey where it is known from documentary records that there was a herbarium garden (Harvey 1981, plan p.85). It was identified by a double moat which survived to be planned in 1721, it was the garden of Abbot Godfrey set out in 1302 as a complex of perhaps six acres including fish ponds (Harvey 1981, p.88). Plants which are mentioned are pear trees and most lovely herbs (Harvey, 1994, p.568-9); however apple and plum were the only fruit trees represented in the remains here. Other plants include herbs which could be used for food flavours, salads or for pottage as well as plants with other uses such as the dye plant weld. Although the plants found at Long Causeway are from nearby some could be garden escapes and it could be suggested that vervain, fennel, cornsalad, mallow, poppy, mint, mustards and others possibly used as medicinal herbs (marked 'M' in Table 1) could be from this source. These together with fruit trees and vegetables may give us some idea of the plants grown in gardens at the time.

Conclusions

The plant macrofossils from the ditch appear to consist of a mixture natural vegetation, food waste and other plant material dumped after use. The small amount of domestic rubbish in the lowest ditch deposits suggests that the bulk of the remains represent the vegetation in or near the ditch possibly originating from some distance along the length of the ditch. The filling of the ditch is reflected in the decrease in aquatic plants up the ditch profile and the change from slow flowing water to a wet marshy area choked with rubbish. When the ditch was recut in phase 3 water was allowed to flow again until the ditch filled with silt and rubbish once again. Rubbish deposited in the ditch and pits contains food waste showing the plant resources used at the time with foods including the cereals; bread wheat, rye wheat,

barley, rye and oats, with a range of fruit and vegetables. Some plants may represent garden escapes and may suggest the plants grown as herbs in the Abbey garden. Some of the remains may consist of plant material used for flooring dumped as rubbish after use.

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Table 1: Plant Macrofossils from Long Causeway, Peterborough (LCW 95). (July 97)

	Phase	1	2	2	2	2	2	2 S	2S	2 S	2N	2N	2N	3	3	3			
	Feature	560	599	579	579	579	L	563	563	577	572	572	552	546	551	551			
	Context	5216	5290	5285	5284	5258	5259	5236	5236	5261	5252	5254	5104	5142	5234	5149			
	Sample No	100	98	145	152	157	129	134	96	95	128	111	113	42	46	88	88	27	
	Wet/Bulk	W	B	W*	W	W	W*	W	W	B	W	W	W	B	B	W*	W	B	
CEREALS																			
<i>Triticum turgidum/durum</i> rachis (ch)	-	3	-	-	-	-	-	-	-	-	-	1	-	6	-	-	-	-	Rivet/Macaroni wheat
<i>Triticum aestivum</i> s 1 rachis (ch)	-	1	+	7	-	-	-	1	-	-	-	-	1	7	-	-	-	-	Bread wheat
<i>Triticum cf aestivum</i> rachis (ch)	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	Bread wheat type
<i>Triticum</i> free-threshing grain (ch)	-	-	-	-	4	-	-	5	-	2	-	-	-	18	5	-	-	3	Free-threshing Wheat
<i>Triticum</i> free-threshing rachis (ch)	2	2	-	7	-	-	-	1	-	1	-	10	1	27	-	-	-	2	Wheat
<i>Triticum</i> free-threshing rachis	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	Wheat cf Free-threshing
<i>Triticum</i> sp(p) grain (ch)	-	2	+	-	-	-	-	1	1	1	#	4	1	5	3	-	-	4	Wheat
<i>Triticum</i> sp rachis (ch)	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Wheat
<i>Triticum</i> sp tail grain (ch)	-	1	-	-	-	-	-	2	-	-	-	1	-	5	-	-	-	-	Wheat tail-grain
<i>Secale cereale</i> L. grain (ch)	-	-	-	-	1	-	-	2	-	1	-	-	-	4	-	-	-	2	Rye
<i>Secale cereale</i> L. rachis (ch)	-	1	+	9	-	-	-	3	1	-	-	1	-	9	-	-	-	3	Rye
<i>Secale cereale</i> L. rachis	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	cf Rye
<i>Hordeum vulgare</i> L. grain (ch)	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	Barley
<i>Hordeum vulgare</i> cf 2-row rachis (ch)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	Barley 2-row
<i>Hordeum vulgare</i> L. rachis (ch)	1	2	-	-	-	-	-	-	-	2	1	4	-	15	1	-	-	4	Barley
<i>Hordeum vulgare</i> L. hulled (ch)	-	1	-	-	-	-	-	1	-	-	-	2	-	10	6	-	-	6	Barley
<i>Avena</i> / <i>Gramineae</i> grain (ch)	-	-	-	-	-	-	-	1	-	1	-	-	-	8	1	-	-	3	Oat/Grass
Cereal indet grains (ch)	-	2	-	3	3	-	7	1	1	-	6	3	40	12	-	-	-	7	Cereal
Rachis fragment (ch)	1	4	-	10	-	-	-	5	-	-	-	-	3	12	-	-	-	-	Rachis fragment
Cereal rachis fragment	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	Cereal
Culm node large	3	-	-	3	-	-	-	5	1	-	-	-	-	-	-	-	-	-	Cereal stem
Culm node large (ch)	-	7	-	3	-	-	-	14	-	-	2	2	1	5	1	-	-	-	Cereal stem
Cereal bran	#	-	-	-	-	-	-	-	-	-	#	-	-	-	-	-	-	-	Chaff
Cereal coleoptiles (ch)	-	1	-	-	-	-	-	-	-	-	-	-	-	11	-	-	-	-	Cereal sprouts
LEGUMES																			
cf <i>Lens culinaris</i> Medik. (ch)	-	-	-	-	-	-	-	-	-	-	-	-	-	#	-	-	-	-	Lentil
<i>Vicia</i> / <i>Lathyrus</i> / <i>Pisum</i> (ch)	-	-	-	-	1	-	2	-	-	-	-	-	1	1	4	-	1	6	Bean/Peas
<i>Vicia</i> / <i>Pisum</i> / <i>Lathyrus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	Bean/Pea
<i>Vicia</i> / <i>Pisum</i> (ch)	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	Bean/Pea
<i>Pisum sativum</i> L. (ch)	-	-	-	-	#	1	-	-	2	-	-	1	-	+	2	-	-	1	Pea

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	Sample No	100	98	145	152	157	129	134	96	95	128	111	113	42	46	88	88	27	
CULTIVATED																			
<i>Papaver somniferum</i> L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	1	-	Opium poppy (M)
<i>Ficus carica</i> L.	-	-	-	-	-	-	-	1	-	-	-	-	-	-	8	-	-	25	Fig
<i>Linum usitatissimum</i> L.	2	+	+	1	-	-	-	11	-	-	-	-	-	-	-	-	-	-	Flax (M)
<i>Linum usitatissimum</i> L. capsule	-	1	#	-	-	-	-	20	#	-	#	-	-	+	2	-	-	-	Flax
<i>cf Beta vulgaris</i> L. fruit frags (ch)	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Beet
<i>cf Foeniculum vulgare</i>	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Fennel
FRUIT AND NUTS																			
<i>Corylus avellana</i> L.	-	14	-	3	1	+	33	28	56	3	1	-	10	-	-	-	-	6	Hazel nutshell
<i>Corylus avellana</i> L. (ch)	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	Hazel nutshell
<i>Rubus fruticosus</i> L. agg	-	4	+	1	1	-	1	1	+	1	-	2	-	1	-	-	-	-	Brambles (M)
<i>Prunus domestica</i> L.	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	1	Plum
<i>Prunus</i> sp	-	3	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	Bullace/Damson/Plum
<i>Malus sylvestris</i> s.l.	3	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	Crab Apple/Apple
ARABLE / DISTURBED GROUND																			
<i>Papaver rhoeas/dubium</i>	-	2	+	1	43	+	8	4	5	-	-	2	-	-	+	3	1	1	Poppy (M)
<i>Papaver cf argemone</i> L.	1	-	-	-	3	+	6	#	-	-	#	-	-	-	-	-	-	-	Prickly Poppy
<i>Chelidonium majus</i> L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	Greater Celandine
<i>Fumaria</i> sp	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	Fumitory
<i>Urtica dioica</i> L.	2	17	+	69	115	+	1	6	-	12	4	36	-	-	+	121	285	285	Common Nettle (M)
<i>Urtica urens</i> L.	1	1	-	-	10	+	2	-	-	6	-	2	-	-	-	-	-	-	Small Nettle (M)
<i>Chenopodium</i> sp	4	38	+	4	7	+	7	-	+	1	3	5	1	14	-	1	12	12	Goosefoots
<i>Chenopodium bonus-henricus</i> L.	1	6	-	2	7	-	3	7	-	3	1	3	-	-	-	3	-	-	Good-King-Henry
<i>Chenopodium album</i> L.	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	1	-	Fat-hen
<i>Chenopodium album</i> type	-	-	-	-	15	-	1	14	-	2	-	-	-	-	-	-	-	-	Fat-hen
<i>Scleranthus annuus</i> L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#	Annual Knawel
<i>Arenaria serpyllifolia</i> L.	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	Sandwort
<i>Stellaria media</i> (L.) Villars	-	-	+	-	-	-	1	-	-	-	-	4	-	-	+	-	-	-	Common Chickweed (M)
<i>Stellaria media</i> type	-	15	-	-	7	+	-	6	-	1	-	6	-	2	+	1	4	4	Chickweed
<i>Agrostemma githago</i> L. fragments	4	15	-	31	2	+	40	3	-	17	-	1	-	1	-	5	1	1	Corn Cockle (M)
<i>Agrostemma githago</i> L. capsule	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	Corn Cockle
<i>Persicaria maculosa</i> Gray.	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Redshank/Pale Persicaria
<i>Persicaria maculosa/lapathifolia</i>	1	11	+	5	2	+	1	6	+	1	-	3	1	-	-	5	2	2	Redshank/Pale Persicaria
<i>Polygonum aviculare</i> L.	-	4	-	12	5	+	6	2	-	-	-	1	-	-	-	9	14	14	Knotgrass (M)
<i>Fallopia convolvulus</i> (L)	1	9	-	4	8	-	6	5	-	-	1	1	-	-	-	-	2	2	Black-bindweed
<i>Rumex</i> sp	-	11	+	6	-	+	3	22	+	1	-	3	+	-	+	83	3	3	Docks (M)

	Context Sample No	5216 100	5290 98	5285 145	5284 152	5258 157	5259 129	5236 96	5236 95	5261 128	5252 111	5254 113	5104 42	5142 46	5234 88	5149 88	5149 27	
<i>Rumex</i> sp (ch)	-	-	-	-	-	-	-	-	-	-	-	-	4	7	-	-	-	Docks
<i>Rumex cf obtusifolius</i>	3	-	-	1	4	-	5	1	-	-	-	-	-	-	-	65	-	Broad-leaved Dock
<i>Rumex acetosella</i> L.	3	13	-	-	-	-	-	91	+	-	-	-	-	25	-	-	3	Sheep's Sorrel
<i>Brassica/Sinapis</i>	-	10	-	-	1	-	1	3	2	-	-	-	-	-	-	-	9	Cabbages/Mustards
<i>Brassica nigra</i> (L) Koch	8	-	-	-	1	-	4	24	-	-	5	1	-	-	-	-	-	Black Mustard
<i>Coronopus squamatus</i> (Forsskaol) Asch.	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	Swine cress
<i>Raphanus raphanistrum</i> L.	-	-	-	-	-	+	-	-	-	-	-	-	1	-	-	-	-	Wild Radish pod
<i>Raphanus raphanistrum</i> L. (ch)	-	-	-	1	-	-	2	-	-	#	-	-	-	-	-	-	-	Wild radish pod
<i>Reseda luteola</i> L.	1	5	+	5	-	-	-	-	-	-	-	-	-	1	+	-	-	Weld
<i>Vicia cf hirsuta</i> (L) Gray.	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Hairy Tare
<i>Aphanes arvensis</i> L.	-	-	-	1	-	-	-	-	-	-	-	-	-	-	+	22	-	Parsley-piert
<i>Epilobium</i> sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51	-	Willowherb
<i>Scandix pecten-veneris</i> L.	1	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	Shepherd's needle
<i>Aethusa cynapium</i> L.	1	-	-	-	-	-	2	-	-	-	-	-	-	-	+	2	1	Fool's Parsley
<i>Bupleurum rotundifolium</i> L.	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	Thorow-wax
<i>Bupleurum rotundifolium</i> L. (ch)	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	Thorow-wax
<i>Euphorbia helioscopia</i> L.	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	Sun Spurge
<i>Hyoscyamus niger</i> L.	-	-	+	-	5	-	-	-	-	-	-	-	-	1	-	-	-	Henbane (M)
<i>Solanum nigrum</i> L.	1	9	+	4	1	+	1	2	-	8	-	4	-	-	-	-	1	Black nightshade (M)
<i>Solanum dulcamara</i> L.	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Bittersweet
<i>Lithospermum arvense</i> L.	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	Field Gromwell
<i>Lithospermum arvense</i> L. (ch)	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	Field Gromwell
<i>Galeopsis</i> sp	-	-	+	-	-	-	-	#	-	-	-	-	-	-	-	-	2	Hemp-nettle
<i>Veronica hederifolia</i> L.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	Ivy-leaved Speedwell
<i>Veronica polita/agrestis</i> (ch)	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	Speedwell
<i>Galium aparine</i> L. (ch)	-	1	-	-	-	-	1	-	-	1	-	-	1	-	-	-	-	Cleavers
<i>Valerianella locusta</i> (L.) Laterr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	11	-	Common Cornsalad
<i>Valerianella carinata</i> Lois	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	Keeled-fruited cornsalad
<i>Valerianella dentata</i> (L) Pollich.	-	7	-	-	-	-	-	13	+	2	-	-	-	-	-	-	-	Cornsalad
<i>Centaurea cyanus</i> L.	1	-	+	-	1	-	8	3	-	-	-	-	-	-	+	-	-	Cornflower
<i>Picris echioides</i> L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	29	-	Bristly Oxtongue
<i>Sonchus arvensis</i> L.	-	-	-	3	-	+	5	2	-	-	-	-	-	-	+	19	-	Perennial sow-thistle
<i>Sonchus oleraceus</i> L.	1	6	+	-	-	+	4	-	-	-	-	-	-	-	+	7	3	Smooth Sow-thistle
<i>Sonchus asper</i> (L.) Hill	-	-	+	-	-	+	-	-	-	-	-	-	-	-	+	-	-	Prickly Sow-thistle
<i>Anthemis cotula</i> L.	13	2	+	12	4	+	39	84	-	8	-	1	-	-	+	-	-	Stinking Mayweed (M)
<i>Anthemis cotula</i> L. (ch)	-	1	-	1	-	-	-	-	-	1	1	2	4	1	-	-	-	Stinking Mayweed

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Tripleurospermum inodorum (L)		-	-	-	-	-	-	1	-	-	-	1	1	-	-	-	-	-	Scentless Mayweed
Schultz-Bip (ch)																			
Senecio cf vulgaris L.		-	-	+	-	-	+	-	-	-	-	-	-	-	-	+	21	-	Groundsel (M)
Senecio cf viscosus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	Sticky groundsel
Bromus hordeaceus/secalinus (ch)		-	-	-	-	-	-	1	-	-	-	-	-	7	-	-	-	-	Lop-grass/Rye-brome
GRASSLAND																			
Potentilla sp		-	-	-	1	-	-	6	-	-	-	-	-	-	-	+	16	10	Cinquefoil (M)
Daucus carota L.		-	1	-	-	-	-	-	-	-	-	-	1	-	-	+	12	1	Wild Carrot (M)
Verbena officinalis L.		-	1	+	4	-	-	-	-	1	1	-	-	-	-	+	-	-	Vervain (M)
Prunella vulgaris L.		-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Self heal
Plantago lanceolata L. (ch)		-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	Ribwort Plantain
Euphrasia/Odontites		-	-	+	1	1	+	6	1	-	-	-	-	2	-	-	-	-	Eyebright/Bartsia (M)
Rhinanthus sp		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Yellow Rattle
Centaurea nigra L. (ch)		-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	Knapweed
Lapsana communis L.		2	4	-	1	-	+	3	55	+	1	1	-	-	-	-	2	3	Nipplewort (M)
Hypochaeris sp .		-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	Cat's-ear
Leontodon sp		-	-	-	1	-	-	-	4	-	-	-	-	-	-	-	-	-	Hawkbit
Hieracium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	Hawkweed
Taraxacum sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	Dandelions (M)
Inula conyzae (Griess) Meikle		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	Ploughman's-spikenard
Cynosurus cristatus L. (ch)		-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	Crested Dog's-tail
Phleum pratense L.		-	-	-	-	-	+	2	-	-	-	-	-	-	-	-	-	-	Timothy grass
cf Phleum sp. (ch)		-	-	-	2	-	+	-	-	-	-	-	-	-	1	-	-	-	cf Cat's-tails
DAMP OR WET GROUND																			
Caltha palustris L.		-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	Marsh Marigold
Ranunculus sceleratus L.		3	10	+	111	1	+	37	2	-	18	-	12	-	1	+	66	10	Celery-leaved buttercup
Ranunculus lingua L.		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	97	-	Greater spearwort
Ranunculus flammula L.		1	-	-	-	-	-	-	-	-	2	1	-	-	-	-	2	-	Lesser Spearwort
Ranunculus subgen Batrachium		-	1	+	1	1	+	4	-	-	-	-	-	-	-	+	7	-	Crowfoots
Myrica gale L.		-	-	-	-	-	+	1	-	-	-	-	-	-	-	-	-	-	Bog-myrtle
Stellaria palustris Retz		-	-	-	-	-	-	-	7	-	-	-	-	-	-	-	-	-	Marsh Stitchwort
Persicaria hydropiper (L.) Spach		-	-	+	7	1	-	-	-	-	-	-	-	-	-	-	-	-	Water Pepper
Rorippa nasturtium-aquatica (L.) Hayek		-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	Water-cress
Rorippa sp.		-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	6	-	Water-cress
Hydrocotyle vulgaris (L.)		-	1	-	-	-	-	1	4	-	1	1	2	-	-	-	-	1	Marsh Pennywort
Oenanthe aquatica (L.) Poiret		-	2	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	Water-dropwort

	Context	5216	5290	5285	5284	5258	5259	5236	5236	5261	5252	5254	5104	5142	5234	5149			
	Sample No	100	98	145	152	157	129	134	96	95	128	111	113	42	46	88	88	27	
<i>Apium nodiflorum</i> (L.) Lag.	-	-	+	2	-	-	-	4	-	-	-	-	-	-	-	18	-	Fool's Water-cress	
<i>Cicuta virosa</i> L.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Cowbane	
<i>Lycopus europaeus</i> L.	1	-	+	4	-	+	1	6	-	3	-	-	-	1	+	18	2	Gypsywort	
<i>Mentha</i> cf <i>aquatica</i>	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	Water mint	
<i>Mentha</i> sp	-	1	+	1	-	+	-	1	1	-	-	-	-	-	-	-	-	Mint	
<i>Bidens</i> sp	-	-	+	2	-	+	1	-	-	-	-	-	-	-	-	-	-	Bur-marigold	
<i>Alisma plantago-aquatica</i> L.	-	-	+	-	-	+	3	1	-	-	-	-	-	-	-	3	-	Water-plantain	
<i>Potamogeton</i> sp	-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	Pondweed	
<i>Zannichellia</i> sp	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	Horned Pondweed	
<i>Lemna</i> sp	-	-	+	-	-	-	-	-	-	-	5	-	-	-	+	8	-	Duck-weed	
<i>Juncus</i> sp	1	-	-	-	5	+	15	44	-	3	3	5	-	-	-	1	-	Rush	
<i>Luzula</i> sp.	-	1	-	-	-	+	2	-	-	-	-	-	-	2	-	-	-	Wood-Rush	
<i>Eleocharis palustris/uniglumis</i>	4	39	-	3	5	+	3	304	+	1	1	1	43	-	-	-	1	Spike-rush	
<i>Eleocharis</i> sp. (ch)	-	-	-	-	-	-	-	6	-	-	-	-	-	3	-	-	1	Spike-rush	
<i>Cladium mariscus</i> (L.) Pohl	3	6	+	-	3	+	8	7	+	4	-	4	4	-	-	2	-	Great Fen-sedge	
<i>Carex</i> cf <i>paniculata</i> L.	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Greater Tussock-sedge	
<i>Glyceria</i> cf <i>maxima</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Reed Sweet-grass	
<i>Sparganium</i> sp	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	2	1	Bur-reed	
HEDGE OR WOODLAND																			
<i>Thalictrum</i> cf <i>minus</i>	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	Lesser Meadow-rue	
<i>Alnus</i> sp	2	-	+	1	-	-	-	-	-	-	-	-	-	-	-	-	-	Alder	
<i>Alder</i> sp catkin	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	Alder	
<i>Lychnis flos-cuculi</i> L.	-	1	+	1	2	+	1	8	-	-	1	-	-	-	-	-	-	Ragged Robin	
<i>Silene vulgaris</i> Garcke	4	-	-	1	-	+	1	1	-	-	1	2	-	-	-	-	3	Bladder Campion	
<i>Silene latifolia</i> Poiret	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	White Campion	
<i>Silene dioica</i> (L.) Clairv.	-	4	-	-	2	+	2	3	-	-	1	-	-	-	-	1	4	Red Campion	
<i>Crataegus</i> cf <i>monogyna</i> Jacq.	-	#	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Hawthorn	
<i>Prunus</i> / <i>Crataegus</i> thorns	-	3	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	8	Blackthorn/Hawthorn
<i>Rubus</i> sp	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	Bramble
Rosaceae Thorns	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Rose/Bramble Thorns
<i>Hypericum perforatum</i> L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	21	1	Perforate St John's-wort (M)
<i>Anthriscus caucalis</i> M. Bieb	1	3	-	-	21	+	-	2	-	1	-	-	-	-	-	4	-	Bur Parsley	
<i>Chaerophyllum temulum</i> L.	-	-	-	-	-	-	5	-	-	1	-	-	-	-	-	2	-	Rough Chervil	
<i>Ballota</i> / <i>Marrubium</i>	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Horehound (M)
<i>Scrophularia</i> sp.	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Figwort

	Context Sample No	5216 100 98	5290 145	5285 152	5284 157	5258 129	5259 134	5236 96	5236 95	5261 128	5252 111	5254 113	5104 42	5142 46	5234 88 88	5149 27			
<i>Sambucus nigra</i> L.		1	3	+	1	21	+	2	-	+	-	2	18	+	74	+	13	72	Elder (M)
<i>Dipsacus fullonum</i> L.		-	-	+	-	-	-	-	-	-	-	-	-	-	+	21	-		Wild Teasel (M)
UNCLASSIFIED																			
<i>Ranunculus</i> sp		5	-	+	1	9	+	-	3	-	-	-	1	-	-	-	-	-	Buttercup
<i>Ranunculus acris/repens/bulbosus</i>		-	23	-	2	2	+	10	14	+	2	-	9	-	-	-	-	14	Buttercup
<i>Atriplex</i> sp		1	8	+	3	4	+	1	1	-	1	1	2	-	-	+	2	-	Oraches (M)
<i>Stellaria</i> sp.		-	6	+	-	3	-	1	3	-	-	-	-	-	-	-	5	6	Stitchwort
<i>Cerastium</i> sp.		-	-	-	-	3	-	-	5	-	-	-	-	-	-	-	4	-	Mouse-ears
Caryophyllaceae		-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	Pink family
<i>Polygonum</i> sp		1	7	-	1	6	-	3	18	-	-	-	1	1	10	-	16	2	Knotweed
<i>Malva</i> sp		-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	Mallow
<i>Malva sylvestris</i> L.		-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	Mallow
Brassicaceae		-	1	-	-	1	-	-	18	-	-	-	-	-	-	-	-	-	Cabbage family
<i>Lysimachia/Anagallis</i>		-	1	-	-	-	-	-	6	-	1	1	2	1	-	-	-	4	Loosestrife/Pimpernel
<i>Vicia</i> sp		2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Vetch
<i>Vicia/Lathyrus</i>		1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	Tare/Vetch/Vetchling
<i>Vicia/Lathyrus</i> (ch)		-	2	-	-	-	-	-	1	-	1	-	-	2	3	-	-	-	Tare/Vetch/Vetchling
<i>Medicago/Melilotus/Trifolium</i> (ch)		-	2	-	-	-	-	-	-	1	-	1	38	3	-	-	-	4	Medick/Melilot/Clover
Apiaceae		-	1	-	1	-	-	-	1	-	2	-	-	-	+	13	-	-	Carrot family
<i>Conium maculatum</i> L.		-	-	-	-	1	-	1	1	-	-	-	-	2	-	154	39		Hemlock
Lamiaceae		-	3	-	2	3	-	-	1	1	3	-	1	-	-	-	6	3	Deadnettle family
<i>Lamium</i> sp		-	1	+	9	7	-	-	-	2	1	-	-	-	-	-	-	4	Deadnettles (M)
cf <i>Stachys</i> sp. capsule		-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	Woundwort
Valerianaceae		-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	15	-	Valerian family
Asteraceae		2	4	-	-	1	-	3	4	-	2	-	2	-	-	-	2	1	Daisy family
<i>Cirsium</i> sp.		-	-	+	1	-	-	-	1	-	-	-	-	-	-	+	3	-	Thistles (M)
<i>Carduus/Cirsium</i>		-	-	-	2	-	+	2	-	-	-	-	-	-	-	+	4	2	Thistles
<i>Carex</i> spp (2-sided)		4	-	-	13	-	-	22	21	-	1	2	3	-	-	-	14	-	Sedges
<i>Carex</i> spp (3-sided)		2	-	-	5	8	-	10	11	-	4	7	5	-	-	-	-	-	Sedges
<i>Carex</i> spp		-	25	+	-	-	+	-	-	+	-	-	-	3	7	+	-	27	Sedges
<i>Carex</i> spp (ch)		-	-	-	-	-	-	-	-	-	-	-	-	11	-	-	-	-	Sedges
Poaceae (small)		-	-	-	5	8	-	3	7	3	-	-	-	+	-	-	3	1	Grasses
Poaceae (small) (ch)		-	1	-	-	-	-	1	-	-	-	-	-	4	1	-	-	-	Sedges/Docks
Poaceae (small) flower		-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	Grasses
Poaceae (large) (ch)		-	4	-	-	-	-	3	-	-	-	-	1	67	1	-	-	-	Grasses large
Poaceae indet		1	12	+	2	2	+	9	-	-	-	-	3	-	-	-	9	-	Grasses

	Context	5216	5290	5285	5284	5258	5259	5236	5236	5261	5252	5254	5104	5142	5234	5149			
	Sample No	100	98	145	152	157	129	134	96	95	128	111	113	42	46	88	88	27	
Poaceae culm node		-	-	-	3	-	+	1	-	-	-	-	2	7	-	-	-	+	Grasses
Poaceae culm node (ch)		-	-	-	1	-	-	4	-	-	-	1	1	-	-	-	-	-	Grasses medium
<i>Pteridium aquilinum</i> (L.) Kuhn		1	-	-	1	-	-	2	-	-	-	-	-	-	-	-	-	-	Bracken Frond
Indeterminate seeds		9	5	-	14	9	-	27	4	5	2	8	4	7	3	-	47	16	Indeterminate seeds
OTHER																			
Woody stem		-	-	-	-	-	-	++	-	-	-	-	-	-	-	-	-	-	Twigs
Fungal parts		-	-	-	-	-	-	-	9	-	-	25	-	-	-	-	-	-	Fungus
Monocot stem/leaf		+	-	-	+	-	-	++	+	-	+	-	-	-	-	-	+	-	Cereal/Grass/Reed etc
Dicot stem		+	-	-	-	-	-	+	-	-	-	1	4	-	-	-	-	-	Herbaceous stem
Moss		+	-	+	+	+	+	++	+	-	-	1	-	-	-	+	7	-	
Thorns indet.		-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	+	-	
Tree buds		3	5	-	-	1	+	11	4	-	-	-	6	2	2	+	+	10	
Bark		+	-	-	-	+	-	-	+	-	+	-	-	-	-	-	-	-	
Leaf fragments		+	-	-	+	+	-	++	+	-	+	-	-	-	-	-	-	-	
Mineralised concretions		-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TOTAL		117	429	*	434	383	*	510	942	85	136	111	187	426	207	*	1087	682	TOTAL = 5736 items
Volume (litres)		0.5	9x	2.0	0.5	1.0	2.0	1.0	0.5	14x	0.5	0.5	0.5	9	10	2.0	0.5	12x	litres
Flot volume (mls)		-	300	-	-	-	-	-	-	640	-	-	-	60	190	-	-	560	mls

Key: (ch) = charred; (M) = Medicinal (Hunt 1990, Wilson 1975); (+) = present; (++) = abundant; x = 25% flot sorted.

* = samples analysed by Pamela Grinter. # = determined by Lisa Moffett.

Remains are seeds in the broad sense and are preserved by waterlogging unless described otherwise.