AHA Rpnt 3/93.

1439

Site	: Fison Way, Thetford
County	: Norfolk
Code	: 5853 THD '
Director	: T. Gregory
Type of contexts	: Settlement features (pits, ditches, hearths, postholes etc.) and some grave fills
Period	: Iron Age - Roman
Geology	: Pleistocene plateau gravels and sands with some sandy clay loam
Type of material	: Charred plant remains

PETER MURPHY

Fison Way, Thetford (5853 THD): Plant remains

Summary

The presence of ericaceous charcoal, including remains of Calluna vulgaris, together with some other seeds of heathland plants, indicates the proximity of heath at all site phases. That there was some scrub in the vicinity is shown by remains of hazel (Corylus avellana), hawthorn (Crataegus monogyna) and elder (Sambucus nigra). Rare remains of grassland and marsh plants may be derived from hay, or may indicate locally damp habitats.

The principle crop plants represented are spelt (Triticum spelta) and hulled barley (including Hordeum vulgare) with traces of emmer (Triticum dicoccum) and wild or cultivated oats (Avena sp.). Cereal cultivation could have been located on calcareous slope soils below the site or in the vicinity of the site, where a perched water-table provided a moisture reservoir for crop growth. Fruits of Galium aparine indicate some autumn sowing. Leguminous weed seeds occur only at low frequencies, and soil nitrogen levels appear to have been maintained by manuring. The weed flora includes a calcifuge element associated with sandy soils.

Most samples are small and mixed and the processes which resulted in their formation cannot be assessed. However, several storage deposits were identified including a store of barley (stored as threshed grain and associated with remains of wild fruits and charred small mammal bone) and spelt (stored as spikelets). The distribution of charred cereal remains on one storage pit conforms with the expected pattern estbalished by experimental firing. A large deposit of Calluna remains may indicate disposal of unwanted litter, bedding etc. or an accidental fire.

Introduction

Preservation conditions for biological remains at this site were extremely poor. Even the relatively durable carbonised plant remains, with which this report is concerned, included many fragmented and 'weathered' specimens, probably due in part to abrasion against sand particles and to high percolation rates in the generally coarse sandy matrix of the archaeoligcal deposits. Nevertheless, these botanical remains have provided information on the semi-natural vegetation of the vicinity between the late Iron Age and Roman periods, on the range of crops cultivated, on some aspects of crop husbandry and on the function of some of the excavated features.

Methods

A total of eighty-one bulk samples were collected. It was intended that these samples should be processed on site using a water flotation tank of the type described by Williams (1973), but in practice some samples were found to have a high clay content which resulted in waterlogging and/or difficulties in disaggregation. These problems made this intended extraction method unreliable due to inconsistent recovery-rates varying with soil sample matrix. Sub-samples, normally 10kg in weight, were therefore taken from the bulk samples for processing in the laboratory, where extraction efficiency was more easily controlled. This was the largest practical sample size. Larger soil samples would have been preferable since some aspects of analysis and interpretation have been precluded by the smallness of the assemblages of charred plant remains extracted. After disaggregating the samples in hot water with manual agitation charred plant remains were extracted by simple water flotation collecting the flot in a 500 micron mesh sieve. A wash-over technique was finally used to ensure as complete recovery of charred material as possible.

The flot fraction was dried and sorted under a low-power binocular microscope. Almost all samples included some uncharred intrusive modern plant material, notably fine roots with fruits and seeds of Brassica sp., Spergula arvensis, Arenaria serpyllifolia, Polygonum aviculare, Polygonum convolvulus, Rumex acetosella, Aphanes arvensis, Chenopodium album, Atriplex sp., Veronica hederifolia, Sambucus nigra, Plantago lanceolata and Tripleurospermum maritimum. These were noted and discounted; only the contaminant Chenopodiaceae seeds presented any difficulties in separation from charred specimens (see note below Table 5). Charred fruits, seeds, spikelet and straw fragments, and charcoal fragments appearing, on external characteristics, to be of the Ericaceae were extracted. Identifications of the seeds and cereal remains were made by comparison with modern material. A note on charcoal identification is given below (Table 5).

Local vegetaion

The general pattern of anthropogenic vegetational change in the Breckland was established by Godwin (1944) and studied in more detail by Sims (1978): clearance of deciduous woodland from at least the Neolithic onwards resulted in soil deterioration and the development and spread of heath and grassland. The principle palaeoecological questions to be answered at Fison Way were, firstly, when clearance in the vicinity occurred and, secondly, whether there was any evidence for the incidence of heath and for vegetation associated with unstable or impoverished

soils. The presence or absence of Ericaceous charcoal fragments in the flotated samples from the site is relevant to both questions (Table 1).

Phase	I	I/II	II	II/III	III	IV
No of samples containing ericaceous charcoal	6	15	10	3	7	3
No of samples per phase	19	23	20	4	7	4

Table 1 : Distribution of ericaceous charcoal

Most of these charcoal fragments were too immature for closer identification, but undoubted remains of Calluna vulgaris (heather) were present in larger charred deposits of phase III or later (3303, 3304, discussed further below) and Calluna capsules were extracted from 2750 (Phase I/II) and 648 (Phase II). Calluna is the dominant ericaceous plant in the dry Breckland heaths today. Further heathland plants definitely or tentatively identified in the samples are Stellaria graminea (lesser stitchwort) and Carex arenaria (sand sedge). Carex nutlets closely matching those of C.arenaria occurred in three samples from phase I/II. The sand sedge occurs widely in the Breckland, most conspicuously nowadays as large, pure communities developing on blown sand in areas where rabbits were formerly abundant (Petch and Swann 1968, 243; Corbett 1973, 28).

Heath vegetation was thus clearly present in the surrounding area at all site phases and clearance of at least some, perhaps most, local woodland must pre-date phase I. However, the construction of the defences of the later site phases clearly involved the use of massive quantities of timber. There must therefore have been fairly extensive areas of woodland accessible from the site, though their location remains conjectural.

There is some direct evidence from the site for the proximity of scrub, if not woodland. Charred fragments of hazel-nut shells (Corylus avellana) were extracted from eight samples, a single fruitstone of hawthorn (Crataegus monogyna) was identified in 2663 (Phase II) and seeds of elder (Sambucus nigra) were present in four samples. In addition tree charcoals, generally very small fragments, were present in most samples, though these have not been identified.

Most of the remaining wild species occur as arable weeds and presumably reached the site as contaminants of cereals. There is however, a single nutlet of the grassland herb Self-heal (Prunella vulgaris) and some nutlets of sedge (definitely not C.arenaria) and of the spike-rush (Eleocharis palustris). These plant remains could have arrived at the site with hay mown in damp grassland, perhaps in the valley

floor, or could indicate the proximity of locally damp habitats, possibly in hollows or small blow-outs with their bases below the local perched water-table (see below).

The Crop-Plants

The samples examined from the site contain remains of glume wheats and barley with traces of wild or cultivated oats (Tables 5 and 6). The wheats are represented by caryopses, rachis internodes, spikelet forks, glume bases and spikelet bases (forks lacking internodes and with only the extreme basal part of the glumes surviving). On the basis of the criteria for identification defined and illustrated by Helbaek (1952) and elaborated by Jones (1978) almost all the wheat spikelet fragments are of spelt, Triticum spelta. The two largest wheat samples (2748, 2750) include a few glume bases which from their widths and venation are identified as emmer, Triticum dicoccum but also some glume bases with unclear venation and dimensions falling within the overlap between width distributions for spelt and emmer. The wheat grains almost all show signs of deformation during carbonisation, and have therefore not been specifically identified, but elongate forms of spelt/emmer-type predominate. Most grains of barley are similarly poorly presrved, clearly distorted, and often with 'cokey', porous surfaces. Grains from 2663, 2665 and 3025 are in a better state. Most retain an angular cross-section, sometimes with traces of lemma and palea adhering. Asymmetrical lateral grains are present in these samples, though due to distortion, ratios of twisted: straight grains cannot reliably be obtained. However, six-row hulled barley (Hordeum vulgare) is certainly present. Lemma bases have not survived. Barley rachis fragments were recovered from only two samples: a single internode from 3641 and a node with two fragmentary internodes from 2750. The specimen from 3641 is 2.9mm in length, approximately 1.0mm across the basal node, and shows faint traces of marginal pubescence. The remains of oats (Avena sp.) comprise only naked grains and awn fragments; in the absence of floret bases it cannot be determined whether a weed species or a cultivated oat is represented. Charred cereal culm nodes and other culm fragments occur sporadically.

Soils and crop husbandry

The excavated settlements occupy a plateau site just over 1km from the Little Ouse River. The site lies outside the area mapped in detail by the Soil Survey (Corbett 1973) but in adjacent areas four zones of soil complexes running roughly parallel to the river have been distinguished. These are as follows:

1. Valley floor soils. Imperfectly to very poorly drained organic soils, peaty

gley soils and ground-water gely soils formed on peats and fluviatile gravels. (Adventures, Highlodge, Isleham, Row series).

2. Terrace soils. Coarse stoney brownearth soils, excessively well-drained with pH less then 6 in the top 30cm. (Freckenham Series).

3. Slope soils. Shallow brown calcarous soils and sandy brownearths formed on the chalk/sand drift. (Methwold, Worlington Series).

4. Upland soils. Freckenham series soils similar to those on the terraces are widespread at nearby upland sites. In the vicinity of the Fison Way site, however, there is an irregularly-distributed impervious sandy clay loam horizon at about 1m depth which has resulted in the development of a perched water-table. Periodically there is standing surface water. A fossil soil buried beneath a turf-stack apparently of late Roman date at the nearby Gallows Hill site has been described by MacPhail (1979). This was an immature soil formed on blown sand and influenced by the local water-table, and has tentatively been classed as the Row series.

The Breckland is an area of deficient rainfall, and in dry years today barley yields may be reduced to less than half the normal yield, which on better soils is 2.76-3.76 t/ha. Consequently most agricultural land is located on soils whose parent materials have a high moisture-retaining capacity. For the most part these are the calcareous soils formed over the chalk/sand drift (Corbett 1973). Such soils are present just downslope at Fison Way, and in 1982 were under sugar beet and cereals. In addition, however, the perched water table in the vicinity of the site provides a moisture reservoir for crop growth. It seems not unlikely that this feature of the soil profile was one factor influencing the location of the settlement in its early phases at least. The low base status of local upland soils could have been improved by marling with chalk. Very small chalk fragments in the modern topsoil and in samples from some excavated features show that there has been marling and cultivation at the site at some indeterminate date. In short, then, the vicinity of Fison Way was unusual amongst upland localities in providing a fairly extensive area of varied soils potentially suitable for arable farming with some improvement where necessary.

The crop plant remains show that late Iron Age and Roman farming in the area included the cultivation of spelt and barley. Presence analysis (Table 5; Hubbard 1975) indicates that wheat and barley caryopses are present at comparable frequencies, though wheat chaff occurs more frequently than barley chaff. Barley: wheat grain

ratios calculated in terms of site phases show haphazard fluctuations influenced by particularly large deposits of one crop or another (Table 2).

Phase	I	I/II	II	II/III	III	IV
Barley: wheat grain ratio	4.3:1	0.8:1	14.8:1	5.2:1	1:1	0.3:1

Table 2 : Barley: wheat grain ratios calculated by phase

In addition the samples produced traces of emmer and wild or cultivated oats though whether these should be considered as crops or mere contaminants is uncertain.

Weed seeds associated with these cereals provide some information on crop husbandry. P. Reynolds and M. Jones have demonstrated that under 'primitive' cultivation methods the noxious weed Cleavers (Galium aparine) is confined to autumn sown crops (Reynolds 1981, 112). At Fison Way fruits of G.aparine were identified in five samples (Table 3).

505	Phase I/II	1 fruit, associated with a wheat grain
2663	Phase II	3 fruits, associated with a predominantly barley deposit with some wheat
2441	Phase II/III	2 fruits, associated with spelt and barley
3025	Phase II/III	1 fruit, associated with a predominantly barley deposit with some wheat
2263	Phase IV	1 fruit associated with spelt chaff and grains

Table 3 : Distribution of Galium aparine

From this it is clear that at least some of the spelt crop was autumn-sown, and some of the barley may have been. Hillman (1981, 147) considers that autumn-sowing was probably always the norm in temperate Europe where work schedules permitted. Moreover, as has been argued eleswhere (Murphy, forthcoming) there would have been particular advantages for early farmers in sowing during the autumn in the Breckland, for by this means seedling losses due to drought and wind-blow in the spring could be minimised.

The frequencies of leguminous weed seeds in samples from the site are generally low: seeds and cotyledons of vetches and tares were recovered from only seven samples, usually in small numbers apart from in 505 (Phase I/II) which produced eleven cotyledons and a seed of the smooth tare (Vicia tetrasperma). In addition 393 (Phase I/II) contained a deformed seed of Medicago/Trifolium-type (medick or

tretoil). Leguminous weeds are generally more prevalent on nitrogen-deficient soils (Warington 1924). The ability of these weeds to fix atmospheric nitrogen by their root nodules places them at an advantage over other weed species in poor soils. Jones (1978) has argued that a rise in frequency of vetch seeds in samples from successive phases of an Iron Age settlement at Abingdon indicates progressive nitrogen depletion. No such trend is apparent at Fison Way, and it is thought that soil nitrogen levels were maintained. This could only have been achieved by manuring.

Most of the remaining weed seeds are not particularly informative, though, as might be expected, some are particularly characteristic of acid sandy soils (Raphanus raphanistrum, Spergula arvensis, Rumex acetosella).

Taphonomy

The majority of the samples of charred plant remains from the site consist of small numbers of cereal grains and/or spikelet fragments usually with a few weed seeds. It is impossible to determine the particular significance of such samples: neither their composition nor (in most cases) their contexts provide any basis for assessing the activities and processes which may have led to their formation. A few samples and contexts, however, are potentially more informative and will be considered in more detail in this section.

1. Pit 131 (Period I)

This feature was of the type usually described as a grain storage pit. Samples were taken in order to establish whether the distribution of charred cereal remains within its fill could be interpreted in the light of experimental results reported by Reynolds (1974, 1981), and also, if possible, to determine the crop stored. A central column sample and a further sample from the edge of the pit at its base were collected. A full list of charred plant remains identified is given in Table 6 and the results are summarised in Table 4.

The upper fills of this pit produced only low concentrations of poorly-preserved cereal grains, most of which were unidentifiable, together with rare wheat spikelet fragments. At the base of the pit, however, cereal remains were more abundant, particularly towards the edge of the pit base where they were associated with clay fragments. The sample from the edge included some grains which had become fused together, and were extremely badly distorted.

Layer	Depth (cm)	Cereal grains/ kg of soil	Spikelet fragments/ kg of soil
256	0-20	0.2	0
256	20-40	1.2	0
256	40-55	0.8	0
257	55-75	0.8	0.2
259	75-90	0.6	0.2
259	90-105	0.2	0
259	105-110	6.0	0
259	(at edge of pit base)	12.4	0

Table 4 : Summary of concentration of cereal remains in fill of pit 131

Reynolds (1974, 127-8) notes that viable grain stored in a pit of this type forms a 'skin' of germinated grain lining the pit wall. It seems possible that the fused grains from the edge of pit 131 may be the charred remnants of such a skin produced during a firing of the pit to dry it out and destroy micro-organisms prior to re-use. Reynolds has demonstrated experimentally that firing does result in the charring of residual cereal grains and the concentration of charred cereals at the base of pit 131 certainly would be consistent with such a firing. So far as the type of crop stored is concerned, the high proportion of indeterminate grains inevitably leads to some uncertainty, but of the grains identified in layers below 90cm depth, 15 were of barley and 3 of wheat. This might indicate successive use for both wheat and barley storage.

2. Contexts 2663, 2665 and 3025 (Period II/III)

These contexts were the top fills of post-holes in the vicinity of grid reference 553/581. They produced very similar cereal samples, and this, together with their proximity to one another, leaves little doubt that the samples had a common source. Each sample consists predominantly of six-row hulled barley grains associated with unidentified cereal grains and a few wheat grains. There are no cereal spikelet fragments, but all three samples contain a few culm nodes. Weed seeds are present but not abundant, and large weed seeds (eg. Galium aparine, Polygonum convolvulus, Raphanus raphanistrum) occur. The samples are cleary derived from a batch of prime barley grain, which had been almost completely cleaned but still included a few impurities. These would have been removed by a final sieving and hand-sorting prior to consumption. This is equivalent to step 9 in the process of grain cleaning for free-threshing cereals described by Hillman (1981, 135-6), and represents the state in which cereals would have been stored in bulk. It is

impossible to establish with certainty the particular processes which led to the carbonisation of this barley and the incorporation of the residue in the tops of these post-holes, but an accidental granary fire seems a distinct possibility. The unusually good state of preservation of the barley grains for this site indicates slow carbonisation and rapid burial, before the surfaces of the carbonised grains become badly abraded: conditions which would occur if the barley had been buried beneath the charred debris of a building.

Interestingly these samples have also produced charred remains of wild fruits, which are otherwise rare at the site. Only four samples from the site (including these three) produced seeds of elderberry (Sambucus nigra) and 2663 contained the only fruitstone of haw (Crataegus monogyna). One possible interpretation is that these wild fruits were stored, either dried or preserved by some other means, in the same building as the barley and that mixing occurred after carbonisation.

Finally, the abundance of burnt small mammal bone from these three samples is worth noting. It is tempting to suggest that these are the remains of vermin killed in a granary fire.

3. Contexts 2748, 2750 (Period I/II)

These contexts were the top two layers of pit 506. The two samples contain a comparable range of cereal remains and once again a common source for the samples may reasonably be inferred. 2748 produced the largest single sample of wheat remains from the site, and the sample from 2750 was similar though smaller. In marked contrast to the barley deposits discussed above, both grains and spikelet fragments occur in these two samples (Table). Since many of the cereal grains were poorly preserved and have not been identified it is not possible to calculate wholly reliable grain: glume ratios for the wheats. However, in 2748 there are 32 wheat grains and 59 indeterminate grains. Assuming that the latter are mostly of wheat, a total of 91 grains is obtained. The sample also includes 20 spikelet forks and 67 separate glume bases, equivalent in total to 107 glumes. In an ear of mainly two-grained spikelets a grain: glume ratio of about 1:1 would be expected, and the ratio of 91:107 (i.e. 1:1.17) in 2748 approximates to this surprisingly well. The low frequency of rachis internodes in the sample is easily explained in terms of their fragility. From this it seems clear that sample 2748 represents either intact ears or, more probably since straw fragments are rare, disarticulated spikelets. The relatively high frequency of weed seeds, particularly of Polygonaceae, confirms that a fairly early stage of crop processing prior to final winnowing and sievings is represented possibly equivalent to Hillman's

Step 7 or 8 (Hillman 1981, Fig. 5). Carbonisation is most likely to have occurred during drying prior to storage as spikelets or during parching to render the chaff brittle and release the grain.

4. Contexts 3303, 3304 (Phase III or later).

These were the middle and lower fills respectively of pit 3329. Both contexts included a high proportion of charcoal and other charred plant remains, mainly of heather (Calluna vulgaris), and, as in the contexts discussed above, it seems certain that the plant remains from these two layers had a single origin. Calluna was identified in these layers from charcoal from mature stems, isolated leaves, young shoots with imbricate leaves and capsules with some seeds: evidently entire heather plants are represented. Other plant remains are very rare, confined to a single achene of a buttercup (Ranunculus acris/repens-type) and a nutlet of black bindweed (Polygonum convolvulus) from 3304. These dense Calluna deposits are reminiscent of a deposit from the base of the turf-stack at Gallows Hill (8) dated to 1600 ± 70b.p. or 350a.d. (HAR-2905) which included Calluna remains with some tree charcoals, cereals, and seeds of heath plants and ruderals. From its context, just above a buried soil and sealed by the mound, this was thought to represent a clearance of heath vegetation by burning prior to construction work. Such an explanation seems less probable for 3303 and 3304: there is no obvious reason why the charred debris from a heath fire should have been dumped in pit 3329. Possible alternative explanations are that this heather had been used for litter, flooring, bedding or possibly thatch and that it was subsequently burnt, either intentionally for disposal or accidentally.

Table 5 : Presence analysis of plant remains from the site

Notes:

1. Cereal grains. Poorly-preserved indeterminate specimens comprising more than half a grain, or including the embryo were counted and are listed as 'cereal indet'. Smaller fragments were noted but not counted.

2. Chenopodiaceae. For two reasons counts are not given. Firstly contaminant intrusive seeds of Chenopodiaceae are common and were not always separable from charred seeds. Secondly there was extensive fragmentation.

3. Ericaceous charcoal. This was picked out on external features during sorting and identification was subsequently confirmed or rejected by higher power examination of fractured sections. The fragments were generally from very young stems and consequently determination to genus was not attempted; however, only Calluna capsules and leaves were observed. No other charcoal from the site has been identified, but was retained for possible future study.

4. Polygonum persicaria/lapathifolium. These nutlets are mostly puffed into a sub-spherical shape. Separation of these species is therefore impossible.

5. Carex arenaria-type. Nutlets with angular margins, slightly convergent towards the square apex with a distinct stipe, which compare well with C.arenaria. The possibility that some other Carex nutlets might take up this form on carbonisation cannot, however, be excluded.

Phase	I	I/II	II	II/III	III	IV
Cereal indet. caryopses	11	16	10	3	4	3
Cereal indet. caryopsis fragments	15	20	15	3	4	2
Cereal indet. culm nodes	1	3	4	2	1	-
Hordeum sp. caryopses	8	15	3	2	1	2
Hordeum sp. rachis internodes	-	2	-	-	-	-
Hordeum vulgare caryopses	-	-	2	1	-	-
Triticum sp. caryopses	3	13	6	2	2	3
Triticum sp. brittle-rachis internodes	1	1	-	-	-	1
Triticum sp. spikelet bases	2	4	1	-	-	-
Triticum sp. glume bases	1	4	2	-	-	-
Triticum spelta spikelet forks	1	3	-	-	-	-
Triticum spelta glume bases	3	7	1	1	-	1
Triticum dicoccum spikelet forks	-	2	-	-	-	-
Triticum dicoccum glume bases	-	2	-	-	-	-
Avena sp. caryopses	-	1	2	1	-	-
Avena sp. awn fragments	3	5	1	-	-	-
Ranunculus acris/repens - type	1	1	-	-	1	-
Brassica/Sinapis sp.	-	-	1	-	-	-
Raphanus raphanistrum	-	2	2	-	-	-
Cruciferae indet.	-	1	-	-	-	-
Silene cf alba	-	1	-	-	-	-
Stellaria media-type	-	3	-	-	1	-
Stellaria graminea	-	-	1	-	-	-
Spergula arvensis	-	2	-	-	-	-
Atriplex patula/hastata	1	1	2	-	-	-
Chenopodium album	6	10	3	1	-	-
Chenopodium sp.	2	1	-	-	-	-
Chenopodiaceae indet.	1	1	2	-	-	-
Malva sp.	-	1	-	1	-	-
Medicago/Trifolium - type	-	1	-	-	-	-
Vicia sp. seeds	1	-	-	-	-	-
Vicia sp. cotyledons	1	1	1	-	1	-
Vicia cf. tetrasperma	-	1	-	-	-	-
Leguminosae indet.	-	1	-	-	-	1
Crataegus monogyna	-	-	1	-	-	-
Polygonum aviculare agg	1	2	3	1	-	-
Polygonum lapathifolium	-	-	2	-	-	-
Polygonum lapathifolium/persicaria	3	6	-	-	1	-
Polygonum convolvulus	5	12	3	-	2	-
Rumex acetosella	2	3	1	-	-	-
Rumex sp.	1	9	5	2	2	-
Polygonaceae indet	-	5	2	1	2	-
Urtica dioica	-	1	1	-	-	-

Stellaria graminea	-	-	1	-	-	-
Spergula arvensis	-	2	-	-	-	-
Atriplex patula/hastata	1	1	2	-	-	-
Chenopodium album	6	10	3	1	-	-
Chenopodium sp.	2	1	-	-	-	-
Chenopodiaceae indet.	1	1	2	-	-	-
Malva sp.	-	1	-	1	-	-
Medicago/Trifolium - type	-	1	-	-	-	-
Vicia sp. seeds	1	-	-	-	-	-
Vicia sp. cotyledons	1	1	1	-	1	-
Vicia cf. tetrasperma	-	1	-	-	-	-
Leguminosae indet.	-	1	-	-	-	1
Crataegus monogyna	-	-	1	-	-	-
Polygonum aviculare agg	1	2	3	1	-	-
Polygonum lapathifolium	-	-	2	-	-	-
Polygonum lapathifolium/persicaria	3	6	-	-	1	-
Polygonum convolvulus	5	12	3	-	2	-
Rumex acetosella	2	3	1	-	-	-
Rumex sp.	1	9	5	2	2	-
Polygonaceae indet	-	5	2	1	2	-
Urtica dioica	-	1	1	-	-	-
Corylus avellana nutshell frags.	1	5	1	-	-	1
Calluna vulgaris capsules	-	1	1	-	2	-
leaves and shoots	-	-	-	-	2	-
Ericaceae charcoal	6	15	10	3	7	3
Prunella vulgaris	-	-	-	1	-	-
Plantago lanceolata	2	4	5	-	2	-
Galium aparine	-	1	1	2	-	1
Sambucus nigra	-	1	2	1	-	-
Centaurea sp. fr	-	1	-	-	-	-
Carex arenaria-type	-	3	-	-	-	-
Carex sp.	-	1	3	-	-	-
Eleocharis palustris agg	-	1	-	-	-	-
Bromus mollis/secalinus	8	10	4	1	-	-
Gramineae indet.	1	6	3	2	1	1
Indet. stem fragments	1	-	-	-	-	-
Indeterminate, seeds etc.	11	12	7	3	4	-
No. of samples per phase	19	23	20	4	7	4

Table : Presence analysis of charred plant remains from Fison Way

Table 6: Full list of plant remains from the site.

Phase 1
Sheet I

Context no.	153	256 0-20 cm	256 20-40 cm	256 40-55 cm	257 65-75 cm	259 75-90 cm	259 90-105 cm	259 105-110 cm	259 (at road)	671	1654	1800
Cereal indet. ca.	-	1	6	3	4	3	-	23	31	-	6	-
Cereal indet. ca fr.	-	+	+	+	+	+	+	+	+	-	+	-
Cereal indet. cn.	-	-	-	-	-	-	-	-	1fr.	-	-	-
Hordeum sp. ca	-	-	-	1	-	-	1	7	7	-	4	-
Hordeum sp. ri	-	-	-	-	-	-	-	-	-	-	-	-
Hordeum vulgare. ca	-	-	-	-	-	-	-	-	-	-	-	
Triticum sp. ca	-	-	-	-	-	-	-	-	3	-	-	2
Triticum sp. bri	-	-	-	-	-	-	-	-	-	-	1	-
Triticum sp. spb	-	-	-	-	1	-	-	-	-	-	-	-
Triticum sp. gb	-	-	-	-	-	-	-	-	-	-	-	-
Triticum spelta spf	-	-	-	-	-	-	-	-	-	-	1	-
Triticum spelta gb	-	-	-	-	-	1	-	-	-	-	-	1
Triticum dicoccum spf	-	-	-	-	-	-	-	-	-	-	-	-
Triticum dicoccum gb	-	-	-	-	-	-	-	-	-	-	-	-
Avena sp. ca	-	-	-	-	-	-	-	-	-	-	-	-
Avena sp. a fr.	-	-	-	+	-	-	-	+	+	-	-	-
Ranunculus acris/repens-type	-	-	-	-	-	-	-	-	-	-	-	-
Raphanus raphanistrum	-	-	-	-	-	-	-	-	-	-	-	-
Cruciferae indet.	-	-	-	-	-	-	-	-	-	-	-	-
Silene cf alba	-	-	-	-	-	-	-	-	-	-	-	-
Stellaria media-type	-	-	-	-	-	-	-	-	-	-	-	-
Stellaria graminea	-	-	-	-	-	-	-	-	-	-	-	-
Spergula arvensis	-	-	-	-	-	-	-	-	-	-	-	-
Atriplex patula/hastata	-	-	-	-	-	-	-	-	-	-	+	-
Chenopodium album	-	-	-	-	-	+	-	+	+	-	+	-
Chenopodium sp.	-	-	-	-	+	-	-	-	-	-	-	-
Chenopodiaceae indet.	-	-	-	-	-	-	-	-	-	-	-	-
Malva sp.	-	-	-	-	-	-	-	-	-	-	-	-
Medicago/Trifolium -type	-	-	-	-	-	-	-	-	-	-	-	-
Vicia sp. s.	-	-	-	-	1	-	-	-	-	-	-	-
Vicia sp. co	-	-	-	-	-	-	-	-	-	-	-	-
Vicia cf tetrasperma	-	-	-	-	-	-	-	-	-	-	-	-
Leguminosae indet.	-	-	-	-	-	-	-	-	-	-	-	-
Crataegus monogyna	-	-	-	-	-	-	-	-	-	-	-	-
Polygonum aviculare agg	-	-	-	-	-	-	-	-	-	-	-	-
Polygonum lapathifolium	-	-	-	-	-	-	-	-	-	-	-	-
Polygonum lapathifolium/persicaria	-	-	-	-	-	-	-	1	1	-	-	-
Polygonum convolvulus	-	-	-	-	-	-	1	2	8	1	-	-
Rumex acetosella	-	-	-	-	-	-	-	-	-	-	-	1
Rumex sp.	-	1	-	-	-	-	-	-	-	-	-	-
Polygonaceae indet	-	-	-	-	-	-	-	-	-	-	-	-
Urtica dioica	-	-	-	-	-	-	-	-	-	-	-	-
Corylus avellana ns fr	-	-	-	-	-	-	-	-	-	-	+	-
Calluna vulgaris cap	-	-	-	-	-	-	-	-	-	-	-	-
lvs	-	-	-	-	-	-	-	-	-	-	-	-
Ericaceae charcoal	-	-	-	-	-	-	-	-	-	+	-	-
Prunella vulgaris	-	-	-	-	-	-	-	-	-	-	-	-
Plantago lanceolata	-	-	-	-	-	-	-	1	-	-	-	-
Galium aparine	-	-	-	-	-	-	-	-	-	-	-	-
Sambucus nigra	-	-	-	-	-	-	-	-	-	-	-	-
Centaurea sp. fr	-	-	-	-	-	-	-	-	-	-	-	-
Carex arenaria-type	-	-	-	-	-	-	-	-	-	-	-	-
Carex sp.	-	-	-	-	-	-	-	-	-	-	-	-
Eleocharis palustris agg	-	-	-	-	-	-	-	-	-	-	-	-
Bromus mollis/secalinus	-	-	2	-	1	-	2	8	6	-	3	1
Gramineae indet.	-	-	-	-	-	-	-	-	-	-	-	-
Indet st fr	-	-	-	-	-	-	-	-	-	1	-	
Indeterminate.	-	1	3	1	2	1	1	5	-	-	-	
Sample wt (kg).	44	5	5	5	5	5	5	5	33	10	10	

Sheet II

Context no.	2080	2649	2746	2753	2755	2756	2757
Cereal indet. ca.	3	-	1	-	-	-	2
Cereal indet. ca fr.	+	+	+	+	+	+	-
Cereal indet. cn.	-	-	-	-	-	-	-
Hordeum sp. ca	2	-	2	-	2	-	-
Hordeum sp. ri	-	-	-	-	-	-	-
Hordeum vulgare. ca	-	-	-	-	-	-	-
Triticum sp. ca	1	-	-	-	-	-	-
Triticum sp. bri	-	-	-	-	-	-	-
Triticum sp. spb	1	-	-	-	-	-	-
Triticum sp. gb	4	-	-	-	-	-	-
Triticum spelta spf	-	-	-	-	-	-	-
Triticum spelta gb	-	-	-	-	1	-	-
Triticum dicoccum spf	-	-	-	-	-	-	-
Triticum dicoccum gb	-	-	-	-	-	-	-
Avena sp. ca	-	-	-	-	-	-	-
Avena sp. a fr.	-	-	-	-	-	-	-
Ranunculus acris/repens-type	-	-	-	-	-	-	1
Raphanus raphanistrum	-	-	-	-	-	-	-
Cruciferae indet.	-	-	-	-	-	-	-
Silene cf alba	-	-	-	-	-	-	-
Stellaria media-type	-	-	-	-	-	-	-
Stellaria graminea	-	-	-	-	-	-	-
Spergula arvensis	-	-	-	-	-	-	-
Atriplex patula/hastata	-	-	-	-	-	-	-
Chenopodium album	-	-	+	-	-	+	-
Chenopodium sp.	+	-	-	-	-	-	-
Chenopodiaceae indet.	-	-	-	-	+	-	-
Malva sp.	-	-	-	-	-	-	-
Medicago/Trifolium -type	-	-	-	-	-	-	-
Vicia sp. s.	-	-	-	-	-	-	-
Vicia sp. co	-	-	-	-	-	1	-
Vicia cf tetrasperma	-	-	-	-	-	-	-
Leguminosae indet.	-	-	-	-	-	-	-
Crataegus monogyna	-	-	-	-	-	-	-
Polygonum aviculare agg	-	-	-	-	-	1	-
Polygonum lapathifolium	-	-	-	-	-	-	-
Polygonum lapathifolium/persicaria	1	-	-	-	-	-	-
Polygonum convolvulus	-	-	-	5	-	-	-
Rumex acetosella	-	-	-	-	-	-	1
Rumex sp.	-	-	-	-	-	-	-
Polygonaceae indet	-	-	-	-	-	-	-
Urtica dioica	-	-	-	-	-	-	-
Corylus avellana ns fr	-	-	-	-	-	-	-
Calluna vulgaris cap	-	-	-	-	-	-	-
lvs	-	-	-	-	-	-	-
Ericaceae charcoal	+	+	+	+	+	-	-
Prunella vulgaris	-	-	-	-	-	-	-
Plantago lanceolata	-	-	-	-	-	2	-
Galium aparine	-	-	-	-	-	-	-
Sambucus nigra	-	-	-	-	-	-	-
Centaurea sp. fr	-	-	-	-	-	-	-
Carex arenaria-type	-	-	-	-	-	-	-
Carex sp.	-	-	-	-	-	-	-
Eleocharis palustris agg	-	-	-	-	-	-	-
Bromus mollis/secalinus	-	-	-	-	-	-	1
Gramineae indet.	-	-	-	-	-	-	1
Indet st fr	-	-	-	-	-	-	-
Indeterminate.	2	-	-	2	1	1	-
Sample wt (kg).	10	10	10	10	10	5	10

Sheet II

Context no.	346	393	499	505	513	535	797	1090	2076	2352	2354	24 3
Cereal indet. ca.	3	14	-	-	5	4	-	25	1	-	28	2
Cereal indet. ca fr.	+	+	-	-	+	+	+	+	+	+	+	+
Cereal indet. cn.	-	-	-	-	3	-	-	-	-	-	-	-
Hordeum sp. ca	-	22	-	-	1	3	-	1	-	-	7	14
Hordeum sp. ri	-	-	-	-	-	-	-	-	-	-	-	-
Hordeum vulgare. ca	-	-	-	-	-	-	-	-	-	-	-	-
Triticum sp. ca	-	4	-	1	-	2	-	8	4	3	14	7
Triticum sp. bri	-	-	-	-	-	-	-	-	-	-	-	-
Triticum sp. spb	-	2	-	-	-	-	-	-	-	-	-	-
Triticum sp. gb	-	-	-	-	-	-	-	-	-	-	-	-
Triticum spelta spf	-	-	-	-	-	-	-	-	-	-	-	-
Triticum spelta gb	-	3	-	-	-	-	-	-	-	2	-	-
Triticum dicoccum spf	-	-	-	-	-	-	-	-	-	-	-	-
Triticum dicoccum gb	-	-	-	-	-	-	-	-	-	-	-	-
Avena sp. ca	-	-	-	-	-	-	-	-	-	-	cf 3	-
Avena sp. a fr.	-	-	-	-	-	+	-	-	-	+	+	-
Ranunculus acris/repens-type	-	-	-	-	1	-	-	-	-	-	-	-
Raphanus raphanistrum	-	-	-	-	-	-	-	-	-	-	-	-
Cruciferae indet.	-	-	-	-	-	-	-	-	-	-	-	1
Silene cf alba	-	2	-	-	-	-	-	-	-	-	-	-
Stellaria media-type	-	1	-	5	-	1	-	-	-	-	-	-
Stellaria graminea	-	-	-	-	-	-	-	-	-	-	-	-
Spergula arvensis	-	-	-	-	2	-	-	-	-	-	-	-
Atriplex patula/hastata	-	-	-	-	+	-	-	-	-	-	-	-
Chenopodium album	-	+	-	-	+	-	-	+	-	-	+	+
Chenopodium sp.	-	-	-	+	-	-	-	-	-	-	-	-
Chenopodiaceae indet.	1	-	-	-	-	-	-	-	-	-	-	-
Malva sp.	-	-	-	1	-	-	-	-	-	-	-	-
Medicago/Trifolium -type	-	3	-	-	-	-	-	-	-	-	-	-
Vicia sp. s.	-	-	-	-	-	-	-	-	-	-	-	-
Vicia sp. co	-	-	-	11	-	-	-	-	-	-	-	-
Vicia cf tetrasperma	-	-	-	1	-	-	-	-	-	-	-	-
Leguminosae indet.	-	-	1	-	-	-	-	-	-	-	-	-
Crataegus monogyna	-	-	-	-	-	-	-	-	-	-	-	-
Polygonum aviculare agg	-	-	-	2	-	-	-	-	-	-	-	-
Polygonum lapathifolium	-	-	-	-	-	-	-	-	-	-	-	-
Polygonum lapathifolium/persicaria	-	4	-	-	-	-	-	1	-	-	6	5
Polygonum convolvulus	1fr.	6	-	2	-	1fr.	-	-	-	-	6	4
Rumex acetosella	-	-	-	-	8	-	-	-	-	-	-	-
Rumex sp.	-	4	-	-	-	-	-	-	-	-	1	6
Polygonaceae indet	-	5	-	1	-	-	7	-	-	-	-	-
Urtica dioica	-	-	-	cf 1	-	-	-	-	-	-	-	-
Corylus avellana ns fr	-	+	-	-	-	-	-	-	-	-	-	+
Calluna vulgaris cap	-	-	-	-	-	-	-	-	-	-	-	-
lvs	-	-	-	-	-	-	-	-	-	-	-	-
Ericaceae charcoal	+	-	-	-	+	+	-	-	+	-	+	+
Prunella vulgaris	-	-	-	-	-	-	-	-	-	-	-	-
Plantago lanceolata	-	2	-	-	2	-	-	-	-	-	-	1
Galium aparine	-	-	-	1	-	-	-	-	-	-	-	-
Sambucus nigra	-	-	-	1	-	-	-	-	-	-	-	-
Centaurea sp. fr	-	-	-	-	-	-	-	-	-	-	-	-
Carex arenaria-type	-	-	1	-	-	-	-	-	-	-	-	-
Carex sp.	-	-	-	-	-	-	-	-	-	-	-	-
Eleocharis palustris agg	-	-	-	-	-	-	-	-	-	-	-	-
Bromus mollis/secalinus	2	23	-	-	1	-	-	-	-	2	1	15
Gramineae indet.	-	1	-	-	-	-	-	-	-	-	-	1
Indet st fr	-	-	-	-	-	-	-	-	-	-	-	-
Indeterminate.	-	6	4	7	4	2	3	3	-	-	1	-
Sample vol (kg).	10	10	10	10	10	10	9	8	10	5	10	10

Phase 1 of 2

Sheet 11

Context no.	2615	2627	2628	2748	2750	2854	3019	3200	3245	3254	3641
Cereal indet. ca.	–	5	21	59	64	–	7	2	2	–	16
Cereal indet. ca fr.	–	+	+	+	+	+	+	+	+	+	+
Cereal indet. cn.	–	1	–	+	–	–	–	–	–	–	–
Hordeum sp. ca	1fr.	3	4	7	13	–	1	1	–	1	4
Hordeum sp. ri	–	–	–	–	1fr.	–	–	–	–	–	1
Hordeum vulgare. ca	–	–	–	–	–	–	–	–	–	–	–
Triticum sp. ca	–	–	5	32	19	–	2	–	–	–	8
Triticum sp. bri	–	–	–	6	–	–	–	–	–	–	–
Triticum sp. spb /spf	–	–	1	16/8	1	–	–	–	–	–	–
Triticum sp. gb	–	–	1	33	1	–	–	–	–	–	1
Triticum spelta spf	–	–	1	3	3	–	–	–	–	–	–
Triticum spelta gb	–	2	2	9	4	–	–	–	–	–	1
Triticum dicoccum spf	–	–	–	9	1	–	–	–	–	–	–
Triticum dicoccum gb	–	–	–	25	2	–	–	–	–	–	–
Avena sp. ca	–	–	–	–	–	–	–	–	–	–	–
Avena sp. a fr.	–	–	–	+	–	–	–	–	–	–	+
Ranunculus acris/repens-type	–	–	–	–	–	–	–	–	–	–	–
Raphanus raphanistrum	–	–	–	fr	–	–	2	–	–	–	–
Cruciferae indet.	–	–	–	–	–	–	–	–	–	–	–
Silene cf alba	–	–	–	–	–	–	–	–	–	–	–
Stellaria media-type	–	–	–	–	–	–	–	–	–	–	–
Stellaria graminea	–	–	–	–	–	–	–	–	–	–	–
Spergula arvensis	–	–	1	–	–	–	–	–	–	–	–
Atriplex patula/hastata	–	–	–	–	–	–	–	–	–	–	–
Chenopodium album	–	+	–	+	+	–	+	–	–	–	+
Chenopodium sp.	–	–	–	–	–	–	–	–	–	–	–
Chenopodiaceae indet.	–	–	–	–	–	–	–	–	–	–	–
Malva sp.	–	–	–	–	–	–	–	–	–	–	–
Medicago/Trifolium -type	–	–	–	–	–	–	–	–	–	–	–
Vicia sp. s.	–	–	–	–	–	–	–	–	–	–	–
Vicia sp. co	–	–	–	–	–	–	–	–	–	–	–
Vicia cf tetrasperma	–	–	–	–	–	–	–	–	–	–	–
Leguminosae indet.	–	–	–	–	–	–	–	–	–	–	–
Crataegus monogyna	–	–	–	–	–	–	–	–	–	–	–
Polygonum aviculare agg	–	–	–	1	–	–	–	–	–	–	–
Polygonum lapathifolium	–	–	–	–	–	–	–	–	–	–	–
Polygonum lapathifolium/persicaria	–	–	–	22	4	–	–	–	–	–	–
Polygonum convolvulus	–	–	–	5	4	–	1	1	1	–	1
Rumex acetosella	–	1	–	3	–	–	–	–	–	–	–
Rumex sp.	–	–	1	3	2	–	1	2	–	–	4
Polygonaceae indet	–	–	–	1	1	–	–	–	–	–	–
Urtica dioica	–	–	–	–	–	–	–	–	–	–	–
Corylus avellana ns fr	+	–	–	–	–	–	–	–	+	+	–
Calluna vulgaris cap	–	–	–	–	2	–	–	–	–	–	–
lvs	–	–	–	–	–	–	–	–	–	–	–
Ericaceae charcoal	–	+	+	+	+	–	+	+	+	+	+
Prunella vulgaris	–	–	–	–	–	–	–	–	–	–	–
Plantago lanceolata	–	1	–	–	–	–	–	–	–	–	–
Galium aparine	–	–	–	–	–	–	–	–	–	–	–
Sambucus nigra	–	–	–	–	–	–	–	–	–	–	–
Centaurea sp. fr	–	–	–	1	–	–	–	–	–	–	–
Carex arenaria-type	–	–	–	–	2	–	1	–	–	–	–
Carex sp.	–	–	–	2	–	–	–	–	–	–	–
Eleocharis palustris agg	–	–	–	–	–	–	1	–	–	–	–
Bromus mollis/secalinus	–	1fr.	32	4	6	–	–	–	–	–	–
Gramineae indet.	–	–	–	1	1	–	1	1	–	–	–
Indet st fr	–	–	–	–	–	–	–	–	–	–	–
Indeterminate.	–	1	–	5	–	–	–	1	–	–	2
Sample size (litres)	10	10	7	10	10	10	10	10	10	5	10

Phase II
Sheet I

Context no.	647	648	700	136	962	1307	1325	1327	2256	2663	2665
Cereal indet. ca.	–	3	11	–	–	2	–	1	2	80	52
Cereal indet. ca fr.	–	+	+	+	–	+	+	+	+	+	+
Cereal indet. cn.	–	–	1	–	–	–	–	–	–	2	1
Hordeum sp. ca	–	–	3	–	–	2	–	–	1	–	–
Hordeum sp. ri	–	–	–	–	–	–	–	–	–	–	–
Hordeum vulgare. ca	–	–	–	–	–	–	–	–	–	131	85
Triticum sp. ca	–	–	3	1	–	–	–	–	1	6	3
Triticum sp. bri	–	–	–	–	–	–	–	–	–	–	–
Triticum sp. spb	–	1	–	–	–	–	–	–	–	–	–
Triticum sp. gb	–	–	–	–	–	1	–	–	–	–	–
Triticum spelta spf	–	–	–	–	–	–	–	–	–	–	–
Triticum spelta gb	–	–	–	–	–	–	–	–	–	–	–
Triticum dicoccum spf	–	–	–	–	–	–	–	–	–	–	–
Triticum dicoccum gb	–	–	–	–	–	–	–	–	–	–	–
Avena sp. ca	–	–	–	–	–	–	–	–	–	1	cf 1
Avena sp. a fr.	–	–	–	–	–	+	–	–	–	–	–
Ranunculus acris/repens-type	–	–	–	–	–	–	–	–	–	–	–
Raphanus raphanistrum	–	–	–	–	–	–	–	–	2	–	1
Cruciferae indet.	–	–	–	–	–	–	–	–	–	–	–
Silene cf alba	–	–	–	–	–	–	–	–	–	–	–
Stellaria media-type	–	–	–	–	–	–	–	–	–	–	–
Stellaria graminea	–	–	–	–	–	–	–	–	–	–	–
Spergula arvensis	–	–	–	–	–	–	–	–	–	–	–
Atriplex patula/hastata	–	–	–	–	–	–	–	–	–	+	+
Chenopodium album	–	–	–	–	–	–	–	–	+	+	+
Chenopodium sp.	–	–	–	–	–	–	–	–	–	–	–
Chenopodiaceae indet.	–	+	+	–	–	–	–	–	–	–	–
Malva sp.	–	–	–	–	–	–	–	–	–	–	–
Medicago/Trifolium -type	–	–	–	–	–	–	–	–	–	–	–
Vicia sp. s.	–	–	–	–	–	–	–	–	–	–	–
Vicia sp. co	–	–	–	–	–	–	–	–	–	–	1
Vicia cf tetrasperma	–	–	–	–	–	–	–	–	–	–	–
Leguminosae indet.	–	–	–	–	–	–	–	–	–	–	–
Crataegus monogyna	–	–	–	–	–	–	–	–	–	1	–
Polygonum aviculare agg	–	1	–	–	–	–	–	–	–	1	–
Polygonum lapathifolium	–	–	1	–	–	–	–	–	–	–	–
Polygonum lapathifolium/persicaria	–	–	–	–	–	–	–	–	–	–	–
Polygonum convolvulus	–	1	–	–	–	–	–	–	3	1 Fr.	–
Rumex acetosella	–	1	–	–	–	–	–	–	–	–	–
Rumex sp.	–	1	5	–	–	–	–	–	–	4	2
Polygonaceae indet	–	31	–	–	–	–	–	–	–	1	–
Urtica dioica	–	–	–	–	–	–	–	1	–	–	–
Corylus avellana ns fr	–	+	–	–	–	–	–	–	–	–	–
Calluna vulgaris cap	–	1	–	–	–	–	–	–	–	–	–
lvs	–	–	–	–	–	–	–	–	–	–	–
Ericaceae charcoal	+	+	+	+	–	+	+	–	–	–	–
Prunella vulgaris	–	–	–	–	–	–	–	–	–	–	–
Plantago lanceolata	–	–	4	1	–	–	–	–	–	3	–
Galium aparine	–	–	–	–	–	–	–	–	–	3	–
Sambucus nigra	–	–	–	–	–	–	–	–	–	1	2
Centaurea sp. fr	–	–	–	–	–	–	–	–	–	–	–
Carex arenaria-type	–	–	–	–	–	–	–	–	–	–	–
Carex sp.	–	–	2	–	–	–	–	–	–	1	1
Eleocharis palustris agg	–	–	–	–	–	–	–	–	–	–	–
Bromus mollis/secalinus	1	–	5	3	–	–	–	–	–	–	–
Gramineae indet.	–	–	–	–	–	–	–	–	–	4	5
Indet st fr	–	–	–	–	–	–	–	–	–	–	–
Indeterminate.	–	11	1	–	1	–	–	1	1	7	86
Sample wt (kg).	7	75	10	10	10	10	10	10	5	10	10

Phase II
Sheet II

Context no.	2997	646 3187	646 3239	646 3240	646 3241	3264	3309	3330
Cereal indet. ca.	–	–	1	–	–	3	2	–
Cereal indet. ca fr.	–	+	–	+	–	+	+	+
Cereal indet. cn.	–	–	1	–	–	–	–	–
Hordeum sp. ca	–	–	–	–	–	–	–	–
Hordeum sp. ri	–	–	–	–	–	–	–	–
Hordeum vulgare. ca	–	–	–	–	–	–	–	–
Triticum sp. ca	–	–	–	–	–	–	–	–
Triticum sp. bri	–	–	–	–	–	–	–	–
Triticum sp. spb	–	–	–	–	–	–	–	–
Triticum sp. gb	–	–	–	2	–	–	–	–
Triticum spelta spf	–	–	–	–	–	–	–	–
Triticum spelta gb	–	–	–	1	–	–	–	–
Triticum dicoccum spf	–	–	–	–	–	–	–	–
Triticum dicoccum gb	–	–	–	–	–	–	–	–
Avena sp. ca	–	–	–	–	–	–	–	–
Avena sp. a fr.	–	–	–	–	–	–	–	–
Ranunculus acris/repens -type	–	–	–	–	–	–	–	–
Brassica/Sinapis sp.	–	–	–	–	–	–	1	–
Raphanus raphanistrum	–	–	–	–	–	–	–	–
Cruciferae indet.	–	–	–	–	–	–	–	–
Silene cf alba	–	–	–	–	–	–	–	–
Stellaria media-type	–	–	–	–	–	–	–	–
Stellaria graminea	–	–	–	–	1	–	–	–
Spergula arvensis	–	–	–	–	–	–	–	–
Atriplex patula/hastata	–	–	–	–	–	–	–	–
Chenopodium album	–	–	–	–	–	–	–	–
Chenopodium sp.	–	–	–	–	–	–	–	–
Chenopodiaceae indet.	–	–	–	–	–	–	–	–
Malva sp.	–	–	–	–	–	–	–	–
Medicago/Trifolium -type	–	–	–	–	–	–	–	–
Vicia sp. s.	–	–	–	–	–	–	–	–
Vicia sp. co	–	–	–	–	–	–	–	–
Vicia cf tetrasperma	–	–	–	–	–	–	–	–
Leguminosae indet.	–	–	–	–	–	–	–	–
Crataegus monogyna	–	–	–	–	–	–	–	–
Polygonum aviculare agg	2	–	–	–	–	–	–	–
Polygonum lapathifolium	1	–	–	–	–	–	–	–
Polygonum lapathifolium/persicaria	–	–	–	–	–	–	–	–
Polygonum convolvulus	–	–	–	–	–	–	–	–
Rumex acetosella	–	–	–	–	–	–	–	–
Rumex sp.	–	–	–	–	–	–	2	–
Polygonaceae indet	–	–	–	–	–	–	–	–
Urtica dioica	–	–	–	–	–	–	–	–
Corylus avellana ns fr	–	–	–	–	–	–	–	–
Calluna vulgaris cap	–	–	–	–	–	–	–	–
lvs	–	–	–	–	–	–	–	–
Ericaceae charcoal	–	+	+	–	+	–	–	+
Prunella vulgaris	–	–	–	–	–	–	–	–
Plantago lanceolata	–	–	–	–	–	4	13	–
Galium aparine	–	–	–	–	–	1	–	–
Sambucus nigra	–	–	–	–	–	–	–	–
Centaurea sp. fr	–	–	–	–	–	–	–	–
Carex arenaria-type	–	–	–	–	–	–	–	–
Carex sp.	–	–	–	–	–	–	–	–
Eleocharis palustris agg	–	–	–	–	–	–	–	–
Bromus mollis/secalinus	–	–	–	–	–	–	–	–
Gramineae indet.	–	–	–	–	–	1	–	–
Indet st fr	–	–	–	–	–	–	–	–
Indeterminate.	–	–	–	–	–	–	–	–
Sample wt (kg).	10	10	3	10	10	10	10	10

Phase II or III
Sheet I

Context no.	954	2441	3525	3528
Cereal indet. ca.	1	8	49	-
Cereal indet. ca fr.	-	+	+	+
Cereal indet. cn.	1	-	8	-
Hordeum sp. ca	-	3	-	1
Hordeum sp. ri	-	-	-	-
Hordeum vulgare. ca	-	-	94	-
Triticum sp. ca	-	5	14	-
Triticum sp. bri	-	-	-	-
Triticum sp. spb	-	-	-	-
Triticum sp. gb	-	-	-	-
Triticum spelta spf	-	-	-	-
Triticum spelta gb	-	1	-	-
Triticum dicoccum spf	-	-	-	-
Triticum dicoccum gb	-	-	-	-
Avena sp. ca	-	-	1	-
Avena sp. a fr.	-	-	-	-
Ranunculus acris/repens-type	-	-	-	-
Raphanus raphanistrum	-	-	-	-
Cruciferae indet.	-	-	-	-
Silene cf alba	-	-	-	-
Stellaria media-type	-	-	-	-
Stellaria graminea	-	-	-	-
Spergula arvensis	-	-	-	-
Atriplex patula/hastata	-	-	-	-
Chenopodium album	-	-	+	-
Chenopodium sp.	-	-	-	-
Chenopodiaceae indet.	-	-	-	-
Malva sp.	-	-	-	1
Medicago/Trifolium -type	-	-	-	-
Vicia sp. s.	-	-	-	-
Vicia sp. co	-	-	-	-
Vicia cf tetrasperma	-	-	-	-
Leguminosae indet.	-	-	-	-
Crataegus monogyna	-	-	-	-
Polygonum aviculare agg	-	-	1	-
Polygonum lapathifolium	-	-	-	-
Polygonum lapathifolium/persicaria	-	-	-	-
Polygonum convolvulus	-	-	-	-
Rumex acetosella	-	-	-	-
Rumex sp.	-	1	1	-
Polygonaceae indet	-	-	1	-
Urtica dioica	-	-	-	-
Corylus avellana ns fr	-	-	-	-
Calluna vulgaris cap	-	-	-	-
lvs	-	-	-	-
Ericaceae charcoal	-	+	+	+
Prunella vulgaris	-	-	1	-
Plantago lanceolata	-	-	-	-
Galium aparine	-	2	1	-
Sambucus nigra	-	-	3	-
Centaurea sp. fr	-	-	-	-
Carex arenaria-type	-	-	-	-
Carex sp.	-	-	-	-
Eleocharis palustris agg	-	-	-	-
Bromus mollis/secalinus	-	3	-	-
Gramineae indet.	-	-	15	1
Indet st fr	-	-	-	-
Indeterminate.	1	3	3	-
Sample wt (kg).	10	10	10	10

Phase III
Sheet I

Context no.	917	2918	3004	3007	3288	3305	3304
Cereal indet. ca.	-	2	2	2	4	-	-
Cereal indet. ca fr.	+	-	+	+	+	-	-
Cereal indet. cn.	-	-	-	-	+	-	-
Hordeum sp. ca	-	-	-	-	2	-	-
Hordeum sp. ri	-	-	-	-	-	-	-
Hordeum vulgare. ca	-	-	-	-	-	-	-
Triticum sp. ca	-	1	-	-	1	-	-
Triticum sp. bri	-	-	-	-	-	-	-
Triticum sp. spb	-	-	-	-	-	-	-
Triticum sp. gb	-	-	-	-	-	-	-
Triticum spelta spf	-	-	-	-	-	-	-
Triticum spelta gb	-	-	-	-	-	-	-
Triticum dicoccum spf	-	-	-	-	-	-	-
Triticum dicoccum gb	-	-	-	-	-	-	-
Avena sp. ca	-	-	-	-	-	-	-
Avena sp. a fr.	-	-	-	-	-	-	-
Ranunculus acris/repens-type	-	-	-	-	-	-	1
Raphanus raphanistrum	-	-	-	-	-	-	-
Cruciferae indet.	-	-	-	-	-	-	-
Silene cf alba	-	-	-	-	-	-	-
Stellaria media-type	-	1	-	-	-	-	-
Stellaria graminea	-	-	-	-	-	-	-
Spergula arvensis	-	-	-	-	-	-	-
Atriplex patula/hastata	-	-	-	-	-	-	-
Chenopodium album	-	-	-	-	-	-	-
Chenopodium sp.	-	-	-	-	-	-	-
Chenopodiaceae indet.	-	-	-	-	-	-	-
Malva sp.	-	-	-	-	-	-	-
Medicago/Trifolium -type	-	-	-	-	-	-	-
Vicia sp. s.	-	-	-	-	-	-	-
Vicia sp. co	-	-	-	-	2	-	-
Vicia cf tetrasperma	-	-	-	-	-	-	-
Leguminosae indet.	-	-	-	-	-	-	-
Crataegus monogyna	-	-	-	-	-	-	-
Polygonum aviculare agg	-	-	-	-	-	-	-
Polygonum lapathifolium	-	-	-	-	-	-	-
Polygonum lapathifolium/persicaria	-	-	-	1	-	-	-
Polygonum convolvulus	-	-	-	-	1	-	2
Rumex acetosella	-	-	-	-	-	-	-
Rumex sp.	-	-	2	-	1	-	-
Polygonaceae indet	-	-	-	1	1	-	-
Urtica dioica	-	-	-	-	-	-	-
Corylus avellana ns fr	-	-	-	-	-	-	-
Calluna vulgaris cap	-	-	-	-	-	+++	+++
lvs	-	-	-	-	-	+	+++
Ericaceae charcoal	+	+	+	+	+	+++	+++
Prunella vulgaris	-	-	-	-	-	-	-
Plantago lanceolata	-	-	1	1	-	-	-
Galium aparine	-	-	-	-	-	-	-
Sambucus nigra	-	-	-	-	-	-	-
Centaurea sp. fr	-	-	-	-	-	-	-
Carex arenaria-type	-	-	-	-	-	-	-
Carex sp.	-	-	-	-	-	-	-
Eleocharis palustris agg	-	-	-	-	-	-	-
Bromus mollis/secalinus	-	-	-	-	-	-	-
Gramineae indet.	-	-	-	-	3	-	-
Indet st fr	-	-	-	-	-	-	-
Indeterminate.	2	-	1	4	-	-	1
	10	10	10	10	10	5	10

Phase IV
Sheet I

Context no.	2239	2243	2259	2263
Cereal indet. ca.	5	1	4	–
Cereal indet. ca fr.	–	–	+	+
Cereal indet. cn.	–	–	–	–
Hordeum sp. ca	–	1	3	–
Hordeum sp. ri	–	–	–	–
Hordeum vulgare. ca	–	–	–	–
Triticum sp. ca	4	–	3	6
Triticum sp. bri	–	–	–	1
Triticum sp. spb	–	–	–	–
Triticum sp. gb	–	–	–	–
Triticum spelta spf	–	–	–	1
Triticum spelta gb	–	–	–	1
Triticum dicoccum spf	–	–	–	–
Triticum dicoccum gb	–	–	–	–
Avena sp. ca	–	–	–	–
Avena sp. a fr.	–	–	–	–
Ranunculus acris/repens-type	–	–	–	–
Raphanus raphanistrum	–	–	–	–
Cruciferae indet.	–	–	–	–
Silene cf alba	–	–	–	–
Stellaria media-type	–	–	–	–
Stellaria graminea	–	–	–	–
Spergula arvensis	–	–	–	–
Atriplex patula/hastata	–	–	–	–
Chenopodium album	–	–	–	–
Chenopodium sp.	–	–	–	–
Chenopodiaceae indet.	–	–	–	–
Malva sp.	–	–	–	–
Medicago/Trifolium -type	–	–	–	–
Vicia sp. s.	–	–	–	–
Vicia sp. co	–	–	–	–
Vicia cf tetrasperma	–	–	–	–
Leguminosae indet.	–	–	1	–
Crataegus monogyna	–	–	–	–
Polygonum aviculare agg	–	–	–	–
Polygonum lapathifolium	–	–	–	–
Polygonum lapathifolium/persicaria	–	–	–	–
Polygonum convolvulus	–	–	–	–
Rumex acetosella	–	–	–	–
Rumex sp.	–	–	–	–
Polygonaceae indet	–	–	–	–
Urtica dioica	–	–	–	–
Corylus avellana ns fr	–	–	+	–
Calluna vulgaris cap	–	–	–	–
lvs	–	–	–	–
Ericaceae charcoal	+	–	+	+
Prunella vulgaris	–	–	–	–
Plantago lanceolata	–	–	–	–
Galium aparine	–	–	–	1
Sambucus nigra	–	–	–	–
Centaurea sp. fr	–	–	–	–
Carex arenaria-type	–	–	–	–
Carex sp.	–	–	–	–
Eleocharis palustris agg	–	–	–	–
Bromus mollis/secalinus	–	–	–	–
Gramineae indet.	–	–	1	–
Indet st fr	–	–	–	–
Indeterminate.	–	–	–	–
Sample wt (kg).	10	10	10	10

Unphased.
Sheet I

Context no.	799	1016 3465	1695	3185
Cereal indet. ca.	–	–	–	3
Cereal indet. ca fr.	+	+	+	+
Cereal indet. cn.	–	–	–	–
Hordeum sp. ca	–	1	1	3
Hordeum sp. ri	–	–	–	–
Hordeum vulgare. ca	–	–	–	–
Triticum sp. ca	–	–	–	4
Triticum sp. bri	–	–	–	1
Triticum sp. spb	–	–	–	–
Triticum sp. gb	–	–	–	2
Triticum spelta spf	–	–	–	1
Triticum spelta gb	–	–	–	2
Triticum dicoccum spf	–	–	–	–
Triticum dicoccum gb	–	–	–	–
Avena sp. ca	–	–	–	–
Avena sp. a fr.	–	–	–	–
Ranunculus acris/repens-type	–	–	–	–
Raphanus raphanistrum	–	–	–	–
Cruciferae indet.	–	–	–	–
Silene cf alba	–	–	–	–
Stellaria media-type	–	–	–	–
Stellaria graminea	–	–	–	–
Spergula arvensis	–	–	–	–
Atriplex patula/hastata	–	–	–	–
Chenopodium album	–	+	–	+
Chenopodium sp.	–	–	–	–
Chenopodiaceae indet.	–	–	–	–
Malva sp.	–	–	–	–
Medicago/Trifolium -type	–	–	–	–
Vicia sp. s.	–	–	–	–
Vicia sp. co	–	–	–	–
Vicia cf tetrasperma	–	–	–	–
Leguminosae indet.	–	–	–	–
Crataegus monogyna	–	–	–	–
Polygonum aviculare agg	–	1	–	1
Polygonum lapathifolium	–	–	–	–
Polygonum lapathifolium/persicaria	–	–	–	–
Polygonum convolvulus	1	–	–	2
Rumex acetosella	–	–	–	2
Rumex sp.	–	1	–	–
Polygonaceae indet	–	–	–	–
Urtica dioica	–	–	–	–
Corylus avellana ns fr	–	+	–	+
Calluna vulgaris cap	–	–	–	–
lvs	–	–	–	–
Ericaceae charcoal	+	–	–	–
Prunella vulgaris	–	–	–	–
Plantago lanceolata	–	–	–	–
Galium aparine	–	–	–	–
Sambucus nigra	–	–	–	–
Centaurea sp. fr	–	–	–	–
Carex arenaria-type	–	–	–	–
Carex sp.	–	–	–	–
Eleocharis palustris agg	–	–	–	–
Bromus mollis/secalinus	–	–	–	2
Gramineae indet.	–	–	–	1
Indet st fr	–	–	–	–
Indeterminate.	–	–	–	5
(iv).	10	5	10	10

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A note on the preservation of faunal remains

Soils at upland sites in the Breckland, including the Freckenham series, mapped by the Soil Survey about 0.5km to the north of Fison Way, are generally acid, and are formed on sands and gravels with high percolation rates. Corbett (1973, 105) gives pH values between 3.9-4.6 in water, 2.8-4.0 in 0.01M $CaCl_2$ for different horizons of the Freckenham series. In such acid soils bone survival is not to be expected, and it was not anticipated that bone would be present at the site. Generally this assumption proved to be correct, but in some deposits bone and occasionally even land mollusca were fairly abundant. The reason for this is sometimes obvious: mollusca survived in post-hole 3309 because chalky material from an associated dwarf wall had become incorporated into its fill. In other deposits the factors permitting bone survival were less clear.

Samples from 759 (a deposit including only small rare bone fragments) 3719, (a deposit containing abundant bone) and, 2065 (a grave fill known to contain high phosphate levels) and a sample of natural sand examined were in an attempt to clarify this problem. All four samples had a very similar sand matrix with rare small angular flint pebbles and varied in colour from dark brown to yellowish-brown (10YR 4/2.5; 5/6 moist) depending apparently on their organic carbon content. 3719 included small friable bone chips.

Testing with dilute HCl produced no effervescence with any of the samples. Bone survival in 3719 cannot therefore be attributed to the buffering effects of chalk, and in any case no chalk fragments were observed in the sample. pH estimates on suspensions in distilled water (1:2.5) were initially made with indicator paper, with the intention of subsequently making accurate determinations with a glass electrode. However, all four samples lay in the range pH 5-5.5 and greater accuracy was therefore unnecessary. In the absence of any marked chemical differences between the samples in terms of carbonate and pH it can only be suggested that bone survived in 3719 either because percolation rates were lower, due perhaps to some local variation in the lithology of the deposits around this layer, or alternatively that a large dump of bone in 3719 produced its own micro-environment.