Context	Sample #	No pieces	Description
3447	<480>	9	6 frags of magnetic geology
			3 frags possible crushed slag /corrosion agglomerated with silica
3460	<483>	104	97 frags of magnetic geology, including many frags of iron pan
			7 possible slag frags or crushed slag/corrosion agglomerated with silica
3507	<496>	3	fragments of charred nutshell

Small finds by Hilary Cool

Glass

Two fragments from blue/green vessels were recovered from the topsoil, one the rim and part of the neck of a flask and the other part of the base of a cylindrical bottle retaining part of a moulded trademark in the form of the letters]ISC[AND]28[. Both are of 19th century date or later and no further work is required. Southern Stockpile Area; Context topsoil.

Concretion

A spherical object was submitted as an iron small find (SF10 context 3259). As the fragment is not magnetic, it seem unlikely to be iron and is much more likely to be a concretion that could be discarded. *Phase 1 Extraction Area; Context 3259; Ditch 4; SF. 10.*

7 Environmental Record

Animal bone by Jane Richardson

In total, 174 animal bone fragments were recovered from hand-excavated deposits and sieved samples. These are listed in Table 6. The bone fragments were typically poorly preserved, with highly eroded surfaces and significant levels of fragmentation. No butchery or gnaw marks were noted and no metrical or pathological data were recovered. Only horse and sheep/goat are represented in the assemblage, although most bone fragments could only be recorded to a lower-order category such as 'large mammal'. Unfortunately too few bones were retrieved to allow for meaningful interpretation.

Numerous calcined bone fragments were recovered from Pit 3452 (Table 6). These were typically too small to be assigned to taxon, although two sheep/goat carpals were noted. It would be prudent to have these cremated remains reassessed by a human bone specialist during a subsequent phase of analysis.

Table 6. Animal bones by context (italicised entries indicate bones recovered from soil sampling)

Feature	Context	Sample	Species	Element	Quantity
Pit 3135	3134		Small mammal	Long bone fragments	4

Feature	Context	Sample	Species	Element	Quantity
	3134	384	Small mammal	Long bone fragments (burnt)	2
P-H 3199	3198		Small mammal	Undiagnostic fragments (burnt)	10
Pit 3234	3232	413	Small mammal	Long bone fragment	1
Ditch 3255	3254		Horse	Radius (proximal fused)	1
Ditch 3260	3259		Large mammal	Long bone fragments	4
Pit 3329	3326		Small mammal	Undiagnostic fragments (burnt)	3
Pit 3357	3356		Small mammal	Long bone fragments (burnt)	3
Pit 3442	3441	471	Small mammal	Long bone fragment	1
Pit 3442	3441	484	Small mammal	Long bone fragment	1
Pit 3452	3451	474	Sheep/goat	Carpals (burnt)	2
			Small mammal	Long bone fragments (burnt)	8
Pit 3452	3451	475	Small mammal	Undiagnostic fragments (burnt)	15
Pit 3452	3451	476	Small mammal	Undiagnostic fragments (burnt)	35
Pit 3452	3451	477	Small mammal	Long bone fragments (burnt)	2
			Small mammal	Undiagnostic fragments (burnt)	6
Pit 3452	3451	478	Small mammal	Undiagnostic fragments (burnt)	3
Pit 3452	3451	479	Small mammal	Undiagnostic fragments (burnt)	2
P-H 3462	3461		Large mammal	Long bone fragments	9
Ditch 3491	3490		Horse	Mandibular teeth (including M3 in wear)	5
			Large mammal	Long bone fragments	7
			Large mammal	Undiagnostic fragments	35
Ditch 3493	3492		Large mammal	Long bone fragments	15

Carbonised Plant Macrofossils and Charcoal by Diane Alldritt

Introduction

A total of forty-five environmental sample flots were analysed for carbonised plant macrofossils and charcoal. Twenty-four bags of charred material sorted from the retent portion of each sample were also examined for identifiable plant remains.

Methodology

Bulk environmental samples were processed by ASWYAS using an Ankara style water flotation system (French 1971). The flots were dried prior to examination under a low powered binocular microscope. Most samples produced a small quantity of charred material, typically from <2.5ml to 10ml of tea-leaf sized detritus only, whilst occasional samples proved totally barren. The corn drier samples from Phase 1 were slightly more abundant with up to 15ml of carbonised cereal grain present, whilst fire pit fill (3103) from the Southern Stockpiling Area produced 30ml of wood charcoal. Modern root fragments were present in small amounts from <2.5ml to 40ml together with scarce earthworm egg capsules and modern (non-carbonised) seeds, indicating a very low level of modern contamination, which should not be cause for concern. All identified plant remains including charcoal were removed and bagged separately by type.

Wood charcoal suitable for identification was examined using a high powered Vickers M10 metallurgical microscope at magnifications up to x200. The majority of charcoal recovered was in a very good state of preservation and some of the short-lived material would be suitable for radiocarbon dating if required. The reference photographs of Schweingruber (1990) were consulted for charcoal identification. Plant nomenclature utilised in the text follows Stace (1997) for all vascular plants apart from cereals, which follow Zohary and Hopf (2000).

Results

Results are presented in Table 7 below

Discussion

The forty-five samples from the Phase 1 Extraction and Southern Stockpiling Areas produced a narrow range of carbonised plant material. Small amounts of wood charcoal and other material such as hazel nutshell were recovered from most of the pit contexts, and occasionally from some of the post-hole features. Fire-pit fill (3103) from the Southern Stockpiling Area proved particularly abundant in oak charcoal, indicating a fuel use for this type of wood. The conspicuous presence of hazel nutshell throughout the pit samples, particularly in pit fills 3110 and 3326, and also in possible cremation pit fill (3451), suggested a gathered food resource and is indicative of an early Prehistoric date for some of these features.

Carbonised cereal grain was concentrated mainly in the two samples taken from the corn drier related contexts, fills 3428 and 3429, but also recovered in reasonable amounts from fill 3441 taken from the large pit feature (3442). A mixed cereal economy based primarily upon wheat and barley was suggested from the material recovered in the corn drier, with only trace amounts of oat, suggesting this latter type may have been in use as animal fodder. The cereal assemblage recovered from corn drier (3430) was broadly concurrent with what one would expect from a Late Iron Age / Romano-British dated feature. Other pits in the Phase 1 Extraction Area, e.g. fills 3327 and 3371 were also found to contain occasional cereal grain and weed seeds, but some of this material is probably residual.

The samples are discussed below by Area and feature type.

Southern Stockpiling Area

Two pit samples were taken from pit fills in the Southern Stockpiling Area. Sample 357 from the single fill (3103) of a fire-pit 3104 produced large fragments of wood charcoal approximately 2-3cm in size, all of which were identified as *Quercus* (oak). Oak was most likely the main source of fuel for the fire-pit as no other remains recorded from the sample. The fill of pit 3110 (sample 363) produced a different assemblage of remains, with a small amount of *Corylus* (hazel) charcoal and some nicely preserved fragments of *Corylus avellana* (hazel) nutshell. It is possible that hazelnuts were a gathered food resource and they may have been roasted among the embers of a fire within the pit prior to consumption.

Phase 1 Extraction Area - Corn Drier Samples

Two samples taken from corn drier 3430 produced reasonably large amounts of cereal grain, occasional grains of which were nicely preserved, but with the majority of material vesicular and degraded. Sample 468 (3428), taken from the fill of the fire-pit of the corn drier, contained numerous indeterminate grains, together with specimens which could be identified as *Triticum* sp. (wheat), *Hordeum vulgare* sl. (barley) and *Avena* sp. (oat). Wheat was recovered in the largest amounts, with far fewer barley grains, and only trace amounts of oat. Scarce weeds of cultivated / disturbed ground and grassland, *Fallopia convolvulus* (black bindweed) and *Rumex* sp. (docks) respectively, were also present and probably arrived with the cultivated crop from grassy or weedy field edges.

Sample 469 (3429) taken from the fill of the main shaft of the corn drier produced a very similar range of material to 3428, except the plant remains were far better preserved. It was possible to identify *Triticum spelta* (spelt wheat) in the assemblage from the recovery of both grain and chaff fragments, with a small number of glume bases of this type present. No barley was identified from this sample, but a small number of oat grains were found. Field weed types were identical to the previous sample and only found in small amounts suggesting perhaps a cereal crop that has been highly processed prior to the final stages of drying for storage or milling (van der Veen 1989).

Phase 1 Extraction Area - Pit Samples

Environmental samples were taken from 16 different pit fill contexts, with a further three contexts described as either pits or post-holes. Samples 384 (3134), 480 (3447) and 481 (3431) were sterile and will not be discussed further.

Pit fills 448 (3326), 455 (3371), 457 (3359), 467 (3431), 482 (3459), 483 (3460) and 484 (3441) all produced hazel nutshell fragments in various amounts. Contexts 3460 and 3441 were interesting in that they also contained a small amount of *Hordeum vulgare* sl. (barley) cereal grain. These pits may have been used as roasting / cooking pits or as dumping areas for domestic hearth sweepings. Hazelnuts in particular would have provided a valuable source of gathered food from nearby open or scrub woodland, and could indicate an earlier Prehistoric date for some of these features. Greig (1991) pointed to the continuation in use of gathered resources throughout the Neolithic period and later, usually occurring alongside cultivation of barley type cereal crops. A single *Quercus* (oak) nut, or acorn, was identified from the spot sample from fill 3356 of pit 3357. Acorns may have been consumed along with hazelnuts, but would require boiling for 2 to 3 hours to remove the tannin prior to being processed as food. It is more likely that the acorn was an accidental inclusion burnt along with oak wood being used for fuel.

Other pits produced slightly different assemblages, with greater finds of cereal grain, arable field weeds and wood charcoal, sometimes in addition to hazel nutshell. Certain of these may be of a different, perhaps later, date, to the largely hazelnut containing pits, or they could reflect different activity or deposition areas. Sample 449 (3327) contained a small scattering

of barley grain together with occasional field weeds and one fragment of *Corylus* (hazel) charcoal. Pit sample 465 (3406) was similar but with fewer and less well preserved remains, all the charcoal and cereal from this sample was indeterminate. These assemblages most likely represent hearth sweepings from cooking or the final stages of cereal processing, such as drying. Samples 471 (3441) and 473 (3448) from large pit 3442 contained larger amounts of cereal grain than any of the other pit fills, mostly barley grain and arable field weeds, but also produced a single *Triticum* sp. (wheat). Hazel nutshells were present in a small amount in 3441.

Sample 496 (3507) contained one indeterminate cereal grain which was probably residual material and not significant.

Three possible pits / post-holes, samples 412 (3231), 413 (3232) and 414 (3233) produced very few remains, with hazel nutshell only in 3231 and 3232, and a small amount of *Quercus* (oak) charcoal in 3233. Very few conclusions can be drawn about these limited remains, other than they are concurrent with the contents of a number of other pits in the area, producing evidence for possibly early activity.

Pit (Cremation?) Samples

Six samples were taken from context 3451, the fill of possible cremation pit 3452. No identifiable wood charcoal was present to indicate the possible fuel types in use, if this was a cremation pit, although small amounts of degraded tea-leaf sized charred detritus indicated that charcoal had probably been present in the pit. Considerable numbers of hazel nutshell fragments were recovered from samples 474, 475, 476 and 477, and in this respect the pit was very similar in content to some of the other Phase 1 Extraction Area pits discussed above. Therefore, taken purely from the archaeobotanical evidence, 3452 may simply have been another roasting pit or dumping area for hearth waste. Alternatively, hazelnuts may have been part of a feasting ritual or perhaps thrown onto the funeral pyre as offerings, but it should be noted no whole shells were found, only fragments with the contents consumed. Samples 478 and 479 from 3451 were barren of environmental material.

Post-hole Samples

Fourteen environmental samples were taken from different post-hole fills in the Phase 1 Extraction Area. Samples 386 (3165), 398 (3198), 415 (3235), 420 (3267), 428 (3283), 461 (3393), 462 (3332) and 488 (3481) were all sterile of identifiable carbonised material, producing only occasional modern seeds and snail shell, and can therefore be considered barren.

A small amount of *Quercus* (oak) charcoal was recovered from samples 394 (3184), 421 (3269) and 427 (3281). These oak fragments possibly reflect all that remains of construction posts that could have burnt *in situ*. Similarly, sample 453 (3354) contained one fragment of hazel charcoal, which could have had a hurdling or other construction use. Indeterminate charcoal was all that was found in sample 450 (3339). Finally, sample 416 (3237) produced a

single piece of, perhaps residual, hazel nutshell. The combination of oak and hazel indicated the use of mixed deciduous woodland containing open lighter areas of scrub, that could have been exploited for both fuel and construction purposes.

Phase 1 Extraction area - Ditch and Gully Samples

Ditch sample 433 (3297) was barren of environmental material.

Gully fill sample 364 (3114) produced only modern seeds therefore can also be considered barren. Sample 424 (3279) from gully 3280 contained a single poorly preserved indeterminate cereal grain, which was probably residual or wind-blown material and not significant.

Conclusion

The 45 environmental samples from the Phase 1 Extraction 1 Stockpiling Areas produced a narrow range of carbonised plant remains and charcoal, with the majority of the wood charcoal being found in a good state of preservation. Some of the cereal grain was less well preserved, and this may reflect upon the bulk of cereal finds being located as burnt waste within the fire-pit and flue of corn drier (3430), where it could have been subject to numerous heating and drying events.

The evidence from the corn drier (3430) indicated a mixed cereal economy reliant mainly on wheat, most likely spelt wheat type, with lesser amounts of barley and only trace finds of oat. Oat may well have been used as animal fodder. The cereal evidence from the corn drier was concurrent with a Late Iron Age / Romano-British date. Material recovered from some of the pit fill samples, in particular contexts 3441, 3327 and possibly 3441 may be slightly earlier, with evidence for barley grain together with hazel nutshell fragments. However, there is a possibility some of the less well preserved grain in the pits could be residual or mixed from later deposits, so caution should be taken with any interpretation until radiocarbon dates are available.

Charcoal evidence recovered from the pits and some of the post-holes indicated deciduous woodland of oak, with open lighter areas of hazel, being exploited for both fuel and construction purposes. Gathered resources in the form of hazelnuts were concentrated mainly in the pits, which indicated perhaps roasting in-situ or deposition of hearth sweepings from cooking waste. The combination of oak and hazel charcoal, together with hazel nutshells could suggest an early date for some of these pits.

Overall the samples examined from these areas produced a largely well preserved assemblage and suggested further work at the site has a good potential to produce similar ranges of charcoal and cereal grain. The carbonised grain in particular has a high potential to be recovered in large concentrations when specific context types are sampled.

Table 7	Carbonised	plant	remains	and	charcoal
		P			

Table / Carbonised plant remai	iis and charcoar								
Newbridge Quarry Northern		257	2.62	264	201	206	204	***	440
Extension	Sample	357	363	364	384	386	394	398	412
	Context	3103	3110	3114	3134	3165	3184	3198	3231
	Trench	Stock Area	Stock Area	Phase 1	Phase 1	Phase 1	Phase 1	Phase 1	Phase 1
	Feature	fire pit	pit	gully	pit	post-hole	post-hole	post-hole	pit/p-hole?
	Total CV	30ml	10ml	<2.5ml	<2.5ml	<2.5ml	5ml	0	<2.5ml
	Modern	10ml	15ml	10ml	<2.5ml	<2.5ml	<2.5ml	<2.5ml	2.5ml
Carbonised Cereal Grain and Chaff	Common Name								
Avena sp.	oat								
Triticum spelta	spelt wheat								
Triticum spelta glume bases	spelt wheat chaff								
Tritcum sp.	wheat								
cf. Triticum sp.	cf. wheat								
Hordeum vulgare sl.	barley								
Indeterminate cereal grain (+embryo)									
Charcoal									
Quercus	oak	5 (13.27g)					1 (1.3g)		
Corylus	hazel		1 (0.06g)						
Indeterminate			2 (0.40g)						
Carbonised Wild Resources									
Corylus avellana nutshell	hazel nutshell		10 (0.27g)						2 (0.02g)
Quercus nut (acorn) fragment	acorn								
Carbonised Weeds									
Fallopia convolvulus	black bindweed								
Rumex sp.	docks								
Galium aparine	cleavers								
Galeopsis tetrahit	hemp-nettle								
Sambucus nigra	elder								
Indeterminate weed									
Other Remains									
Non-marine mollusc shell		2	2		3	2	10+	5+	1
Modern (non-carbonised) seeds		5+		5+		1		2	

Newbridge Quarry Northern		412	41.4	41.5	416	120	421	424	427
Extension	Sample	413	414	415	416	420	421	424	427 3281
	Context	3232	3233	3235	3237	3267	3269	3279	
	Trench	Phase 1	Phase 1	Phase 1	Phase 1	Phase 1	Phase 1	Phase 1	Phase 1
	Feature	pit/p-hole?	pit/p-hole	post-hole	post-hole	post-hole	post-hole	E-W gully	post-hole
	Total CV	7.5ml	5ml	<2.5ml	<2.5ml	<2.5ml	5ml	2.5ml	<2.5ml
	Modern	20ml	10ml	2.5ml	2.5ml	<2.5ml	<2.5ml	40ml	10ml
Carbonised Cereal Grain and Chaff	Common Name								
Avena sp.	oat								
Triticum spelta	spelt wheat								
Triticum spelta glume bases	spelt wheat chaff								
Tritcum sp.	wheat								
cf. Triticum sp.	cf. wheat								
Hordeum vulgare sl.	barley								
Indeterminate cereal grain (+embryo)								1	
Charcoal									
Quercus	oak		3 (0.34g)				1 (0.35g)		1 (0.05g
Corylus	hazel								
Indeterminate									
Carbonised Wild Resources									
Corylus avellana nutshell	hazel nutshell	4 (0.14g)			1 (0.02g)				
Quercus nut (acorn) fragment	acorn								
Carbonised Weeds									
Fallopia convolvulus	black bindweed								
Rumex sp.	docks								
Galium aparine	cleavers								
Galeopsis tetrahit	hemp-nettle								
Sambucus nigra	elder								
Indeterminate weed									
Other Remains									
Non-marine mollusc shell				5+				1	2
Modern (non-carbonised) seeds						1			

				×					
Newbridge Quarry Northern					-				
Extension	Sample	428	433	448	449	450	453	spot	455
	Context	3283	3297	3326	3327	3339	3354	3356	3371
	Trench	Phase 1	Phase 1	Phase 1	Phase 1	Phase 1	Phase 1	Phase 1	Phase 1
	Feature	post-hole	ditch	pit	pit	post-hole	post-hole	pit	pit
	Total CV	2.5ml	<2.5ml	5ml	2.5ml	10ml	5ml	2.5ml	5ml
	Modern	5ml	<2.5ml	5ml	5ml	2.5ml	2.5ml	n/a	2.5ml
Carbonised Cereal Grain and Chaff	Common Name								
Avena sp.	oat								
Triticum spelta	spelt wheat								
Triticum spelta glume bases	spelt wheat chaff								
Tritcum sp.	wheat								
cf. Triticum sp.	cf. wheat								
Hordeum vulgare sl.	barley				1				
Indeterminate cereal grain (+embryo)					3				2
Charcoal									
Quercus	oak								1 (0.21g)
Corylus	hazel				1 (0.94g)		1 (0.11g)		
Indeterminate						1 (0.70g)			
Carbonised Wild Resources									
Corylus avellana nutshell	hazel nutshell			10 (0.26g)					3 (0.07g)
Quercus nut (acorn) fragment	acorn							1 (0.53g)	
Carbonised Weeds									
Fallopia convolvulus	black bindweed								
Rumex sp.	docks				1				
Galium aparine	cleavers				1				
Galeopsis tetrahit	hemp-nettle				3				
Sambucus nigra	elder								
Indeterminate weed					1				
Other Remains									
Non-marine mollusc shell				1			10+		
Modern (non-carbonised) seeds				5+			1		1

Newbridge Quarry Northern	Committee	457	461	463	165	467	160	460	471
Extension	Sample	457	461	462	465	467	468	469	471
	Context	3359	3393	3332	3406	3431	3428	3429	3441
	Trench	Phase 1	Phase 1	Phase 1	Phase 1				
	Feature	pit	post-hole	post-hole	pit	pit	corn-drier	corn-drier	large pit
	Total CV	2.5ml	<2.5ml	<2.5ml	10ml	2.5ml	10ml	15ml	10ml
	Modern	<2.5ml	2.5ml	<2.5ml	20ml	5ml	5ml	10ml	25ml
Carbonised Cereal Grain and Chaff	Common Name								
Avena sp.	oat						2	4	
Triticum spelta	spelt wheat							10	
Triticum spelta glume bases	spelt wheat chaff							10	
Tritcum sp.	wheat						22	30	
cf. Triticum sp.	cf. wheat							1	
Hordeum vulgare sl.	barley				e		5		14
Indeterminate cereal grain (+embryo)					5	1	214	156	20
Charcoal									
Quercus	oak								
Corylus	hazel			-					
Indeterminate					3 (0.45g)			1 (0.08g)	
Carbonised Wild Resources						2			
Corylus avellana nutshell	hazel nutshell	1 (0.02g)				1 (<0.01g)			3 (0.14g)
Quercus nut (acorn) fragment	acorn								
Carbonised Weeds									
Fallopia convolvulus	black bindweed						8	6	1
Rumex sp.	docks						4	1	
Galium aparine	cleavers								1
Galeopsis tetrahit	hemp-nettle				1				
Sambucus nigra	elder								1
Indeterminate weed									
Other Remains									
Non-marine mollusc shell		2							
Modern (non-carbonised) seeds					5+		5+		3

Newbridge Quarry Northern		452	474	475	476	477	470	479	480
Extension	Sample	473	474	475	476	477	478		3447
	Context	3448	3451	3451	3451	3451	3451	3451	
	Trench	Phase 1	Phase 1	Phase 1	Phase 1	Phase 1	Phase 1	Phase 1	Phase 1
	Feature	large pit	pit (crem?)	pit (crem?)	pit (crem?)	pit (crem?)	pit (crem?)	pit (crem?)	pit
	Total CV	2.5ml	10ml	5ml	10ml	5ml	<2.5ml	<2.5ml	2.5ml
	Modern	25ml	2.5ml	2.5ml	2.5ml	2.5ml	5ml	<2.5ml	<2.5ml
Carbonised Cereal Grain and Chaff	Common Name								
Avena sp.	oat								
Triticum spelta	spelt wheat								
Triticum spelta glume bases	spelt wheat chaff								
Tritcum sp.	wheat	1							
cf. Triticum sp.	cf. wheat								
Hordeum vulgare sl.	barley	2							
Indeterminate cereal grain (+embryo)									
Charcoal									
Quercus	oak								
Corylus	hazel								
Indeterminate									
Carbonised Wild Resources									
Corylus avellana nutshell	hazel nutshell		27 (0.92g)	13 (0.50g)	25 (0.54g)	15 (0.30g)			
Quercus nut (acorn) fragment	acorn								
Carbonised Weeds									
Fallopia convolvulus	black bindweed								
Rumex sp.	docks								
Galium aparine	cleavers								
Galeopsis tetrahit	hemp-nettle								
Sambucus nigra	elder								
Indeterminate weed									
Other Remains									
Non-marine mollusc shell		3							
Modern (non-carbonised) seeds			1		410				

Newbridge Quarry Northern Extension	Sample	481	482	483	484	488	496
	Context	3431	3459	3460	3441	3481	3507
	Trench	Phase 1	Phase 1	Phase 1	Phase 1	Phase 1 post-hole	Phase 1
	Feature	pit	pit	pit	pit		pit
	Total CV	5ml	7.5ml	<2.5ml	7.5ml	<2.5ml	10ml
	Modern	10ml	10ml	<2.5ml	15ml	2.5ml	10ml
Carbonised Cereal Grain and Chaff	Common Name						
Avena sp.	oat						
Triticum spelta	spelt wheat						
Triticum spelta glume bases	spelt wheat chaff						
Tritcum sp.	wheat						
cf. Triticum sp.	cf. wheat						
Hordeum vulgare sl.	barley		1		7		
Indeterminate cereal grain (+embryo)			6				1
Charcoal							
Quercus	oak						
Corylus	hazel						
Indeterminate							
Carbonised Wild Resources							
Corylus avellana nutshell	hazel nutshell		3 (0.07g)	1 (0.05g)	3 (0.14g)		
Quercus nut (acorn) fragment	acorn						
Carbonised Weeds							
Fallopia convolvulus	black bindweed						
Rumex sp.	docks						
Galium aparine	cleavers						
Galeopsis tetrahit	hemp-nettle						
Sambucus nigra	elder		1				
Indeterminate weed							
Other Remains							
Non-marine mollusc shell							
Modern (non-carbonised) seeds							1