Technical report

Analysis of plant remains from Ballinglanna North 3, Co. Cork (E2416)

By Penny Johnston

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Appendix 5 Plant remains

Analysis of the plant remains from Ballinglanna North 3, Co. Cork (E2416)

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Introduction

This short report details the results of plant remains analysis from Ballinglanna North 3, Co. Cork (E2416). The site comprised two Neolithic rectangular houses, many pits and post-holes indicative of external domestic activity and two burnt mounds/*fulachta fiadh*.

Methodology

The samples were collected on site as bulk soil and were processed using machine-assisted floatation (following guidelines in Pearsall 2000). The floating material (or 'flot') from each sample was collected in a stack of geological sieves (the smallest mesh size was 250 μm). When all the carbonised material was collected the flot was then air-dried in paper-lined drying trays prior to storage in airtight plastic bags. The samples were scanned under low-powered magnification (x 10 to x 40) using a binocular microscope. Nomenclature and taxonomic order follows Stace (1997).

Results

The results of preliminary scanning are presented in Table 1 at the end of this report. A total of 206 samples were scanned. Plant remains were present in 47 of the samples (23% of the total number of examined samples). The identifications of retrieved plant remains are presented in Table 2.

The majority of samples with plant remains contained charred hazelnut shell fragments, with over 500 fragments counted. These plant remains are frequent finds in Irish archaeological sites, due partly to the fact that they were often collected, eaten and used in the past. Their frequency is also partly due to the taphonomic factors that govern the preservation of hazelnut shells (as outlined in Monk 2000, 74 – 75). Firstly, they have a dense cellular structure, which means that they are slow to decay. In addition, the nut shell fragments are waste, and the shells were broken open and thrown in the fire. The fact that they were often discarded in hearths means that they were very likely to come into contact with fire and were therefore frequently carbonised and preserved.

The cereals from this site were identified as emmer wheat and barley. These are the most common cereal types recovered from Neolithic sites and the role of these different cereal types is the topic of current research investigating the timing, characteristics and effects of the introduction of agriculture to Ireland (McClatchie et al. 2009, 4). At

Ballinglanna North 3 emmer was by far the most common cereal type found and barley was recovered from only one context (C.568).

Emmer grains were recovered from 11 contexts (twelve samples). These were recovered from features in Structure 1, including some external post-holes (C.105, C.112, C.115 and C.270) and from features in Structure 2 (C.533, C.580, C.652, C.686 and C.704). Emmer chaff was also recovered from 3 contexts from both structures. In one sample (from C.112), emmer chaff was more frequent than cereal grains, perhaps suggesting that this sample included the by-products of crop processing. The results indicate that domestic activities, such as crop processing, were probably carried out within Structure 1.

Emmer was also found in deposits from the Early Neolithic house at Gortore 1 (E2119). Comparative cereal assemblages from six early Neolithic houses at Corbally, Co. Kildare also indicate that the crop economy was almost exclusively dependent on emmer wheat, as there was only one possible grain of barley found (Purcell 2002). Tankardstown South, Co. Limerick also produced emmer grains, the largest cache known from an Irish early Neolithic site (Gowen 1988, 41). However, crop assemblages from some other Irish Neolithic houses indicate more diverse crop husbandry practices; although wheat was also predominant at Ballygalley, Co. Antrim, much of this was identified as einkorn rather than emmer (Simpson 1993), an unusual find. And at Cloghers I (Early-Middle Neolithic date), the crop assemblage consisted of bread wheat, barley, oats and possibly spelt wheat; no signs of emmer were found (Kiely and Dunne 2005).

Barley is less common than emmer wheat in Early Neolithic contexts. However, McClatchie's study of plant remains from 24 Neolithic sites indicated that although wheat was predominant, barley was recorded at more than half of the sites (McClatchie et al. 2009, 4) and it was found at most of the rectangular house sites (McClatchie forthcoming). It is uncertain whether or not the barley from Ballinglanna North 3 can be added to this total, as it was not from a well-recorded context and it is uncertain what phase of the site this material relates to; it is possible that these grains are from later deposits at the site.

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Sample	Context	Charcoal	Seeds	% sorted
1	3	L	A	100
2	4	H	A	30
3	13	L	L	100
4	6	M	A	100
5	6	H	A	50
6	11	M	A	100
8	17	L	A	100
9	6	M	A	100
10	31	L	A	100
14	12	M	A	100
15	35	L	A	100
16	8	H	A	100
17	12	M	L	100
18	38	L	A	100
19	40	L	A	100
20	52	L	A	100
21	45	L	L	100
22	54	L	A	100
23	46	L	L	100
24	42	M	A	100
25	60	L	A	100
26	57	L	A	100
27	63	M	A	100
28	58	L	A	100
29	65	L	A	100
30	41	L	A	100
31	55	L	A	100
35	83	M	A	100
36	87	L	A	100
37	88	M	L	100
38	94	H	M	100
38	94	L	L	100
39	94	H	L	100
40	97	L	A	100
41	106	H	L	100
42	105	H	L	100
43	112	H	M	33
44	115	H	L	100
45	100	H	L	100
47	132	L	L	100
48	134	L	A	100
61	32	L	A	100

Sample	Context	Charcoal	Seeds	% sorted
89	136	L	A	100
91	148	L	L	100
92	79	L	A	100
92	79	L	A	100
93	80	L	A	100
94	158	L	A	100
95	157	L	L	100
96	160	L	L	100
97	161	L	A	100
98	165	M	A	100
99	166	L	A	100
100	151	L	A	100
101	168	L	A	100
102	170	M	A	100
102	170	L	A	100
103	171	L	L	100
105	177	L	A	100
106	97	L	L	100
107	172	L	A	100
108	181	M	L	100
109	183	L	A	100
110	186	L	A	100
111	189	L	A	100
112	190	L	A	100
113	188	L	A	100
115	194	L	A	100
118	200	H	A	100
119	212	L	A	100
120	208	L	A	100
121	216	M	A	100
122	217	L	A	100
123	220	L	A	100
124	224	L	A	100
125	201	L	A	100
126	204	L	A	100
127	231	M	A	100
128	232	L	A	100
129	218	L	A	100
130	230	L	A	100
131	235	L	A	100
131	46	L	A	100
132	180	L	A	100

Sample	Context	Charcoal	Seeds	% sorted
133	237	L	A	100
134	238	L	A	100
135	250	M	A	100
136	262	L	A	100
137	265	A	A	100
138	272	L	A	100
139	263	M	A	100
140	279	L	A	100
141	270	M	L	100
142	277	M	A	100
143	280	M	A	100
144	283	L	L	100
145	284	M	A	100
146	288	M	L	100
147	290	L	L	100
148	292	M	A	100
150	298	L	A	100
152	302	L	A	100
155	314	L	A	100
156	311	L	A	100
157	312	L	A	100
158	307	M	A	100
159	315	L	A	100
160	319	L	A	100
161	318	L	A	100
162	339	L	A	100
163	343	L	A	100
164	344	L	A	100
165	342	L	A	100
166	341	L	A	100
167	355	L	A	100
168	345	L	A	100
169	356	L	A	100
170	357	A	A	100
171	358	L	A	100
172	360	L	A	100
173	365	H	L	50
174	382	H	L	50
175	377	H	A	100
176	377	H	A	100
177	401	H	A	100
178	348	L	A	100

Sample	Context	Charcoal	Seeds	% sorted
179	420	L	A	100
180	428	M	A	100
181	427	L	A	100
182	397	L	A	100
183	431	M	A	100
184	438	H	A	100
185	456	L	A	100
186	457	L	A	100
187	474	L	A	100
188	305	L	A	100
189	475	L	A	100
190	481	M	A	100
191	429	L	A	100
193	498	L	A	100
194	492	L	A	100
195	503	L	A	100
196	500	H	L	100
197	502	H	L	50
198	533	M	L	100
199	553	L	A	100
199	553	A	A	100
200	532	H	L	100
201	546	M	A	100
203	569	L	A	100
204	577	L	A	100
205	579	H	L	100
206	580	L	A	100
207	595	L	A	100
208	599	L	A	100
209	598	L	A	100
210	545	L	A	100
211	568	L	L	100
212	609	M	A	100
213	611	L	A	100
214	613	L	A	100
214	600	L	A	100
216	623	L	A	100
217	614	L	A	100
218	626	L	A	100
219	628	L	L	100
220	609	M	L	100
221	637	L	A	100

Sample	Context	Charcoal	Seeds	% sorted
222	638	L	A	100
223	640	L	A	100
224	643	L	A	100
226	636	L	A	100
227	654	L	A	100
228	652	L	A	100
229	664	M	A	100
231	659	L	A	100
232	666	L	L	100
233	679	H	L	100
234	682	L	A	100
235	683	L	A	100
236	661	L	A	100
237	677	L	A	100
238	699	M	A	100
239	684	M	M	100
240	704	M	M	100
241	685	L	A	100
242	686	L	L	100
243	687	L	A	100
244	688	L	A	100
245	689	L	A	100
246	690	L	A	100
247	691	L	A	100
248	392	L	A	100
249	693	L	L	100
250	694	L	A	100
251	695	L	L	100
252	696	L	A	100
253	697	L	A	100
255	464	M	A	100
257	476	M	L	100
258	792	L	A	100
259	782	L	L	100
260	784	L	A	100
261	795	L	A	100
422	256	M	A	100
645	225	H	A	100

A = Absent, L = Low, M = Medium and H = High

Table 1: Scanned samples from Ballinglanna North 3, Co. Cork (E2416)

Context	**13**	**12**	**45**	**46**	**42**	**87**	**88**	**94**	**94**	**106**
Sample	**3**	**17**	**21**	**23**	**24**	**36**	**37**	**38**	**39**	**41**
Hazel nut shell fragments (*Corylus avellana* L.)	3			1		1	7	28	4	3
Emmer wheat (*Triticum dicoccum* L.) two seeded grain								5	2	
Probable Emmer wheat (*Triticum cf dicoccum* L.) two seeded grain								2	1	
Wheat grains *(Triticum* L. species)								1		
Indeterminate cereal grains	1	2	2 (cf)					1		1
Indeterminate weed seeds									1	
Vesicular plant fragments present					*					

Table 2: Identified seeds from Ballinglanna North 3, Co. Cork (E2416)

Context	**105**	**112**	**115**	**100**	**132**	**148**	**157**	**160**	**170**	**171**
Sample	**42**	**43**	**44**	**45**	**47**	**91**	**95**	**96**	**102**	**103**
Hazel nut shell fragments (*Corylus avellana* L.)	1	299	21	12	2	3	6			1
Emmer wheat (*Triticum dicoccum* L.) two seeded grain	2	3	1							
Probable Emmer wheat (*Triticum cf dicoccum* L.) two seeded grain			1							
Emmer wheat (Triticum dicoccum L.) glume bases		9								
Emmer wheat (Triticum dicoccum L.) spikelet forks		1								
Wheat grains *(Triticum* L. species)									1	
Indeterminate cereal grains		1	2					1	1	
Vesicular plant fragments present									**	

Table 2: Identified seeds from Ballinglanna North 3, Co. Cork (E2416) continued

Context	**97**	**181**	**270**	**283**	**288**	**290**	**382**	**500**	**502**	**533**
Sample	**106**	**108**	**141**	**144**	**146**	**147**	**174**	**196**	**197**	**198**
Hazel nut shell fragments (*Corylus avellana* L.)		2	1	1	4	1			1	1
Cherries: plum/sloe/cherry stones (*Prunus* L. species)								1		
Emmer wheat (*Triticum dicoccum* L.) two seeded grain			1		1					
Probable Emmer wheat (*Triticum cf dicoccum* L.) two seeded grain	1									1
Wheat grains *(Triticum* L. species)										1
Indeterminate cereal grains										2
Indeterminate weed seeds							1			

Table 2: Identified seeds from Ballinglanna North 3, Co. Cork (E2416) continued

Context	**532**	**579**	**568**	**580**	**628**	**609**	**643**	**652**	**666**	**679**
Sample	**200**	**205**	**211**	**206**	**219**	**220**	**224**	**228**	**232**	**233**
Hazel nut shell fragments (*Corylus avellana* L.)	3	2		58	2	5	2	1	4	1
Barley grains (*Hordeum vulgare* L.)			2							
Emmer wheat (*Triticum dicoccum* L.) two seeded grain				2						
Probable Emmer wheat (*Triticum cf dicoccum* L.) two seeded grain				2				2		
Wheat grains *(Triticum* L. species)	1	1		2						1
Indeterminate cereal grains		3		4	1	1		1		

Table 2: Identified seeds from Ballinglanna North 3, Co. Cork (E2416) continued

Context	**684**	**704**	**686**	**693**	**695**	**476**	**782**
Sample	**239**	**240**	**242**	**249**	**251**	**257**	**259**
Hazel nut shell fragments (*Corylus avellana* L.)		7	1	1		17	
Indeterminate seeds from the Legume family (Fabaceae)					1		
Emmer wheat (*Triticum dicoccum* L.) two seeded grain			1				
Probable Emmer wheat (*Triticum cf dicoccum* L.) two seeded grain		1					
Emmer wheat (Triticum dicoccum L.) glume bases		1	1				
Indeterminate cereal grains	1						1

Table 2: Identified seeds from Ballinglanna North 3, Co. Cork (E2416) continued