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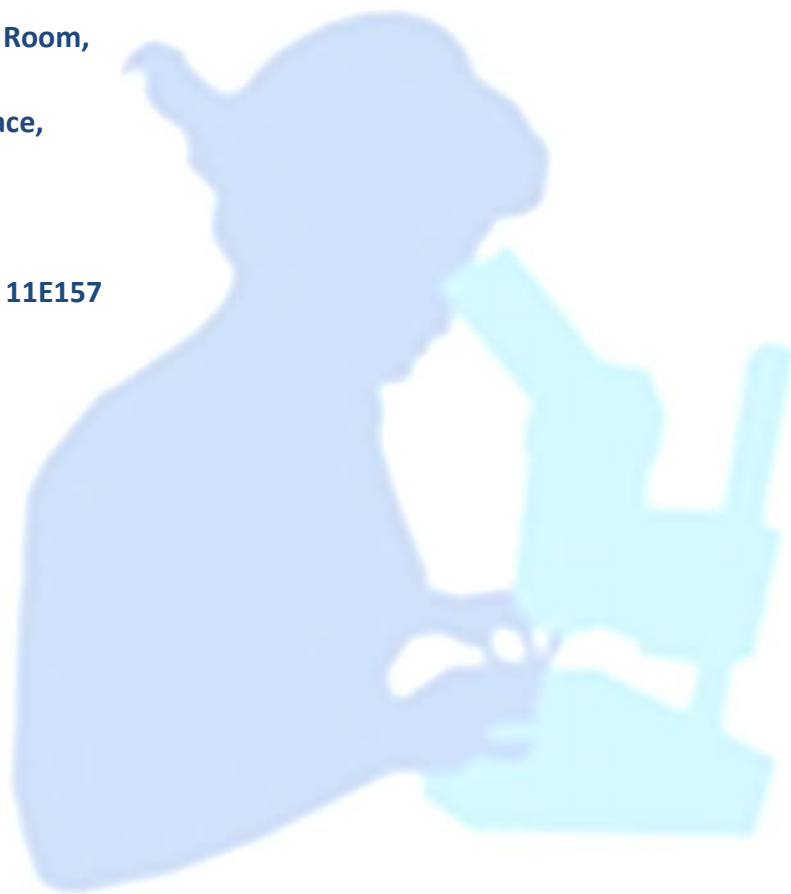
Archaeobotanical Analysis of Plant Remains,

The Robing Room,

Bishop's Place,

Kilkenny.

Licence No. 11E157



By

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1 Introduction

- 1.1 This report describes the results of the analysis of charred archaeobotanical material retrieved during excavations at Bishop's Palace, Kilkenny. Two soil samples, measuring 10 litres in volume, were gathered from a pit which truncated natural subsoil.
- 1.2 The pit [010] was situated in levels which predated the 12th century Bishop's Palace. An antler-tine, which was deposited in the pit, was radiocarbon dated to 1000-1140 cal BC (Beta-306021). The feature is believed to have been associated with the monastic settlement of *Cill Chainnigh*, which was founded in the 6th century.
- 1.3 Cultivated grains, including barley and oats, were identified during the analysis. Wild and cultivated fruit, including apple, were also identified. One grape pip and smaller fragments were also present in the samples. Ruderal taxa, such as knotweed and plantain, gave an indication of the local environment at the time the assemblage was formed.

2 Methodology; processing, identification and analysis

- 2.1 The samples were floated and then poured into geological sieves measuring 1mm, 2mm and 0.25mm. The retent was also sorted through and any additional material was taken out. The samples were then analysed at magnifications x7 to x40. Initial identifications were made using a variety of literary and digital sources, including Stace (1997), Jacomet *et al.* (2006), Van Zeist and Bakker-Heeres (1985) and Cappers *et al.* (2006; <http://seeds.eldoc.ub.rug.nl/>). Further in-depth identification was then carried out by comparisons with the author's reference collection.
- 2.2 The results of identification of the seeds are presented in Table 1 on Page 3 of this report. The plant remains listed in the table are listed in English, followed by the Latin name. In order to facilitate easy reading of this report, the plant remains are named in English within the body of the text; the Latin names are listed in the table. The nomenclature of species is generally



arranged according to the *New Flora of the British Isles* (Stace 1997). However, the cereals have been listed at the start of the table to facilitate ease of reading.

- 2.3 Each seed and fragment was counted and listed in the table accordingly. Where possible, identifications were made to genus and species. However, where these identifications were proved impossible, as much of the assemblage was extremely carbonized, seeds are listed as 'Family sp.'. In some cases, although much of the definitive identification criteria were missing, some remains were recognizable and are denoted by the letters 'cf'. In the case of the cereals either the embryos or the apices were counted. However, many cereals were fragmentary. In this case, an intact cereal caryopsis was weighed and an estimate was then made of the number of whole grains which may originally have been present. These estimated figures are shown within square brackets in the table.

3 Results of the Analysis

- 3.1 The samples were dominated by cereal grains, with hulled barley (*Hordeum vulgare*) being the most ubiquitous. Oat (*Avena sativa/strigosa*) was also present. The grains were extremely charred and there were many which were assigned to the 'Inidentifiable Cereal' category. There was a minimal amount of fragmentary legumes visible. Grassy weeds (Poaceae) were also noted. Fruit was well-represented by both cultivated and wild types, including sloe/cherry/plum and apple/pear species. A grape pip and a number of grape fragments were also noted.
- 3.2 The samples indicate some of the food that was available at the time, including the grains, legumes and fruits, as well as activities associated with the produce, such as milling. However, they also represent the wild taxa which were growing on and around the area when the assemblage was formed.



3.3 Table 1: Plant Remains

Feature			[010]	[010]
Feature type			Fill of Pit	Fill of Pit
Date of context			Medieval	Medieval
Volume sampled			10litres	10 litres
Volume of flot			80ml	50ml
Weight of flot			25.92g	31.92g
Sample No.			11	19
Botanical Name	Other	Plant part		
Poaceae <i>Avena Sativa</i> L. / <i>Avena strigosa</i> Schreb. s.l	Oat	caryopsis fragments	5 2[2]	1 4 [2]
<i>Hordeum vulgare</i> L.	Hulled Barley (symmetrical) (assymetrical) cf	caryopsis caryopsis	2 3 5	1 8
Identifiable Cereal		caryopsis fragments	11 [40]	10 [40]
Identifiable Cereal chaff		Culm nodes		1
Indeterminate Poaceae	Grasses	caryopsis glume fragments	5 0.03g	7 1 0.02g
Betulaceae <i>Corylus avellana</i>	Hazel-nut	fragments		2
Chenopodiaceae <i>Chenopodium album</i> L. <i>Atriplex prostrata</i> cf.	Fat hen Spear-headed orache	seed	1	1
Polygonaceae <i>Persicaria</i> sp.	Knotweed family	nutlet	1	1
Brassicaceae <i>Brassica</i> sp.	Cabbage family	capsule		1
Rosaceae <i>Prunus</i> sp. <i>Malus sylvestris</i> / <i>Pyrus communis</i> L. <i>Alchemilla</i> L. cf	cherry/plum/sloe Apple/Pear Lady's Mantle	fruit-stone fragments	 32 3	1 93 2 1
Fabaceae <i>Pisum sativum</i> L. cf Fabaceae sp.	Common pea	fragments fragments	1 2	1
Vitaceae <i>Vitis vinifera</i> L. cf		fragments fragments	 [3]	3



Plantaginaceae <i>Plantago lanceolata</i> L.	Ribwort plantain	seed	1	
Asteraceae <i>Lapsana communis</i> <i>Chrysanthemum segetum</i> L. <i>Chrysanthemum</i> cf. <i>segetum</i> L.	Nipplewort Corn marigold	seed fragments	1 1 1	
Cyperaceae <i>Carex</i> sp. L.	Sedge	nutlet	1	
Miscellaneous Miscellaneous Inidentifiable fragments Miscellaneous indeterminate seeds			49 1	128 1
Density per litre			0.09	0.05

4 Discussion

4.1 Charred assemblages

Plants formed an important part of daily life throughout history; they were used for food and in everyday items such as houses, clothing, baskets and string (Swogger 2000, 176). They were both symbolic and part of the daily backdrop of life. Thus it is important to understand that while the methods of identification and analysis used in archaeobotany can be employed to answer both technical and scientific questions, the non-tangible relationships that people had with plants should also be considered. It is important to remember that archaeobotanical assemblages have been created by people and they represent a very small part of the plant world which the inhabitants of *Cill Chainnigh* and the surrounding area would have known and utilized.

This report is concerned with charred assemblages. Carbonisation under oxygen-poor conditions preserves seeds and grains as carbon skeletons (Moffett 2009, 41). However, seeds may often preserve by becoming waterlogged or desiccated. The most common '*modes of entry*' of grains, weed seeds and chaff include food processing, preparation, consumption and storage as well as through fuel, animal dung, building materials and ritual (van der Veen 2007). However, it is important to understand that many of the plants and plant parts which were most likely to have



been preserved are those which come into contact with fire through processing. In Ireland, this includes waste by-products of crop-processing, such as chaff and weed seeds. Parching grains after a wet summer or heating them for germination purposes ensures at least some will be charred and preserved, while refuse disposal and accidental conflagration of grain stores also serve to preserve seeds (van der Veen 1992, 81). Unfortunately, charred assemblages, such as this one, are often badly preserved which makes identification problematic.

It is likely that the assemblage retrieved from Bishop's Palace was the result of a combination of activities which resulted in their carbonization within a fire and their subsequent deposit into pit [10]. It is probable that consumption by the fire and natural wind-dispersal of ruderal taxa accounts for a portion of the assemblage. The rest of the assemblage reflects activities concerning plant cultivation and processing which were being carried out in the surrounding areas (Küster 1991; Hillman 1991).

4.2 Grain

Hulled barley was the most ubiquitous grain and is a common find for assemblages of this period (Murray and McCormick 2005; Johnston 2004). Hulled varieties protect the grain after harvest (Jacomet *et al.* 2006). While there are many 'symmetrical' grains, it is likely that the crop was that of 6-row barley. This form was the most common in the medieval period and its ubiquity reflects its position in society as a low-status crop as cited in the *Bretha Déine Chécht* (c.f. Kelly 1997, 219). Barley was one of the first crops to arrive in Ireland in the Neolithic and was common throughout history because of its low growth requirements and hardiness to drought and wet conditions (Riehl 2009). Barley was often grown as a dredge crop along with oats as a buffer against adverse weather; it was also mixed with oats to make coarse bread for the lower classes in society (Stone 2009, 12). Barley was used to brew ale because of its distinctive taste (Dinely and Dinely 2000). Additionally it was often fed to animals as fodder. Dietary regimes of early medieval monks include barley bread as a staple component of the diet, especially those following penitential and ascetic regimes (Kelly 1997, 34). Although the grains are severely carbonized, there is no indication that they had germinated after the harvest; this



suggests that these particular grains did not need drying or had not been heated as part of the brewing process.

Oats are often found in sites dating to the medieval period. They are listed as the lowest of the grain crops despite their ubiquity in the archaeological record (Kelly 1997, 219; Monk 1986). They are very tolerant to poor growing conditions and were often grown alongside barley as dredge (Stone 2009, 12). They were used to make coarse and cheap bread, porridges, cakes and often ale; they were also used as horse-feed. This is the most common grain found in the early medieval monastery of Illaunloughan (Murray and McCormick 2005) and there is documentary evidence of an association between oats and ecclesiastics (Kelly 1997, 244). While oats have been cited in the contemporary law tracts as low-status grain (Kelly 1997, 219), their extensive usage across all medieval sites suggests otherwise, as they are highly nutritious (Monk 2011).

Unfortunately, many cereal grains could not be identified to species level. However, it is likely that wheat, such as emmer and perhaps bread wheat were consumed on the site. Emmer wheat was introduced to Ireland in the Neolithic, but its consumption continued into the medieval period. This wheat was listed as a middle-status grain in the law tracts (Kelly 1997, 219). It was often grown alongside barley as both crops are fairly hardy and resistant to drought and cold. Emmer is tightly enclosed by its lemma and palea (glumes), which allows for easy storage and protection from insect and animal infestation. However, the glumes meant an additional step in processing whereby the grain was heated or ground to remove the hulls prior to grinding for flour. This wheat was consumed in breads and porridges, although the bread would have been coarse and heavy. Bread wheat was not protected by glumes and it was easier processed (Jacomet *et al.* 2006). The fact that it lacked glumes meant that it was subject to decay and infestation. This wheat requires fertile soils to grow and as such it was a more valuable crop. This fact, and the presence of a large percentage of gluten within the caryopsis which allowed bread to rise and consist of a lighter texture than previous wheat, lent it the highest status of all grains in the medieval period (Kelly 1997, 219; Stone 2009, 17). It was used in large households and rich monasteries to make light bread, particularly after the arrival of the Anglo-Normans.



The grains noted in the analysis are unlikely to have been consumed and deposited within the fire. Firstly, these grains are hulled and would have needed to be processed prior to consumption, which involved the removal of the glumes, hulls, additional chaff and segetal weed seeds. Medieval milling techniques were efficient and would have taken place in mill-houses, unlike the preceding periods where crops would have been processed by hand around the fire (Rynne 2003, 20; In Murphy and Potterton 2010). Many large households and religious houses had their own mill at this time, as well as drying and malting kilns. Furthermore, the consumption of these products in ground flours, biscuits, breads and soups would not have allowed preservation of whole, and often hulled, grains, which showed no sign of having been cooked in these types of foods.

It is not clear whether the monks had their own land or were growing their own grain. Monasteries often imported grain, but *Cill Chainnigh* was likely to have had large landholdings, like many of the large ecclesiastical sites at the time (Edwards 2002, 114). *Cill Chainnigh* was the largest seat of power in Leinster outside Dublin (Ó'Drisceoil *et al.* 2008, 80) and is probable that lay-people were employed to work in the fields. It has been suggested that tillage was mainly associated with monasteries, while lay-people concentrated on cattle-farming (Hall 2005, 2), although this is a theory which is much disputed.

None of the grains showed any indication that they had started to germinate; however they were extremely carbonised. Coleoptile growth would have been the result of the grains being dried within a kiln after a wet summer to aid with the processing and milling stage (Monk 1991). Additionally, this often suggests that the grains were being used to brew ale, in a process which encourages allows the starch in the grain to be converted to sugar for fermentation (Dinely and Dinely 2000). Barley, oats and wheat were used in brewing, dependent on the status of the brewer and the crops available to them (Stone 2009, 18) although barley was the preferred malting grain because of its sugars and taste. Modern palates are also suited to both malted fermented and non-alcoholic barley drinks, as well as the by-products (Wood 2007). However, weather also influenced the grain available for brewing and it is recorded in parts of Britain that during times of diverse weather a higher percentage of oats were used to make beer (Stone



2009, 18). Beer, drunkenness and ecclesiasts are recorded in '*Vitae sanctorum Hiberniae*' (Plummer 1910 in Ó Cróinin 1995, 105) suggesting that alcohol consumption was not unusual at the time.

4.3 Legumes, fruit and gardens

Fragments of legumes in the samples indicate that peas were probably consumed on this site. They may have been grown in the garden or in the larger fields surrounding the site. Peas and beans were a common and nutritious food; records show how the poor in Britain were allowed to pick peas from the sides of roads in the hungry months leading to crop-harvesting (Stone 2009, 36). They were both eaten fresh and were dried for storage; they were also added to breads and pottages by those of low-status (Stone 2009). Legumes are listed in the law tracts as a lesser foodstuff than cereals and were probably treated in a similar manner (Kelly 1997, 219). They were planted widely in the early medieval period; probably because they are resistant to drought, poor soils and badly drained fields, which are common problems in Ireland. Legumes have nitrogen-fixing nodes which would have enhanced soils depleted of nutrients after growing cereal crops (Mahler-Slasky and Kislev 2010, 2479). Unfortunately, the lack of need for a fire to prepare legumes ensures a lack of ubiquity in the archaeological record. As noted before, a common problem with archaeobotanical assemblages is that they do not reflect the historical accounts of the time (Monk 1986).

There are also fragments of a smaller legume, which may have been vetch. This was only eaten during a time of famine and adverse weather, as it is quite small and is noxious when eaten in large quantities (Mahler-Slasky and Kislev 2010). However, the lack of a large amount of seeds associated with waterlogged soils would suggest that there was not enough bad weather for plants of this nature to colonize in order for vetch to have become a desirable food-source.

It was commonplace for all houses to have an attached garden to produce vegetables for the kitchen table (Dyer 2009, 28). Excavations of monasteries in Ireland suggest that garden soils were imported onto the sites, indicating that gardens were important features within monastic enclosures (O'Sullivan *et al.* 2008, 193). The gardens would have produced enough vegetables to



feed the monks and any surplus could be sold. Evidence of a garden and orchard in *Cill Chainnigh* is produced by the apple seeds, which would have been grown for both immediate consumption and for alcohol production. Apple and pear seeds are quite similar in morphology and by inference it is more likely that the seeds found in this assemblage were those of apple, as pear was introduced by the Anglo-Normans (Kelly 1997). Apples were grown widely in the medieval period and were consumed as snacks and used to make cider, which was a low-status drink at this time (Dyer 2009, 36). They were also dried for consumption at Christmas.

Seeds of the *Prunus* genus are also present here, which may have been plum, sloe or cherry. Although they could have been growing in the orchards, it is more likely that they were growing as wild foods in the local environment and were consumed beside the fire. These fruits were also used to make jams and preserves to provide extra flavour during the winter months, when no fresh fruit or vegetables were available (Davidson 1999).

Only one seed belonging to the cabbage family was noted, but these are particularly small and easily damaged. This family includes broccoli and cauliflower and was introduced to Ireland in the early medieval period. Cabbage is particularly associated with monastic diets, where it was known as '*braiseach*' and consumed as a relish (Kelly 1997, 255). However, according to the *Aislinge Meic Con Ghinne*, this term became altered during the medieval period to mean cabbage soup which had a layer of animal fat on top (In Kelly 1997, 340).

4.4 Grapes

Grape pips were also present in the assemblage. Grapes have been noted on medieval sites in Dublin (Collins 1997), Waterford (Tierney and Hannon 1997, 892) and Drogheda (Mitchell 1987). However, these sites are dated to the 13th and 14th centuries and, as such; the grape fragments found in Bishop's Palace are earlier. There are three possible ways in which the grape pip arrived on the site. It was either grown in the area for consumption in wine or as fruit; imported within wine or a related product; or as dried fruit. It is unlikely that it was imported as fresh fruit, as it would probably have rotted on the journey.



There is no direct evidence for viticulture in Ireland in the early medieval period. While Bede, a monastic historian based in Northumbria in the 7-8th centuries AD, states that vineyards existed in Ireland, he never visited the country to record this activity first-hand (Sherley-Price 1956, 39). However, it appears that vineyards were particularly associated with monasteries in the early medieval period (Hagen 2010, 22).

Wine was extremely important in medieval church life, both for the Eucharist and for daily consumption as an allowance and for medicinal purposes (Hagen 2010, 22). The importance of wine in Ecclesiastical life is evidenced by the rules surrounding vineyards and wine consumption in the literature which governed monastic diets in Anglo-Saxon England (Hagen 2010, 220). The immigration of Anglo-Saxon bishops and their traditions concerning wine may have had an influence on their Irish peers (Conway 1999, 13). The climate was warm enough for viticulture in England in the 11th and 12th centuries and there are historical records documenting the flourishing of grapes there (Greig 1996, 217; Hagen 2010, 59), suggesting that it would not be impossible for vineyards to have existed in Ireland. Unfortunately, there is debate as to whether Ireland would have felt any of the climatic improvements which are recorded in Britain at this time (Hall 2011, 122; Mitchell and Ryan 1997, 248).

It is possible that the grape pip was imported within the wine itself, as was suggested by Monk (1977; in Hagen 2010 and *pers. comm.* 2011) for grape pips found in 8-9th century Southampton. The pips may have been included accidentally. While the process of modern wine-pressing involves the removal of the must (pulp and pips) from the liquid (www.wine-pages.com), it is the skin and pips which contain the tannins needed to flavour the wines and to prevent oxidisation. It may have been the case that some of the must was retained within the wine to prevent the wine spoiling on the journey between the British or Mediterranean suppliers and *Cill Chainnigh*. This may have made the wine slightly unpleasant to taste however.

Two other forms of grape product associated with the Romans suggest that pips were retained in the final products; *lora* and *defrutum* or *sapa* (<http://penelope.uchicago.edu>). *Lora* was a second brew of the must produced during a first batch of wine. This was a thin and bitter brew,



which was served to the slaves and soldiers and it does not appear that stringent rules were applied to its procedure. It is possible that the must was bottled with the liquid to produce *lora*, as the skins and pips would have been greatly reduced in size and robustness with a secondary fermentation. *Defrutum* or *sapa* was another Roman grape product and it consisted of the boiled and reduced must. It was used as a sweetener for wines and foods. It appears that the entire must was consumed and is therefore a likely way that pips would be found in wine.

Documentary sources also record a high volume of imported raisins and currants into early Medieval England from Spain and Portugal (Greig 1997, 217). They were used as trade items and gifts in Anglo-Saxon England (Hagen 2010, 60). Dried fruit is the reason cited for grape pips to have appeared on medieval sites in Cork (McClatchie 2003, 401) and Limerick (Haston 2010). It is unknown how grapes were dried in the early medieval period and whether stones were retained in the shrivelled fruit. The process of drying grapes may have caused the pips to wither; additionally, the use of seedless grapes to make currants may have been a common practise at this time (Hagen 2010, 60). However, it is important to remember that palates have changed over the centuries and people may have ingested stones as part of the dried fruit. Fresh sloes were consumed in this way in the medieval period (Geraghty 1996, 33).

The grape pip is an indicator of the status of *Cill Chainnigh* and illustrates the extensive trade routes which existed at the time, which were influenced by the spread of Christianity and the movement of Vikings around Western Europe. The movement of the Irish around the coasts of Britain would also have had an effect on the type of foodstuffs coming into Ireland (Conway 1999, 12). Direct trade routes between Dublin and Gaul/Northern France probably existed from the 5th century AD (Comber 2001, 82) and were well-used in the mid-10th century (Johnson 2004, 73). Additionally, documentary sources suggest that Irish merchants were well-known in Chester in the 10th century and they would have purchased foods imported into England for trade purposes, which would have included wine and spices (Hagen 2010, 175). Imported Mediterranean pottery found in early Medieval Irish high-status monastic and secular sites also illustrate importation of wine, oil and possibly dried fruit (O'Sullivan *et al.* 2008; Comber 2001).



Evidence of such pottery has been found on a site in Leggetsrath West, Co. Kilkenny (Lennon 2006).

Therefore, it should not be unusual that evidence for grapes have been found in 11th-12th century monastic deposits. However, the nature of the soft fruit and the processes which are associated with viticulture, wine-making and drying are not conducive to preservation and it should be recorded as an interesting find for Kilkenny.

4.5 Weeds and local environment

The weed taxa indicate the environment within and around the site. The wild taxa, which included plantain, nipplewort, orache and dock, are suggestive of open and disturbed ground and they have been found in other medieval assemblages in Kilkenny (Johnston 2004), Drogheda (Mitchell 1987) and Dublin (Collins 1997). They were probably growing around the site and were windblown into the fire. Other species included in the assemblage, like the dock/knotgrass and the sedge families, suggest a damp environment close to the site. They may have grown in badly-drained part of the enclosure, or they may have blown in from the floodplain to the south or the riverside to the east. They are edible species, but in the context of the assemblage formation it is likely that they represent ruderal taxa growing around the site.

Corn marigold and corn-cockle were also noted; these were serious weed crops in the medieval period and they would have been present within the crop until the final cleaning stages. The latter was often included in flours because of its persistence; however the flour produced would not have tasted well and was poisonous (Salisbury 1961). Other wild grass seeds were also noted and it is probable that they arrived on the site with semi-cleaned crops. There is a minimal presence of these taxa in the assemblage and if the lack of chaff is also taken into account, it is likely that large scale crop storage or cleaning was not taking place close to pit [010]. Alternatively, these seeds may have grown in nearby grain fields. Many of these weeds have almost disappeared with modern employment of herbicides, as well as the use of machinery for crop-harvesting and processing (Bond and Turner 2004).



4.6 Formation of Assemblage and Diet Indicators

It is difficult to reconstruct the diet of the monks from this assemblage, as inevitably, most assemblages have been built up during a series of activities and are secondary in nature (Schiffer 1976; Hubbard and Clapham 1992). However, through careful analysis of the taxa we can surmise about the type of foods that were being consumed and the processes which were carried out. While each religious order obeyed different rules, secular habits crept into the monasteries as towns built up around them and lay people carried out jobs for the monks. It is likely that the people who were working the antler-tines were local specialists and as such the fruit remains were probably evidence of their meals; they may have been provided with food from the monastic gardens. The fact that many of these seeds rely on animals and insects for their dispersal suggest that they are too heavy to be lifted by the wind and are therefore the most definite reflection of consumption directly related to this assemblage.

The seeds which have been noted concur with previous analyses of medieval assemblages. They also reflect the documentary sources of monastic diets (Harvey 2009). According to the Rules of St. Benedicta of Nursia, monks throughout the early medieval period were allowed a number of "*pulmentum*", which consisted of cereal and vegetables, as well as a loaf of bread and wine (Harvey 2009, 215-16). Their gardens would also have provided them with fruit, like apples, and it is likely that their diet was supplemented by wild taxa growing close to the site, such as sloes and plums. The monks may also have been brewing their own beer and cider.

It could be suggested that the assemblage was formed during the summer months, based on the period when seeds of wild taxa were dispersed, as opposed to the harvesting time of the grains.

5 Conclusions

Analysis was carried out on two samples from Bishop's Palace, Kilkenny. The samples were retrieved from the primary layer of pit [010] which pre-dated the medieval Bishop's Palace. It is



probable that the pit was associated with the ecclesiastical settlement of *Cill Chainnigh*, which was founded in the 6th century.

The samples contained oat and barley grains. There were also a number of sloe/cherry/plum stones within, as well as charred hazelnut shells. Grape fragments suggest the consumption of dried fruit or wine.

Weed taxa noted were indicative of an open site disturbed by development, while others were indicative of wet ground in the vicinity of the site.

Most assemblages are secondary and it would seem that this sample was the result of various modes of entry. Much of the taxa reflect activities concerning plant cultivation and processing which were being carried out in the surrounding areas. The seeds of the ruderal taxa were dispersed by the wind from outside and within the site. It is likely that the fruit stones were eaten prior to their carbonization. The grape pip may have been present within wine or dried fruit consumed by those working on the antler tines. These seeds were charred in a fire and deposited in pit [010] as refuse. The assemblage is similar to that of previously analyzed medieval material from Kilkenny.

It is recommended that the flot samples and sorted plant remains retrieved from Bishop's Place are permanently retained by the National Museum of Ireland. This is in accordance with the National Monuments Act 1930 (Section 2) and the National Monuments Act 1994 (Section 9) and will allow for future archaeobotanical research to be undertaken. It is important in the light of this particular assemblage as the grape pip and fragments found are of an earlier date than those of previous discoveries and further research may shed light on its true origins.



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