‘Sowing Seeds of Interdisciplinary Work’: Relict Plants at Medieval Castles

Funded by the Castle Studies Trust

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Thanks to the Office of Public Work who facilitated access to Adare, Co. Limerick and to all of the landowners who kindly gave access to the other remaining sites.

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Introduction, background and aims

'Sowing Seeds of Interdisciplinary Work', the project funded by the Castle Studies Trust, aims to expand further the multidisciplinary approach of castles studies by including botanical surveys of castle landscapes. Specifically, this approach comprises relict plant studies which involves the examination of present-day landscapes for the occurrence of plants that are non-native or rare to that particular location or region and absent from suitable surrounding terrain (Connolly 1994; Solberg et al 2013). They are understood be 'ancestral plants', descendants of those introduced and/or cultivated by people in the past (Connolly 1994). Relict plants are often located in isolated stands, typically on masonry walls and adjacent areas of historic sites (Connolly 1994; Pearman 2008; Preston et al 2004). Of particular interest for this project are non-native species, known as archaeophytes, which were introduced pre-1500 AD (Preston et al 2002; Pearson 2007; Williamson et al 2008).

Relict plants studies are slowly becoming established as a novel way to gain insights into past cultivation practices, medicinal and dietary concerns (Synott 1979; Connolly 1994; Solberg et al, 2013; Persson 2014; Farstadvoll 2018). Together with detailed analysis of archaeological, historical and architectural details of these castles, there is great potential for relict plants studies to enrich our understanding of the 'green' lives of people in the past. In order to develop this study area further for medieval archaeology, four geographically diverse but culturally similar medieval castles were selected for botanical surveys: Adare. Co. Limerick, Castleroche, Co. Louth, Carbury, Co. Kildare and Castlecarra, Co. Mayo (Figure 1). This project intended to seek out the botanical legacy of the castle and its inhabitants, to ascertain if particular plants in the present-day landscape could be associated with the castle, its possible gardens and the people who lived there.

Figure 1 Distribution of case-study sites in Ireland

Relict Plants and Medieval Castles

Identification of non-native species of plants was a popular activity during the Victorian era in Ireland and Britain but its popularity waned over the course of the twentieth century. In the early twenty-first century, this research area was re-invigorated and botanical studies endeavoured to define and refine the contributing factors that lead to a plant being considered native or non-native. This included debates about the recently applied term 'archaeophyte' (Williamson et al 2008; Pearman 2008). While there are still ongoing discussions as to what plants can be understood as archaeophytes, there is now a general consensus that at least 96 plants were introduced to Ireland pre-1500 (Preston et al 2002; Williamson et al 2008). Of course, it can be very difficult to establish exactly when these introduction dates occurred. It may be that many of these archaeophytes were introduced very early on in prehistory. For now, of note for this project, are introductions of plants which may be linked to medicinal practices that were shared across networks of new religious or settler-colonial communities who arrived in Ireland and Britain from the eleventh and twelfth century (Lyons 2015; Synott 1979).

Present ecologies at castles can still reflect past land uses (Creighton 2009, 16). Across Europe, castles and historic towns are a recurrent focus for studies of relict plants. Research on the Manz and Harz regions in Germany (Dehnman-Schutz 2004; Brandes 1996) identified a greater number of alien or non-native species at castles than in comparison to the surrounding areas. Research at West Slavic settlements and castles produced similar results (Celka 2011). Studies of relict plants in Britain (Connolly 1994) and Ireland (Synott 1979; MacGowan 2015; Foley 2016) if less extensive have produced similar results. Botanical observations during the 1920s at Askeaton Castle, Co. Limerick noted the presence of 'doubtfully native' specimen such as Hemlock (*Malva sylvestris)* and Milkthistle (*Silybum marianum*) (Praeger 1900). During the 1970s, Dr Donall Synott (1979), former Director of the National Botanical Gardens, compiled a list of ten medicinal or culinary herbs which he noted as regularly occurring at historic sites including Castleroche, Co. Louth and Dunamase, Co. Laois. He noted that it was likely these species were originally introduced or that the knowledge of their culinary or medicinal application was brought to Ireland by the Normans. This list included native and non-native species such as Hemlock (*Conium maculatum*) which were present at some of the sites included in this project.

Particularly relevant for 'Sowing Seeds', are the results from a large-scale survey of fifty Welsh monastic and castle complexes completed by ecologist Ann Connolly (1994) which revealed that certain native and non-native plants with known medicinal properties occur frequently at these sites on walls or in adjacent areas (see Dempsey 2021, 270 for compiled table; Connolly 1994). She argued that their prevalence coupled with a notable absence from apparently suitable surrounding terrain suggest their deliberation curation or cultivation by medieval people living or working at castle or

monastic complexes. More recently, a smaller scale survey was carried out at Bective Abbey to reveal the botanical legacy of this important Cistercian foundation in Co. Meath established c. 1160. Here, archaeophytes were found to be much more common along the roadside verges close to the monastic complex and in townlands where there were grange farms than in control areas unlikely to have been associated with medieval settlement (Foley 2016). As part of a community heritage project at Lea Castle, Co. Laois, an ecological survey conducted by ecologist Dr Fiona MacGowan (who carried out the surveys for 'Sowing Seeds') revealed the presence of two notable archaeophytes: greater celandine (*Chelidonium majus*) and yellow wallflower (*Erysimum cheiri)* as well as the conspicuous presence of navelwort (*Umbilicus rupestris*) which does not usually occur in this area (MacGowan 2015). There is growing appreciation of the extra layers of understanding botanical surveys can bring to archaeological narratives (Dempsey 2021).

Pioneering work employing archaeological approaches has to relict plants studies have been completed on medieval monastic gardens in Norway (Åsen 2009) and Iceland **(**Kristjánsdóttir *et al*. 2014), as well as historic homes and towns in Sweden (Farstadvoll 2018; Heimdahl 2018) and the Faroe Islands (Christiansen & Fosaa 2009). This innovative work across the Nordic countries has demonstrated that relict plants are a key resource in understanding the past but also are an important and overlooked aspect of green heritage (Åsen 2009; Solberg et al, 2013; Persson 2014; Farstadvoll 2018). Sowing Seeds aims to demonstrate the relevance of relict plants to castle studies through analysis of four case-study sites and create a methodology for future studies in medieval archaeology.

Survey methodology and case-study sites

Dr Fiona MacGowan was commissioned to undertake the botanical surveys which were carried out at four sites during May and June 2020. The scale of each survey varied from 2 to 8 hectares. The recording process involved the identification of plants at each site, photographing notable samples and the subsequent compilation of reports which detailed the findings. These reports are found in Appendix II which is downloadable as a separate pdf. In this report, the archaeological, architectural and historical profile of each site are discussed along with the notable findings from the botanical surveys. To place the findings of the botanical surveys in context, plant distribution maps created by the Botanical Society of Britain and Ireland are used. These are helpful but they imply larger coverage of records which are only accurate to 1km or 10km grid level.

The case-study sites comprised high-status castles: Adare. Co. Limerick, Castleroche, Co. Louth, Carbury, Co. Kildare and Castlecarra, Co. Mayo. Initially Mocollop Castle, Co. Waterford was selected for study but owing to safety concerns, Carbury, Co. Kildare was chosen as a replacement. These castles, apart from Adare, Co. Limerick, all remain relatively understudied. Adare has been subject to archaeological investigation; the final report includes an extensive history of the castle and

archaeobotanical analysis (Dunne & Kiely 2013). Recent and up-to-date histories or architectural descriptions have not been published for Carbury or Castlecarra; Castleroche has been the subject of an architectural history previously published in the *Castle Studies Journal* (O'Keeffe 2015). All four have associated settlements and parish churches or religious houses. All sites mentioned within this report have a corresponding Site and Monuments Number as per the Historic Environment register compiled by The Archaeological Survey of Ireland (ASI) e.g. Adare Castle (LI021-032003-). These site reference are searchable on the associated webpage: https://maps.archaeology.ie/HistoricEnvironment/

'Sowing Seeds' employs traditional castle research methodologies where historical documents such as annals (e.g., Annals of the Four Masters), court records, inquisition extents and chancery letters from Ireland are used to deepen understanding of the histories of the case-study sites. Drawing on more wide-ranging historic sources, contemporary medicinal texts, area used to highlight how medieval people may have viewed particular plants in terms of health practices. This includes historic sources such as the Trota collection which contains a book on women's health and was also translated into Irish (Green 2002; Färber 2012). Further sources such as the *Materia Medica* of Tadhg Ó Cuinn from 1415 which was a compendium of international medical texts for an Irish audience (Färber 2019/20) and the Physicians of Myddvai collection, who where hereditary physicians who practiced within the royal Welsh court (Pughe 1861) and the early modern Culpepper's Herbal, are all part of this analysis. Attention is also given to the folklore around cures, remedies and practices (Allen & Hatfield 2004). Most attention is given to archaeophytes but of course, many native plants, had medicinal uses from oral solutions and poultices to more sympathetic practices.

Project Activities

Throughout the project I was keen to share news with various audiences. In May 2020, I wrote a blog for the Castle Studies Trust http://castlestudiestrust.org/blog/2020/05/05/sowing-seeds-of-interdisciplinary-work-relict-plants-at-medieval-castles/ which outlined my emerging ideas relating to relict plant studies as well as the planned site visits and various outreach activities. This was widely read with 241 views from 212 people with a dwell time of over four minutes (Richard Nevell pers. comm.). It is one of the most read blog posts for the Castle Studies Trust indicating that this subject area is appealing to a wider interested audience. During fieldwork, aside from the typical archaeological and architectural research, I made a series of videos that I shared via threads on Twitter with pertinent information on each castle site. Some of these were very successful with more than 1,000 engagements, they were widely shared, and viewed over 100 times. These threads and tweets can still be viewed at my @karrycrow Twitter handle.

I had planned public engagement activities, but unfortunately these did not happen as anticipated owing to the pandemic. Instead of the planned walking castle and plant tour at Castlecarra, I completed a virtual talk for Heritage Week 2020 in Ireland '*Plants, people and places: medieval castles and modern landscapes*'. This comprised preliminary results, contextual information about medieval castles and gardens as well as virtual tours from our site visits. So far it has received 224+ views and can be viewed at https://www.youtube.com/watch?v=HoqxcUee1lE&feature=youtu.be. I also gave a second talk on the project for the Natural and Cultural Heritage Seminar Series at NUI Galway, Ireland. This is a well-attended annual series of public talks and my paper '*Green Lives at Medieval Castles'* had over 80 attendees. It was recorded and is available to view online: https://nuigalway.mediaspace.kaltura.com/media/Spring+Lunchtime+Series+2021+Karen+Dempsey/1_88n0bwr7/211424143. The final talk I gave related to the project finding was for Heritage Week 2021 for the Carlow Historical and Archaeological Society. This focused on castle gardens and how the methodology for 'Sowing Seeds' could be harnessed for citizen science by communities to explore relict plants at their local historic sites. It was recorded and is available to watch here: https://www.youtube.com/watch?v=QV9jMNm1de0

In August 2021, for Heritage Week, I spoke with a journalist (Clodagh Finn) about Roesia de Verdun and Castleroche, Co. Louth as well as the findings from the Castle Studies Trust survey. This was featured in the Irish Examiner, a national newspaper in Ireland https://www.irishexaminer.com/opinion/columnists/arid-40361537.html Subsequently, I was interviewed for national radio (NewsTalkFM) in relation to the same findings. This is available here: https://www.newstalk.com/podcasts/highlights-from-moncrieff/irelands-female-castle-builder

Dr Fiona MacGowan gave a talk to the Botanical Society of Britain and Ireland in March 2021 about the project '*Can botany provide a window to our medieval past*?' which can be viewed here: https://www.youtube.com/watch?v=5VfNbZnmXsE These talks have sparked much interest and both Fiona and I have received many enquiries in relation to the project. Working collaboratively with county Heritage Officers, Fiona is in discussion to create an informative booklet that can be circulated within community groups who might be interested in pursuing botanical surveys at local heritage sites.

A collaborative peer-reviewed paper 'Planting new ideas: relict plants at medieval castles in Ireland' is in preparation and will be submitted to *Journal of Medieval Archaeology* by November 2021. I am in the process of writing a blog of our final report for the Castle Studies Trust website.

Adare, Co. Limerick

The castle complex of Adare, Co. Limerick is situated on the northern banks of the River Maigue (Figure 2), just outside the present-day town. Traces of the medieval town have been revealed in excavations including an possible outer enclosure and burgage plots, all of which are located on the south side of the River Maigue, south of the castle (Purcell 2019). This corresponds with historical sources which record a grant of murage to the town in 1310 (CIRCLE, CR 4, Edw. II, 9). The location of this later medieval town is supported by antiquarian accounts and later mapping (Figure 3). This grant also documented a range of goods on which customs were to be paid demonstrating that Adare was a lively market town and well provided with supplies from hides, textiles and dyes to kitchen appliances and fresh fish.

Figure 2 Adare Castle, looking west from the bridge over the River Maigue

The town of Adare contains a range of upstanding religious buildings of archaeological interest whose date spans the later middle ages. The earliest religious house, is a Trinitarian Abbey (LI021-032008-), and while it is not certain it is believed to have been built by Geoffrey de Marisco (d. 1245) before 1226 (Gwynn & Hadcock 1970, 217). An Augustinian Friary, located south-east of the castle, on the south side of the River Maigue, was founded by John FitzThomas FitzGerald, 1st earl of Kildare, before 1316 (Gwynn & Hadcock 1970, 295; CIRCLE PR 11 Edward II, 61). During the fifteenth century, a Franciscan Friary (LI021-032007) was established by Thomas Fitzmaurice Fitzgerald

(d.1477/8) and Johanna Fitzgerald (d. 1486). All of whom were closely associated with the castle. Close to the castle itself, c. 75m to the north-east lies a medieval parish church ruins (LI021-032004-) dedicated to St. Nicholas and situated within an active graveyard which also has a possible medieval chapel (LI021-032011-) in central position. This particular building is potentially the proprietary chapel of the seigneurial family who occupied Adare Castle.

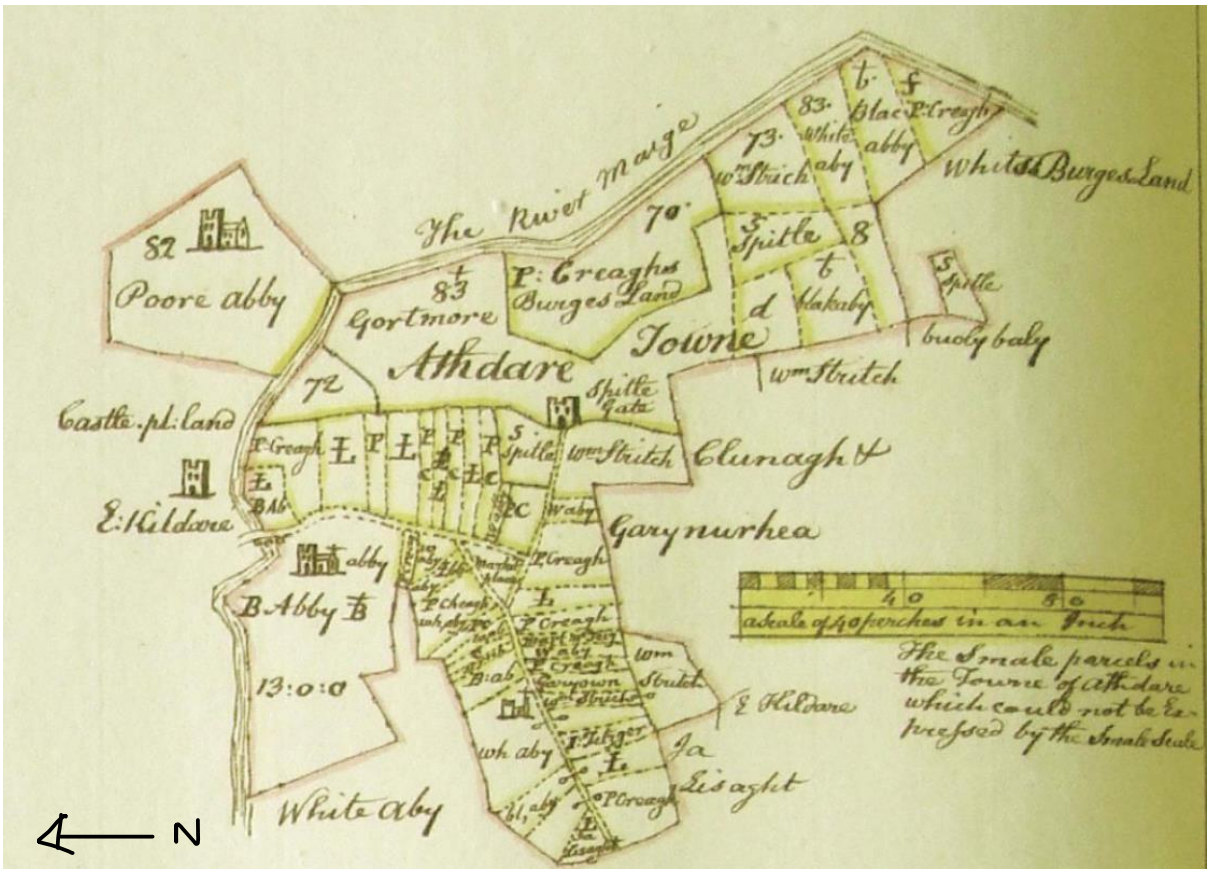

Figure 3 Down Survey Map 1656-8, showing detail of Adare, Co. Limerick. http://downsurvey.tcd.ie/down-survey-maps.php

Adare Castle (LI021-032003-) is a National monument in State Ownership No. 622 and has been subject to antiquarian restoration as well as twentieth-century repairs and conservation. As revealed during excavations, Adare Castle was constructed on a pre-Norman power centre from which the castle emerged as a large D-shaped earthwork with a surrounding large ditch and river-fed moat (Dunne & Kiely 2013). This later formed the inner ward, which was further enclosed by an external wall to the north-west with a single mural tower and a gatehouse to the south (Figure 4). The outer court is enclosed by masonry walling which is augmented by a ditch to the north and west. A pre-Norman seigneurial hall as well as thirteenth-century aisled hall with services and a kitchen flank the River Maigue which runs along the southern boundary of the castle. This river was navigable from the Atlantic coast to c. 500m from the castle.

A contemporary historical account from the Book of Munster revealed Domhnall Mór ua Briain, King of Thomond (d. 1194), as the patron of the early castle. Adare later became the *caput* of the Geraldines,

a dynastic Anglo-Norman family. While the earliest historical reference to the Anglo-Norman manor at Adare was in 1226 AD, this related to a grant to hold an annual fair, but there are no explicit references at this point to the masonry castle (CDI ii, 214). The status, and upkeep of the castle and town ebbed and flowed throughout the later medieval period. In 1344 the King granted an unknown sum of money for the repair of the castle and building (CIRCLE, CR 8 Edward III, 8). During the later fourteenth century, the town had been burned and damaged and in 1377, Maurice fitz Thomas, Earl of Kildare (d. 1390) successfully petitioned King Edward III (d.1377) that taxies and levies from the townspeople be redirected to fund the reconstruction of the town (CIRCLE CR 51 Edward III, 70). The castle was repaired, renovated and inhabited throughout its life up until at least the sixteenth century when it experienced another period of intense occupations as revealed in the archaeological excavation (Dunne & Kiely 2013)

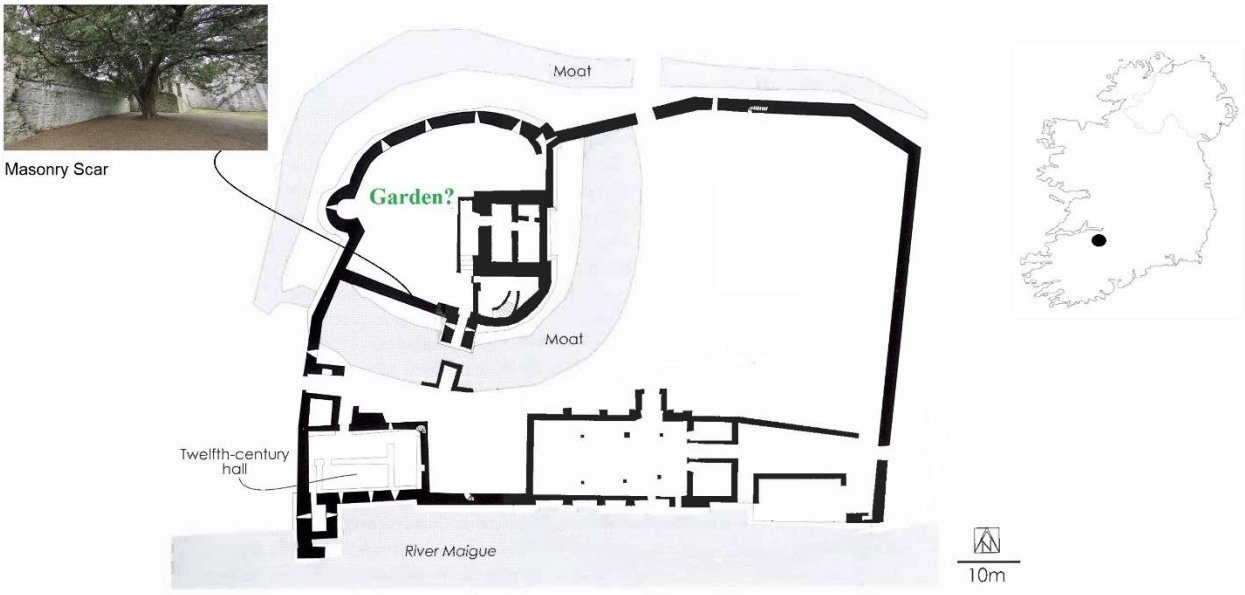

Figure 4 Adare Castle Plan, garden inset and location map (afer O'Keeffe 2015, 209)

During conservation works, parts of the castle deemed at-risk were excavated (Dunne & Kiely 2013). This included archaeobotanical investigations which explored twenty-three different contexts revealing plant remains from charred and waterlogged contexts. Charred plant remains tend to be composed of crop processing waste or burnt refuse and therefore might include material brought into the site from the fields as arable weeds, thatching and hay. It may also include vegetation growing within the site that has been cleared or accidentally included in fires. At Adare, charred grains including oat and wheat were revealed, which formed key parts of the daily diet of the castle inhabitants (Dillon & Brewer 2013, 207- 224). Unsurprisingly, sedge, used in flooring was also very common. Waterlogged material is more likely to include vegetation which was growing on site and dropped

leaves or seeds into the wetter parts of the site such as the areas of the castle moat or wells. This could also include domestic waste include garderobe/latrine waste. Dill (cf *Anethum graveolens*) was discovered in waterlogged contexts from within the castle moat and from the well, it is common in rubbish pits and latrines in Britain (Greig 1991, 325). Both its seeds and leaves are used for flavouring foods. It has wide ranging medicinal qualities and can be used fresh, as a poultice or a drink when its boiled and left to infuse in wine (Culpepper 1653, 154).

A broad range of native flowering plants such as docks, buttercups and orache were found as well as thistles (*Sonchus oleraceus*) and Herb robert (*Geranium robertanium*). Present in the sample but less common, were nettle (*Urtica dioica*), selfheal (*Prunella vulgaris*), broad-leaved plantain (*Plantago major*) and bedstraw (*Galium verum*). They are common within medieval plants assemblages more generally. These plants typically occur in grassland habitats of (mostly) disturbed ground taxa. They have numerous uses from floor covering to wholesome medicinal infusions and poultices. All of these native plants still occur at the castle today.

Figure 5 Weld (Reseda luteola) adjacent to the castle on the banks of the River Maigue

A number of archaeophytes (William et al 2008) were present in the excavated assemblage such as Black mustard (*Basssica nigra/rapa*), Greater burdock (*Articum lappa*) and Hemlock (*Conium maculatum*) but none of these were found in the botanical assemblage at the present-day castle. Hawkweed (*Hieracum spp.)* was detected in the archaeological plant remains and Hawkweed (*Hieracum neosparsum*) was identified at the present-day castle. Unfortunately, Dr Fiona Mac Gowan recorded that this particular plant is a modern invasive species as a garden escapee. Weld (*Reseda luteola)* was identified at the castle complex along the bank of the River Maigue (Figure 5). This archaeophyte is typically common within plant remains at historic sites and is a recognised dyeplant most used to give a bright colourfast yellow dye (Tomlinson 1986; Dickinson 1996). However, it is only present at Adare in relict form. No traditional dyeplants were found in the archaeological excavation though historical records (CIRCLE PR 4 Edward II, 9) tells us that people at Adare were interested in dyes and dyed textiles. As part of the murage grant for Adare town c. 1326, certain

customs were granted on merchandise coming to the town for sale: and noted was "*from each 100 of verdigris or other, of whatever colour, 2d*" and "*from each entire English cloth of whatever colour, 2d*". These things imply an interest in trading dye and buying cloth in multiple colours. Perhaps the absence of archaeobotanical evidence for dye plants at the castle indicates that the craft of dyeing and the plants used was not a concern for castle residents.

Figure 6 Adare medieval church and graveyard with potential proprietary chapel in foreground

As part of the Adare survey, the adjacent medieval parish church, (proprietary?) chapel and graveyard were included (Figure 6). These buildings are likely to have been associated with the castle and are located less than 100 metres to the north. Today, the castle and churchyard are separated by part of a golf-course. The results from this survey revealed no archaeophytes but the building, and surrounding areas were more species rich.

Overall, the results from Adare were very disappointing. The walls are completely clean and there is noticeable pesticide use around the moats of the castle, and even along the river bank. Green lawns do not promote biodiversity, they are a species poor mono-crop which does not reflect the past lives of the castle. During the twentieth century, in conservation and heritage management there was an emphasis on pristine landscapes, manicured lawns and paths. However, this is changing (Emerick 2014; Smith 2008). But, for now, it seems that these conservation ethics and resultant land management practices have greatly impacted on plant life at the castle.

Castlecarra, Co. Mayo

Castle Carra is a complex and multi-period castle site (MA100-08200) and is a National Monument in State Care (No. 222). It is situated on the eastern shore of Lough Carra, in Co. Galway on a heavily-wooded promontory which is now part of a large farm. Traversing the neck of the promontory is an intermittent masonry and earthwork feature which may pre-date or be contemporary with the castle (MA100-082005-). The castle now comprises a large three-storey focal building set within very compact enclosure (MA100-082006-) which is a later, potentially fifteenth-century addition (Figure 7). This enclosing wall contains one D-shaped mural tower (4.5 diameter) in the north-east corner, and two opposing entrances in the middle of the east and west walls. The relatively plain wall reaches up to 2.5m thick in places and has a deep batter which is particularly pronounced at the northern end.

Figure 7 Castlecarra, Co. Mayo from the south-east. Image of chamber, latrine and later enclosing masonry wall

The focal building of the castle is a rectangular block (10.5m x 15m) built of roughly-coursed limestone over a prominent base-batter on an E-W axis which was augmented at some point in the castle's life. The castle is raised on a rock-cut plinth and the western side is partially rock-hewn. It is likely that this castle was originally two-stories with the later addition of an extra floor which necessitated the addition of gabled roof. The castle no longer has crenellations; however, just below the uppermost section of the walls rows of drip stones remain.

Castle Carra was the *caput* of the barony of 'Kerre' which was awarded to Adam de Staunton, Lord of Moone Co. Kildare by Richard de Burgh (d. 1242/3) (Orpen iii, 215). At least five castles were constructed in the barony of 'Cera' and surrounding territories by the 'barons' who crossed into Connacht as recorded in the Irish Annals (ALC, 349). The cantred or possibly castle of 'Cera' was mentioned in relation to battles with Ua Chonchair and other Irish dynastic families (ALC 295, 331, 379). The AFM record the construction of a castle at Carra in 1238.

Burriscarra, the associated deserted medieval settlement, is situated c.1.15km directly north-east of the castle. Here, there are some earthworks and linear features that are likely to represent the vill including an enclosure (MA100-040). There are records of 'Buirgés chinntrachta' as early as 1247 AD when the settlement was burned, but evidently was rebuilt as in 1307 the 'Nova Villa de Kera' is valued in the Papal Taxation accounts (CDI v, Pap. Tax., 232). Almost certainly this refers to the settlement of Burriscarra, which was most likely the medieval borough of the cantred. Adjacent to these remains, but now divided by a modern road, is a thirteenth or fourteenth century parish church (MA100-040001) with an active graveyard. The Annals of Tuam record Stauntons as still being associated with the parish church in 1449 (Lateran Regesta 453A: 1449). West of the parish church (c. 30m) is Burriscarra Friary (Figure 8). This was initially established as a Carmelite House c. 1298 but, it was later transferred to the Augustinian friars of Ballinrobe (Gywn & Hadcock 1988, 277). Adam de Staunton was recorded as the patron of Burriscarra Abbey c.1298 but this must be the son or grandson of the original grantee (Gwynn & Hadcock 1970, 296-7). Adam de Staunton died in 1300 and we must presume that he was a descendant of the first Adam de Staunton (ALC, 523).

Figure 8 Looking north-east from Burriscarra Friary towards the parish church

The de Staunton family continue to be associated with the castle and settlement until the fifteenth century. At the time of the Down Survey[1] the castle and religious house are recorded on the edge of the lake. Subsequent to this, the castle and the settlement of Burriscarra was confiscated from the Stauntons and granted to Sir Henry Lynch after the Restoration whose family held it until the nineteenth century (Gwynn and Hadcock 1970, 296-7). The Lynch family are responsible for the construction of an early modern house and landscaped parkland adjacent to the castle including the creation of a tree-lined avenue which comprised the unusual hornbeam trees noted by Dr MacGowan in her report (Figure 9). By 1844 the house, outbuilding and grounds were described as "now almost ruins" (see 'Landed Estates Database').

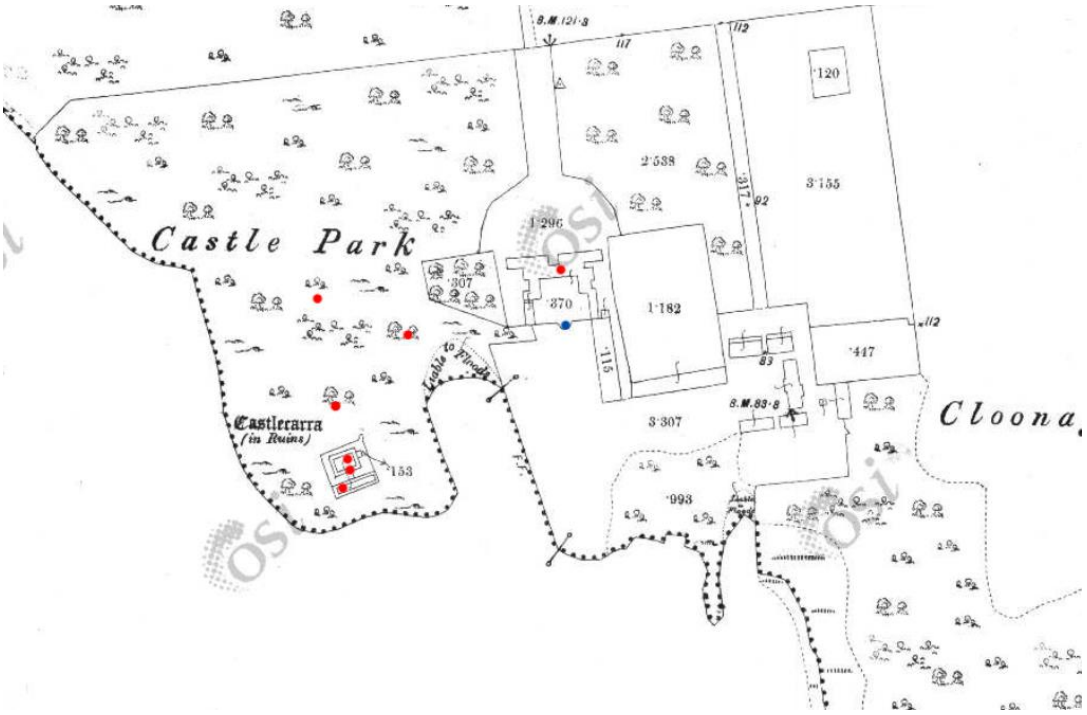

Figure 9 Ordnance Survey Map 1925, Castlecarra to lower left and historic home including outbuildings and gardens centrally placed. https://maps.archaeology.ie/HistoricEnvironment/

While much conservation work has been undertaken at Castlecarra, it has not been excavated. It is included in the Lough Mask and Lough Carra Special Area of Conservation (Site code 001774) and the present-day woodland, adjacent to the castle, has the potential to be long-lived. These features indicated its potential as a case-study site. The associated deserted medieval settlement and religious house also provided potential comparative sites. Despite these promising attributes, no archaeophytes were found at the castle. Unfortunately, the Apple tree (*Malus domestica*) found, understood as an archaeophyte by Williamson et al 2008, is likely to have grown from a present-day discarded apple core as noted by Dr MacGowan. But for future work that encompasses a broader chronological span, the re-ordering of the landscape in the later sixteenth and seventeenth centuries left a significant

[1] The Down Survey was undertaken between 1656-1658. It was a detailed national survey to measure all the land to be forfeited by the Catholic Irish in order to facilitate its redistribution after the victory of the English Commonwealth, commanded by Oliver Cromwell

botanical legacy at Castlecarra with the introduction of large trees including Field maple (*Acer campestre*), Sycamore (*Acer pseudoplatanus*) and Hornbeam (*Carpinus betulus*) some of which are listed in a document created by Peter Lynch of Castlecarra in 1768 (NAI, CS/CP/ID/51/62, pp.2, 142). Available here: http://loughcarra.org/wp-content/uploads/2017/05/trees_peter_lynch.pdf

Figure 10 Wood sorrel (Oxalis acetosella) at Castlecarra, Co. Mayo

What is notable then, is the absence of archaeophytes at Castlecarra. Not one of a possible 96 non-native species introduced pre-1500 occurs at this castle or within the wider landscape. Even widespread species such as Ground-elder (*Aegopodium podagraria*) were absent. Is this unusual? As Castlecarra was the last site surveyed in this project it is possible that a long dry April and May in 2020 affected flowering species which were no longer identifiable in June. Perhaps the wetter colder climate of western Ireland is less suitable to certain plants. Present-day land management may also have led to declines in certain species. Historic interventions in the areas surrounding the castle and later house could also play a role in their absence. It is also possible that the people who lived at Castlecarra in the medieval period did not curtate non-native species and different plants were used in medicinal and health practices. For example, wood sorrel (*Oxalis acetosella*) (Figure 10), only occurring at Castlecarra, was noted in Ó Cuinn's 1415 herbal as a cure for fever when consumed as drink with a number of other herbs (Färber 2012, 91). While archaeophytes were absent, three neophytes were noted, indicating that imported plants can indeed be curated at the castle. Native plants such as Selfheal

(*Prunella vulgaris*), Meadowsweet (*Filipendula ulmaria*) and Lady's bedstraw (*Galium verum*) were present. These were widely used in the medieval period for medicinal and culinary purposes, so we must not assume that those living as Castlecarra were not in tune with the medicinal qualities of the plants in their own green world. Indeed, these plants occur at all four of the castles, and while these are relatively widely spread across the Irish landscape, they are notable for their uses in medieval daily life. Nevertheless, the complete lack of archaeophytes at Castlecarra requires greater investigation. In the future, further ecological surveys with multiple visits should be undertaken to ensure seasonally variable plants are captured in the survey. In tandem with this, pending proper permissions, it would be of great interest to carry out systematic coring to reveal paleoenvironmental data. The landscape of Castlecarra particularly lends itself to this, and with the comparative site at Burriscarra, this future programme of research would address some of these issues.

Carbury, Co. Kildare

Carbury Castle set on Carbury Hill where it overlooks the surrounding landscape and the small village of Derrinturn, in north Co. Kildare. This multi-period castle comprised a motte (KD008-001001-), a thirteenth-century masonry castle (KD008-001002-) comprising a two-storey chamber block to which later, potentially fifteenth and sixteenth centuries additions (KD008-001003-) to the north and north-east were made (Figure 11). This complex culminated in a further three-storeyed expansion to the south-east of the castle which is crowned by cut-stone star-shaped chimneys. Surrounding the castle south and eastern side are likely early modern landscaped gardens (KD008-001004) that add to the complexity of the site, but which could be earlier (Figure 12). The northern section of the hill, to the rear of the castle has been subject to quarrying and the castle now sits on a precipice overlooking boglands to the north. A ruined medieval church (KD008-001005-) and graveyard (KD008-001006-), are located c. 80m south of the castle complex.

Figure 11 Carbury Castle, Co. Kildare, facing north-east. Motte to left, masonry chamber placed centrally with later additions and 16th century houses with chimneys to right. Earthworks visible in foreground.

Carbury Castle has a long and complicated history, it features regularly in historic sources from medieval and early modern Ireland. The larger territory of Carbury is named in the Song of Dermot and the Earl, a Norman French poem created during the thirteenth century focussing on the story of Richard de Clare in Ireland. Giraldus Cambrensis also documents this land division in his *Expugnatio Hibernica*. In 1170, Richard de Clare sub-infeudated the lands of Leinster to his barons and he granted

the lands of Carbury to Meiler fitz Henry (d. 1220), grandson of King Henry I (d. 1135) and Nest ferch Rhys (d. 1158). Meiler was later to become the Lord Chief Justice of Ireland. Given the early date that Meiler held Carbury, it is likely that he constructed the earthwork and timber castle at Carbury (Otway-Ruthen 1959, 183).

Figure 12 Carbury Castle (centre top), aerial image showing very clear earthwork and garden features to south, east and north-east http://map.geohive.ie/

In 1203 the lands passed to William Marshall (d. 1219) through marriage to Isabel de Clare (d. 1219). After some time, Meiler fitz Henry relinquished the lands to William and Isabel. It is possible that the earliest masonry castle can be attributed to the married couple, perhaps constructed during 1208-1213 when Marshall was in Ireland (CDI i, 56). The first specific mention of a castle was by Henry III (d. 1272) when he ordered Hugh de Lacy, First Earl of Ulster (d. 1242) to return the castle of Carbury to Gilbert Marshall (d. 1241) which had been seized from his father –William – during a dispute with the King (CDI i, 322). It seems possible that if the castle had been taken from William Marshall, and the chamber block appears to date to the very early thirteenth-century then it was likely constructed under his and Isabel de Clare's patronage (Figure 13).

The Marshall inheritance and subsequent division of Leinster is well-known (Otway-Ruthven 1961, 163-81). From the mid-thirteenth century onwards Carbury passed through many hands which undoubtedly shaped the castles' architecture. In 1249 Margaret Countess of Lincoln (d.1270) received

the castles of Kildare and Carbury as part of her dower (CDI i, 446). On her death the lands were split and Carbury was inherited by Agnes de Vescy (d. 1290), grand-daughter of Marshall. By 1297, they have reverted to King on the death of William de Vescy (d. 1297), son of Agnes who had served as Justiciar of Ireland for three years from 1290 AD (Waugh 2005). The de Vescy inheritance reverted to the king on the death of William in 1297 (Waugh 2005).

Figure 13 Interior of masonry chamber block facing east. Large putlogs holes plus thick masonry walls places this castle in the early thirteenth-century

At some point subsequent to this, Carbury becomes part of the de Bermingham landholdings. They were a family associated with Leinster (Offelan) from at least the last quarter of the twelfth century. In 1305 Peter de Bermingham was responsible for the murder of a dozen chief men of the O'Connors of Offaly at Carbury (CJRI 1305-7, p. 82). In 1317 Carbury was demised to John Mohun by Edward II for an annual rent of £100. It was subsequently transferred to John de Wogun (CPR 1317–21, 43; CPR 1309–13, 122–3). When William de Bermingham was hanged at Dublin Castle 1 July 1332, by order of Anthony Lucy, the Justiciar of Ireland, Carbury was back in the hands of the de Berminghams. (see Connolly 1995 for an account of his attempted escape from Dublin Castle). Walter de Bermingham, William's son, eventually regained favour and in return for his services in battle King Edward III restored lands to him in 1356. But prior to this, in 1354, James de Bermingham and

entourage assaulted and killed. Simon Betagh, a sheriff, and imprisoned his stewards at Carbury (CPR, 1354-58, p381). In 1360, Walter dies leaving his estates to his sister Margaret de Bermingham (d. 1361). Margaret died shortly afterwards and Carbury passed to her husband Robert Preston, who was the Chief Baron of the Exchequer. In 1368 the de Berminghams imprisoned not only the sheriff of Meath but also the Chancellor of Ireland at Carbury. Unrest continues and in 1374 Robert Tyrell, formerly keeper of the peace in Co. Dublin was captured and imprisoned there until a ransom was paid (CIRCLE CR 48, Edward III, 85). The castle must have been returned to the de Berminghams, as in 1447, they dismantled the castle, apparently to prevent it falling into the hands of crown supporters. However quite soon after the Lord Deputy of Ireland, Sir John Talbot, sent a company of soldiers to rebuild it and defend the land against the O'Connors and de Berminghams (Salter 2004, 46).

Figure 14 Colley Estate Map by Michael Byrn featuring Carbury Castle with some indication of geometric garden (NLI Ms 9212)

In 1538, Walter Colley, Principal Solicitor for Ireland, leased the castle for an initial twenty-one year period. The lease was renewed twice until 1569 when his grandson Henry received the manor and castle at Carbury in a grant from the crown. It is possible that Henry Colley restored the older parts of the castle and added a front section in Elizabethan style (Dempsey 2007). The tall, star-shaped cut-stone chimneys, that tower above the castle date to this period and appear to confirm this theory. In 1719, the castle is the property of Henry Colley, the great, grandson of Walter Colley. When Henry

passed away in 1723 he left the castle and estates to his two daughters: Elizabeth and Mary Colley (Robinson 1991, 90). In 1744, the heiresses employed Mr. Michael Byrn to survey their estate. Byrn describes the castle as being in need of much repair but with great potential; he also praises the castle and its grounds deeming both to be fit for ladies and gentleman (Holton 2004, 99-100; Figure 14). A map made for this survey shows the wider landscape layout of Carbury Castle in the eighteenth century and geometric gardens, while of course this does not reveal the medieval castle it could indicate where the favourable location for a garden may have been (Figure 12).

Clearly, Carbury has a long and very well documented history from the medieval and up to the early-modern period. While at first this appears to be very tumultuous with raids, different occupations, kidnappings and burnings seemingly common, in reality, these events were largely concentrated in the fourteenth century. For most of the late medieval period the castle seems to have been held by the crown but tended to or lived in by a series of stewards e.g. William Wellesley in 1382 (Patent Roll 5 Richard II, 135 - 10 Mar. 1382) or in 1387 Walter son of James Delahide was appointed as keeper of that castle (CIRCLE PR 10 Richard II, 175 - 30 Mar. 1387). This series of stewards is hard to reconcile as the architecture of the castle suggests that building was ongoing during this period. In keeping with wider cultural traditions of castle life across Europe it would be expected that Carbury would have gardens of various sorts from orchards, herb gardens and vegetable patches to the more ornamental enclosed spaces. The people living and working at the castle would certainly have eaten the produce from gardens but was it grown at Carbury? Did the early castle – the iteration of the twelfth and thirteenth century - have a garden? Historic maps and present-day aerial imagery certainly indicate the presence of gardens. These earthwork features including terracing and a sunken garden are visible at ground level (Figure 12). However, their date is uncertain; they must date – at least – to the Renaissance period when the Elizabethan extension to the south was constructed. There is a strong possibility that these gardens were laid over those that already existed at the castle. Perhaps also possible is the presence of a smaller garden, McNeill (1989/90, 61) noted that at some point the top of the motte was surrounded by a wall to form a courtyard – could this space have been an enclosed garden?

It was hoped that the relict plants survey might provide another route towards addressing how medieval people interacted with the green spaces of the castle. However, at Carbury, the landscape of the castle complex is very grazed. The interior of the castle is somewhat more inaccessible to animals and contains a much broader range of plants. Three archaeophytes were revealed here: White stonecrop (*Sedum album*), Hedge mustard (*Sisymbrium officinale)* and Hemlock (*Conium maculatum*). This final plant is abundant within its interior space. It has been revealed during castle excavations across Ireland and Britain including at Adare, Co. Limerick as we saw earlier.

Hemlock contains the chemical compound ‘coniine’ which is well known for its toxicity. It is incredibly poisonous, and dangerous to humans and livestock (Lopez et al 1999; Hotti & Rischer 2017). Despite these concerns, this particular plant is incredibly versatile and widely used in medieval medicinal practice and present-day medicine is increasingly turning towards its utility as a non-addictive painkiller (Hotti & Rischer 2017). Hemlock was featured in the compendium of medieval medical texts known as the Trotula which was in part written by Trota of Salerno. In the book on the Diseases of Women, translated by Monica Green, it is used to encourage menstruation:

“*Likewise, an excellent powder for provoking the menses: take some yellow flag, **hemlock**, castoreum, mugwort, sea wormwood, myrrh, common centaury, sage. Let a powder be made and let her be given to drink one dram of this with water in which savin and myrrh are cooked and let her drink this in the bath. And let her be given one dose of one scruple*” (Green 2002, 77)

But is also has uses for bladder complaints

“*We place cooked watercress on the pubic area, and we put the patient in a decoction of the same [herb].Women, indeed, labor from this same affliction, for whom we make a fumigation of horsemint, catmint, and pennyroyal. For both men and women we should make a steambath, and place them in water in which juniper, catmint, fleabane and horsemint, laurel leaves, pennyroyal, wormwood, [and] mugwort have been boiled, and in the bath we give [to them] uncompounded **hemlock**. And thus the patient is freed even if s/he has a bladder stone because, so long as it is not yet solidified, patients purge it through their urine as if little grains of sand were coming out*.” (Green 2002, 131).

Figure 15 Carbury Castle interior, facing north-east with abundant vegetation growth visible. Hemlock inset

The uses of hemlock are also noted in Ó Cuinn's *Materia Medica* herbal (Färber 2019/20, 92) who cautions that the ingestion of seeds can be fatal but that its medical uses are numerous from lactation suppression to soothing herpes flare-ups and easing pain in diseased joints.

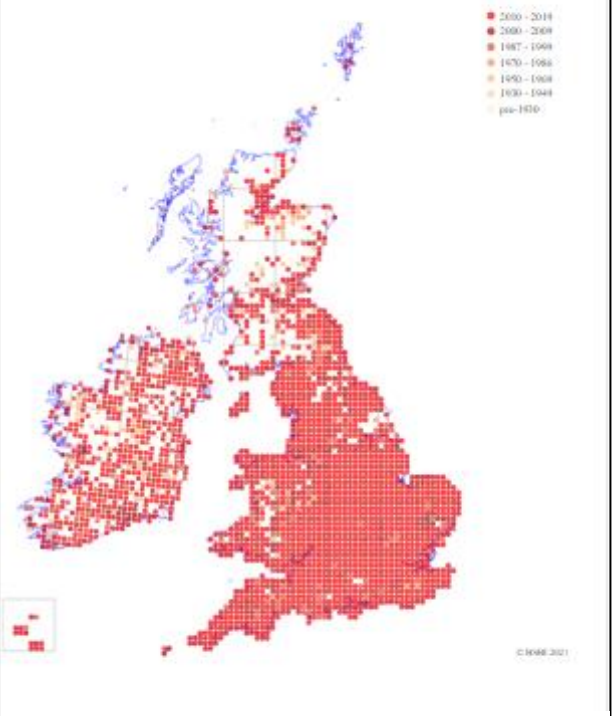

Figure 16 Distribution of White stonecrop (Sedum album)

White stonecrop is of interest but not for its medicinal value. This plant, sometimes known as a 'house-leek' a name which is also applied to navelwort (Devlin 2021; Culpepper 1653, 131). It was grown on the roofs of houses, presumably thatch, as it was thought to protect against lightning strike which may cause fire (Dempsey 2021). Interesting, the broad category of 'house leek' was also believed to be a remedy for burns and scalds. The dual use of this plant showcases medieval understanding of the green world through this sympathetic practice which can be unpicked through the material trace of the living plant in present-day landscapes (Figure 16).

Hedge mustard, also found with the castle complex, is from the Brassicaceae family and contains anti-microbial compounds (Blažević et al 2010). It is known as "the singers' plant" for its traditional use in treating aphonia, vocal disability and hoarseness (De Nisi et al, 2021; Zorzan et al 2020). Its chemical composition suggests that it can be effective in treatment of inflammatory pain and works as a muscle relaxant (Zorzan et al 2020). Perhaps this may be responsible for its use as a laxative in the medical texts written by the Physicians of Myddvai (Pughe 1861, 358).

No other archaeophytes were located within the masonry castle or adjacent to the castle walls as at other sites or as recorded by Connolly (1994). However, drawing inspiration from Foley's 2016 Bective Abbey survey where road verges and hedgerows of the townland (territorial unit) were also surveyed and one further archaeophyte was revealed at Carbury: Comfrey (*Symphytum officinale*) which is relatively uncommon (Figure 17 and Figure 18). Comfrey is particularly notable, known as knitbone, it was widely used as a healing poultice for broken bones throughout medieval medical texts (Allen & Hatfield 2004, 208; Färber 2012, 89). Pharmacologically, this plant contains allantoin, which promotes the creation of new cells and healing of connective tissue (Allen & Hatfield 2004, 208).

Figure 17 Carbury Castle in background with Hedge mustard (Sisymbrium officinale) and Comfrey (Symphytum officinale) to fore

The survey at Carbury demonstrates the importance of including the wider landscape, hedgerows, verges and townland boundaries especially given that many show indications of being ancient (Foley 2016). This is a really important methodological development in relict plant studies in Ireland.

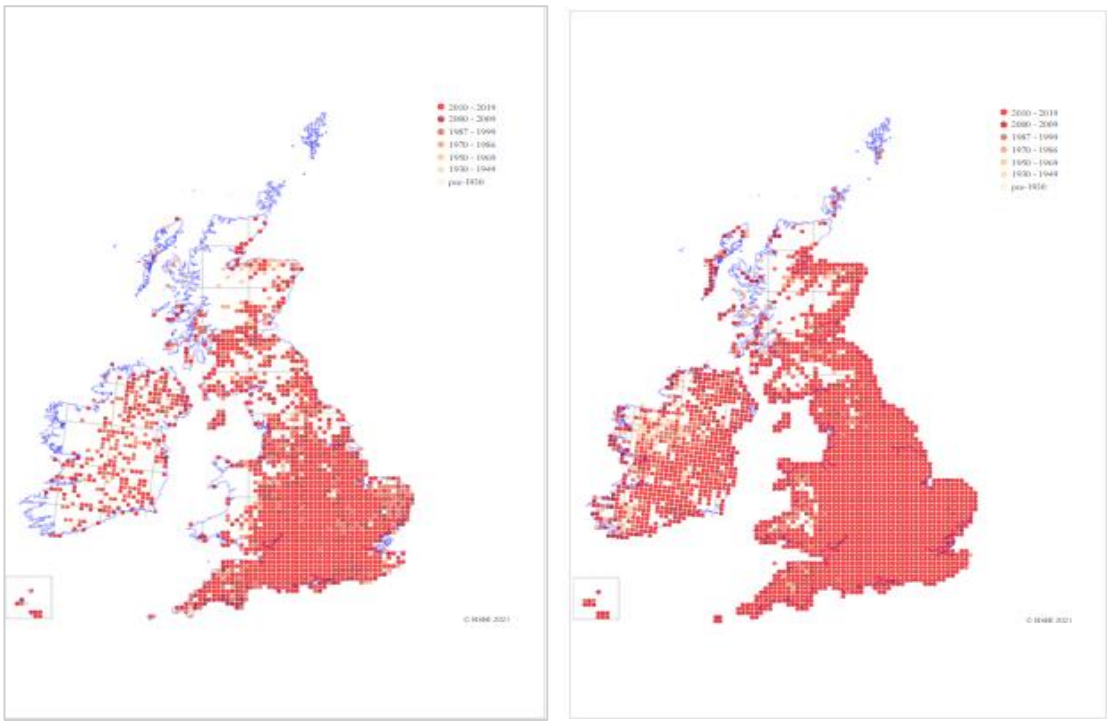

Figure 18 Distribution of and Comfrey (Symphytum officinale) left and Hedge mustard (Sisymbrium officinale) right

Castleroche, Co. Louth

Castleroche (LH003-029001-, National Monument in State Guardianship no 460) is situated on a rocky outcrop overlooking the flat plains of north Co. Louth (Figure 19 and Figure 20). It was part of the large territorial holdings of the de Verdun family who histories and Irish estates has been extensively discussed (Otway-Ruthven 1968; Hagger 2001). The castle commands a prominent position in the landscape, the curtain walls enclose a sub-triangular area, rising directly from the edge of bedrock on all but northeast side along which a large twin-towered gatehouse is located. Situated above the gate passage, the residential chamber once accessed the likely aisled hall situated along the southern side of the castle complex. Analysis of ownership and research on the historic fabric of the castle (O'Keeffe 2014) indicated it was constructed by Roseia de Verdun in three stages, potentially to an altered plan, during the early to mid-thirteenth century. However, little is known about what lies within its immediate environs beyond the hall and possible kitchen which presents as a thick-walled square building at the western end of the hall but placed centrally within the complex.

Figure 19 Castleroche, Co. Louth. View east across flat plateau

On a large plateau to the east of the castle, separated by a wide rock-cut fosse, are the alleged remains of a possible deserted medieval village (DMV) (L003-029002) (Figure 19). Earthworks in this location are understood to be indicative of a DMV. A weekly market and annual fair were established here by 1284 AD and a borough is mentioned in 1332 AD (CIRCLE CP Rolls, Richard II, 9). However, in 1332, an inquisition of the lands of Theobald Verdon (d. 1250) record that the "*castle of le Roche, in*

which there are no buildings because the castle has been burnt by the Irish so that it is extended at no value" (CIRCLE CP Rolls, Richard II, 9; Otway-Ruthven 1967, 447-455). Interestingly, for this study, also recorded was 'a small plot called parke, and a garden lying around the castle, and 4 acres of meadow and pasture around the castle.'. In the original Latin transcription, the term 'gardina' was used which implies a plural; therefore, the correct translation should be 'gardens lying around the castle'. Typically, the term 'gardinum' is used to denote a kitchen garden so it is possible that there were multiple kitchen gardens in the area around the castle or, perhaps gardens of different kinds (Harvey 1981, 4). Swallow (2020) in her detailed study of Caernarfon Castle argues that the late-thirteenth-century references to a gardinum at Caernarfon Castle may have referred to "a park-like, plaisance-type of garden" (2020, 121-139). Caernarfon was a large royal castle, whose patrons had great financial capacity. But the patron of Castleroche, Roesia de Verdun, was very much part of the royal circle – King Henry III wrote letters separately to her and her father urging her to marry Theobald de Walter (Hagger 1998, 62). There is potential then, for the gardinum at Castleroche to refer to a more ornate garden commensurate with Roesia's own place in the social elite of the later medieval period.

Figure 20 Castleroche, Co. Louth from southwest

While there seems to be some consensus that the DMV mentioned in the historic sources is located on the plateau to the east of the castle, I am less sure. Certainly, there are earthworks visible in aerial

images and identifiable on site (Figure 21). However, the historic sources indicate that 80 acres – a significantly larger site than the plateau (c. 2.5 modern acres), was set aside for the burgess

> "*80 acres of land that the burgesses of the town of Roche hold there in free burgage, rendering 6½d p.a. for each acre at Michaelmas and Easter, and 80 acres of land that the same burgesses hold there in free burgage, rendering 2d p.a. at the accustomed terms; and each of them does suit at the hundred [court] fortnightly. The pleas and perquisites of the hundred of that town, worth 2s 3d p.a. and the toll-booth of the town, worth 16d p.a.*" (CIRCLE PR 2 Richard II. 9).

This town, its toll both, and the associated land suggests a settlement potentially much larger than what the plateau could accommodate. Perhaps the town is located in the flat field further east on the northern side of the modern road? (Figure 21). The Archaeological Survey of Ireland recorded a possible house site in this location. Is it possible that instead the plateau once contained ancillary building associated with the castle, which the triangular walled complex was too restricted in space to contain? This might more convincingly explain the exposure of large masonry footings on the plateau. We could also consider the potential for gardens associated with the castle to be located here. In summer 2021, with funding from the Society for Medieval Archaeology and the Royal Irish Academy, a programme of geophysical survey was carried out to see what can be revealed about the immediate castle landscape of Roche. But, for now, we can turn to the excellent results of the relict plant survey.

Figure 21 Castleroche Aerial Imagery http://map.geohive.ie/

Castleroche was the first castle surveyed as part of the Sowing Seeds project, on a very wet day in early May 2020. After surveying the castle three archaeophytes were revealed: Hemlock (*Conium maculatum*), Mallow (*Malva sylvestris*) and Milk thistle (*Silybum marianum*). The first plant,

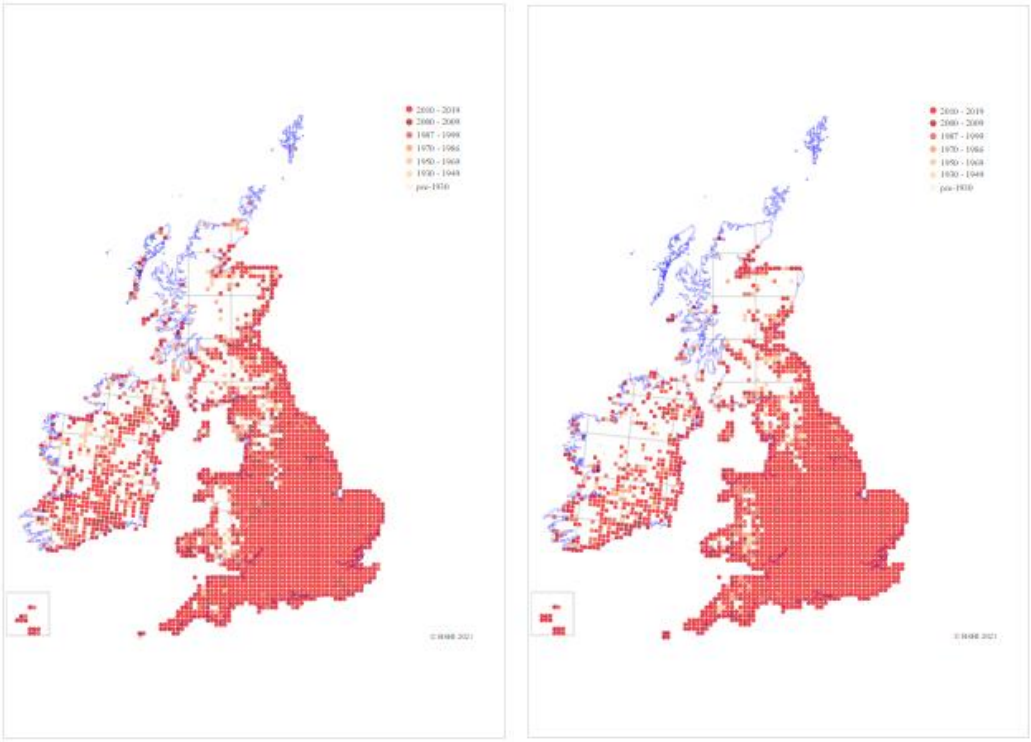

Figure 22 Distribution of Hemlock (Conium maculatum), left and Mallow (Malva sylvestris), right

Hemlock, was also present at Carbury and discovered in the archaeobotanical record at Adare (Dunne & Kiely 2012). Its medicinal qualities have been previously discussed above but noted here is its distribution which is far more widespread in England and Wales than in Ireland or Scotland (Figure 22).

The second archaeophyte, Mallow seems to have a similar distribution, and is even less prevalent in Ireland. This may be an issue with recording, or it indicates the plants preference for a lowland habitat. But, Castleroche while situated in a lowland plain, is itself in a relatively elevated position. Altogether these things may indicate that Mallow, at some point, was deliberately grown here. Mallow, was used for cures of many kinds, both in terms of sympathetic medicine as well as in oral solutions, powders and poultices. In the Irish herbal of Ó Cuinn (Färber 2019/20, 8) it has many uses from reducing the male libido and treating acne but also when boiled in wine or milk to “release the bind of blood that occurs in women's abdomen after pregnancy”. According to The Physicians of Myddvai, it could be used to treat ‘Envy’ (Pughe 1861,85). But its juice could treat mouth ulcers when used as a mouthwash (Pughe 1861, 309) and when drank could cure chest complaints. It appears to have been widely used as a demulcent. When turned into a salve or poultice and applied directly to the skin it was thought to reduce inflammation (Pughe 1861, 324).

These oral and poultice medicines referred to in the medieval herbals comprise mallow as well as other herbs and plants such as chamomile, rosemary but also more unusual ingredients like snail shells (Pughe 1861, 352). Each of these remedies works in tandem with a very specific set of practices and instructions. For instance, when combining the snail shells with mallow, it is important that a brass mortar is used. Across Britain and Ireland, mallow was used a poultice especially for sprains (Allen & Hatfield 2004, 109). Curiously, in Leinster and specifically Louth, it was recommended that the sprained limb was to be bathed in a mallow solution, but these sorts of practices are absent further west in places such as Limerick. Allen & Hatfield (2004, 108-9) suggest that this may be because mallow was introduced to Ireland later than comfrey (*Symphytum officinale)* which already had an established reputation as 'knitbone'. Mallow was also cultivated as an ornamental plant in medieval gardens likely owing to its decorative flowers (Howell 2016, 292).

Milk thistle (*Silybum marianum*) was identified at Castleroche during our survey. Dr Niamh Roche, who accompanied Dr MacGowan and I, had also previously identified its occurrence at the castle. During the mid-twentieth century its presence was also noted by Donal Synott (1979) who believed it was part of an assemblage of plants introduced by the Normans. This plant, more than any other in the survey, is sure to be a relic from medieval populations living at the castle. It is a rare plant in Ireland today, and its continuing presence at Castleroche is notable (Figure 23).

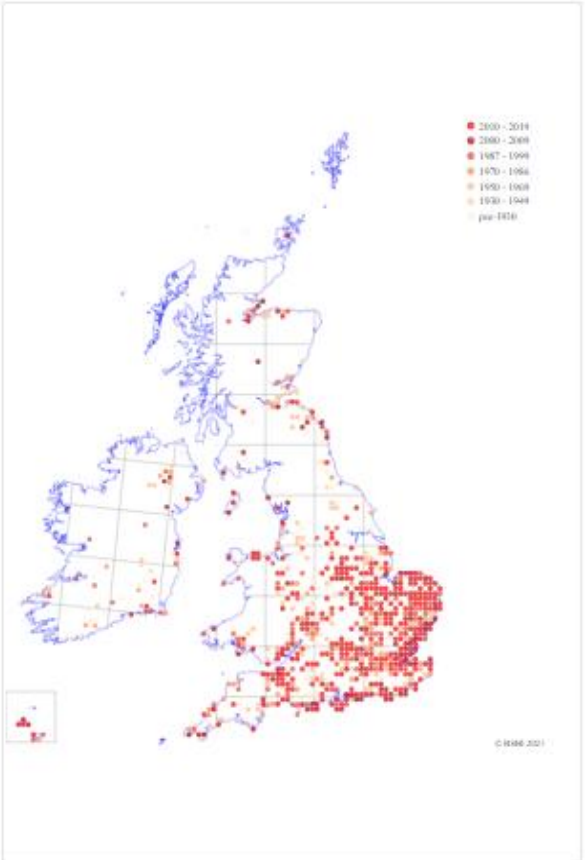

Figure 23 Distribution of Milk thistle (Silybum marianum) in Ireland and Britain

Milk thistle has been used for centuries as a natural remedy for diseases of the liver and biliary tract (Flora et al 1998). Milk thistle is native to the Mediterranean (Valková et al 2020). It contains strong antioxidants such as the compound Silymarin, that has been scientifically proven to increase liver regeneration, to reduce blood cholesterol and to help prevent cancer (Vaknin et al., 2008). It also has a lactogenic effect (Peila et al., 2015), which means it increases milk production.

Culpepper's Herbal notes that Milk thistle, was cultivated in gardens and used against fevers, including the plague, and for the disorders of the liver and spleen (ibid, 254). Mayster Jon Gardener's Treatise, one of the first garden books in England lists a number of suitable plants for the garden and it includes milk thistle (as well as a number of other

native and non-native plants). In this book, it is known as ‘Foothistell (Vow Thistle)’ (Harvey 1985, 91-2). Harvey noted (1985, 91) that this thistle is often confused with the Blessed Thistle (*Cardus Benedictus*) and perhaps this confusion is why Milk thistle does not feature at all in the Physicians of Myddvai texts. Also possible is that it was not used as part of their medical traditions. Milk thistle (*Silybum marianum*) is also known as Mary’s Thistle named after the Virgin (Freedman 1976, 151). Hildegard von Bingen noted its multiple uses including an oral solution to cure a stitch or a poisoning and when used as a poultice it can sooth a rash (Hozeski (transl.) 2001, 93, 171). In the *Grand Herbier* or ‘Grete Herball’ a widely reproduced medicinal manuscript c. 1525, milk thistle was believed to increase the flow of mother’s milk, aid the creation of children within the womb and help women to nourish their children (Freeman 1976, 151-2). This plant also appears in the imagery of ‘The Unicorn in Captivity" as part of the Unicorn Tapestries, an iconic series of textiles constructed in the Low Countries in the fifteenth century, embedded with religious imagery as well as symbolism related to marriage and fertility. In the scene where the plant is present, the unicorn is (apparently happily) lying down with a collar around its neck within a small, fenced enclosure, the surrounding meadow is populated with flowers and plants that reference fertility or marriage included within this is the milk thistle. Whatever its uses at Castleroche, there is potential for this plant to have fulfilled many roles from symbolic to ornamental purposes as well as in medicinal practices.

At Castleroche, archaeological, architectural and botanical legacies and heritage co-exist. But, worryingly all are threatened in various ways. There continues to be illegal metal detecting at the site, recently masonry has fallen within the area of the gatehouse, and the northern tower vault is at present very precarious. It also seems that since the 1970s three plants, identified as relicts have disappeared. The lack of awareness around the green aspects of heritage in the form of relict plants must be addressed in order to protect plants in the future.

Project Reflections and Future Research Directions:

'Sowing Seeds' was a novel project – both conceptually and methodologically. It involved drawing together different source material from medieval archaeology and history to botany, folklore and ethnopharmacology. Doing this for the first time meant engaging with new material and unfamiliar sources. This wide-reaching research methodology is a core strength of this project. It enables a dialogue between different disciplines that are traditionally separate or rarely integrated. Disappointingly, for now, the overall results were mixed: only 8 archaeophytes were revealed out of a potential 96 present in Ireland (Table 1). This, we believe, may be largely due to the over manicured past treatment of some historic sites, the continued use of sites as residences from the medieval period into the early-modern era and land management at some of the selected case-study sites. It is also possible that our single survey days limited the number of identifiable species. However, these findings allow for future research and further conversations with heritage agencies regarding site management and conservation practices of both biodiversity and past vegetation. Rather than offering conclusive findings, we have revealed tantalising hints and a vast array of potential new avenues in which to take this research.

Table 1List of Archaeophytes and neophytes at four selected castles in Ireland[2]

Common name	Scientific name	Status	Date	Castle
Comfrey	*Symphytum officinale*	Archaeophyte		Carbury
Domestic apple*	*Malus domestica*	Archaeophyte		Castlecarra
Hedge mustard	*Sisymbrium officinale*	Archaeophyte	1597	Carbury
Hemlock*	*Conium maculatum*	Archaeophyte	1548	Carbury, Castleroche
Mallow*	*Malva sylvestris*	Archaeophyte	1562	Castleroche,
Milk thistle*	*Silybum marianum*	Archaeophyte	1632	Castleroche
Weld	*Reseda luteola*	Archaeophyte	1570	Adare
White stonecrop	*Sedum album*	Archaeophyte	1634	Carbury

As part of this concluding section, I draw out some paths for future research, including the need for an altered methodology, the scope for development of guidance for heritage agencies and more site specific research directions.

[2] Date in the table refers to the first historic botanical record of these plants in Ireland and Britain, and * denotes their occurrence in lists of species included in medieval gardens (Harvey 1981)

New survey methodology

- Multiple site visits should be undertaken at different points across the year to ensure seasonally variable plants are captured in surveys.
- As a starting point in this project, we operated the botanical survey on a presence/absence of species basis. We did not record the exact location of all plants. In future, general areas of particular plant growth and exact locations of rare or unusual plants should be recorded (using a handheld GPS or mobile phone with appropriate technology).
- The survey at Carbury demonstrates the importance of including the wider landscape, hedgerows, verges and townland boundaries especially given that many show indications of being ancient. Wider survey areas should include related semi-natural farm infrastructure e.g. hedgerows, road verges, rough ground, stone walls, ditches and embankments which have been shown to include relict plants (Foley 2016). This would give greater appreciation of micro-scale diversity and similarities in terms of plant-life or habitats. This is a really important methodological development in application of relict plant studies in Ireland.
- Control areas must be included in order to deepen the value of the presence or absence of certain plants. Equally townlands culturally linked to castle sites i.e. 'castlepark' or 'grange' should be surveyed to see if they have a similar botanical legacy to the main survey area.

Recommendations to heritage agencies

- Dr MacGowan and I are preparing a short report to share with the Office of Public Works and the National Monuments Service as well as relevant heritage bodies about the over-cleaning of wider castle or other historic sites and of the impact of pesticide use on 'green heritage'.
- Attention will also be drawn to the pH impact of such pesticides on buried archaeological material as well as invertebrate and plant biodiversity. The landscape at Burriscarra Friary shows how sensitively managed land can improve the character of historic sites, and also enhances their authenticity.
- Collaborate on the creation of a plant species guide for historic sites from which local communities can document or record plants of interest.
- Promotion of a citizen science recording of plants at historic sites

Future Survey Work: archaeology and botany

- Conduct further botanical surveys that note the presence of archaeophytes, neophytes and native plant species. Neophytes, plants whose introduction post-dates 1500 AD, were noted in this survey but not part of the research agenda. Neophytes occurrence at castle sites may also be especially revealing when considering the afterlives of medieval castles as romantic ruins.

- Future surveys should not be restricted to buildings from the twelfth and thirteenth centuries but also include later medieval castles and religious houses from the broader period of 1200-1600 AD. Towerhouses in particular are of interest as they are often situated on less managed and therefore within potentially better-preserved landscapes. This would provide comparative material and also explore if neophytes (post-1500 AD) occur more widely at tower-houses which date to the late medieval period. Those plants introduced immediately post-1500 could reveal connections with sixteenth-century colonising and trading practices beyond Europe.
- If permission is forthcoming, and necessary licencing approved, undertake systematic coring at suitable sites such as Castlecarra and Adare which can add paleo-environmental and archaeobotanical records to relict plant studies.
- Building on this, if suitable deposits were found, it would be worthwhile to take larger samples of sediment sequences, for the extraction of seed and insect indicators of vegetation over time. The landscape of Castlecarra particularly lends itself to this, and with the comparative site at Burriscarra, this future programme of research would enhance and complement the findings from relict plant studies
- In tandem with new archaeobotanical / paleoenvironmental data being gathered we believe that the compilation of a large-scale archaeobotanical database for all excavated later medieval sites would provide excellent oversight on plant assemblages at castles / and or religious houses and provide useful comparative material for relict plant studies
- It might be possible to sample the topsoil below the existing turf layer for any surviving evidence of vegetation prior to the 'cleaning up' at the more manicured sites as some more robust seeds may survive.

Future Research

- Unlike Britain, at present there is no definitive list for when archaeophytes were introduced or became common to Ireland. The relatively long-time span of a 'pre-1500' date for archaeophytes must be given consideration. Some species may have been introduced very early on in prehistory and could already have been well established by the time the castles were constructed and occupied. Dr Meriel McClatchie is in the process compiling this evidence but for now it is a major gap in our knowledge of non-native species. Establishing and collating introduction dates for archaeophytes to Ireland based on archaeobotanical evidence following Preston et al 2004 is a high priority research agenda for relict plant studies and archaeobotany more generally.
- The project findings indicate that both archaeophytes and native plants were tended and used by people living and working at the castle. It is important that we appreciate the role of native plants in medieval life such as meadowsweet and selfheal that were growing at past and present-day

medieval castles. However, this is beyond the scope of the current project, but it should be attended to in future studies of medieval medicinal plants.

- Future work should consider the addition of case-study sites from south-east Leinster, which was party to intensive early secular colonisation and also saw the establishment of important monastic landscapes such as those around Tintern, Co. Wexford and Dunbrody, Co. Waterford thereby providing excellent comparative material.
- Widening the survey or comparative work beyond Ireland should be a key priority for future work. For example, botanical evidence from castles such as Kilkenny could be compared with the related Anglo-Welsh centres of the Marshall lordship. This is applicable for many regions in Ireland (i.e. de Lacy lordship in Meath and/or Ulster) as well as England and Wales (i.e. the castles of Elizabeth de Burgh in Wales and East Anglia).

Scheduled Future Research

- Given the rich results of relict plants from Castleroche, and the lack of research carried out on the castle's landscape, including the location of the deserted medieval village, working collaboratively with the Louth Archaeological & Historical Society, seed funding from the Society for Medieval Archaeology was awarded to carry out geophysical survey in the area east of the castle on the plateau. In tandem with this, working with Laura Corrway (Black Friary Archaeological Field School) and Dr Conor Brady (Dundalk Institute of Technology), we successfully received funding from the Royal Irish Academy to enlarge the survey area. We believe that this will reveal further information on the settlement of Castleroche, and if, as the plant life suggests from 'Sowing Seeds' there may have been a residential population present at the castle for much longer than previously appreciated.

Sowing Seeds aimed to demonstrate the relevance of relict plants to castle studies through analysis of four case-study sites and create a methodology for future studies in medieval archaeology. The results have shown that while there is much more to learn in terms of historicity and perfection the methodology, relict plant studies are a useful addition to the multidisciplinary approaches already present in castle studies.

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Appendix I List of Archaeophytes from the case-study sites

Common name	Scientific name	Status	Castle	Common Uses from Culpepper's Herbal 1653
Hemlock	*Conium maculatum*	Archaeophyte	Carbury, Castleroche,	Found mostly on old walls and hedges. Widely used in medicinal practice. It can be ingested as powder or juice or applied externally to treat a range of conditions from sore eyes to cancer, inflammations, tumours and swellings of nay part of the body (except the privates). Leaves, when bruised and placed over the forehead, can relieve eye ailmentss. The juice from the plant treats 'scrofula' (Mycobacterial cervical lymphadenitis). Roasting its root and creating a poultice eases pain from gout (p201).
Mallow	*Malva sylvestris*	Archaeophyte	Castleroche,	Widespread. Used to treat fever and as an expellent for various complaints from chest to bowels and bee stings as well as aiding women in childbirth when drunk in wine (p238)
Milk thistle	*Silybum marianum*	Archaeophyte	Castleroche	Described as 'Our Lady's Thistle', used as a prevention and cure of plagues, and believed to be good for the liver and spleen. Used as a blood cleanser. It is also good for 'inward….grippings' which likely refers to menstruation pain (p370)
Weld	*Reseda luteola*	Archaeophyte	Adare	Used for chest complaints as it acts as an expectorant as well as a poultices for wounds, boils and stings (p384).

Common name	Scientific name	Status	Castle	Common Uses from Culpepper's Herbal 1653
White stonecrop	*Sedum album*	Archaeophyte	Carbury	It has binding qualities, and may stop the flow of blood but also can be used as a poultice including for piles (p354)
Hedge mustard	*Sisymbrium officinale*	Archaeophyte	Carbury	Widely used in medicinal cures. Particularly useful for chest diseases and lungs issues as well as hoarseness. Mixed with honey to soothe coughs or wheezing. Good also for reducing swellings in the testicles and breasts.(p260)
Comfrey	*Symphytum officinale*	Archaeophyte	Carbury	Used to heal internal ulcers, stop inflammation when ingested or applied externally. When applied to women's breasts it encourages milk production but it can also be used as a poultice for gout (p131)
Domestic apple	*Malus domestica*	Archaeophyte	Castlecarra	While this is an archaeophyte, it is not likely to a relict plant – it was likely introduced from an cast-away apple core. However, we know that medieval seigneurial class certainly kept orchards including apples.

Appendix II Botanical Surveys by Dr Fiona MacGowan

Dr Fiona MacGowan's reports are available as a separate download.