Mortuary Practices in the Iron Age of Southwest Britain

Thesis submitted for the degree of Doctor of Philosophy
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Abstract

This thesis presents a holistic investigation into enigmatic Iron Age mortuary practices in Southwest Britain, a region with interesting variations in the burial record but has been largely discounted in previous scholarship. This is due in part to the poor geological conditions for bone preservation that cover much of the region, however 'invisible' funerary rites have been suggested to explain the paucity of human remains in Britain. Excarnation has been the dominant theory to explain the often disarticulated and scattered nature of Iron Age mortuary evidence, the possibilities are manifold. Thus, this research aims to identify mortuary practices afforded to the Iron Age dead by employing a multi-scalar methodology of microscopic and macroscopic analyses. Three main methods are used to shed light on various post-mortem stages:

1. Histological light microscopy of bone diagenesis of human bone samples representing various types of deposition (articulated, partially articulated and disarticulated), recovered from various site types and features, to determine early post-mortem treatments including excarnation or immediate burial;
2. Macroscopic taphonomic analysis of sampled elements to inform on secondary processes such as manipulation, curation and exposure;
3. Large-scale analysis of burial data collected from site reports (both published and unpublished) and HER records to determine regional patterns in burials or 'final deposition' characteristics.

The combined results of these methods suggest that mortuary practices in the Iron Age of southwest Britain were protracted, involving series of multifaceted processes and various treatments leading up to the final deposition. Most importantly, this research suggests that exhumation, rather than excarnation, was largely responsible for skeletal disarticulation. Variations in post-mortem treatments may represent different stages of a widespread practice, or less common mortuary practices that were performed concurrently within Iron Age communities. The research presented here provides new insights into complex mortuary practices in a fascinating and under-studied region.

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Acknowledgements

I have so been incredibly fortunate to be surrounded by supportive, helpful, and encouraging family, friends, and colleagues that it would take another thesis entirely to fully express my gratitude and to acknowledge everyone who has played a part in these last five years. I am not quite ready to write another thesis, however, so I will keep it brief.

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1. Introduction

This thesis presents a holistic study into elusive Iron Age (c.800 BC-AD 43) mortuary practices in southwest Britain. Previous research into Iron Age mortuary practice has focused on the evidence provided by the burial alone, however human remains are recovered in various states of articulation including fully articulated, partially articulated, and disarticulated deposits. Additionally, disarticulated human remains are often observed to have taphonomic indicators for manipulation, processing and exposure, suggesting that mortuary processes were more complex and likely involved many stages over time.

This research incorporates several methods to create a comprehensive investigation into early post-mortem, secondary, and final mortuary treatments. This includes both primary osteological analyses as well as an extensive trawl through published sources, unpublished reports and HER records from across the study region. As a result, this thesis provides an evidence-based discussion of mortuary practice that considers pre-depositional treatments as well as patterns in burial characteristics (see Chapter 8). This new interpretation of the evidence challenges established theories of excarnation as a majority rite and adds to the growing evidence for variation in Iron Age mortuary practice in Britain.

1.1. Research context

Theoretical frameworks and gaps within the current understanding of Iron Age mortuary practice are discussed in detail in Chapter 3, but a brief summary is offered here.

First, it is important to understand the many challenges of interpreting the Iron Age burial record as these challenges have shaped the discipline and necessitate the application of methods used in the present study. Generally, the funerary rites of the Iron Age in Britain are poorly understood because human remains are underrepresented compared to the projected population based on size and number of settlement sites (Wait 1995). This paucity of evidence is partly due to natural factors—the preservation of human remains is reliant on soil composition, and acidic soils cover large areas of the southwest, as described in Chapter 2. Because of this, the available data is biased towards areas with a higher concentration of limestone and chalk geology which allow for better preservation. Some burial evidence can be gathered in the form of grave cuts or stone lined cists, but characteristics of the burial itself (such as the positioning of the body, what direction it was facing) have been erased through time. However, the lack of evidence may also indicate mortuary practices that leave behind no archaeological trace, and deposition of human remains within areas that are not often targeted for archaeological investigations.

Iron Age burial evidence is varied across the southwest, but can be summarised into three types of deposition: articulated inhumations burials, partially articulated deposits, and disarticulated elements. Inhumation burials are infrequent and disparate across the region, mostly concentrated in the LIA, resulting in the long-held belief that there must have been a mortuary rite afforded to the majority of the population that left behind no trace. The disarticulated material recovered from settlement sites were theorised to represent the display of body parts (particularly heads) from vanquished enemies, cannibalism, victims of sacrifice, and more recently, excarnation followed by redeposition of selected bones. Many of these theories were made based on depositional evidence alone, and in many cases sensationalised. However, several studies using taphonomic assessments and histological light microscopy of bone diagenesis have shown that it is possible to reconstruct early post-mortem processes (e.g. Madgwick 2008, 2011; Booth and Madgwick 2016). This presents an opportunity to determine the origins of disarticulated and partially articulated deposits as well as identify variety within inhumations such as immediate burial, mummification, and protected exposure.

Despite the growing bodies of evidence and interesting variation in burial characteristics, the southwest of Britain has been largely neglected in Iron Age burial studies, especially the southwest peninsula (Devon, Cornwall and the Isles of Scilly), South Wales (here defined as Pembrokeshire, Carmarthenshire, Glamorgan, Monmouthshire) and Gloucestershire. Whilst some recent studies have focused on certain areas of the region, for example Sharples's (2010, 2014) work in the 'Wessex' region, Davis's (2017, 2018) work in Wales and Moore's (2006a, 2006b, 2021) work in the Severn-Cotswolds, there has yet to be a synthesis of this material. A comprehensive study incorporating both published and unpublished material is needed to re-evaluate previous narratives and to identify variations and patterns of Iron Age burial practice throughout this region (Pope and Ralston 2011: 407).

1.2. Defining the study region

This research includes the geographical area covered by the following modern counties in Wales (W) and England (E) (Figure 1):

1. Pembrokeshire (W)
2. Carmarthenshire (W)
3. Glamorgan (W)

4. Monmouthshire (W)
5. Gloucestershire (E)
6. Somerset (E)
7. Wiltshire (E)
8. Dorset (E)
9. Devon (E)
10. Cornwall (and the Isles of Silly) (E)

Throughout this thesis, burial evidence is discussed from 'subregions' because of the imbalance of human remains represented in some counties. Evidence from the individual counties in Wales is scarce, so these are combined into the 'South Wales' subregion unless otherwise stated (and traditional, rather than modern Welsh counties were used, due to their larger size, more comparable to the English counties). For the same reason, the 'Southwest peninsula' is often used to describe the counties of Devon, Cornwall and the Isles of Scilly. Additionally, the counties of Dorset, Wiltshire and eastern Somerset are sometimes referred to as the 'Wessex' area after previous studies (e.g. Sharples 2010). As discussed in Chapter 2, the geology of the Wessex region (also includes Hampshire, not in this study) is favourable to human remains preservation so much of the burial evidence described in this thesis comes from sites within this subregion. However, there are obvious distinctions between the Wessex counties, so they are often discussed independently.

The southwest region as defined by the present study is described in more detail in Chapter 2 including geology, topography and settlement types.

Figure 1. Map of Britain highlighting the study region: 1) Pembrokeshire 2) Carmarthenshire 3) Glamorgan 4) Monmouthshire 5) Gloucestershire 6) Somerset 7) Wiltshire 8) Dorset 9) Devon 10) Cornwall and Scilly. Source: author (base map Google Satellite)

1.3. Establishing chronology

This study includes evidence spanning the Iron Age in southern Britain (c.800 BC-AD 43). Issues with accurately dating burials in the Iron Age mentioned in Section 1.1 and further explained in 1.3.1 means that some of the recorded burials/deposits may date to the periods immediate before (LBA) or after (ER). The occasional inclusion of LBA material is not an issue because, in addition to the issues in radiocarbon dating explained in Section 1.3.1, the LBA/EIA transition was likely gradual, with some traditions enduring for centuries beginning in the LBA and continuing into the MIA (Waddington et al. 2019). Similarly, Iron Age society and funerary traditions did not cease when the Roman legions first landed in Britain —Roman influence would affect different groups at different times across the southwest (e.g. life in Pembrokeshire would not be affected at the same time and in the same way as in Dorset). The cut-off point of AD 43 has even been described as meaningless since life continued virtually the same for many groups throughout the Roman occupation (Booth et al. 2011: 243). Nevertheless, efforts were made to represent Iron Age burial evidence exclusively to provide the most accurate insight into Iron Age mortuary practices within the study region.

The Iron Age is divided into Early, Middle, and Late phases following the chronology used for Danebury Hillfort in Hampshire (Cunliffe 1984a,b). This chronology was largely based on ceramic styles from the massive amount of material excavated from stratified layers across the site: Earliest Iron Age (c.800-600 BC); Early Iron Age (c.600-400 BC); Middle Iron Age (c.400/300 BC-100 BC); and Late Iron Age (c.100 BC-AD 43). This chronology is widely accepted for southern Britain, however the Early Iron Age is not subdivided throughout this thesis as the radiocarbon plateau precludes such precision. Occasionally, material known to date between the Late Bronze Age and Early Iron Age is abbreviated as the LBA/EIA transition. To summarise, the chronological phases used throughout this research are as follows:

- Early Iron Age/EIA: c.800 BC - 400 BC
- Middle Iron Age/MIA: c.400 BC - 100 BC
- Late Iron Age/LIA: c.100 BC - AD 43

1.3.1. Hallstatt Plateau and Bayesian modelling

The lack of secure dating is a substantial obstacle to the present study, so the issues around dating in the Iron Age warrants further explanation. A flattening in the radiocarbon calibration curve during the middle of the first millennium BC has been described as 'one of the most extreme encountered in the Holocene' and has severely impaired chronological phasing of early Iron Age material from Britain (Waddington et al. 2019: 1). This means that chronological resolution on dated material is very poor between c.800-400 BC. The Hallstatt Plateau is particularly detrimental to accurately dating the monumental midden sites in the Vale of Pewsey, Wiltshire, which have produced significant human remains material included in the present study. Consequently, this hinders the potential for chronological analyses in skeletal material dating to the Early Iron Age.

However, the problems of the Hallstatt Plateau can be challenged by Bayesian modelling, as shown by recent studies (e.g. Waddington et al. 2019). To elaborate, heavily stratified accumulations of material at some sites provide relative sequences that can offer strong archaeological 'prior beliefs' necessary for the Bayesian modelling of radiocarbon dates (see Whittle and Bayliss 2007; Buck and Juarez 2017). A recent study by Waddington et al. (2019) has demonstrated that these calibration curve issues can be challenged with extensive radiocarbon dating accompanied by strongly informative prior archaeological information on the relative sequence of samples (derived either from stratigraphy or from seriation of artefact-types) combined using Bayesian statistical modelling. This has promising implications for the future or Iron Age mortuary studies and the results of this thesis would benefit from such improvements on chronological resolution.

1.4. Aims and objectives

The overarching purpose of this research is to transform the understanding of Iron Age mortuary practice in southwest Britain using a holistic approach employing archaeological, macroscopic and microscopic methods. In doing so, this will redress the imbalance in the current knowledge which is biased toward formal burial characteristics of well-established traditions from elsewhere in Britain (e.g. Kent and London). This aim is completed by two objectives:

1. Investigate multi-phase mortuary processes afforded to the Iron Age dead, including pre-depositional treatments
2. Identify patterns in burial or deposition of human remains within the southwest region

The first objective is achieved through primary osteological analyses (histological light microscopy of bone diagenesis and macroscopic taphonomic observations) on human remains from various states of articulation and depositional circumstances across the study region. This informs on how long a body may have taken to decompose and any further processing undertaken on the represented elements, therefore reassessing the current narratives on disarticulation, especially excarnation and the possibility of an 'archaeologically invisible' majority rite (see Sections 5.2, 5.3 and Chapter 6). Regional and chronological patterns and variations in pre-depositional mortuary practices are identified.

The second objective is achieved by compiling all available burial data from the southwest region into a database including depositional characteristics such as state of articulation, feature, age, sex and body position (see Section 5.4 and Chapter 7). From this data, patterns in inhumation burial and deposition of disarticulated remains are identified and established. Existing theories such as the prevalence of skulls amongst disarticulated deposits (see Chapter 3) are tested against this corpus of data.

This integrated research creates a substantially more comprehensive understanding of Iron Age mortuary practice in Southwest Britain by representing multiple stages of complex funerary processes, rather than just the final deposition.

1.5. Chapter outline (thesis structure)

The first four chapters provide background information on the main aspects of this research. After this chapter (Chapter one), the following chapters are summarised:

Chapter two gives an overview of the varied geology, landscapes, and the different settlements constructed during the Iron Age of the southwest. This functions to orientate the research into its regional context and explain the bias in the burial record.

Chapter three is a literature review of the major works produced on the subject of Iron Age burial in Britain. This chapter explains the formation of current narratives surrounding mortuary practice and identifies the gaps that the present research aims to fill.

Chapter four is an overview describing the formation of one of the methods employed by this research: histological analysis of bone diagenesis. The application of this method to archaeological bone to inform on mortuary practice is a relatively new one, so providing a background on the main contributions and arguments surrounding the method places the research into its methodological context.

Chapter five explains the methods and materials used in this research. The three main methods employed to investigate mortuary practices are described, comprising histological light microscopy of bone diagenesis, taphonomic observations, and analysis of burial characteristics.

Chapters six and seven present the results. Chapter six describes the results of histological analysis of articulated burials, partially articulated and disarticulated human remains deposits. These categories are further broken down by the types of feature from which the burials or deposits were recovered. Taphonomic observations made by the author and/or any existing osteological reports are integrated in this chapter as necessary. Chapter seven describes the results of frequency analysis on various burial characteristics to identify any patterns in deposition across the southwest. This chapter is also broken down by deposit type, feature, and demographics (age, sex) when possible. Chronological patterns are identified when possible.

Chapter eight discusses the evidence for mortuary practice provided in chapters six and seven. This discussion integrates histological analysis, observations of taphonomic markers, and burial characteristics to identify potential processes afforded to the dead throughout the region as well as environmental factors and existing theoretical arguments provided in chapters two, three and four. In doing so, the research aims are achieved.

Chapter nine concludes the thesis by summarising the key findings, methodological contribution, and suggests future research.

Five appendices are included at the end of the thesis:

Appendix 1 – list of all sites with human remains from the study region with coordinates
Appendix 2 – database of all burials/human remains deposits recorded from the study region
Appendix 3 – datasheet of histological samples (see Chapter 6)
Appendix 4 – list of case study sites for histological analysis with geology
Appendix 5 – tables and figures for burial characteristics from each subregion

2. Regional overview of geology and settlement landscape

2.1. Introduction

This chapter describes the landscape, lithology and underlying geology that have shaped human activity, as well as human remains preservation, throughout the study region. As shown in Figure 2 and Figure 3, the geology and soilscapes of the southwest are diverse. This has implications on the preservation of human remains and can explain, to some extent, the paucity of human remains evidence that has come to characterise this region. To summarise the significance of geology in the present study, the preservation of human remains is reliant on the conditions of the burial or deposition environment. Generally speaking, chalk and limestone provide favourable conditions to osteological preservation. Areas with geology dominated by sandstone, however, typically have acidic soil that will completely destroy organic material over time.

There are also distinct landscapes and environments across the region that may have inspired unusual or 'ritual' activity and therefore may play an important role in mortuary practice. This variety also extends to settlement types found throughout region. Human remains are often recovered from Iron Age domestic sites at various frequencies, however a detailed summary about each site falls beyond the scope of this research. A complete site list can be found in Appendix 1, and Appendix 2 includes a detailed catalogue of individual burials/deposits for each site. In this chapter, the sites that are particularly prolific in terms of human remains recovery are highlighted amongst the descriptions of landscape and geology to provide context to the subsequent chapters that discuss burial evidence directly.

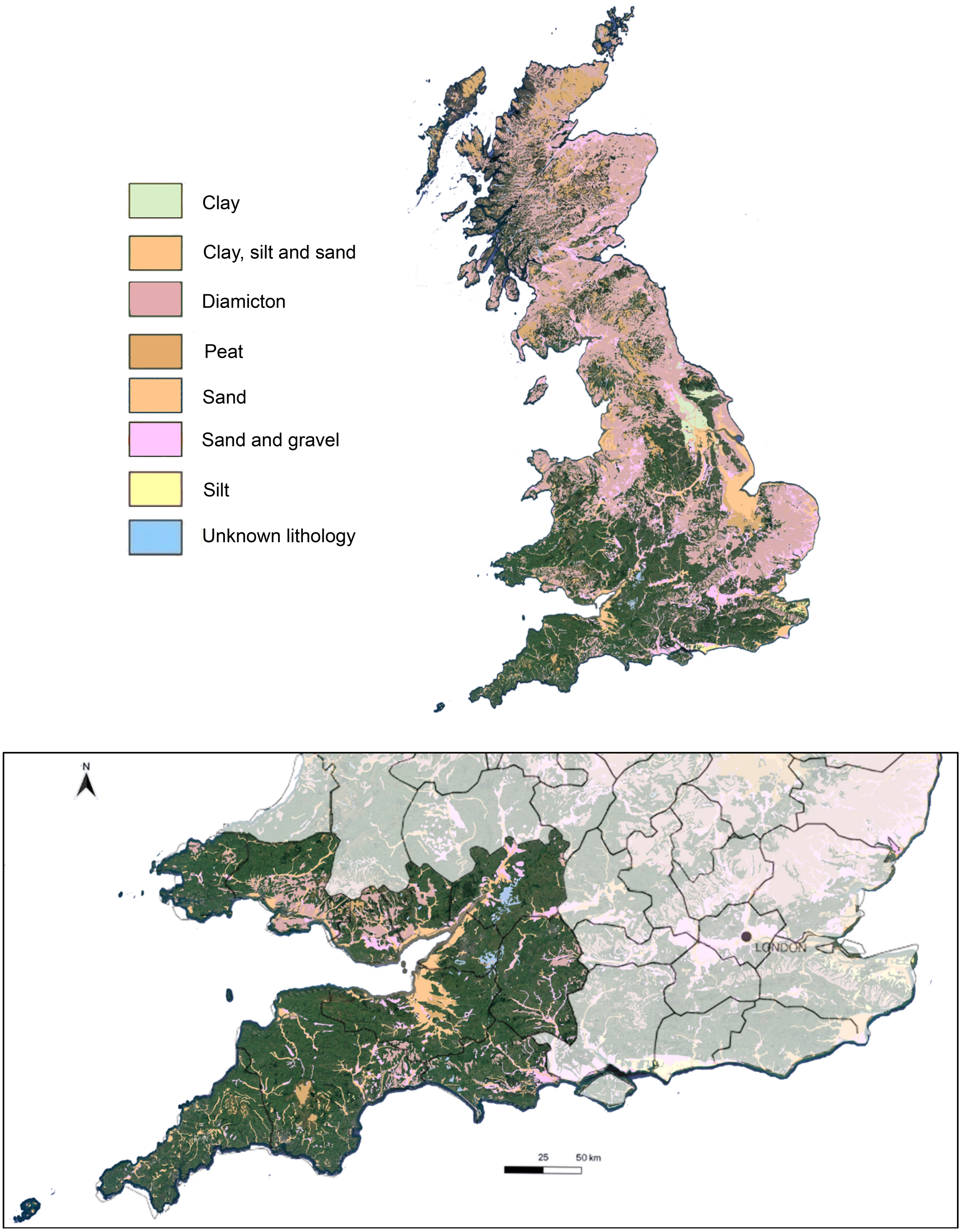


Figure 2. Map showing superficial lithology of the study region. Source: author (base map from Google Satellite, lithology layer from British Geological Survey)

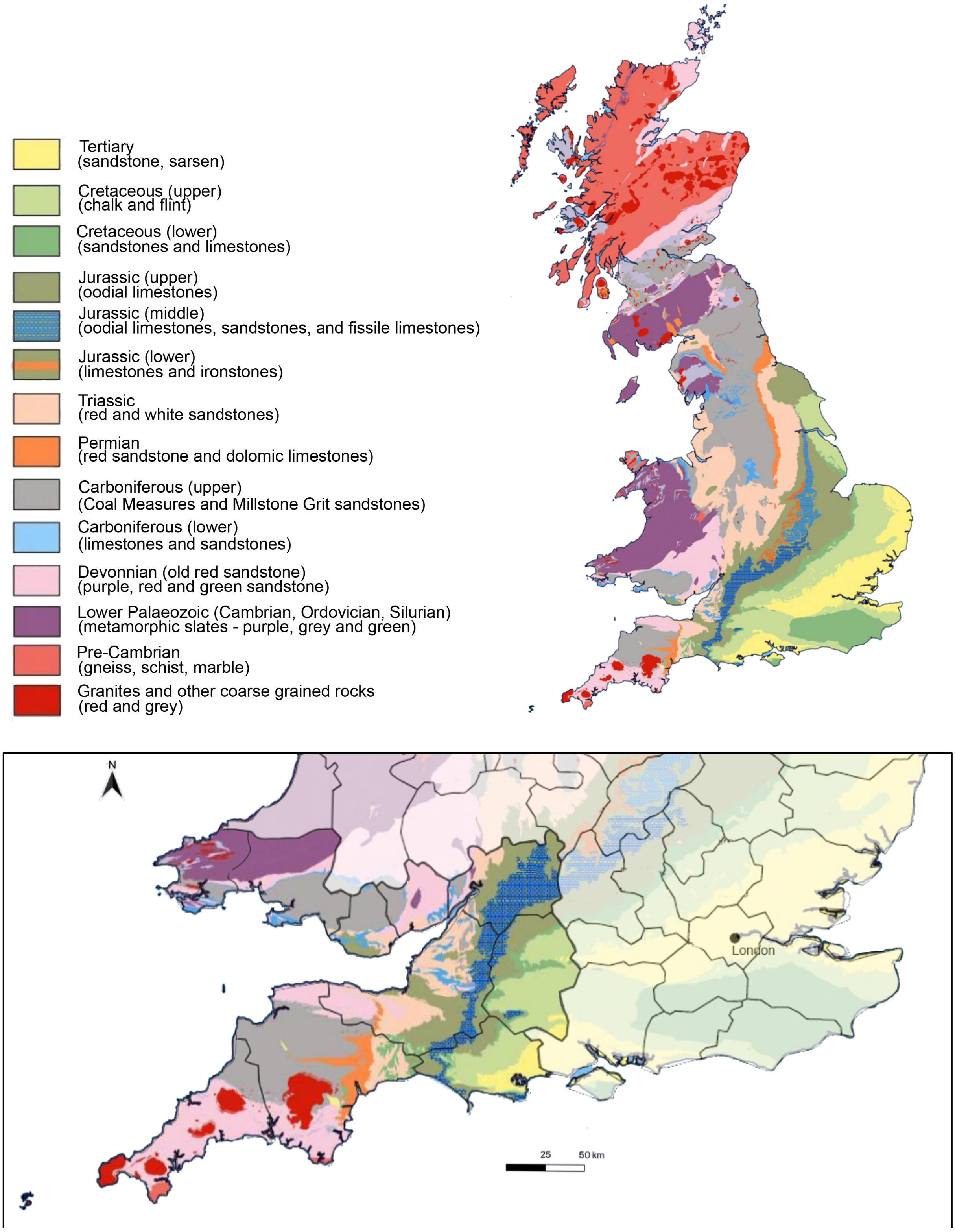


Figure 3. Map showing underlying geology of the study region. Source: author (base map from British Geological Survey)

2.2. South Wales

South Wales (Pembrokeshire, Carmarthenshire, Glamorgan, Monmouthshire) has a varied landscape with rugged mountains, rolling hills, valley lowlands, wetlands and coastal plains. The geology of the subregion is primarily comprised of various sandstones and an area of slate covering much of Pembrokeshire and Carmarthenshire to the west (Figure 3). Small pockets of limestone are concentrated most densely along the coast, especially in the Vale of Glamorgan, which also seemed to be an important area throughout the Iron Age due to the agricultural capability of the land. A number of settlements are known from this area, some which contained human remains evidence, for example a large midden site at Llanmaes. The site functioned as a place of gathering for disparate groups of people to partake in ceremonial or ritual feasts (Gwilt et al. 2006; Gwilt and Lodwick 2008; Madgwick and Mulville 2012; Madgwick et al. 2015; Gwilt et al. 2016). Among the rubbish accumulated in this midden were human remains, further attesting to the importance of the site and perhaps the wider landscape. Additionally, small settlements such as RAF St Athan (Barber et al. 2006) have been recovered from the Vale of Glamorgan and have produced small assemblages of human remains.

Promontory forts, or enclosed sites located on the coastline, are numerous along the south coast of Wales. The functions of these are not fully understood and may have varied through time, however some have produced human remains, for example Dunraven (Bell et al. 2000), Nash Point (Savory 1950) and Sudbrook (Nash-Williams 1939). Many promontory forts have been significantly affected, or even completely destroyed, by coastal erosion.

The north of the South Wales subregion is dominated by the Brecon Beacons, a mountain range that bisects South and Mid Wales. Many hillforts crown the peaks and foothills of this mountain range and although they may lack the multivallate grandeur seen in Wessex hillforts (see Section 2.4), they are formidable monuments on the landscape. Lower lying hillforts are also known from Monmouthshire, for example Llanmelin Wood (Nash-Williams 1933), with a unique and distinctive linear annexe (Figure 4). The hillfort is located on a narrow limestone ridge which typically allows for good osteological preservation, although only two small-scale excavations have occurred which produced few human remains deposits.

In addition to the wealth of rocks and mountains, wetlands are another distinctive environment in South Wales. The Severn Estuary, for example, forms mud flats and saltmarshes along the southeast coast. This wetland was a significant site during the Iron Age and human remains have been recovered from the mud, for example at Goldcliff a human skull and a partially preserved wooden platform, perhaps indicating a ceremonial site (Bell et al. 2000). The sea levels have risen since the Iron Age, and it is likely that many sites and burial evidence has been lost to time.

Figure 4. Aerial photograph of Llanmelin Wood hillfort near Caerwent, Monmouthshire. Source: RCAHMW, photo taken by Toby Driver 21 April 2015

2.2.1. Summary

To summarise, much of South Wales has sandstone geology that creates acidic environments resulting in the destruction of organic material. However, some pockets of limestone in Monmouthshire and along the south coast provide favourable conditions for the preservation of human remains. The Vale of Glamorgan is particularly important for archaeological activity including the large midden at Llanmaes. The Severn Estuary was also an important landscape during the Iron Age and although much has been lost to rising sea levels, some human remains have been recovered from the mud.

2.3. Gloucestershire

Two natural features dominate this region: the lower stretches of the Severn River and the Cotswolds Hills (Moore 2006a: 4). The Cotswold Hills have an elevation of c.300 metres in the north and form part of the limestone ridges extending north into Oxfordshire and south to the River Avon at Bath (Moore 2006a: 4, also see Figure 2). A number of substantial hillforts were constructed on these ridges that have produced significant archaeological assemblages, for example Salmonsbury Camp (Dunning 1976). Salmonsbury is a sizeable and important settlement site occupied from the Neolithic to the Roman period and beyond (Figure 5). The site enclosed an area of c.23 hectares and, unlike most hillforts which follow a more organic shape, the enclosures at Salmonsbury are rectilinear. Due to the favourable conditions offered by the limestone ridge, a relatively large quantity of human remains were recovered from the site. Another significant settlement site located further south on the limestone ridge is Bagendon, although far fewer human remains have been recovered there (Moore 2021).

Figure 5. Artist's interpretation of Salmonsbury Camp hillfort, Gloucestershire, during the Iron Age. Source: Archaeology Data Service.

To the west, there is the rough pastureland of the south Welsh hills, alluvial meadows of the floodplains of the Thames and Severn valleys, the well-drained soils of the Cotswolds, and the Gwent and Avon levels which are themselves varying in the Iron Age including carrs and salt marshes (Bell *et al*. 2000; Coles 1982; Rippon 2000). Other characteristic features include the Mendip and Malvern Hills and the uplands of the Forest of Dean (Moore 2006a: 4).

Moore (2006a: 4) describes the region as a geographic interface potentially divided, or unified, by the River Severn with access to the western Seaboard. Throughout prehistory, the substantial rivers—Avon, Thames, Churn, Wye, Usk and Brute, and the Severn itself—traversed the landscape, making the Severn Cotswolds area a hub of trade and exchange, as well as facilitating the transmission of ideas (Cunliffe 2005; Matthews 1999; Sherratt 1996). Archaeological evidence suggests that the region may have been a sort of boundary between different Iron Age cultural zones, and therefore subject to a variety of cultural, social and economic influences from inland as well as along the Atlantic Coast (Cunliffe 2001). All these influences would likely also extend to mortuary practice.

2.3.1. Summary

In sum, Gloucestershire has several landscape features that shape human activity there. To the south, large hillforts were built on the limestone ridges of the Cotswold Hills, which also provide the best conditions for human remains preservation. Additionally, the Severn Cotswolds and the various rivers that travel across Gloucestershire to the Severn Estuary meant that the area was exposed to various influences from different trading groups, and would have undoubtedly influenced in return.

2.4. Wessex

As previously mentioned, the area known as Wessex covers the modern-day counties of Wiltshire, Dorset, eastern Somerset and Hampshire (see Figure 1, 2, 3; note: Hampshire is not included in this research). The defining feature is the rolling chalk downlands that have attracted prehistoric peoples since the Mesolithic era due to the light, fertile soils (Cunliffe 1983). Evidence for settlement in the Wessex area is concentrated along these chalk hills (Sharples 2010: 19), including hillforts that have produced human remains (e.g. Hod Hill in Dorset, Yarnbury Castle and Groveley Castle in Wiltshire). Hillforts in this region are typically massive in scale and include complex series of ramparts and ditches. One of the largest hillforts in Britain is Maiden Castle in Dorset, enclosing an enormous area of 81 hectares (Figure 2.6) (Wheeler 1943; Sharples 1991). Smaller hillforts were also constructed in Wessex (e.g. Abbotsbury in southwest Dorset which is only 0.4 hectares) as well as non-hillfort enclosed settlements, for example Gussage All Saints in Dorset and Little Woodbury in Wiltshire (Wainwright 19xx; Bersu 1940).

Figure 6. Artist interpretation of Iron Age settlement at Maiden Castle hillfort in Dorset. Source: Historic England Archive Photo Library ref: J870379

Although settlement (and therefore burial evidence) is concentrated on the chalk downs, there are other environments in the Wessex area to consider. Wetlands, including mudflats and salt marshes, are also characteristic of the Wessex landscape, for example the inlets on the coast of Dorset. All of these are easily distinguishable landscapes, each with their own distinctive historic character (Fairclough 1999; Fairclough et al. 1999; Sharples 2010: 19). Additionally, surrounding the chalklands are clay vales and limestone deposits.

The Vale of Pewsey in Wiltshire, for example, is a damp, low-lying clay land with intermittent low chalk hills. Within the low-lying clay vales, monumental middens sites accumulated by continuous feasting in the early first millennium BC. Several large settlements in Wiltshire are associated with massive midden sites: Potterne (Gingell and Lawson 1983, 1984; Lawson 2000) and East Chisenbury (McOmish 1996; Barrett and McOmish 2000; McOmish et al. 2010) are two examples. The staggering amount of material deposited at these middens suggest a profoundly important event occurring regularly over time—the material spread at Potterne covers an area of 3.5 hectares with a depth of 2 metres, and the East Chisenbury midden covers an area of 2.5 hectares with a depth of 3 metres. Due to the organic composition of the deposit, stratigraphy and features are often impossible to distinguish, however it is known that they form part of a larger settlement context. Human remains have been recovered from the accumulated material, especially at Potterne, suggesting these were profoundly significant sites that played an important role in mortuary practice. A detailed analysis and discussion of middens in the Vale of Pewsey can be found in Waddington (2009).

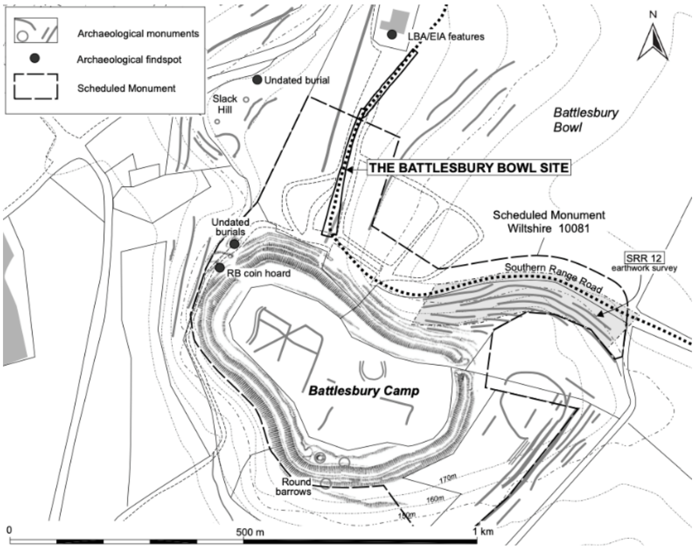


Figure 7. Illustration showing the plan of Battlesbury Bowl located outside the Battlesbury Camp hillfort. Adapted from Ellis and Powell 2008: fig.2.1

Although monumental hillforts characterise settlement in the area, unenclosed settlements are known throughout Wessex, although the lack of distinguishable features on the landscape means these are less often extensively excavated. One exception is Battlesbury Bowl in Wiltshire, located just below the Battlesbury Hillfort settlement (Figure 7. The site was extensively excavated in 1998-9 and produced a substantial corpus of human remains from storage pits (Ellis and Powell 2008).

The geology of eastern Somerset is covered mostly by limestone deposits allowing for good preservation of human remains. Two extensively excavated hillforts in eastern Somerset have produced especially large and significant corpuses of burial data: Ham Hill and Cadbury Castle. Ham Hill enclosed an area of c.85 hectares. Cadbury Castle, built upon a limestone (Inferior Oolite) deposit surrounded by sandstone and situated between the chalk downs of the 'Wessex' area and the lowlands of western Somerset (Tabor 2000: 25-26).

2.4.1. Summary

To summarise, much of the Wessex area is characterised geologically by chalk downlands, especially Wiltshire and Dorset (see Figure 3). Chalk provides favourable conditions for human remains preservation, and many of the large-scale excavations of Iron Age sites in these areas have produced significant amounts of burial data. The area of Wessex also includes some geological variation, including the Vale of Pewsey, where monumental middens containing human remains were amassed. In eastern Somerset, large hillforts such as Cadbury Castle and Ham Hill were built atop limestone ridges that span most of the length of the eastern county boundary. Due to the favourable preservation conditions of chalk and limestone, this results in a bias towards Wessex in overall burial data—on the other hand, it forms a solid comparison for areas with less human remains evidence.

2.5. Somerset levels and the surrounding area

The flat, low-lying Somerset Levels in western Somerset comprise unique coastal and wetland landscapes that cover an area of c.650 km^2 and is distinctly different from the Wessex area of east of Somerset (Figure 8). Although much of the area isn't suitable for large-scale farming, the Levels is an area of vast ecological richness and was home to two important Iron Age settlement sites: Glastonbury Lake Village (Bulleid and Gray 1911; 1917) and Meare Lake Village (Gray and Bulleid 1911; 1953).

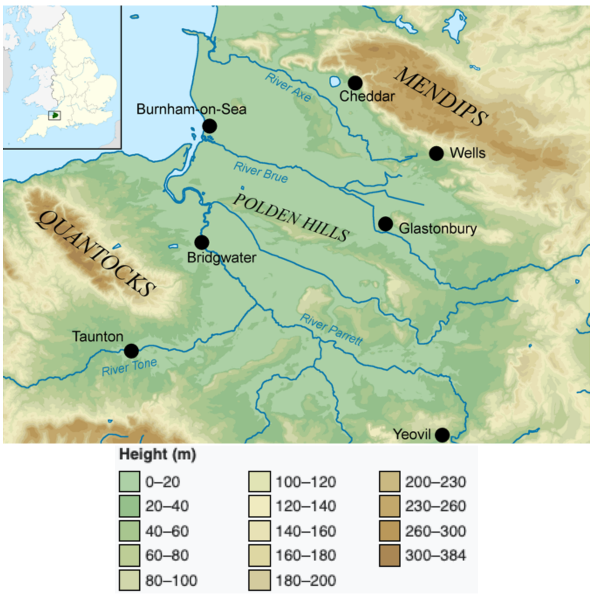


Figure 8. Topographical map of the Somerset Levels and surrounding area. Source: Ordnance Survey OpenData

These settlements were built into the wetlands by creating artificial islands out of earth and other materials, making them unique in the Iron Age of the southwest (Figure 2.9). These sites produced massive amounts of significant material including (among many other things) parts of structures, trackways, decorated pottery, animal bone, tools and other domestic material. Additionally, the peat surrounding the settlements preserved the human remains deposited around them, particularly at Glastonbury Lake Village. Peat covers a significant portion of area in the Levels (see Figure 2, 3).

Figure 9. Artist interpretation of the Iron Age settlement Glastonbury Lake Village by Amédée Forestier. Copyright Somerset Museums Service

Other significant areas in western Somerset include the Mendips, a large limestone ridge that forms an impressive series of gorges and flat peaks with views that extend across the Somerset Levels. A number of caves that penetrate the Mendips were used during the Iron Age as places of burial, including the famous Wookey Hole (Dymond 1902: 76-80). The coast of Somerset is home to a number of promontory forts, including Brean Down and Worlebury. Both promontory forts were built on limestone uplands that continued from the Mendips and therefore facilitates good preservation of the human remains recovered from the sites (for Brean Down see Bell and Straker 1984; Bell 1986, 1990; for Worlebury see Dymond 1886).

2.5.1. Summary

Overall, the unique landscapes of the Somerset Levels inspired unique settlements (Glastonbury Lake Village and Meare West) that vary from the eastern areas within the Wessex subregion. This variation and uniqueness may also apply to mortuary practices. Preservation of burial evidence is mostly concentrated in the limestone areas and within the peat surrounding Glastonbury Lake Village and so burial evidence from this area are biased towards these landscapes.

2.6. Southwest peninsula

The southwest peninsula (Devon, Cornwall and Scilly) stretches c.250 km into the Atlantic and has a distinct landscape from the rest of the southwest. Much of Devon and Cornwall is covered in carboniferous sandstone and acidic soils that are not typically favourable to the preservation of osteological remains, and thus may account for the dearth in Iron Age burial evidence in these areas. A particularly distinctive geological feature of the southwest peninsula is six major granite formations: Dartmoor, Bodmin Moor, Hensbarrow or Austell Moors, Carnmenellis, Penwith and the Isles of Scilly. Both moors compose a true upland rich in minerals of tin, cooper, and granite-derived clays unparalleled in north-western Europe (Pearce 1981: 17). It is also important to note that the Isles of Scilly, an archipelago located a further 42km beyond Land's End, was likely one large island until the Medieval period (Hencken 1932). It is highly likely, then, that a number of archaeological sites, including burials, have been concealed by rising sea levels.

Figure 10. Reconstruction of 'Courtyard Houses' of western Cornwall and Scilly. Source: English Heritage

The peninsula is located in the centre of sea routes which run between Ireland, south Wales, Brittany, and the Channel coasts (Pearce 1981: 17). This subregion was known for its wealth of minerals used to create metal and the surrounding sea facilitated trade and migrations of people between Ireland and the Continent, but also amongst closer regions such as south Wales and southern Britain. This exposure may have influenced the construction of 'cliff castles', or defended promontory forts, that line the coast, although the nature of these sites is not yet understood. Additionally, distinctive settlements and site types are found in Devon and Cornwall: for example the subterranean Fogous and the 'Courtyard houses' of west Cornwall and Scilly (Figure 10).

Unlike the other subregions, human remains have not been recovered from settlements in the southwest peninsula. This may be due in some part to the problems with preservation described above, or may indicate a different tradition of burial. Large cemeteries located close to the sandy coasts characterise burial practice in this region, for example Harlyn Bay (Bullen 1930). It is also interesting that, apart from cliff castles, large defended settlements and hillforts are not as common throughout Devon and Cornwall compared to the other sub-regions in this study.

2.6.1. Summary

Overall, the southwest peninsula is distinctive in terms of its geological features and archaeological evidence. The geological landscape does not create favourable environments for bone preservation with evidence for burial being mostly restricted to the sandy coasts. The landscape is mineral-rich, however, and was renowned across Europe for its tin and copper. It is conceivable that mortuary practice would be influenced by the uniqueness of the landscape as well as influence people from different parts of the world coming and going.

2.7. Conclusions

The southwest region is home to a diverse range of landscapes shaped by underlying geology and lithography. This variety is also reflected in the human activity across the region as shown by the differences in settlement across the region: the area of Wessex, for example, is favourable to human remains preservation due to the chalk and limestone that cover most of this area. Additionally, the arable soils and gently rolling landscape have drawn people to the area for millennia, resulting in a dense concentration of settlements including massive hillforts and monumental middens. This has caused an inevitable bias in the burial record as other parts of the southwest are characterised by acidic soils that completely obliterate human remains, particularly in South Wales, Devon and Cornwall. The bias in preservation often extends to the bias in excavation: sites that are visible on the landscape are obviously more extensively excavated than those which can only be revealed through construction of new development, geophysics and, more rarely, extreme drought. However, this bias provides an opportunity to assess the existing human remains evidence in the peripheral southwest against the richness of the Wessex burial record to identify patterns in mortuary practice across the whole of the southwest.

3. Overview of previous research

3.1. Introduction

This chapter provides an overview of previous Iron Age burial research in southern Britain and Wales to establish the theoretical and historical context for the present study. First, the chapter discusses the challenges faced when studying Iron Age burial practice in general and specifically in the southwest. Next, a review of the major works that frame the current understanding of burial traditions in the Iron Age and identify the gaps left to fill. Finally, previous scholarship that led to the development of the excarnation debate is discussed to demonstrate current interpretations of the Iron Age burial record. In doing so, this synthesis identifies the novelty and necessity of the present research to understanding the complexity of Iron Age mortuary practice.

3.1.1. Lack of evidence; *tempus fugit*

First, it is important to understand the many challenges of interpreting the Iron Age burial record as these challenges have shaped the discipline and necessitate the application of methods used in the present study. Generally, the funerary rites of the Iron Age in Britain are poorly understood because human remains are underrepresented compared to the projected population based on size and number of settlement sites (Wait 1985). This paucity of evidence is partly due to natural factors—the preservation of human remains is reliant on soil composition, and acidic soils cover large areas of the southwest, as described in Chapter 2. Because of this, the available data is biased towards areas with a higher concentration of limestone and chalk geology which allow for better preservation. Some burial evidence can be gathered in the form of grave cuts or stone lined cists, but characteristics of the burial itself (such as the positioning of the body, what direction it was facing) have been erased through time.

The scarcity of burial evidence may not be caused by natural factors alone, however. This disappearance of the dead from the archaeological record has been said to begin in the Middle Bronze Age and extend through the Iron Age (Atkison 1972: 114). This notable change in mortuary practice may relate to the observation that landscape once structured around monuments to the dead, for example barrows and henges become, was replaced in the Iron Age by landscape structured around agriculture such as field boundaries (Bradley 1984: 96; Barrett and Bradley 1980). This ultimately means that places of burial were less noticeable on the landscape in the Iron Age, and are therefore less likely to be targeted for archaeological excavation. However, it has been established that there is a marked absence of anything that could be considered a ‘typical’ or ‘standard’ burial practice afforded to the majority, even when remains do preserve and are recovered (Whimster 1977a, 1981). The lack of an obvious majority rite in the Iron Age has been suggested to represent the practice of 'archaeologically invisible' rites, or mortuary practices that leave behind no trace in the archaeological record resulting in what Hodson (1964: 105) considered a 'negative type fossil'.

To summarise, the lack of burial evidence for the Iron Age is influenced by several key factors:

1. Preservation of skeletal elements as determined by geological factors;
2. Burial/deposition of human remains in areas that are not often targeted for archaeological investigations;
3. Mortuary practices that leave behind little or no archaeological evidence.

3.2. Major contributions to Iron Age burial research

Despite the challenges that research into Iron Age burial practices, several seminal works have been produced that underpin this thesis. This section reviews the major contributions to Iron Age mortuary practice, most notably the works of Wilson (1981), Whimster (1981), Wait (1985), and Hill (1995).

The first large-scale study that identified disarticulated and fragmentary human remains as a distinctive feature of Iron Age society, and not a result of carelessness or convenience, was Wilson (1981). In her work *Burials within settlements in southern Britain during the Pre-Roman Iron Age*, Wilson used the following categorisation to describe the evidence:

1. Worked or utilised bone; rare in the Iron Age;
2. Fragments; 30 sites identified;
3. Disarticulated bone; 10 sites identified
4. Articulated joints; rare, but clearly present;
5. Partial burials; rare, but definitely present;
6. Complete burials; under 300 noted

Wilson also suggested that orientation and position (crouched or flexed) were formal characteristics. However, this work was limited by small sample sizes, and the lack of evidence inhibited the robusticity of the typology. For example, worked or utilised human bone is so rare that it does not conceivably constitute a category on its own, but rather a secondary utilisation, perhaps even separate from the mortuary rite. Wilson (1981) also noticed there was very little evidence for weathering or gnawing on the partial and disarticulated remains, leading her to question the belief that excarnation was the cause for their separation and suggesting that the bodies were wrapped. This is plausible, however there are several potential methods for defleshing a human body, some of which would protect the bone from the scavengers and exposure. These will be discussed throughout this thesis.

Perhaps the most significant and comprehensive study produced in the same year is Whimster's seminal work 'Burial Practices in Iron Age Britain' (1981). Whimster focuses on identifying regional patterns in inhumation burials using data compiled from hundreds of sites across Britain and Ireland and categorised the evidence as follows:

1. Inhumations in central-southern England
    a. Pit-burials
    b. Southern Grave-inhumations
    c. Ditch-burials
    d. Rampart burials
2. Durotrigian inhumations, southern Dorset
3. South-western cist inhumations
4. La Tène inhumations in eastern Yorkshire
5. Inhumations with swords
6. Late La Tène cremation in south-eastern England (Aylesford Culture)
7. Peripheral burial practices in the northern and western zones (Wales, Ireland, Northern England and Scotland)
8. Sacrifice and rituals of violence

The work is an invaluable contribution to Iron Age burial practice and has been enormously helpful to the present research. The breadth of burial practices across Britain was noted, however the 1981 publication does not offer much theoretical interpretation on the data collected. The study falls particularly short in addressing burial practices in Wales with only 6 poorly dated burials identified, thus an 'invisible; burial rite was suggested (Whimster 1981: 167). However, as Davis (2017: 2) has pointed out, this work left out some significant data, including 22 burials that had been published before 1981. Moreover, there was no reference to five metacarpals and two flexed inhumations found within the Iron Age deposits at Coygan Camp, which were also published (Wainwright 1967: 40-42, 44, 55-56, 83, 164, 191-192, 195-203).

A few years later, Wait (1985) published *Ritual and religion in Iron Age Britain*. In this work, Wait used 28 sites in southern Britain and was particularly interested in the difference between hillfort and non-hillfort settlements. Wait's typology for burial evidence is as follows:

1. Single complete inhumation
2. Single partial inhumation
3. Multiple partial inhumation
4. Articulated limbs
5. Single skull
6. Isolated, unarticulated bones

This study supplements Whimster's (1981) more generalised work by considering "a wide range of mortuary rites which were apparently applied to only a small part of the population and at infrequent intervals" (Wait 1985: 357). The consideration of various states of articulation listed above meant that emphasis could be placed on the less obvious burial evidence. Additionally, this publication includes detail such as the orientation of the burial when applicable, and in what direction the skeleton's face is looking, although these were purely descriptive and supplemental to the overall discussion centred on ritual practices.

The next major contribution to Iron Age burial studies is Barry Cunliffe's work at Danebury hillfort in Hampshire. Although this research does not include data from Hampshire, it is one of the most extensively studied Iron Age sites in Britain and evidence from Danebury will be referenced occasionally in the present study for comparison. The decades of excavation led by Cunliffe (Cunliffe 1984; 1995; Cunliffe and Poole 1991) unearthed a great deal of material, including over 327 individual records for human remains that were critically assessed by Walker (1984). The site offers the best evidence for the significance of human deposition within hillforts and has shaped our understanding of the Iron Age in southern Britain. Many archetypal "pit burials" come from Danebury, which were given a typology of their own following the human remains assessment by Walker (1984; also Cunliffe and Poole 1991: 418):

1. Whole bodies (in single or group burials)
2. Incomplete skeletons (individual depositions)
3. Multiple, partial semi-articulated skeletons
4. Skulls or parts of skulls (excluding mandibles)
5. Pelvic girdles
6. Individual bones or bone fragments isolated or in small groups

The inclusion of pelvic girdles as their own category is arguably superfluous. Three pelvises were found on the site: one fragmentary pelvis was recovered from a post hole, and another from stratified layer behind a rampart; both female. Cunliffe (1992) has written about his theory that the subterranean storage of grain meant that the grain was under the protection of chthonic deities, thus the human remains in storage pits were deposited as propitiatory offerings in exchange for fertility. It is convenient then that rarely-occurring pelvic girdles, with their association with human fertility, were given a discrete classification. Indeed, he admits that there is little evidence that the pelvis was specially selected (Cunliffe and Poole 1991: 421). However, this work highlights the importance of considering disarticulated human remains within storage pits as intentional, rather than incidental.

The significance of human remains within pits was solidified by Hill's seminal work *Ritual and Rubbish in the Iron Age of Wessex* (1995). This study set out to systematically consider the archaeological record for deposition in Iron Age Wessex by considering all categories of material involved. The results suggested that quantities of material recovered are so small as to represent only a small proportion of the activities taking place on a day-to-day basis—for example, excavated animal bone assemblages do not reflect live herd structures, and artefacts do not only reflect nearby areas of activity. Thus, the large groups of animal bone and pottery sherds indicate rare special events such as feasts, occurring as rarely as every 10-20 years. Rituals of deposition, according to Hill, were driven by an attempt to classify the surrounding world and the domestic space of the settlement.

Hill's (1995) study provided a detailed analysis which demonstrated that the process of human remains deposition was closely linked to the deposition of other materials including special deposits of animal bones and carcasses, which seem to be treated in a very similar manner. However, as Sharples (2010: 254) has indicated, these estimates are problematic because they do not consider surface deposits that have been completely destroyed by systematic cultivation. Nevertheless, Hill (1995) demonstrated that different kinds of material within contexts are statistically significant, a contribution that validates the careful consideration, analysis, and re-analysis of human remains in pit burials.

The next substantial contribution to Iron Age mortuary studies was Bristow's (1998) *Attitudes to Disposal of the Dead in Southern Britain 3500 BC-AD 43*. This work covered a broad chronological range from the Early Bronze Age to Late Iron Age, which limits the interpretive potential for the Iron Age specifically, however it produced a massive catalogue of burial data that includes most of the southwest region as defined by the present study.

More recently, Harding (2016) published the monograph *Death and Burial in Iron Age Britain*. This work examines the deposition of human and animal skeletal remains from both articulated and disarticulated states across the Iron Age, including more recently recovered material, thus providing a more updated theoretical discussion. The wide scope of the research (rather than a targeted geographical area) means that the interpretations are more of an overview, but many important points were made. For example, Harding (2016) argues that there need not have been a cemetery tradition throughout much of the Iron Age—instead, the dead were likely displayed and later integrated into settlements as symbols of identity for the inhabitants. Rather than being exceptional, Harding suggests these practices were the norm.

In the same year, Roth (2016) published her PhD research *Regional Patterns and the Cultural Implications of Late Bronze Age and Iron Age Burial Practices in Britain*. This literary-based study included 100 sites with burial evidence from central and southern Britain dating between the LBA-LIA. Statistical analyses were performed on burial characteristics such as spatial relation to structures, orientation, sex, age, and type of bone to identify any potential patterns in deposition across the geographic area. The results of this study suggested that there was an emphasis on complete or near-complete destruction of the corpse, with mortuary practices involving excarnation and dismemberment most frequent in Wessex spanning the entire Iron Age (Roth 2016: 228). Although limited by a relatively small sample size for the geographic region covered, this detailed work further establishes the act of fragmentation and redeposition as a discrete mortuary rite.

Recently completed PhD projects by Lamb (2018) and Legge (2021) have further investigated Iron Age burial in Britain. Lamb's research is primarily concerned with later Iron Age burial practices in southern Britain with some geographical overlap with the present research particularly in the Wessex area. However, his work differs in that, aside from the histological methods employed in the present study, his thesis was more focused on the potential relationships between inhumation and cremation burials in southern Britain and the near Continent, as opposed to an in-depth examination of mortuary processes (including potential pre-depositional treatments). The recently completed thesis by Legge (2021) has no geographical overlap with the present study but seeks to answer similar questions on wider mortuary practices in the Iron Age in southeast England. In his research, Legge produced a massive database on Iron Age human remains deposits in the southeast including burial characteristics as well as osteological data such as taphonomy, pathology and trauma. Legge's thesis employs primary macroscopic analyses of older human remains collections to create an updated and accessible assessment of Iron Age mortuary practice in the southeast.

Other noteworthy contributions include Cunliffe's (1992) Pits, Preconceptions and Propitiation in the British Iron Age which offers a detailed discussion of pit burials and the various interpretations of their meaning. Human bodies, animals and parts of animals, groups of pot, burnt grain and iron artefacts often found within the storage pits at Danebury were interpreted as 'archaeological manifestations' of offerings to chthonic deities whose territory had been penetrated by the pit, therefore storage pits were not simply utilitarian but rather part of a complex belief system (Cunliffe 1992: 71-73). Twenty years later, a study by Tracey (2012) integrated osteological, forensic and archaeological evidence to re-evaluate pit burials from six sites in central southern Britain. This study considered disarticulated and articulated evidence and suggested three main burial practices that ran parallel in the Iron Age (Tracey 2012: 375):

1. Exposure in situ (not on excarnation platforms);
2. Bodies kept whole in death with evidence for wrapping and protection during decomposition;
3. The deposition of skull fragments.

These studies indicate that mortuary practice was more complex and varied than previously thought, with multiple rites afforded to different corpses within the same chronological period in southern Britain.

3.2.1. Recent work in Wales

Although the present research is limited to southern Wales (with an exception made to include human remains from Dinorben in the histological analysis), it is important to review the recent work as Wales is so often left out in Iron Age burial studies including those reviewed in the previous section.

A little over a decade after the publication of *Burial Practice in Iron Age Britain* (Whimster 1981) where only eight tenuously dated burials were recorded, Murphy (1992a) produced a gazetteer identifying 45 records of human remains from 18 sites in Wales. The gazetteer identified two dominant modes of burial treatment: crouched or extended inhumations in or around hillforts, and secondary cremations or inhumations at Bronze Age ritual/funerary monuments. Iron Age burial in Wales would continue to lurk in ambiguity until more recently.

In 2006, Pollack used 62 burials from 21 sites in an evaluation of Iron Age burial practices as part of a study into the disposal of human remains in Roman Wales. This study proposed five different modes of treatment:

4. Burial at hillforts
5. Secondary burial at Bronze Age monuments

6. Cave burials and bog bodies
7. Late Iron Age burials of status
8. Fragmented skeletal material

Pollack's typology acknowledges that secondary burial practice is becoming more obvious in Iron Age mortuary practice and the incorporation of fragmented and redeposited material marked a significant turning point in understanding Iron Age mortuary practice in Wales. However, the consolidation of evidence from hillforts limits many morphological and chronological distinctions: for example, a partial inhumation at the bottom of a grain storage pit is not representing the same mortuary practice as a fully articulated burial placed in a specially-cut grave.

Davis' 2017 article *Iron Age burial in Wales: Patterns, practices and problems* includes more data and thus offers a more robust analysis. Using a corpus of 106 burials (which is a substantial difference from Whimster's eight), Davis identified five 'categories of disposal':

1. Complete bodies
2. Articulated remains
3. Heads or parts of heads
4. Isolated bones
5. Cremations

This classification is more appropriate for the evidence from Wales, which will be discussed in Chapter 7. Here the emphasis is on the state of the remains themselves rather than where they are deposited. For instance, partially articulated deposits ('articulated remains') are acknowledged as well as articulated inhumations ('complete bodies') and disarticulated bone ('isolated bones' and 'heads or parts of heads'). However, in the present research, complete skulls (with articulated mandible) are considered partially articulated, and parts of skulls are considered disarticulated deposits.

3.3. The excarnation debate

The paucity of burial evidence in Iron Age Britain, as well as the often fragmented and disarticulated nature of recovered material, has led to the widely-held belief that excarnation by exposure was the preferred mortuary method (e.g. Ellison and Drewett 1971; Carr and Knüsel 1997; Cunliffe 2005: 554; Carr 2007; Lally 2008). Excarnation in this context involves exposing a corpse to the elements until the skeleton has been defleshed, a process which usually follows a sequence (provided the body is not wrapped): the cranium, hands and feet are first to skeletonise, and the vertebral column, pelvis and legs are last (Redfern 2008: 283). Depending on the circumstances of corpse placement such as the position of the body and the spatial environment, excarnation could result in the total loss of human remains (e.g. carried away by scavenging animals) or leave behind skeletal elements. It has been suggested that fragments were collected at sites of excarnation and distributed throughout the settlement or at a special event (Carr and Knüsel 1997; Gosden and Marshall 1999), similarly to how some cremations are redeposited (Carr 2007). In theory, this could account for the lack of complete inhumations and the regular occurrence of fragmented and disarticulated bone in the Early and Middle Iron Age (e.g. Whimster 1977; Bristow 1998; Hey et al.1999). However, other taphonomic processes can cause disarticulation, and a study by Beckett and Robb (2006) suggested that element representation and skeletal completeness are identical in both primary and secondary burials in that hands, feet, flat bones and vertebrae are underrepresented. Therefore, other evidence should be observed on the bone if excarnation is to be inferred.

Such evidence was noted in the human remains assemblage at Danebury including fragmentation, cut marks and perimortem trauma, leading to the interpretation that these were ritually killed or sacrificed enemies (Craig et al.2005: 165, 171, 175-6). Similar evidence was noticed by Redfern (2008): she assessed the disarticulated assemblages from Gussage All Saints and Maiden Castle in search of evidence for anthropogenic manipulation and noticed a number of elements showed signs of manipulation and exposure (i.e. canid gnawing, fractures, trauma). This led her to suggest that a minority of individuals, many of whom engaged in violence as indicated by the perimortem of trauma, were incorporated into a 'highly complex and lengthy funerary process' consisting of excarnation/exposure in a shallow burial that could be accessed by canids, followed by dismemberment and processing of the body in order to extract preferred elements (long bones and crania) (Redfern 2008: 296).

In the same year as Redfern's study, Madgwick (2008) assessed weathering patterns on human remains at the Iron Age sites Winnall Down and Danebury, the presumption being that if excarnation were occurring, human remains would show higher instances of modifications. However, the results of this study showed little evidence of weathering and gnawing on human bones compared to the associated animal bones. That is not to say that excarnation did not occur, but it may not have been as widespread as previously believed; alternatively, the environment selected for decomposition prevented the taphonomic indicators that would be expected from long-term exposure. A covered pit, for example, could facilitate more rapid decomposition than an inhumation burial whilst protecting the remains from weather and animal scavenging.

Furthermore, Sharples (2010: 277, 280) argues that the reuse of old burials may provide a source for the disarticulated and partially articulated remains found in pits in enclosed settlements and hillforts. Evidence for disturbance of burials and exhumation of elements, possibly associated with the placement of new burials, has been noted within EIA-MIA graves such as Cockey Down, Rowbarrow, Yarnton and a quarry at Suddern Farm. Sharples (2010: 277) pointed out that evidence is often located in features in areas that are not often targeted by archaeological investigations (e.g. the rear of enclosure settlements) and may represent a wider tradition, thus challenging the ubiquity of the excarnation theory.

3.4. The quest for a majority rite

The archaeological evidence has been widely treated as a collection of special circumstance burials afforded to different classes of individuals for one reason or another—whether they were slaves, social outcasts, prisoners of war, criminals, or individuals of higher-status and revered ancestors. The absence of an obvious majority rite has been speculated to be caused by archaeologically invisible rites such as aqueous burial (deposition of bodies/bones in bodies of water e.g. rivers, lakes, the sea) and excarnation, obliterated by centuries of ploughing, dredging and development. However, to assume that there was a majority rite at all is arguably a projection of modern (and mostly western) attitudes towards the dead and how dead bodies are to be conceptualised and dealt with. A modern death in the Western world is usually followed by a commemoration of some kind that marks the end of the deceased's place in living society. In other words, a person's biological death results in a 'social death'.

However, since the publication of James Brown's edited volume *Approaches to the Social Dimensions of Mortuary Practice* (1971), archaeologists have more regularly explored and embraced the social contexts of death. The volume included a paper by Lewis Binford (1971) titled *Mortuary practices: their study and their potential,* which criticised past interpretations of mortuary practices in archaeology and anthropology. Binford was particularly critical of any approaches based on idealism—or the belief that mortuary practices were determined by different ideas and beliefs—and approached mortuary practice as a product of social influences. Thus, there may not have been a 'majority rite', but mortuary practice may have been nuanced and varied based on the person's standing or role in society.

To summarise, the search for a majority rite may end in the realisation that there simply was not one, or that many different funerary rites and treatments occurred simultaneously, subject to temporal and social change. Instead of looking for answers by separating the evidence into typologies based on the burial evidence alone, a holistic approach that considers taphonomic and histological evidence alongside burial characteristics will shed some much-needed light on mortuary practices.

3.5. Conclusions

This chapter has provided a summary of previous research on Iron Age burial practices to explain the current narratives and identify the gaps this project helps to fill. The major works that effectively established the study of Iron Age mortuary practices were focused on creating typologies based on burial characteristics, however interpretive potential was limited by small sample sizes relative to what is available today. More recently, osteological studies have proven that there were complex processes afforded to human remains throughout the Iron Age in southwest Britain, including secondary mortuary processes evidenced by the disarticulated material recovered from Iron Age settlement sites. Excarnation and redeposition has been the popular explanation for this disarticulation, however variations shown in single-site and small-scale studies incorporating histological and taphonomic analyses have suggested there may be other explanations. The present research further contributes to Iron Age mortuary practice by incorporating several of the methods employed by previous studies to a larger region: histological analysis to identify primary burial; taphonomic observations to identify possible secondary treatments; and a large-scale analysis of the final deposition characteristics, thus creating the first holistic picture of Iron Age mortuary practice in southwest Britain.

4. Background to histological analysis of bone diagenesis

4.1. Introduction

This chapter will describe the primary histological analysis of human remains for the present study. It has been discussed in the previous chapters that there is no known 'majority rite' in Iron Age Britain, instead the dead were disposed of in a variety of places, and in varying stages of completion, suggesting that there was a diverse range of mortuary rites (Whimster 1977; 1981; Wait 1985; Stead 1991; Cunliffe 2005; Darvill 2010). Until recently, only macroscopic (surface) taphonomic analysis has been used to interpret Iron Age burial practices and determining methods of equifinality (or different processes producing the same end result) using these methods is difficult (Booth and Madgwick 2016). Histological examination of bone microstructure can be applied to archaeological bone to help reconstruct burial processes by measuring the degree of diagenesis. This is known as histotaphonomy. Histotaphonomy, or taphonomy on the microstructural scale, is a relatively new field of study and has been used to examine archaeological bone with increasing popularity in recent years. It is also commonly known as 'microstructural bone diagenesis' and may be thought of as a study of preservation and change to internal bone microstructures (Bell 2012: 241).

4.2. Methodological background

In order to demonstrate the novelty of the present research, it is necessary to understand the history of enquiry into skeletonisation and taphonomy. More specifically, it is essential to understand the historical works that underpin ongoing debates surrounding the application of histological analysis in archaeological research—namely, the origin(s) of microstructural change(s). This chapter briefly reviews the history of taphonomy in the wider sense to demonstrate the innovation of taphonomy on a microscopic scale. A history of taphonomy using a histological approach (here abbreviated 'histotaphonomy') is provided by reviewing the major contributions that have shaped the field of study and forms our current understanding of post-mortem microstructural alterations of bone. Attention is given to define the nomenclature surrounding the discipline to avoid later confusion in the results and discussion.

4.2.1. Defining taphonomy

Taphonomy in archaeology has been described as the 'assessment of what has happened to an object or organism between its deposition and its recovery' (Renfrew and Bahn 1991). However, as a result of forensic investigations, it is now accepted that taphonomic markers occur without deposition, and can indeed indicate a distinct lack of deposition, such as weathering and trampling. A more inclusive definition was suggested by Schotsmans et al. (2017) stating that taphonomy is the interdisciplinary study of what has happened to an organism between *death* and its *recovery* [italics added for emphasis]. This definition accommodates archaeological human bone which was treated with any number of pre-depositional processes, making it more suitable for the present research—as previously discussed, evidence suggests that Iron Age mortuary practice was varied and likely included series of processes prior to the final deposition. Overall, taphonomic research depends on the assumption that bone responds to impacts of different forces uniformly over time, allowing for inference on which processes were involved in the past (Gifford-Gonzalez 1989: 43).

4.2.2. History of taphonomy research

Taphonomic analysis was historically applied to palaeontology to study fossilisation, particularly the processes and factors by which some bones become fossilised while others are obliterated with time. In 1927, Johannes Weigelt undertook a descriptive study on the decomposition of organisms in his seminal work 'Vertebrae Carcasses and their Paleobiological Implications'. His research demonstrated the importance of practical analysis, and that understanding the skeletonisation of modern animals is essential to studying vertebrae fossils and their environments. Weigelt called this process "biostratinomy", which was effectively the first study to outline what is known now as taphonomy. Taphonomy as a term was first associated in a 1940 study by Ivan Efremov in his article titled 'Taphonomy: a new branch of palaeontology'. His research expanded on Weigelt's descriptive study and introduced a systematic process to reconstructing palaeontological fossils by looking at the transitions between death, entombment and lithification to help correct biases in the fossil record (Bell 2012: 242).

Weigelt and Efremov's studies are important because they form the theoretical foundation for modern archaeological taphonomic research. Today, these fundamental processes are still used: experimentation using animal proxies in different physiological positions and environments to describe archaeological assemblages. Evidence for fracturing (Shipman and Rose 1983; Olsen and Shipman 1988), animal activity (Hill 1979; Shipman 1989; Haynes 1980; Binford 1981; Haglund et al. 1989; Haglund 1989, Haglund 1997a,b) and weathering (Behrensmeyer 1978, 1982) are incorporated into the primary analysis to inform on variation in mortuary treatments afforded to Iron Age bodies. This evidence is especially significant when considered alongside diagenetic changes at the microscopic level. The taphonomic alterations considered in this research are further explained in Chapter 5 (Section 5.3). The following section describes the studies on histological bone alteration that form our current models for histotaphonomy to establish an understanding for how this method informs on early post-mortem mortuary practice.

4.2.3. Taphonomic analysis of bone microstructure

Post-mortem alteration of bone microstructure was first noted by Carl Wedl in 1864 in a study using submerged and buried defleshed animal bones and teeth. Wedl observed microscopic tunnelling in the teeth, but the tunnelling did not affect enamel. This made the morphology of the attack different than that which results from dental caries (a condition where the tooth enamel is broken down by bacteria that forms in the mouth during life), leading him to conclude that this change developed sometime after death. This research resulted in the discovery of microstructural change associated with marine exposure, now known as Wedl tunnels, as well as the first known identification of bacterial attack on bone microstructure (Bell et al. 1996, Bell and Elkerton 2008).

Apart from the small-scale, curiosity-driven studies that succeeded Wedl (e.g. Roux 1887; Schaffer 1889, 1880, 1894; Tomes 1892), the next substantial research on microstructural change was undertaken in 1949. Reidar F. Sognnaes (1949, 1955, 1956, 1959) completed histological investigations of human teeth from varying historical contexts in Guatemala, Palestine, Egypt, Norway and Iceland in which he noted distinct tunnels in a corkscrew pattern affecting all tissue except enamel. The most frequently occurring tunnels were branched with large globular, or ampulla-shaped widenings. Sognnaes did not see a relationship between time and severity of the microbial attack, however he also did not understand the origin of the destructive agent. He surmised that the tunnelling may have happened in the early post-mortem period associated with the shallow aerobic layer of soil, prior to bacterial and gaseous putrefaction. Sognnaes later suggested the branched tunnelling was caused by a saprophytic agent and dismissed the idea of dental caries as a possible origin (Sognnaes 1959).

Another study in 1949 assessed the histological preservation of soft tissue and bone in a mummified human from Egypt as well as skeletal material from different soil contexts in Sweden (Graf 1949). In this study, Graf observed that the bone samples from the mummified body had intact microstructural preservation whereas the skeletonised material from various soil contexts demonstrated a “derangement of Haversian systems” (Graf 1949: 245). This morphology of this alteration was different from that which Wedl observed: Graf described enlargement of canaliculi within the osteocytes as well as enlarged osteocyte lacunae. It was also noted that the destruction was often less severe or even absent near the Haversian canal. Additionally, Graf observed that the samples from moist earth contexts exhibited higher grades of microstructural destruction than those from dry earth and gravel contexts. Still, the cause of the destruction eluded him. In an attempt to study early post-mortem changes, Graf acquired a human rib from a cadaver and allowed the rib to sit for two weeks before burying it in soil for one year. He observed no changes to the bone, but did note that the osteocytes were “necrotic” in appearance and remnants of bone marrow survived (1949: 247-7). He concluded that time is not an essential variable for the post-mortem destruction he observed, and that traces of cellular components of bone can potentially survive for centuries (Bell 1995: 28).

The first systematic study on the timeframe of post-mortem bone alteration occurred in 1958 (Syssoeva 1958). In this study, Syssoeva examined 196 human teeth from individuals who had been buried for at least 10 years and aged 6 months to 70 years at death. He noted macroscopic, or surface changes to some of the teeth, but did not notice any microscopic alteration. However, an x-ray study of the teeth did show a minor decrease in density for samples that had been buried for 65-70 years. This led him to suggest that post-mortem alteration of microstructure would begin no earlier than 70 years after burial and possibly much later. As Bell (1995: 23) has pointed out, it is curious that the unspecified macroscopic changes Syssoeva noted in the teeth were not visible during microscopic examination.

In the 60s, Werelds completed a series of studies on human teeth spanning c.1000 years and excavated from sand (1961), clay (1962), and a set of teeth deliberately exposed to both soil and marine environments (1967), for a combined c.372 teeth in total. The teeth from sandy soils (n=300) exhibited the same tunnelling described by the previous studies and suggested a type of mycete, or fungus, was the destructive agent. The teeth from the clay soils (n=72) buried for approximately 300 years displayed the same post-mortem microstructural change. This led Werelds to conclude that time was not a significant factor in the post-mortem alteration he observed. Similarly to Wedl’s earlier work, Werelds attempted to reproduce the microstructural change he observed by burying and immersing freshly extracted teeth. Post-mortem alteration in the form of tunnelling was visible in soil-buried specimens after the third year, whereas those immersed in water exhibited tunnelling in only three months (Werelds 1967). This group of studies is significant because it reinforced the observations by Wedl—that microstructural destruction can occur quickly after death—and for the first time introduced a timeframe for post-mortem microstructural alteration (Bell 1995: 24; 2012: 243).

By the late 1970s histology was an increasingly popular research method for the study of archaeological skeletal remains. The argument for applying microscopic analysis as a means to verify other analyses of archaeological bone was advanced in 1978 (Stout 1978; Stout and Teitelbaum 1978). In these studies, human bone from modern cadavers and archaeological excavations were examined using microradiography (Stout 1978) and staining and polarising light (Stout and Teitelbaum 1978). The researchers concluded that post-mortem alterations to bone microstructure could be extensive within the cortex and also cause reduction in mineral density.

A common conclusion for many of these studies is that the post-mortem process of microstructural change is not directly influenced by time in the long term, but rather focused on the early post-mortem phase. In other words, the authors believed that length of time bone has been dead has little effect on preservation (Stout 1978: 601). More recent research has challenged this and attempted to determine the origin of bacterial attack and the degree to which bone microstructure is affected by endogenous or exogenous factors.

4.2.4. Histotaphonomy: recent work

The 1980 and 1990s saw a surge of interest in diagenetic alteration first noticed by the aforementioned studies in the late 19th century. In 1981 C.J. Hackett conducted his seminal study on post-mortem alteration to human bone, inspired by an earlier study in which he studied pathological changes in archaeological dry bone (Hackett 1976). The research was initially intended to determine how long microscopic changes survive burial. In this study Hackett examined 170 samples of human archaeological human bone, mostly femora and tibiae, from southern England, USA, Indonesia and Australia. Hackett suggested that micro-organisms fed on the collagen that make up bone microstructure through a process of regular demineralisation commonly known as microfocal destruction (MFD). Additionally, the classification of destruction still widely used today was proposed, defined below and illustrated in Figure 11:

- **Wedl tunnelling** (obviously named after Carl Wedl). This type of tunnelling is associated with wet environments. The tunnelling has a diameter of 5-10 microns and distribution of tunnelling spreads inwards from periosteal and endosteal surfaces of cortex bone. Hackett suggested that the causative agent was fungal.
- **Linear longitudinal.** Similar in appearance to Wedl tunnels, this type of tunnelling is 5-10 microns in diameter, but occasionally has “cuffed” rims. Hackett noted that these are arranged, streaming together, within the limits of cement lines. These can pass transversely across lamellae. The morphology of this type of attack varies across the cortex, however—Hackett noted that near the periosteal surface they appear as dark round foci with a diameter of 30-50 microns. He suggested that bacteria may be the causative agent.

- **Budded**. These are “frond-like” tunnels with a diameter of approximately 30 microns. These followed osteonal canals, often filling them, with side shoots forming at irregular intervals measuring 80-90 microns across (Bell 1995: 32). Hackett suggested this was produced by episodic demineralisation and remineralisation periods and again attributed bacteria as the causative agent.
- **Lamellate**. This type of change is described as a round jigsaw or mosaic pattern ranging in size from 10-20 microns to 60-250 microns in diameter. They are described as being curved in profile and respect the curved structure of osteons. Hackett proposed bacteria as the causative agent, as with Budded and Linear Longitudinal.

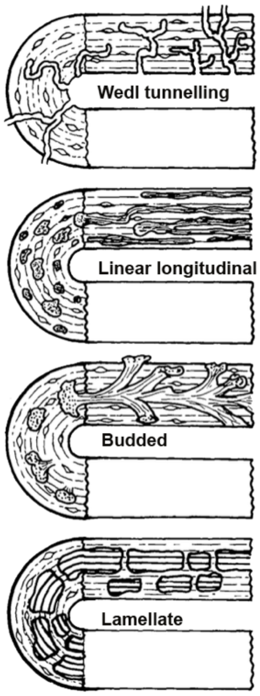


Figure 11. Four kinds of microscopic foci/tunnels illustrated by Hackett (1981: fig. 1).

Ten years later, an experimental study by Yoshino et al. (1991) observed diagenetic change in 51 human bone samples ranging from 0-15 years post-mortem. In this study, 33 were exposed, 14 buried in soil, and 4 immersed in ocean water. The depths of the samples, unfortunately, were not provided in the study, nor was sample preparation. The samples were analysed through microradiography, SEM, TEM and UV fluorescence microscopy. The results demonstrated that the microstructure of exposed bone samples were least affected by diagenetic change. The samples buried in soil showed changes typically beginning 5 years post-mortem, and marine 4 years. Yoshino et al. (1991) concluded that the microstructural destruction in soil-buried and marine contexts differed in morphology, and that change caused by bacteria will not occur until skeletonisation (5 years in the study) assuming that the bacteria originates from the soil.

The study by Yoshino et al. (1991) differed significantly from the previous studies. Hackett (1981) noticed bacterial damage in bone that had been buried for one year. Wedl's (1864) experiment with immersed samples observed change within 13-17 days. This demonstrates the variability in experimental research: the rate of diagenesis will depend on the origin of the causative agent, the type of microbe responsible, the rate and stage of soft tissue decomposition, and environment are all factors in the varied results.

In 1995, Lynne S. Bell completed her PhD research on microstructural impact of diagenetic or post-mortem change to human skeletal tissues. In this study, Bell used backscattered electron (BSE) and SEM imaging to characterise microstructural morphologies of post-mortem alteration in archaeological material from terrestrial and marine contexts. The results of the marine contexts (from the Mary Rose shipwreck) demonstrated that environmental information can be ascertained from skeletal material and establish a clear stratigraphic relationship. Additionally, and perhaps most importantly, her research re-established the relationship between time and diagenetic change that had been disregarded in the previous work discussed earlier. Bell demonstrated that post-mortem alteration of bone microstructure can occur as soon as 3 months after death. She further hypothesized that alterations could begin as little as 3 days after death and, contrary to previous assumptions, prior to skeletonisation, if gut bacteria are the causative agent (Bell 1995: 242). It is this point that is most pertinent to the present study—as Bell noted the implication of gut bacteria in the promotion of early microstructural change is strong. The need for further work on the earliest point of post-mortem alteration and the identification of microfauna responsible for the changes was clearly recognised. Bell's work ultimately concludes that post-mortem alteration or diagenetic change to skeletal material does not represent a burial phenomenon, but can occur without deposition and in a range of contexts. In other words, the study of microstructural diagenetic change can inform on pre-depositional or non-burial treatments.

Nielsen-Marsh and Hedges undertook a study in 2000 to measure diagenetic parameters, particularly site hydrology, for several populations of buried archaeological human and animal bone from the Pleistocene to the 20th century. The sample for the entire study was 134 specimens from eight sites in Europe and noted site-specific patterns. Their histological analyses used the Histological Index (HI) to summarise the degree of diagenetic change and produced largely bimodal results: the majority of the archaeological bones were either very well preserved (HI 4/5) or poorly preserved (HI 0/1). 20% of the sample scored 2/3. These results were similar to those previously observed by Hedges et al. (1995) in a smaller study of 40 bones from three sites spanning from 30,000 BP to 4000 BP. Nielsen-Marsh and

Hedges (2000) found that the specimens with better preserved microstructure generally came from either fully waterlogged environments or drier sites with relatively static ground water levels (e.g. paleochannels or caves). Those with poorer preservation were most commonly exhumed from burial environments with regularly fluctuating water levels (e.g. graves near floodplains). Their results showed no significant differences in preservation in archaeologically fleshed human and animal bone. This study is important because it demonstrates patterns within sites and variability in archaeological samples, which the authors attribute to hydrology, which is certainly a variable in overall diagenetic change. However, no consideration is given to burial treatments which were vastly different across the authors' sampled time periods and sites (for example they chose not to sample individuals buried in coffins at Poundbury which make up a significant portion of the buried population) the 20% of samples that scored 2/3, nor an attempt to explain intra-site variation.

A larger and more comprehensive study on characterising microbial attack on archaeological human and animal bone was completed by Jans et al. in 2004. This research analysed 261 bones from 41 archaeological sites in five countries spanning four climatic regions. Unlike the results from Nielsen-Marsh and Hedges (2000), this study identified differences in microbial attack between human and disarticulated animal bone and suggested that differences in early taphonomy may be the cause. Moreover, the authors concluded that both animal and human bone from complete burials is more likely to be affected by bacterial attack, indicating that bacterial degradation is linked to the very early stages of degradation. For buried samples, the authors did not note an outward-in pattern of micro-tunnelling, as would be expected if the microorganisms causing the destruction originated from the soil, and instead was focused around Haversian canals. The authors suggested that the bacteria responsible for diagenetic change likely originated from the body during putrefaction. This was further supported by the observation the majority of archaeological bone deposited as fragments were generally well preserved, and why animal bone was lacking extensive bacterial attack. This research is important because it considered the role archaeological contexts and anthropogenic manipulation of bodies may have in diagenetic change observed in bone microstructure. Burial practices, such as mummification (preservation of the body through natural means such as desiccation or bog burial; or artificial means involving processes such as evisceration and wrapping, curing/smoking), dismemberment and the placement of bones in environments such as rubbish heaps, can cause variation in preservation even within a single site.

In the light of these developments, another study sought to further investigate the influence of soil chemistry on bone preservation to inform on heritage management for the European Union (Nielsen-

Marsh et al. 2007). This study explicitly pointed out that soil chemistry no longer dominates microstructural preservation in non-corrosive soils; instead, taphonomy determines survivability (Nielsen-Marsh et al.2007: 1527). The authors observed differences in animal and human bone microstructure preservation also noted in the study Jans et al. (2004)—even when from the same burial environment. The authors explained the difference as a consequence of different mechanisms by which humans and animals become interred in the soil (Nielsen-Marsh et al. 2007: 1528). The results of the study formed a chart defining diagenetic end-points for European Holocene bones considering the effects of taphonomy and deposition environment illustrated in Figure 12.

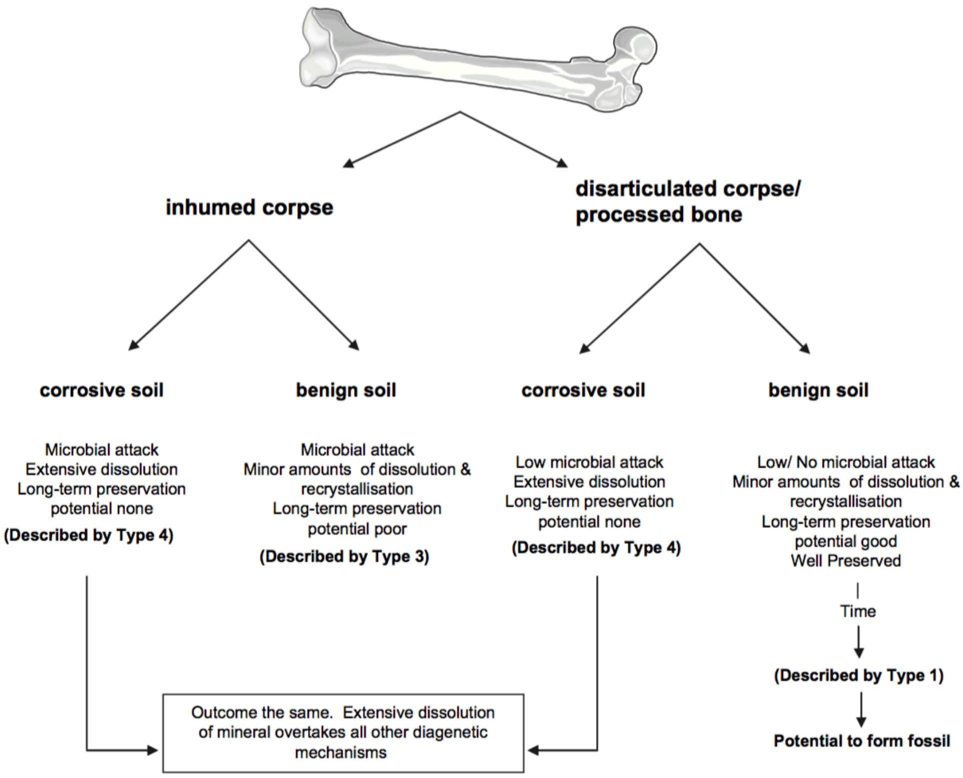


Figure 12. Diagenetic end-points for European Holocene bones considering the effects of burial environment and taphonomy (Nielsen-Marsh et al.2007: fig. 7)

The previously discussed studies clearly established that taphonomy is an essential variable to consider for histological analysis of archaeological bone. Subsequent studies over the following years focused on sampling human and animal bones representing a variety of taphonomic histories within the same or similar sites. In 2011, Hollund et al. conducted a study on osteological material comprising a number of humans and a variety of animal species that had received different burial treatments, excavated from a Roman (c.100-300 AD) site at Castricum, Netherlands in 1995. Humans, as well as some dogs and cattle, had been buried as complete inhumations. A single sample from a horse that was assumed to have been exposed for some time prior to deposition was also sampled. These were compared to animal refuse bones also sampled from the same site. Interestingly, of the 14 samples analysed, all but two were observed to have perfect histological preservation with only two having intermediate levels of diagenetic change. The destructive foci on the samples with middle-ranging histological preservation were determined to be linear longitudinal type bacteria attack. The authors suggested that the picture emerging from their results is one of alternating periods of anoxic and oxic environment for most of the specimens. However, this study does not provide any additional evidence for exposure such as taphonomic indicators, so it cannot be determined whether the horse was indeed exposed, or alternatively butchered or eviscerated. Many different processes can result in the same level of histological preservation—this issue of equifinality is common in histological studies and will be addressed throughout this thesis.

A study in 2016 by Booth and Madgwick produced different results than those from Hollund et al. (2011). In their study, twenty human bones from two Iron Age sites in Hampshire, England: Danebury and Suddern Farm were assessed. The aim of their study was to determine whether histological analysis can help untangle the varied and confusing evidence that characterises burial in Iron Age Britain, particularly addressing the excarnation debate. Samples exhibiting variable patterns of anatomical articulation were chosen (e.g. disarticulated elements, complete articulated skeletons, partially articulated parts of skeletons) to signify diverse post-mortem processes. Considerable difference in micro-focal destruction was observed between the two sites, despite the similar sedimentary matrices. Variation in bone from the same context was also observed. It was interpreted that, considering the free draining chalkland environment, variation resulted from patterns of mortuary treatment rather than environmental factors (Booth and Madgwick 2016: 19). The authors proposed that their results reflect three distinct rites, all present within Iron Age contexts and within the same or similar environment: poor histological preservation suggests burial immediately after death; extensive but incomplete destruction suggests protected exposure; and a third anomaly showing better histological preservation, perhaps representing excarnation (Figure 13). This study is particularly relevant to the present research because it uses Iron Age samples from similar environments and articulation to many of those in the present study.

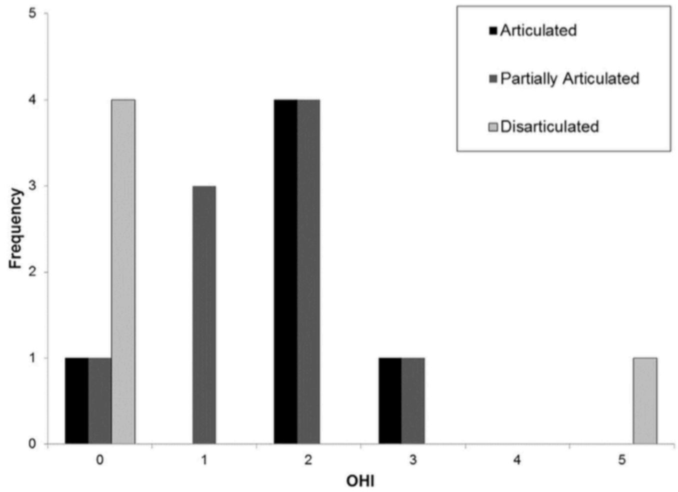


Figure 13. Distribution of OHI scores in samples from Danebury and Suddern Farm separated by level of articulation. (Booth and Madgwick 2016: fig 2)

Archaeological studies have applied histological analysis to better understand mortuary practice with increasing popularity (e.g. Booth 2014; Booth et al, 2015; Booth 2017; Brönnimann et al. 2018; Hollund et al. 2018; Macová et al. 2020; Lemmers et al. 2020; Goren et al. 2020; Booth 2020). These studies show promise for the application of bacterial bioerosion to inform on early post-mortem treatments of archaeological populations. However, outstanding questions regarding the origin of diagenetic bacteria has led some scholars to question the robusticity of interpretations deriving from this method (e.g. Turner-Walker 2019).

4.2.5. Origin of diagenetic bacteria – an ongoing debate

The origin of bacteria responsible for the microbial bioerosion found in archaeological samples is central to the application of histological methods to reconstruct mortuary practice. The sections above describe the key theoretical contributions to understanding the mechanisms and speed of microscopic bone diagenesis, but a summary of the origin debate is offered here.

The debate is currently divided between endogenous (gut bacteria) and exogenous (soil microbes) models. Both are known to directly impact the survival of human remains in the archaeological record (Grupe and Piepenbrink 1989; Balzer et al. 1997; Jans et al. 2002; Reiche et al. 2003). The endogenous model operates on the basis that putrefactive gut bacteria will spread around the body and begin to decompose soft tissues. These bacteria are also able to infiltrate the bone microstructure via the circulatory system and potentially break down bone, *vis-à-vis* histological preservation of bone is dependent on early post-mortem histories (e.g. speed of skeletonisation) and is therefore directly related to mortuary practice (Hollund et al. 2012). The exogenous model assumes that the osteolytic bacteria are endemic to the deposition environment, so the extent of microfocal destruction (MFD) depends on the soil conditions through time, which promote/inhibit the growth of osteolytic bacteria. The main theoretical points for both arguments are summarised in Table 1.

Table 1. Summary of predictions and observations for endogenous and exogenous models of bacterial bioerosion of bone microstructure (adapted from Booth 2014: table 2.1)

Endogenous model	Exogenous model
MFD appear early post-mortem.	MFD appear late post-mortem.
Extent of MFD is related to evidence for early post-mortem processes and taphonomy that would have enabled or prevented microbial access.	Extent of MFD is related to the environment (e.g. soil composition) that would affect the populations of microbials in the soil.
MFD is concentrated around vascular systems (Haversian canals, osteocyte lacunae).	MFD is independent of microstructural features (osteons).
A corpse left to decompose on the ground surface will show minor bioerosion distributed throughout the bone.	A corpse left to decompose on the ground surface will show bioerosion where the bone had contact with soil.
A disarticulated bone separated from the body shortly after death will show better microstructural preservation than a bone from an articulated inhumation.	A disarticulated bone will show the same level of bacterial bioerosion as a bone from an articulated inhumation if the soil conditions are the same.
Mummification/evisceration may prevent extensive bacterial bioerosion.	Mummification will always prevent bacterial bioerosion.
Severity of bacterial attack is related to proximity to the gut.	Severity of bacterial attack is related to bone porosity.
Bones from foetuses and neonates are less likely to be affected by bacterial bioerosion.	Bones from neonates and foetuses are equally affected by bacterial bioerosion as bones from adults.
Extent of bacterial bioerosion is independent of age-at-death.	Older adults will be more heavily affected by bacterial bioerosion.

One of the most often-cited studies in support of the endogenous model of microbial bioerosion was published in 2014 by White and Booth. The study involved twelve experimentally buried and exposed pig carcasses that were monitored and sampled at intervals to measure the rate of diagenetic attack over time. The results showed that the bones from buried pig carcasses displayed statistically significant higher levels of bioerosion than those that were exposed (White and Booth 2014: 100). The microstructure of femora from inhumed pig carcasses was altered by microbial bioerosion after just one year, and it was estimated that full destruction could be achieved in five years (White and Booth 2014: 99). The study also included stillborn/neonatal piglets whose bones were unaffected by bacterial attack, leading the authors to suggest that the youngest piglets had not yet developed the enteric gut bacteria responsible for the bioerosion seen in more mature pigs. Similar results were produce by a similar study of the same pigs by Kontopolous et al. (2016).

Studies of archaeological infants replicated these findings, thus creating one of the most compelling arguments for the endogenous model. A study by Booth (2016) sampled 15 neonatal human samples from dispersed historical cemeteries across the UK and found that 12 were free of bacterial bioerosion compared to adults with poor histological preservation sampled from the same sites. These results were largely replicated when Booth et al. (2016) sampled 10 femora from Roman-British stillborn or short-lived infants from varied sites and burial conditions and found a disproportionate number of preterm foetuses had near-perfect histological preservation. As with the piglets in the 2014 study by White and Booth, this may indicate that the sampled individuals with well-preserved microstructure had not yet developed the osteolytic gut bacteria found in the older individuals (see also Jans et al. 2004; Booth 2016). Larger sample sizes including infants and foetuses of different ages would be needed to confirm this result, however when coupled with the observation that butchered animal bone exhibits less bioerosion than buried adult human bone (Jans et al. 2004: fig.5; Nielsen-Marsh et al. 2007: fig.1; Mulville et al. 2011), the argument for an endogenous model is well supported.

On the other hand, a recent study by Turner-Walker (2019) attempted to determine the difference in preservation noticed between archaeological human and animal bone by performing experiments on freshly butchered animal remains in Taiwan. The study focused mostly on teeth submerged in glasses of water and only one cow femur was buried within soil in a flower box at a dept of 40cm. Microbial tunnelling was seen penetrating the bone surface after 10 years, leading the author to conclude that exogenous, rather than endogenous factors cause bacterial bioerosion seen in cortical bone. Additionally, he suggested that reduced nitrogen and increased crystal size within bone microstructure would be predicted to make bones less attractive to bacteria as a food source, but the increased porosity and disruption of the collagen-mineral bond many make tunnelling by bacteria less energy demanding (Turner-Walker 2019: 31). However, the tunnels on the experimentally buried disarticulated cattle bone look more akin to Wedl tunnels than bacteria, which may be expected in a warm, aerated sub-tropical environment. Backscattered Scanning Electron Microscopy (BSEM) imaging was used to analyse the diagenetic changes within the bone, producing a much higher resolution image than normal transmitted light microscopy. Aside from the small instances of tunnelling at the bone surface, the rest of the sample seemed widely unaffected, and the microstructure would likely be considered very well preserved overall (especially if viewed with normal transmitted light microscopy). The small amount of diagenetic change seen in the disarticulated bone ten years after burial does not altogether discredit the application of histology to mortuary practice—arguably, it supports the endogenous argument but highlights the importance of distinguishing between fungal and bacterial attack.

In any case, the presence of microbial attack on the disarticulated cattle bone is worthy of consideration. However, two main factors mean that this experiment may not be applicable to the present study. First, the sample size of one butchered cattle bone is of course insufficient. The bone underwent processes that would not be available to archaeological populations (freezing at -20 degrees C for several weeks prior to burial). Second, the subtropical climate of Taiwan means the soil (and any interments) undergo different temperature and moisture conditions than those of temperate southern Britain.

The complicated relationship between physical, geochemical, and biological processes in the deposition environment influence skeletal preservation and bone diagenesis (Eriksen et al. 2020; Emmons et al. 2022). It is possible, and likely, that both gut bacteria and bacteria endemic to certain soil environments contribute to histological bioerosion seen in archaeological samples. The evidence for an endogenous model discussed in this chapter is compelling, however a fleshy corpse is conceivably more likely to attract bacteria from the soil than a defleshed, disarticulated bone. On the other hand, a body exposed on the surface will be quickly stripped of soft tissue, removed from gut bacteria, and will not be exposed to osteolytic microbes in the soil. Therefore, the efficacy of histological analysis to reconstruct mortuary practice would conceivably be similar in most scenarios within a regional study such as this. A possible exception would be large cemetery sites where the soil is more saturated in bacteria relating to decomposing corpses, in which case, following the exogenous model, a disarticulated bone may be affected by microbial bioerosion as extensively as one from an articulated inhumation. However, more experimental work would be done to determine this.

4.3. Conclusion

The studies discussed in this chapter have demonstrated that systematic, large-scale diagenetic investigations of archaeological bone provide valuable datasets that can be used to elucidate early taphonomic events which can be interpreted in terms of mortuary practices. It has also shown that

that the results of histological analysis need to be considered alongside multiple lines of evidence, including taphonomy and burial environments. Detangling the micro-focal destruction (MFD) present in the poorest preserved samples from acidic soils in the present study remains an issue as the causative agents are not yet conclusively determined. Nevertheless, the studies discussed in this chapter show promise for providing insight into early post-mortem mortuary practice and the implications are especially important for shedding new light on the disarticulated bones that have come to characterise Iron Age burial in the southwest.

5. Methodology

5.1. Introduction

This chapter describes the methodology used to investigate Iron Age mortuary practice in this study. The chapter is primarily divided by three main analyses: histological analysis, taphonomic observation, and frequency analysis of burial characteristics. The histological analysis section first describes the rationality of sample selection. A total breakdown of sites within each sub-region (Wales, Gloucestershire, Somerset, Wiltshire, Dorset and Cornwall) represented in the histological analysis in Chapter 6 is provided. Next, the process of histological light microscopy of bone diagenesis is described including sample extraction, preparation and analysis.

Taphonomic observations accompany the histological analysis in Chapter 6to inform on potential mortuary processes. The types of taphonomic markers used in this study are individually described.

Finally, the frequency analysis of burial characteristics is described. The main characteristics included in the analysis in Chapter 7 are explained.

5.2. Histological analysis

5.2.1. Sampling strategy

This study required a large corpus of samples from sites across southwest Britain to record patterns of diagenesis. Samples were targeted based on several criteria to ensure a range of potential mortuary practices were represented: spatial and geological distribution, accessibility of collections, deposit type, site/feature type, and taphonomy.

A total of 286 samples were collected from the subregions and a total breakdown of samples per site and subregion is provided in Table 2. Note that Wales includes three samples from Dinorben in North Wales, which is not included in the southwest as defined by this study; however, preserved human bone from Wales is rare and Dinorben is one of the most extensively excavated and published hillfort sites in Wales. Therefore, these samples, having been prepared by the author for a separate study funded by the Cambrian Archaeological Association, are included in this thesis to bolster representation of Wales.

All sampling was completed by the author except for those from Somerset: a substantial number of human bone thin sections from Somerset were already held at the Cardiff University Department of

Archaeology from a previous Cardiff University Research Opportunities Placement (CUROP) project so five sites were chosen to represent the sub-region in this thesis (124 total samples – see Table 2). For a full list of samples, see Appendix 3.

Table 2. Case study sites and number of samples taken for histological analysis. Source: author

Site	County	Site code	No. of samples
Caerau	Vale of Glamorgan	CAE	1
RAF St Athan	Vale of Glamorgan	RAF	5
Five Mile Lane	Vale of Glamorgan	FML	1
Dinorben	Denbighshire	DIN	3
		WALES TOTAL	**10**
Fishmonger's Swallet	Gloucestershire	FSH	7
Greystones Farm	Gloucestershire	GYF	3
Hunt's Grove	Gloucestershire	HGV	2
		GLOUCESTERSHIRE TOTAL	**12**
Ham Hill	Somerset	HH	37
Cadbury Castle	Somerset	SC	29
Worlebury	Somerset	WLB	28
Glastonbury Lake Village	Somerset	GL	26
North Perrott	Somerset	NP	4
		SOMERSET TOTAL	**124**
Potterne	Wiltshire	PTN	23
Battlesbury Bowl	Wiltshire	BB	24
Rowbarrow	Wiltshire	RBW	12
Wroughton	Wiltshire	WRO	3
		WILTSHIRE TOTAL	**63**
Weymouth	Dorset	WEY	13
Gussage All Saints	Dorset	GUS	12
Tolpuddle Ball	Dorset	TPB	11
Maiden Castle	Dorset	MDN	7
Whitcombe	Dorset	WHT	5
		DORSET TOTAL TOTAL	**48**
Harlyn Bay	Cornwall	HLB	24
Trethellan Farm	Cornwall	TLF	5
		CORNWALL TOTAL	**29**
		GRAND TOTAL	286

The samples were selected based on availability of museums and curators, number of bones in collections suitable for sampling, and quality of accompanying excavation reports. Sites with comprehensive bone reports were targeted in the first instance and bones with radiocarbon dates were prioritised as having reliable and detailed context allows for a more nuanced interpretation of mortuary practice, but this was not always possible for case study sites (Harlyn Bay, Glastonbury Lake Village and, to a lesser extent Cadbury Castle) excavated in the late 19th and early 20th centuries. However, these sites have produced significant amounts of human remains and may represent local traditions for mortuary practice, so the decision was made to include them on this basis. Iron Age human remains from Devon are incredibly scarce due in large part to geological factors (see Chapter 7 for distribution), so this subregion is not represented in the histological analysis. The geology of all case-study sites targeted for histological analysis is provided in Appendix 4.

The most important criterion for histological sample selection was deposit type. Articulated, partially articulated, and disarticulated burials/deposits were sampled from sites across the region. This allows for comparison of histological preservation between burials interred with soft tissue intact (at least enough to support skeletal articulation) and disarticulated bone. Long bones were preferentially selected, particularly femora, as described in Section 5.2.1.1.

It was important to select burials/deposits from a variety of features to identify any patterns in histological preservation and the feature chosen for deposition. As discussed in Chapter 7, disarticulated human remains are most often recovered from pits and settlement boundaries (ditches/ramparts), so samples were selected to allow for a comparison between the two. A variety of other features are also represented to explore any potential patterns or distinctions connected to feature type (see Appendix 4).

Finally, elements with taphonomic indicators of manipulation and/or exposure (e.g. cut marks, old fractures, gnawing) were selected (when possible) to explore potential relationships between surface taphonomy and histological preservation. This is particularly necessary when fleshing out evidence for excarnation. Macro- and microscopic analyses together can elucidate otherwise ‘invisible’ mortuary processes such as exhumation of old burials and subsequent manipulation and/or exposure.

These variables together ensure that a full spectrum of funerary treatments is represented in the histological analysis thereby supporting a comprehensive study of mortuary practice across the southwest.

5.2.1.1. Skeletal element

Femora are traditionally used for diagenetic studies for several reasons: they are made of dense cortical bone, which is preferential for measuring microbial post-mortem alteration; it is the closest long bone to the gut and therefore conceivably most likely to be affected by enteric microbial activity; and in order to control for potential differences in diagenesis of skeletal elements (Nielsen-Marsh and Hedges 2000; Jans et al.2004; Hollund et al.2012). The potential influence of bone microstructure on diagenesis meant that it was necessary to sample long bones at the diaphyses (Hedges et al. 1995; Turner-Walker 2008). The present study preferentially targeted samples from femora diaphyses for consistency, however if a femur was not available from an assemblage or discrete individual, another long bone with sufficient cortical bone was chosen (e.g. tibia, humerus). Shafts of long bones contain relatively comparable proportions of cortical and trabecular bone (Junquiera et al. 1986) and limited comparative studies suggest that bioerosion does not significantly vary along bone diaphyses nor between different long bones (Dal Sasso et al. 2014; Booth et al. 2016). When two elements of the same side were not present, contextual and taphonomic evidence was examined to ensure that individuals were not duplicated. In addition to long bones, crania were deliberately sampled to represent Iron Age curation or preference of skulls in certain burial contexts.

In disarticulated assemblages, samples were taken from long bones of the same anatomical side (e.g. right femur) when possible to avoid false results through duplication. This ensures that each sample represents a discrete individual. At the request of museums, samples were taken from already fractured surfaces whenever possible. This meant that in some instances a different element was sampled instead of a femur. Care was taken not to remove any diagnostic taphonomy during sampling.

Cranial fragments were also selected to investigate whether skulls or crania are treated differently to the rest of the body, as suggested by some Iron Age scholars (e.g. Bulleid and Gray 1917; Cunnington 1923; Wheeler 1954: 53; Hencken 1938: 57; Gardner and Savory 1964: 221; Whimster 1981: 189; Wait 1985: 120). This allows for comparison of histological preservation amongst different element types, especially long bones, to investigate existing theories of curation and headhunting in the Iron Age (e.g. Armit 2011, 2012).

5.2.2. Analysis of bone diagenesis

5.2.2.1. Thin section light microscopy

As discussed in Chapter 4, thin section light microscopy of bone microstructure is an effective method of measuring bone diagenesis, particularly microbial bioerosion, in prehistoric human samples (Hackett 1981; Nielsen-Marsh and Hedges 2000; Hedges 2002; Turner-Walker et al. 2002; Jans et al. 2004; Nielsen-Marsh et al. 2007; 2010; Booth 2015; Booth and Madgwick 2016). Cardiff University Department of Archaeology and Conservation included all the facilities necessary to prepare samples and analyse thin sections of bone using transmitted light microscopy.

In other studies, the use of a Scanning Electron Microscope (SEM) has produced higher resolution images providing greater clarity into the morphology of the micro focal destruction (Turner-Walker and Syversen 2002; Turner-Walker et al. 2002; Hollund et al. 2012). However, compared to thin section light microscopy, SEM is expensive and time consuming. Moreover, both methods use a scale to convert the percentage of surviving microstructure into an ordinal score, so the basic assessments are unlikely to differ substantially (Hedges et al. 1995; Turner-Walker and Syversen 2002). For the aims of this present research, thin section light microscopy is sufficient.

5.2.2.2. Sampling human bone

Samples of compact bone measuring c. 10mm by 10mm were cut transversely from the periosteal to the medullary aspect using a Dremel rotary saw with diamond wheel attachment. Care was taken to ensure each cut was the minimum size required for analysis. In long bones, cuts were made on the diaphysis. If the bone had been previously sampled, the existing cut was extended to minimise further damage. If the bone was already fractured (by recent damage), a transverse cut was made from the existing break (e.g. Figure 14). When there was not an existing break, a 'window cut' was made on the posterior surface of the diaphysis. This was deliberately done so the destruction of the bone would be hidden in the event of future display. Long bones selected for sampling were often heavily fragmented through natural taphonomic processes or excavation, and a fragment of a suitable size and cortex already existed. In these instances, the fragment was extracted and no cuts needed to be made. It is worth noting that variability in the availability and preservation on bones meant that resulting thin sections represent various cross-sectional areas. This does not affect the scope of analysis, however, as it has been shown that bacterial attack does not differ significantly across long bone sections (Hackett 1981; Hedges et al. 1995).

Figure 14. A sampled long bone fragment. Source: author.

5.2.2.3. Embedding samples

The unstained and undecalcified samples approximately 10mm x 10mm were placed in individual cylindrical moulds and labelled with site and sample number. A solution of EpoFix resin mixed with EpoFix hardener (25:3 ratio) was then poured over the sample until covered following the protocol for embedding undecalcified bone (Schultz 2001). This resin mixture surrounds the bone sample to support structural integrity without contaminating the microstructure. The samples were then placed in a Nucerite dessicator vacuum (Figure 15) for at least 24 hours to draw out any air bubbles within the resin. Some samples were especially dry and brittle and would otherwise be destroyed in the cutting process. The resin mixture stabilises the sample and prevents future damage. The resulting embedded sample is known as a thick section.

Figure 15. Human bone samples embedded in resin (left) and sealed in a desiccator vacuum (right). Source: author

5.2.2.4. Preparation of thin sections

Transverse undecalcified thin sections of approximately 65 microns in thickness were cut from the thick sections using a REHA-tech RMS-16G3 annular diamond-saw microtome (Figure 16). Thick sections are mounted to the arm of the machine using superglue. Once mounted, the arm moves toward the edge of the blade at a speed of approximately 10mm per minute using an internal automated mechanism. A constant stream of water from an integrated hose connected to a mains-fed sink tap is directed on the edge of the blade keeps the blade cool and lubricates the cut. The initial cut produces an even surface across the embedded sample. Once the initial cut is made, the thickness of the next thin section is set using an integrated digital micrometre.

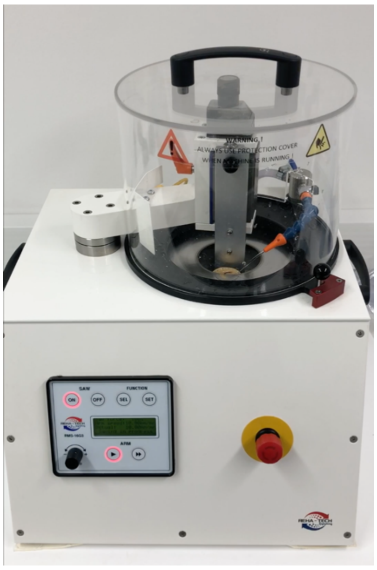


Figure 16. Microtome used to prepare thin sections. Source: author

Successful thin sections were typically 65 microns thick. However, the condition of the bone varied between samples and thin sections often crumbled away during the cutting. In these instances, adjustments had to be made either to thickness of the section or speed of the arm. Well preserved samples could be successfully cut at 50 microns in thickness, whereas poorly preserved samples had to be cut at c.100 microns and hand-polished to a suitable thickness. A thin section with a thickness of c. 65 microns or less is necessary to accurately measure diagenesis and identify types of post-mortem alteration. A thicker section results in several superimposed layers each containing various microstructural features, creating a muddled image.

It could be questioned that the water used to cool the blade may contain microorganisms or other destructive elements, which could cause a false image of diagenetic change. However, in Booth's PhD thesis (2014), he noted no change in the thin sections of fresh animal bone cut with the same methods.

It can be concluded that the limited time spent in contact with the water meant that the microstructure was not damaged by the tap water.

The thin sections were then hand-polished if necessary and mounted on VWR 90 glass slides using a drop of mounting medium (Entellan New, Merck chemicals) and a glass cover slip. The Entellan mounting medium is made of synthetic polymers suspended in xylene with a refractive index similar to glass (Booth 2015: 133). The mounting medium is quick drying and resistant to environmental influences, so samples were able to be produced at a quick pace. The slides were labelled with site number and sample number and left to cure for at least 20 minutes before analysing.

Thin sections from Somerset (Ham Hill, Cadbury Castle, Glastonbury Lake Village and North Perrott) were created prior to this project by undergraduate students as part of a Cardiff University Research Opportunity Placement (CUROP) project. These were created with a Struers minitome and polished by hand using a lap polisher to an acceptable thickness. Some of the sections were too thick for a reliable reading of diagenesis, so when necessary, new thin sections were made by the author using the REHA-TEC Microtome. All images in this thesis relating to these samples were created by the author and all observations on histological bioerosion, including OHI score (Table 3; Hedges et al. 1995), were decided by the author.

5.2.2.5. Analysis of thin sections

After being mounted on the slides and left to cure, the thin sections were analysed using transmitted light binocular microscopes at 50x, 100x and 200x magnification. Digital micrographs were captured using Nikon Eclipse ME600 and SPOT Software 5.1. Scans of fifteen samples (FSH01, 02, 03, 04, 07, 08, 10; HGV01, 02; PTN01, 02, 08, 13, 20, 24) were created by Anthony Hayes (Biomaging Hub, Cardiff School of Biosciences, Cardiff University) under brightfield optics using a x4/0.10 Plan N objective lens of an Objective Imaging 'Surveyor' slide scanning microscope equipped with a QImaging QICAM Fast 1394 colour digital camera.

The percentage of microstructure remaining for each sample was assessed using the Oxford Histological Index (OHI) (Hedges et al. 1995; Millard 2001; Table 3). OHI scores range from 0-5 with the lowest score representing complete destruction of microstructure, characteristic of an archaeological inhumation; and the highest indicating perfect preservation similar to a fresh cadaver. The OHI scores, which provide a generalised overview of microstructural preservation, are augmented by qualitative descriptions of the character of degradation for each sample. This system has been shown to correlate well (r>0.9) with more rigorous quantitative methods of measuring backscattered electron images in SEM (Nielsen Marsh and Hedges 2000: 1141).

Table 3. Oxford Histological Index (OHI) after Hedges et al. 1995; Millard 2001.

OHI score	% preserved bone microstructure	Description
0	<5%	No original microstructural features identifiable except Haversian canals
1	<15%	Small areas of well-preserved microstructure, or some lamellae preserved by pattern of destructive foci
2	<50%	Some well-preserved microstructure present between destroyed areas
3	>50%	Larger areas of well-preserved microstructure present among destroyed areas
4	>85%	Bone microstructure is fairly well-preserved with minor amounts of destroyed areas
5	>95%	Microstructure is very well preserved, similar to that of fresh/modern bone

Some histological studies use other or additional indices to measure diagenetic changes (cracking, staining, infiltrations) such as the General Histological Index (GHI) following Hollund et al. (2012). However, it was decided that assigning a separate GHI score for each sample served little interpretive value to this study as the scores do not necessarily inform on anthropogenic influence on mortuary practice or early post-mortem processes. However, cracking, infiltrations and staining may provide useful environmental proxies and thus are descriptively identified in samples where it benefits interpretation of treatments or deposition histories. This is especially pertinent for potentially waterlogged/peaty deposits that can preserve and stain microstructure in a way that may be easily confused for mortuary practice (especially Glastonbury Lake Village, discussed in Section 6.6).

5.2.2.6. Nomenclature and anatomy of bone microstructure

The main features of bone microstructure and relevant terminology used in the results will be briefly described. The types of bone used for histological analysis in this study are defined in Table 4. As previously stated, most of the bone samples are taken from compact/cortical bone formed by a complex of concentric lamellae (osteons) (Figure 17). Osteons are formed around central pores, called Haversian canals, which contain blood vessels and nerves. During life, Haversian canals function to transport nutrients to the cells housed within osteocyte lacunae located between the concentric layers of via canaliculi. In the endogenous model of bacterial bioerosion, putrefactive gut bacteria enter bone microstructure through Haversian canals and osteocyte lacunae and eat away at the collagen, usually respecting the boundaries of the osteon. The outer margins of osteons are made of thin, highly mineralised layers of bone called cement lines, which are more difficult to break down (and thus may be avoided by osteolytic bacteria). Unformed lamellar bone between osteons is called interstitial lamellae: this can be used to ascertain a rough age estimate as younger individuals will have more interstitial lamellae and older individuals will have more densely packed concentric lamellae (osteons). Figure 18 identifies the main microstructural features used to describe diagenesis on a histological sample from this study. Patterns of bacterial attack are also described related to spatial orientation within the transverse section: the outer surface (periosteum/periosteal aspect), middle (centre cortex) and medullary surface (endosteum/endosteal aspect) (see Figure 17).

Table 4. Summary of lamellar bone types after Mescher 2016 table 8-1.

Type of bone	Histological features	Major locations	Synonyms
Lamellar bone, remodeled from woven bone	Parallel bundles of collagen in thin layers (lamellae) with regularly spaced cells between; heavily calcified	All normal regions of adult bone	Mature bone; secondary bone
Compact bone, c.80% of all lamellar bone	Parallel lamellae or densely packed osteons with interstitial lamellae	Thick, outer regions (beneath periosteum) of bone	Cortical bone
Cancellous bone, c.20% of all lamellar bone	Interconnected thin spicules or trabeculae covered by endosteum	Inner regions of bone, adjacent to marrow cavities	Spongy bone; trabecular bone; medullary bone

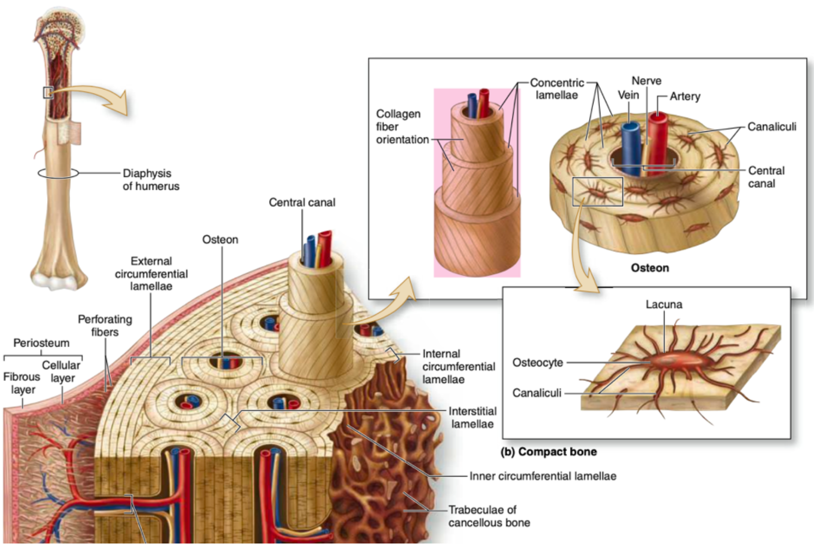


Figure 17. Schematic overview of the main features of lamellar bone microstructure. Source: Mescher 2016: figure 8-1

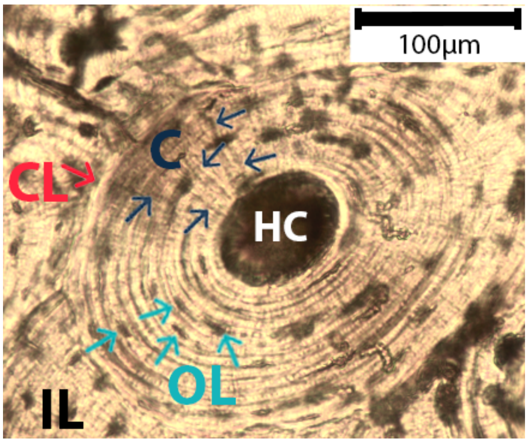


Figure 18. Micrograph of an osteon (10x magnification) with microstructural features annotated and indicated with arrows: HC= Haversian canal; OL=osteocyte lacunae; C= canaliculi; CL =cement line; IL= interstitial lamellae. Source: author

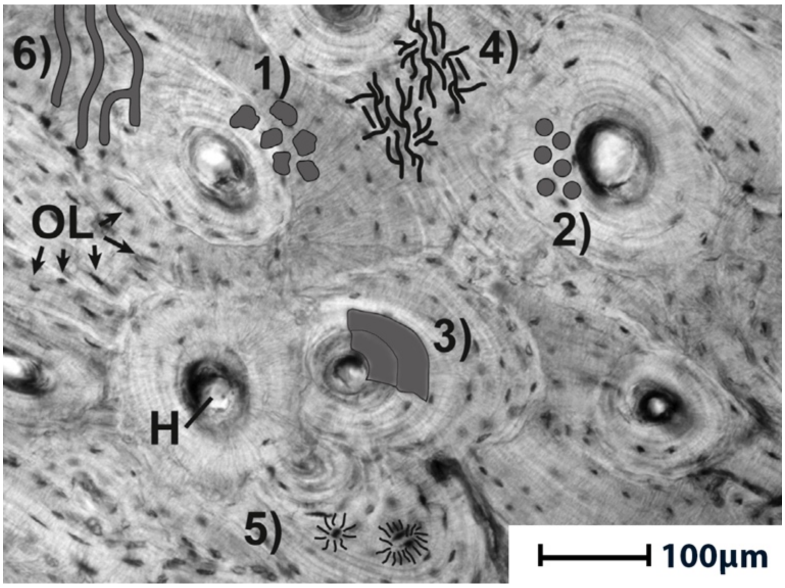


Figure 19. Different types of MFD 1) budded 2) linear longitudinal 3) lamellate 4) Wedl type 1 5) Wedl type 2 6) cyanobacterial tunnelling. OL - osteocyte lacunae, H - Haversian canal. Adapted from Brönnimann et al. 2018: fig.1

When possible, individual types of microfocal attack (MFD) are identified, especially when distinguishing Wedl (fungal, likely exogenous origin) from non-Wedl MFD (bacterial, likely endogenous origin). The various types of MFD are shown in Figure 19. This figure includes two additional types of microfocal attack (compared to Figure 11): Wedl type 2 and Cyanobacterial tunnelling.

Wedl type 2 tunnels have been described as enlarged canaliculi that do not always respect the lamellar structure (Trueman and Martill 2002; Jans 2008). However, this type of diagenetic change is not fully understood and may be caused by various agents including chemical decay and early bacterial attack (Hackett 1981; Hollund et al. 2012; White and Booth 2014; Fernández-Jalvo et al. 2010; Hollund et al. 2018). Therefore, in this thesis, Wedl type 2 refers to distinct tunnelling that appears to originate from osteocyte lacunae, transects the lamellar structure and is not strictly synonymous with enlarged canaliculi. It is often the case that the bioerosion is so concentrated that the Wedl tunnel types are indistinguishable: in this case, they are just referred to as Wedl or possible Wedl tunnels without the type.

Cyanobacteria tunnelling is attributed to decomposition in an aqueous environment (marine or fresh) caused by microorganisms that live in water. The defining characteristic of cyanobacterial tunnelling is that the tunnels are restricted to the external aspects of the bone (Bell et al. 1991; Bell 2012; Turner-Walker 2012; Huisman et al. 2017). The presence of this type of tunnelling would suggest the bone was exposed to a watery environment, as opposed to Wedl tunnels which have been argued to be related to a more aerated environment such as covered pits (Jans 2004; Booth 2016; Booth and Madgwick 2016; Brönnimann et al. 2019).

5.2.2.7. Collagen birefringence

The adjacent arrangement of collagen fibres in bone microstructure result in light refraction at perpendicular planes (Bromage et al. 2003). This is known as birefringence. Each sample was examined using circularly polarised light (CPL) to determine the extent of collagen birefringence. High birefringence usually corresponds with good microstructure preservation, thus indicating preservation of collagen proteins within the bone (Figure 20). However, some external factors can cause loss of birefringence, even when microstructure is otherwise well preserved, through processes of chemical hydrolysis. Loss of birefringence in otherwise well-preserved samples may indicate the bone was subjected to accelerated chemical hydrolysis. Some processes potentially relating to mortuary practice and depositional history can cause hydrolysis such as low-heat burning or intense cycles of wetting and drying (Collins et al. 1995; Nielsen-Marsh et al. 2007; Smith et al. 2007). Birefringence is scored for each sample in the present study as low, medium or high to compare with histological preservation: an element with OHI 0-1 would likely have low birefringence; 2-3 medium; 4-5 high).

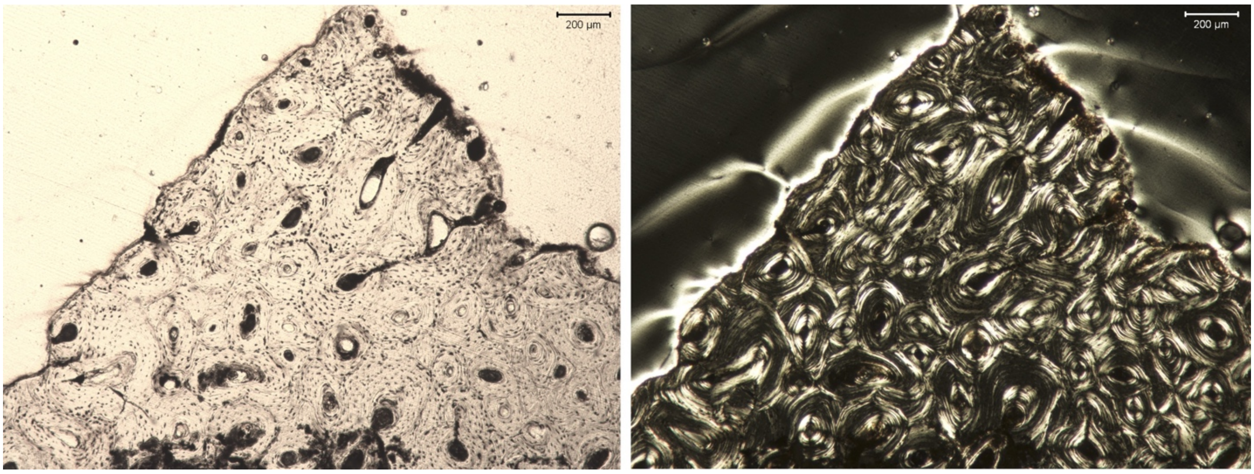


Figure 20. Micrograph demonstrating an area of a sample with good histological preservation (left) and high collagen birefringence (right). Source: author

5.2.3. Presentation of data

Data from histological analysis was entered into a Microsoft Excel spreadsheet for each sample (Appendix 3). This forms a database that includes the name of the site, deposit type, feature, chronological phase, type and side of element sampled, age at death of the represented individual, sex, taphonomic observations, OHI scores and birefringence level for all 286 samples.

The results of histological analysis is provided in Chapter 6. The data is presented within this chapter as tables, pie charts and bar charts to demonstrate the frequency and proportion of OHI scores amongst the entire sampled assemblage and when comparing variables such as element type and sex. Distribution maps for OHI scores were created using the open-source Geographic Information System (GIS) software QGIS. The points in the map represent the latitude and longitude coordinates of sites as reported in the relevant literature. The coordinates for each site are provided in Appendix 3.

Micrographs of the samples are provided throughout Chapter 6. These include both normal and polarised images for most of the samples. All micrographs from the samples included in this study were created by the author. Photos of the element sampled accompany the micrographs in most cases. Most photos were taken by the author, but some illustrations and scans of photographs were used from other published sources (usually site reports). All photographs and figures sourced from elsewhere are credited appropriately.

5.3. Taphonomic observations

The results of the histological analysis are considered alongside any taphonomic markers on the sampled elements. Taphonomic data in the present study is qualitative rather than quantified, used to interpret histological results and make general observations on mortuary practice. These observations are integrated within the results of histological analysis in Chapter 7.

Extant data on the taphonomy of sampled elements provided by osteological reports is used whenever possible. Taphonomic analysis of all Iron Age human remains in the southwest fell far beyond the scope and timeframe of this research. Additionally, as sampling often had to be completed within a single day to accommodate the host institutions, taphonomic observations recorded in site reports were recorded for the sampled elements when possible. Taphonomic observations by the author were made using a x10 and/or x20 hand lens with LED light used as an oblique light source when necessary. The observations were recorded at the hosting facility under adequate lighting. The most important taphonomic markers relevant to this study are those that may indicate exposure or intentional manipulation (described below). Therefore, other markers that inform more on the deposition environment (e.g. erosion, root etching) than treatments are not included.

5.3.1. Fracturing (fresh or dry)

The presence of fresh or dry fractures on a skeletal element can provide valuable insight on post-mortem treatments. In the first instance, fractures are identified as occurring sometime in antiquity rather than from recent damage because the fracture surface will be lighter in colour than the rest of the bone (White et al. 2012: 460-1; Moraitis and Spiliopoulou 2006: 244). The freshness of the fracture—whether it was likely fractured peri- or quickly post-mortem, or after the skeletal elements had lost the elasticity of fresh bone—was assessed using Outram's (2001, 2002) Fracture Freshness Index (FFI). Fresh fractures are easily identified as the fracture surface will be smooth as opposed to undulating seen in dry fractures (White et al. 2012: 460-1). However, dry fracturing is more difficult to interpret because dry bones may be fractured as part of a mortuary practice, or may incidentally occur as the result of some other ancient disturbance (e.g. farming or construction of new features). For the purposes of this research, fractures are generally described as being fresh, semi-fresh, or dry, to indicate length of time that passed between death and breakage.

5.3.2. Gnawing

The presence of gnawing on skeletal elements indicates the bone was exposed at some point and made available to animals. This may be the result of scavenging, or the element may have been intentionally exposed (e.g. excarnation). Gnawing was identified by referencing the morphology of tooth marks compared to taphonomic manuals (Fernández-Jalvo and Andrews 2016: 32, 66-79) and experimental studies (Haynes 1982, 1983a,b, Binford 1981). Most of the gnawing identified by the author was consistent with carnivore gnawing. Detail on direction, intensity, and size of animal is not recorded. Instead, it is noted whether or not the element had evidence for gnawing, and whether gnawing extended to any fracture surfaces. This could help identify the sequence of pre-depositional processes the bone went through prior to deposition.

5.3.3. Weathering

Evidence for weathering on bone suggests the bone was exposed to the elements for a considerable length of time. Exposure to variable weather conditions (direct sunlight, rain, temperature fluctuations, wind, etc.) results in the separation and destruction of bone surface as shown by cracking, splitting and flaking present on the element (Behrensmeyer 1978: 153; Fernández-Jalvo and Andrews 2016: 202). Observations of weathering made by the author did not include a score, but overall presence and general severity of weathering was noted.

5.3.4. Cut marks/processing

Any evidence for peri- or post-mortem manipulation in the form of cut marks were noted. Cut marks are distinguished from other taphonomic indicators such as carnivore tooth marks by the V-shaped cross section formed by bladed instruments (Black et al. 2012: 468). Cut marks may indicate the body had been defleshed or physically disarticulated whilst still retaining soft connective tissue.

5.3.5. Burning/exposure to heat

Burning may be indicated by charring of the bone surface. Some other taphonomic processes may result in changes to the bone that look like burning, for example manganese staining, particularly in caves (Shahack-Gross et al. 1997). Therefore, the deposition context was considered (the black colouration on elements from Fishmonger's Swallet, for example, were very likely manganese stained). Charcoal staining was noted on some elements which may indicate exposure to hot coals, as will be explained in Chapter 6

5.3.6. Polishing/abrasion

An element with a smooth, polished or abraded surface may indicate repeated handling and may suggest curation. Elements that had a smooth, shiny appearance were noted as potentially polished. However, other causes may result in a polished bone surface, for example animal licking, trampling, exposure to running water and bioturbation (Fernández-Jalvo and Andrews 2016: 169). Therefore, the polished element was considered alongside other evidence, for example if the bone was worked (e.g. perforated or made into a tool) or in a deposit with other human remains that had been worked.

In addition to the above, unusual colouration and staining of the bone is noted, especially if it stands out from other elements recovered from the site. Considering macroscopic taphonomic evidence with histological preservation allows for a more nuanced understanding of mortuary practices, especially those which were clearly comprised of multiple stages of manipulation prior to the final deposition.

5.4. Frequency analysis of burial characteristics

The data for this analysis was compiled from published site reports, Historic Environment Records (HER) and unpublished grey literature. Every Iron Age burial or deposit of human remains from all of the sub-regions were included to the best of the author's ability. This resulted in 1391 total entries from 218 sites provided in Appendix 2. Frequency analyses were performed on six main burial characteristics (deposit type, age, sex, position, side, phase) to create a comprehensive overview of Iron Age burial in the southwest. Any patterns are identified. The main characteristics compiled in the database and used in the frequency analyses are described below.

- **Site** – the name of the site where the human remains were recovered is recorded in the first instance. The geographical co-ordinates for each site is provided in Appendix 1. This allows for inter- and intra- site comparison across the region.

- **Deposit type** – deposit types include articulated, partially articulated, disarticulated and cremated. For disarticulated and partially articulated deposits, the body part or type of element is recorded for frequency analysis (particularly regarding disarticulated skull and long bone frequency).

    - 'Articulated' describes skeletons with all elements in correct anatomical positions, or was likely deposited as a complete inhumation but has been disturbed or lost elements due to natural taphonomic process (e.g. acidic soil). An articulated deposit was presumably fleshed upon burial, thus maintaining the skeleton's natural position.

    - 'Partially articulated' describes a burial that represents only a body part or a skeleton that is missing major body parts. This suggests that the body part was either deposited while still connected by soft tissue, or the rest of the body/skeleton had been removed from the burial environment. In either case, partially articulated skeletal elements imply soft connective tissue was present at the time of deposition.

  - ‘Disarticulated’ describes a single deposit of a bone or bones. This includes complete isolated elements, a single bone fragment, fragments from the same element, or a small assemblage of elements with no anatomical relation to each other. A disarticulated deposit implies the bones had been stripped of soft tissue sometime before the deposition. Individual entries are added to database to represent the minimum number of individuals (MNI) (e.g. if a deposit has an MNI of four, there will be four entries.

  - ‘Cremation’ describes a deposition of bones that had been cremated or partially cremated. For deposits representing more than one individual, an entry is made for the MNI.

- **Age** – age categories are broken down by adult, adolescent, juvenile, and infant/neonate following the terminology used in relevant literature when possible. Age categories are supplemented by tabs where the range of years and subcategory (e.g. young, mature, elderly) are provided, but this level of detail is not included in the analysis as the data is too incomplete. If the age is inconclusive, but clearly not a child, the entry is listed as ‘subadult/adult’.

  The details available for age at death are often inconclusive or unreliable, especially for antiquarian excavations. It is especially difficult to determine precise age of disarticulated and heavily fragmented remains. Therefore, in some cases, age is inferred through other evidence such as grave size. Additionally, different ages are used to differentiate between age categories—for example, the threshold for ‘mature’ and ‘elderly’ adult vary across site reports and it was beyond the scope of this research to disentangle the inconsistencies. Therefore, broad categories were used and specific age ranges are provided descriptively when necessary and possible.

  The age categories follow that which is used in the relevant literature when possible, but failing this, ages ranges of the categories used in this research are as follows:

- Infant: perinatal to one year old
- Juvenile: two to twelve years old
- Adolescent: thirteen to eighteen years old
- Adult: eighteen years and older

- **Sex** – for adults and older adolescents, information on sex was recorded as either male (M) or female (F) or probably male (M?) or female (F?) based on information provided in site reports.

- **Position** – the posture of articulated burials (and partially articulated when applicable) within the grave were recorded as crouched, tightly crouched, flexed, and extended. Additional less frequent positions include sitting, squatting, kneeling, squatting, prone and supine (presumably extended).

- **Side** – whether the body was placed on the left or right side was also noted. Other possible entries include ''Back" if they were lying on their back (probably describing a supine position).

- **Feature** – the type of feature in which the deposit was interred was recorded. Bones are recovered from a myriad of places within Iron Age contexts, so the options here are varied. Features, for the sake of this research, may include manmade holes in the ground, for example graves, pits, postholes, ditches and quarries. Structures and terrestrial monuments are included, for example ramparts, roundhouse floors, barrows, middens and cairns. Human remains were also placed in natural features such as caves, bogs, rivers and tree hollows.

- **Phase** – the chronological age or phase of the burial/deposit is recorded as Early Iron Age (EIA) (c.800-400 BC), Middle Iron Age (MIA) (c.400-100 BC) or Late Iron Age (LIA) (100 BC-AD 43). Some deposits are tentatively dated and may extend into the Late Bronze Age (LBA) or Roman period (RB). Transitional periods are represented with two ages together, such as LBA/EIA (Late Bronze Age to Early Iron Age). As discussed in Section 1.3, dating burials is fraught with difficulties, so many entries are given a broad range e.g. MIA/RB. Entries where the specific period within the Iron Age is unknown are simply Iron Age (IA). Invariably some of these will be only tenuously considered Iron Age, particularly for earlier chance discoveries where no material remain but were vaguely described in local newspapers or society bulletins. This tab has a supplementary tab where any associated radiocarbon dates are provided.

- **Orientation** – for articulated burials, position of the body relative to the cardinal direction was recorded when possible. The direction of the head and feet were recorded, for example north to south (N-S) meaning the head was to the north and the feet were to the south. In many cases, only the position of the head is noted in the site reports. This is further explained in Section 7.3.2.

The following descriptive characteristics were not included in the frequency analysis but are useful for interpretation of the burials/deposits. Future studies incorporating these into frequency analyses would be useful but fell beyond the scope of this research.

- **Grave goods** – any grave goods accompanying the burial was noted as described by excavation reports. This includes objects that were intentionally placed in the grave by mourners, for example vessels, objects of personal adornment, mirrors, weapons, and tools.

- **Associated materials** – human remains deposits are often found in association with objects or remains that are not grave goods but may be useful for interpretation. This material often falls under a broad category of domestic refuse such as broken pottery and animal bone; large conspicuous stones or blocks of chalk; or objects that were not close enough to be conclusively grave goods but may have been deliberately deposit during backfilling.

- **Trauma** – any evidence for antemortem and perimortem trauma was recorded including blunt and sharp force trauma.

- **Pathologies** – signs of pathologies or any health-related markers identified in excavation reports are noted.

- **Taphonomy** – taphonomic details are less frequently included in site reports, but where possible, this information is described. Taphonomic markers included in this study are described above in Section 5.3.

Whenever information about any of the above characteristics was unable to be found or inferred, these fields are populated with a dash (-) to signify that the data is unavailable.

5.4.1. Presentation of data

Every individual deposit of human remains dating to, or likely dating to, the Iron Age were entered into an Excel database (Appendix 2). The tabs in the database represent various burial characteristics, described above. Information regarding the sites were entered into a separate database, including latitude and longitude coordinates (Appendix 1). From this, distribution maps were created to illustrate the spatial distribution of various burial types and characteristics across the region.

The results of this analysis are presented in Chapter 6. The results are presented in tables, charts and graphs to illustrate the frequency and proportion of burial characteristics. All of the maps, tables, charts and graphs presented in Chapter 6 were made by the author.

5.5. Conclusion

This chapter has described the methodologies used in the present research to investigate Iron Age mortuary practice in southwest Britain. The incorporation of histological analysis, taphonomy, and burial characteristics means that early post-mortem, secondary, and depositional treatments are represented.

The choice was made to keep the analyses generally broad as this is the first project of its kind to apply integrated methods described above to study Iron Age mortuary practice in this region. As explained, details of certain deposits are provided when necessary to further interrogate mortuary practice suggested by the histological preservation.

6. Results: histological analysis

6.1. Introduction

This chapter provides the results of histological analysis of 286 sampled elements from 23 sites across the southwest. Variation in histological preservation across the sampled corpus is explored in relation to taphonomic and archaeological evidence to inform on potential mortuary practices. The breakdown of samples per site and county is shown in Table 2, which also provides the case study site codes used to identify samples throughout this chapter.

The underlying geology of the sites are identified and discussed throughout the chapter, as necessary, when the deposition environment may significantly influence histological appearance (e.g. preservation, staining). This point is elaborated upon in the following section. See Appendix 4 for the location of the case study sites on a geological map and a short description of the underlying geology for each site.

The chapter begins by presenting the overall results of histological analysis across the entire corpus of samples. This allows for a general comparison among sub-regions, feature types, and sex. Following this, the chapter is then primarily organised by three deposit types: articulated burials, partially articulated deposits, and disarticulated deposits. The number of samples per deposit type is shown in Figure 21. The sections begin with a brief description of the overall results for the deposit type: OHI breakdowns for the total assemblage; by county; by male and female and by element type. The sections on deposit type are then subdivided by feature: articulated burials include samples from a cist cemetery (Harlyn Bay), graves, pits, boundaries (ditches) and unknown features. Partially articulated deposits include samples from graves, boundaries (ditches and ramparts), pits, and other. Disarticulated deposits include samples from a cave (Fishmonger's Swallet), a monumental midden (Potterne), boundaries, graves, and a category of 'other' features comprising a possible ossuary, post holes, a roundhouse floor and an occupation layer.

The feature subsections begin with a table that describes each sample analysed within the deposit and feature type. Each table will provide the sample number, county, element sampled, and side when possible. For articulated burials, the table includes demographic information on age and sex, when possible. For partially articulated and disarticulated deposits, any evidence of trauma and taphonomy are summarised. OHI scores and birefringence level are given for each sample. Charts illustrating the percentage of OHI scores for the deposit type and feature follow the tables.

The feature subsections are further divided by OHI categories 0-1, 2-3 and 4-5, when applicable. The histological preservation of samples from each OHI category are described using micrographs (both normal transmitted light and polarised light, when possible). In addition to micrographs, photographs of the sampled elements and/or illustrations are provided to demonstrate taphonomy and/or burial circumstances, when necessary, to interpret the histology. Significant patterns in histological preservation relating to demographics, regional and intra-site variation will be briefly noted but explored in more detail within the discussion. Each feature subsection concludes with a brief summary.

Outlier sites, Glastonbury Lake Village and Cadbury Castle, are independently described at the end of the chapter. These samples are described separately because Glastonbury Lake Village is a unique wetland settlement with burial evidence that diverges significantly from the other case study sites in context, taphonomy and histological results. The human remains from Cadbury Castle were interpreted as a massacre deposit and therefore do not necessarily represent Iron Age mortuary practice. The circumstances of Glastonbury Lake Village and Cadbury Castle are further explained in their respective sections and further information on the deposits can be found in Appendix 2.

Finally, the chapter will conclude with an overall summary of the results presented.

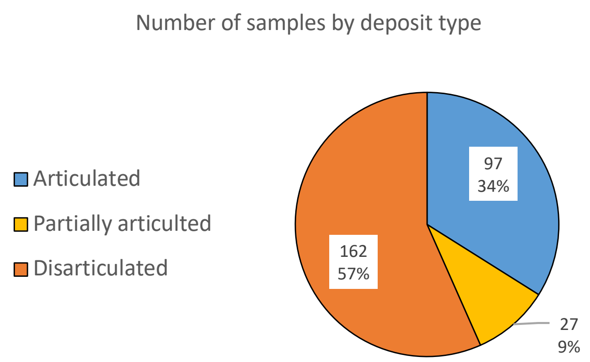


Figure 21. Chart showing the number of histological samples by deposit type. Source: author

6.2. Overall results for histological preservation

Overall, the majority of specimens showed poor histological preservation with scores of OHI 0-1 comprising 71% of the total sampled corpus (Figure 22). The breakdown of OHI score by deposit type (articulated, partially articulated and disarticulated) are shown in Figure 23. These low scores are consistent with long-term articulated inhumations buried shortly after death, a process that prolongs the decomposition process by preventing invertebrate access and maximises skeletal exposure to putrefactive activity (Rodriguez and Bass 1983; 1985; Mann et al. 1990; Campobasso et al. 2001; Breitmeier et al. 2005; Simmons et al. 2010; Zhou and Bayard 2011; White and Booth 2014; Booth 2016). Eighteen percent of specimens showed arrested patterns of bacterial attack with middle OHI scores of 2-3 consistent with more rapid decomposition (but not as rapid as defleshing or excarnation): a likely scenario would be protected exposure in covered pits (Booth and Madgwick 2016), or a change in circumstance where the sampled element had been removed from the decomposing soft tissue, for example intentional selection and removal from an inhumation burial. Specimens with high levels of histological preservation (OHI 4-5) make up 11% of the total sample and the low instance of bacterial attack has implications for early post-mortem treatment. As previously explained, high OHI scores indicate rapid removal of soft tissue: possibilities include excarnation (exposure), defleshing, or mummification/evisceration.

However, it is necessary to consider the potential influence of geological/environmental factors on OHI score and histological appearance, especially when these may produce similar results to a mortuary treatment. Glastonbury Lake Village, for example, was located on a wetland site and several of the sampled elements were recovered from the peat surrounding the settlement (see Section 6.6). As shown in previous studies (Polson et al. 1985; Cotton et al. 1987; Mant 1987; Janaway 1996; Turner and Wiltshire 1999; Fielder and Graw 2003; Wilson et al. 2007; Turner-Walker and Jans 2008; O'Connor et al. 2011; Hollund et al. 2012; Booth et al. 2015), anoxic environments such as a bog may result in good histological preservation as well as deep red staining. On the other hand, burning may also result in good histological preservation and red/brown staining (e.g. Nicholson 1993; Hanson and Cain 2007; Squires et al. 2011). Similarly, the samples from Harlyn Bay may be affected by the beach conditions: a salty environment may cause 'mummification' through desiccation (whether intentional or unintentional) therefore resulting in high histological preservation, or they may be mummified through other treatments that involve heat (see Section 6.3.1). In these instances, interpretation relies more heavily on taphonomic evidence (e.g. presence or absence of charring) with the caveat that some variation may be caused by natural, or multiple factors.

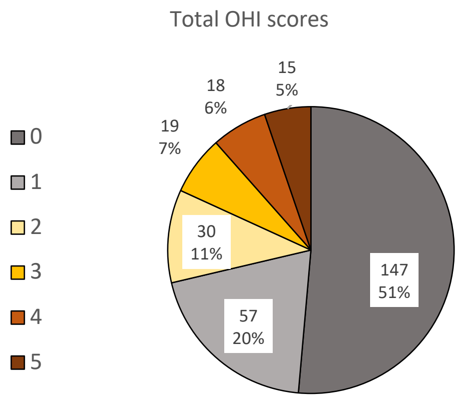


Figure 22. Chart showing the total OHI breakdown for all samples included in this study. Source: author

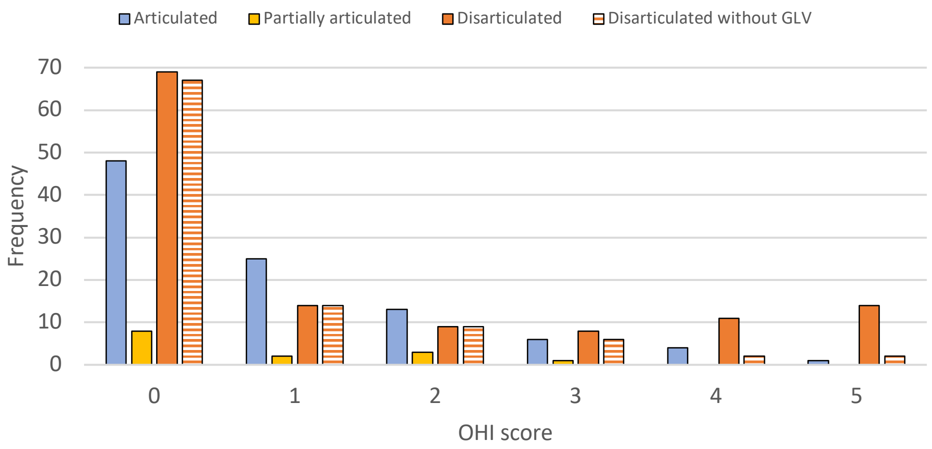


Figure 23. Graph showing the total distribution of OHI scores by deposit type. Source: author

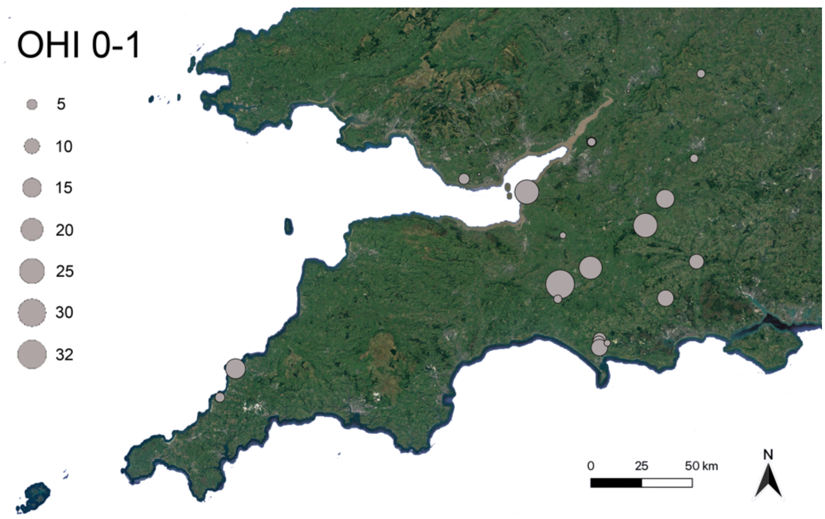


Figure 24. Map showing the distribution of samples scoring OHI 0-1. Source: author

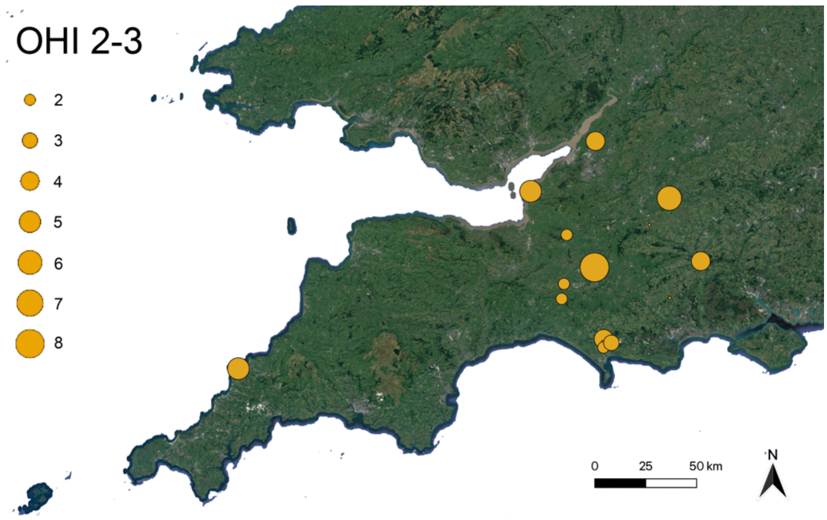


Figure 25. Map showing the distribution of samples scoring OHI 2-3. Source: author

Figure 26. Map showing the distribution of samples scoring OHI 4-5. Source: author

Figure 27 shows the percentage of OHI scores represented in the samples from each sub-region. Low OHI scores (0-1) are the most frequent in all sub-regions suggesting inhumation burial is the most represented mortuary practice across the entire southwest. It is necessary to point out that some of the variations in middle and high OHI scores can be attributed to evidence from single sites which may represent local traditions or special events: the subregion with the highest frequency of OHI 4-5 high is Somerset because most of the sampled elements from Glastonbury Lake Village show excellent histological preservation, possibly indicating a unique mortuary practice at this site—this is described in detail later in the chapter (Section 6.6). Similarly, Gloucestershire shows the highest percentage of specimens with OHI 2-3 with four of the 12 samples showing arrested bacterial attack, all from the same cave (Fishmonger's Swallet). These are described and further discussed later in the chapter (Section 6.5.1).

As previously discussed, the environmental conditions across much of south Wales do not support skeletal preservation, so the sample size is arguably too small to draw conclusions—however, all of the sampled elements from Wales had poor histological preservation, including the disarticulated remains which will be discussed further in the Section 7.5.

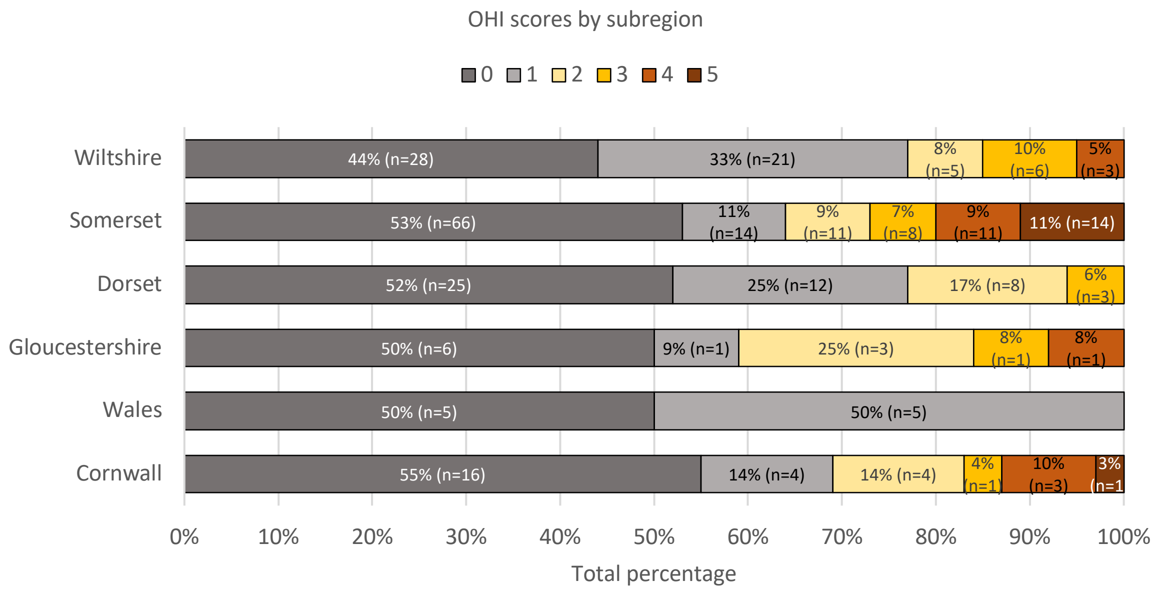


Figure 27. Graph showing the percentage of OHI scores from samples in each subregion. Source: author

6.2.1. Total OHI scores by feature

Figure 28 shows the percentage breakdown of OHI scores from samples recovered from different features. The histological results from the elements sampled from a cave (Fishmonger's Swallet) midden (Potterne) and cists (Harlyn Bay) are described in detail within sections 6.5.1, 6.5.2 and 6.3.1 respectively, so will not be described in detail here, but it is worth noting the percentages of the represented features against each other. An interesting result is that all of the sampled elements from settlement boundaries (n=34) had poor histological preservation scoring OHI 0-1, including disarticulated skull/skull fragments (n=3). This is contrary to the belief that the presence of disarticulated skulls in ditches is evidence for the display of severed heads or 'war trophies'—instead, these results suggest that these are instead redeposited elements from burials elsewhere. The highest percentage of sampled elements from pits also scored low OHI, but few samples showed a range of preservation including seven middle-ranging scores (OHI 2-3) and two high scores (OHI 4-5). This indicates that slightly more variations in mortuary practice are represented by the remains from pits compared to those from ditches.

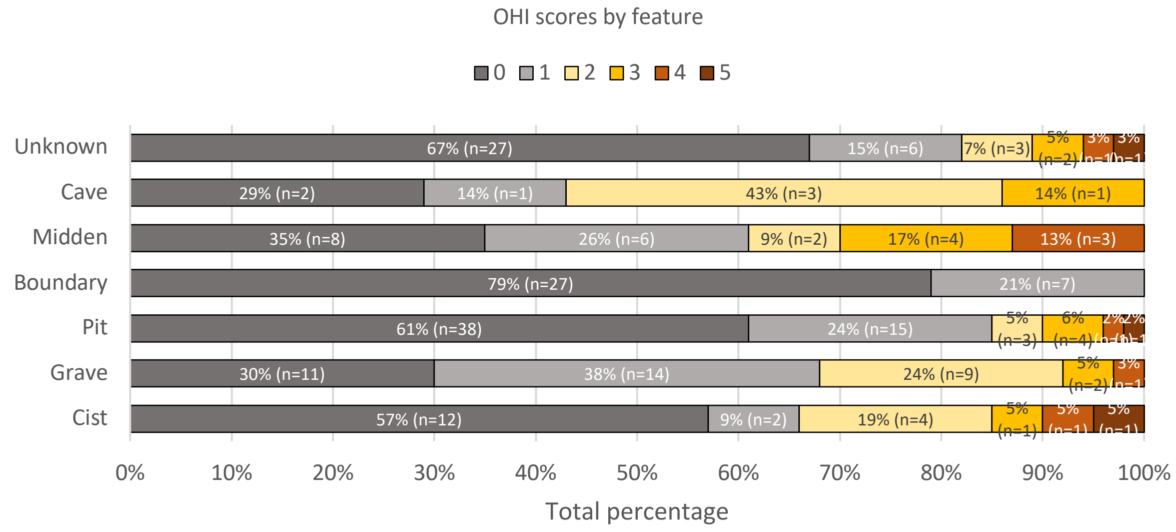


Figure 28. Graph showing the percentage of OHI scores from different features. Source: author

Perhaps the most surprising result regarding feature type is the percentage of middle and high scores in the samples from graves and cists, especially compared to those from boundaries and pits. As will be discussed later in the chapter and in Chapter 8, there is evidence for re-opening of graves for removal or replacement of elements in some of the sampled sites and others across the southwest. There was also evidence for disarticulation and manipulation within the cist cemetery at Harlyn Bay. This may challenge the assumption that storage pits were commonly used as mortuary arenas to facilitate selective disarticulation through protected exposure and suggests that graves and cists were central to a more dynamic mortuary practice than previously thought (i.e. not necessarily representing a static articulated inhumation).

6.2.2. OHI scores for males and females

Of the samples where biological sex of the represented individual or element could be determined, 51 were female and 54 were male. As shown in Figs 29 and 30, there is very little difference in OHI scores between male and female specimens. This suggests that similar mortuary rites were afforded to each sex with no evidence for preference indicated by histological preservation. Equifinality should be considered here as many different processes can result in the same histological signature, particularly for middle and high OHI scores—nevertheless, long-term primary inhumations shortly after death appear to occur at the same rate for both sexes.

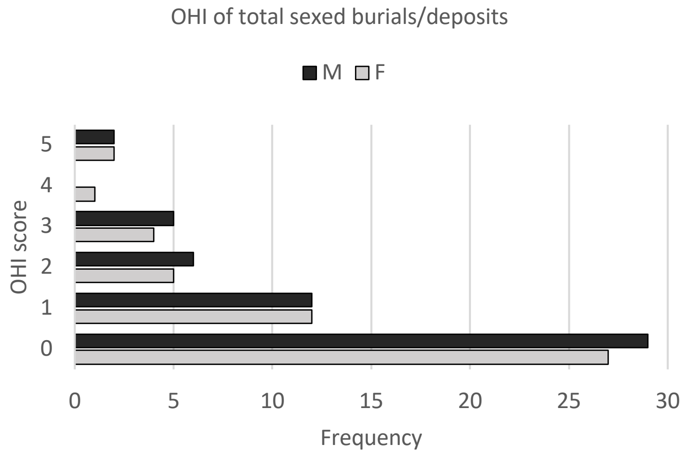


Figure 29. Graph showing the OHI distribution of male and female deposits. Source: author

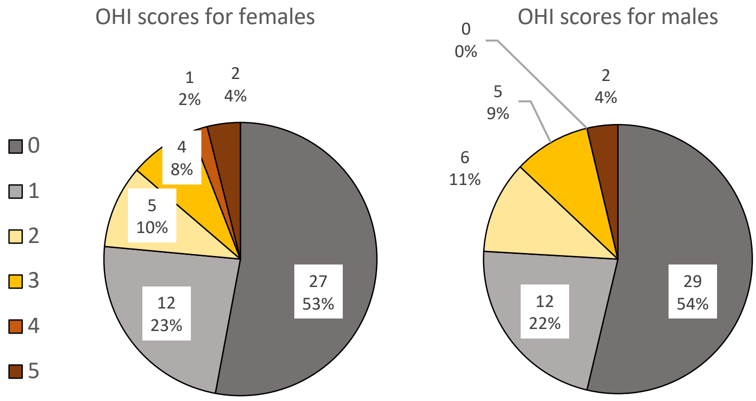


Figure 30. Charts showing the OHI breakdown for females (left) and males (right). Source: author

6.2.3. Summary

To summarise, the majority of the specimens showed low histological preservation scoring OHI 0 and 1. This suggests most of the sampled elements, including disarticulated remains, were originally from articulated inhumations buried shortly after death. This was the case across all sub-regions with some variation in the frequency of middle and high OHI scores that may indicate local traditions, possibly even site-specific mortuary practices. Some feature types may have been preferred over others for mortuary practice, for example all of the samples from settlement boundaries had little to no preserved microstructure compared to pits which had samples representing the range of OHI scores. Graves and cists had more variety in preservation, indicating they were part of varied mortuary practices. Finally, there was no obvious difference in the frequency of histological preservation between male and female samples.

6.3. Articulated burials

Articulated burials are represented in this study by a total of 97 sampled individuals (34% of total samples). The percentage of OHI scores for all articulated burials are shown in Figure 31, and further broken down by feature types in the following sections. Overall, the majority of articulated burials had poor histological preservation consistent with OHI 0-1. This would be the expected score for an articulated inhumation, as previously discussed in Chapter 5. However, almost 25% of the samples had higher OHI scores of 2-3 (19%) and 4-5 (5%). This indicates some variation in the post-mortem treatment of articulated burials which will be further described in the following sections.

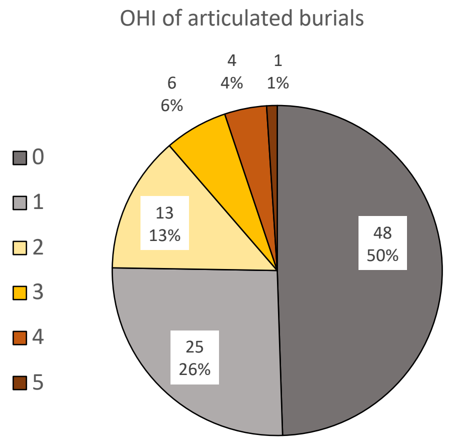


Figure 31. Chart showing the OHI breakdown for articulated inhumation burials. Source: author

The overall frequency of OHI scores from articulated samples in each feature is shown in Figure 32. This will be further broken down in the following subsections, but is illustrated here to allow for a visual comparison of scores from each feature.

Figure 33 presents OHI scores of articulated burials by county. The samples are broken down by site, county and OHI score in each subsection, but is provided here, again, for visual comparison. It is interesting to note the frequency of higher OHI scores in Cornwall compared to the other counties—this may indicate varied mortuary practice afforded to some individuals (but not most), which will be further described in Section 6.3.1 and discussed in Chapter 8.

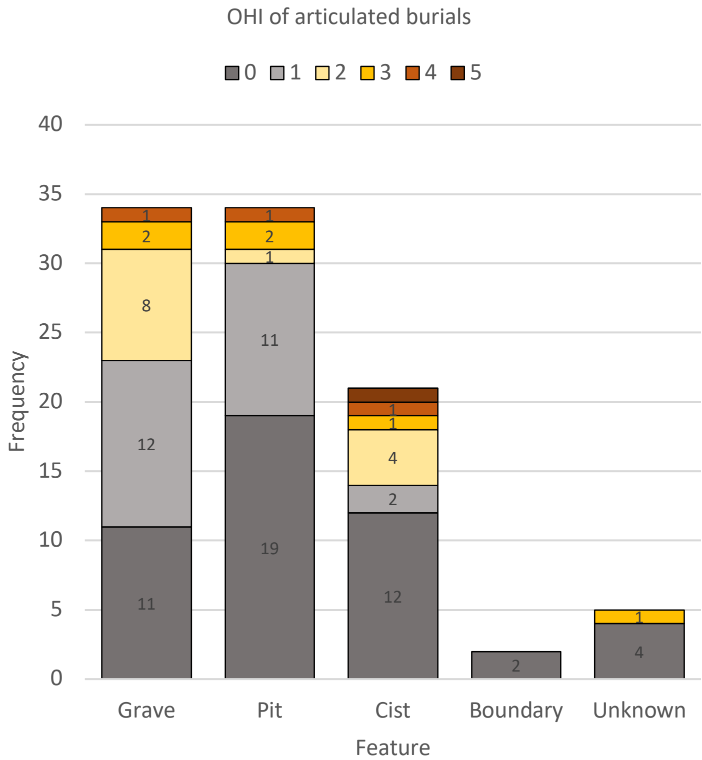


Figure 32. Graph showing OHI scores of articulated inhumation burials from different features. Source: author

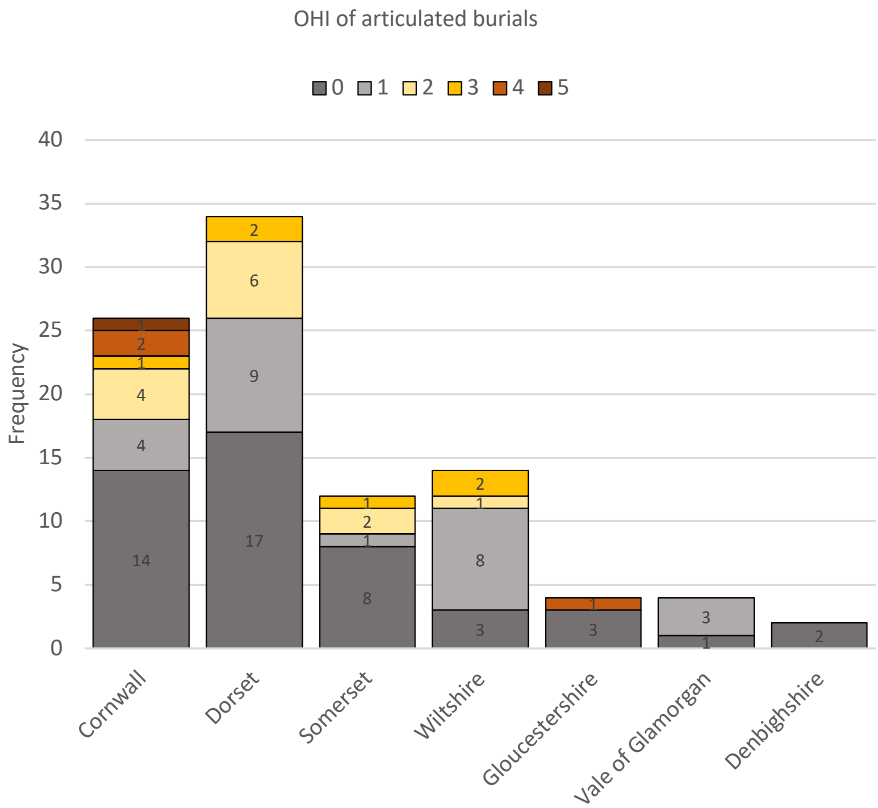


Figure 33. Graph showing OHI scores of articulated burials by county. Source: author

Demographic details of the sampled individuals are briefly mentioned throughout the following sections due to biases in the dataset, for example it was not possible to determine sex for most of the sampled individuals from Harlyn Bay. When it is possible to produce potentially meaningful results, the difference in histological preservation between articulated male and female burials are provided in the following subsections.

6.3.1. Articulated – cists

All 21 samples from articulated inhumations in cists were taken from a single site, Harlyn Bay, on the west coast of Cornwall (Appendix 4). The depositional environment for all the samples, as far as can be discerned, was windblown sand, though the excavation reports describe some of the graves as being filled with water, or 'wet' (Bullen 1930). These may have been filled with water due to rising and falling of water table, or possibly within the modern tidal zone.

Table 5. Samples from articulated inhumation burials within cists. Source: author

Specimen	County	Element	Side	Age	OHI	Birefringence
HLB 04	Cornwall	Radius	R	Adult	0	None
HLB 05	Cornwall	Tibia	L	Adult	0	None
HLB 06	Cornwall	Femur	L	Adult	0	None
HLB 07	Cornwall	Femur	L	Adult	0	None
HLB 08	Cornwall	Femur	R	Adult	2	Med
HLB 09	Cornwall	Humerus	L	Adult	0	None
HLB 10	Cornwall	Ulna	R	Adult	3	Med
HLB 11	Cornwall	Ulna	L	-	1	Low
HLB 12	Cornwall	Fibula	R	-	1	Low
HLB 13	Cornwall	Tibia	R	Adult	2	Med
HLB 14	Cornwall	Humerus	R	Adult	2	Med
HLB 15	Cornwall	Tibia	L	-	0	None/low
HLB 16	Cornwall	Femur	R	-	0	None
HLB 17	Cornwall	Femur	L	-	0	None/low
HLB 18	Cornwall	Radius	L	-	0	None
HLB 19	Cornwall	Parietal	L	-	0	Low
HLB 20	Cornwall	Femur	R	Adult	0	Low
HLB 21	Cornwall	Radius	L	Adult	5	Low
HLB 22	Cornwall	Parietal	L	-	0	Low
HLB 23	Cornwall	Parietal	R	Young adult	2	Med
HLB 24	Cornwall	Occipital	-	Adult	4	High

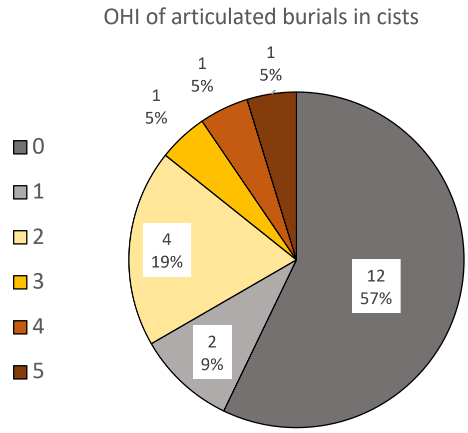


Figure 34. Chart showing the OHI breakdown of articulated burials in cists. Source: author

It is essential to note that the excavations happened in the early 20th century, and it was not possible to match accessioned skeletal material with skeletons in the excavation report (Bullen 1930). The excavation report noted that several of the cists appeared to have been disturbed with elements missing or misplaced, for example skulls. It was suggested by excavators (Bullen 1930) that these disturbances were deliberate as part of a mortuary rite rather than accidental displacement.

Additionally, the excavation reports describe an ‘ossuary’ deposit which was full of disarticulated remains, mostly skulls. Significant work has been undertaken by Alexis Jordan (University of Milwaukee) to reunite the skeletal elements, but at the time of sampling it was uncertain if the elements represented articulated inhumations or disarticulated remains. HLB01-03 are possibly from a disarticulated deposit so these have been grouped with disarticulated samples (Section 6.5).

The OHI scores for articulated/probably articulated deposits in cists are broken down in Figure 34. The majority of the OHI scores from the articulated inhumations in cists scored OHI 0-1 (66%) with microfocal destruction consistent with long-term inhumation. However, it is interesting that there were 5 middle scores of OHI 2-3 (24%) and 2 high scores of OHI 4-5 (10%), indicating possible variety in burial treatments within the site. However, it is also possible that these represent natural variation associated with the same rite rather than different processes, with disturbances occurring at different points in the process, or otherwise altered by the environment (e.g. flooding of the grave cavity).

6.3.1.1. OHI 0-1

Most of the samples were completely destroyed by bacterial bioerosion with poor histological preservation (Table 5), for example HLB06 (Figure 35A and B). The sample was taken from the proximal end of an adult left femur shaft. The MFD affected virtually all of the transverse section from the periosteum to endosteal surface, and the sample showed no collagen birefringence. The majority of the samples from Harlyn Bay representing articulated inhumations in cists looked histologically similar to this example.

Sample HLB12 is from a right fibula shaft with no obvious taphonomic evidence for manipulation or exposure. The majority of the sample is destroyed with thick, homogenous MFD covering the transverse section from the endosteal surface but stopping at the subperiosteal margin, creating a stark interface (Figure 35C). The periosteal surface was well preserved across most of the sample with low amounts of localised bacterial attack. This is reflected in the birefringence, which is higher along the well-preserved margin and virtually absent in the rest (Figure 35D). Some areas of the periosteum have been stripped away, possibly from an acidic burial environment, or changes in environment (e.g. becoming wet and dry (shrinking) over time).

Although MFD is too dense to determine specific types in most of the low-scoring samples, HLB22 (sampled from a small left parietal fragment) has clear examples of fungal tunnelling (Wedl type 1) and possibly cyanobacterial tunnelling (Figure 35E). The histological appearance of this sample is different to others from Harlyn Bay and more closely resembles samples from Trethellan Farm (Section 6.3.2). The remaining microstructure has a grainy appearance and the particles within the lamellae glow luminescent when viewed with polarised light (Figure 35F), possibly suggesting that this sample was exposed to a sandier environment than some others. This, along with the presence of waterborne microbial tunnelling, may indicate the individual was interred within an environment that was wet or prone to water retention.

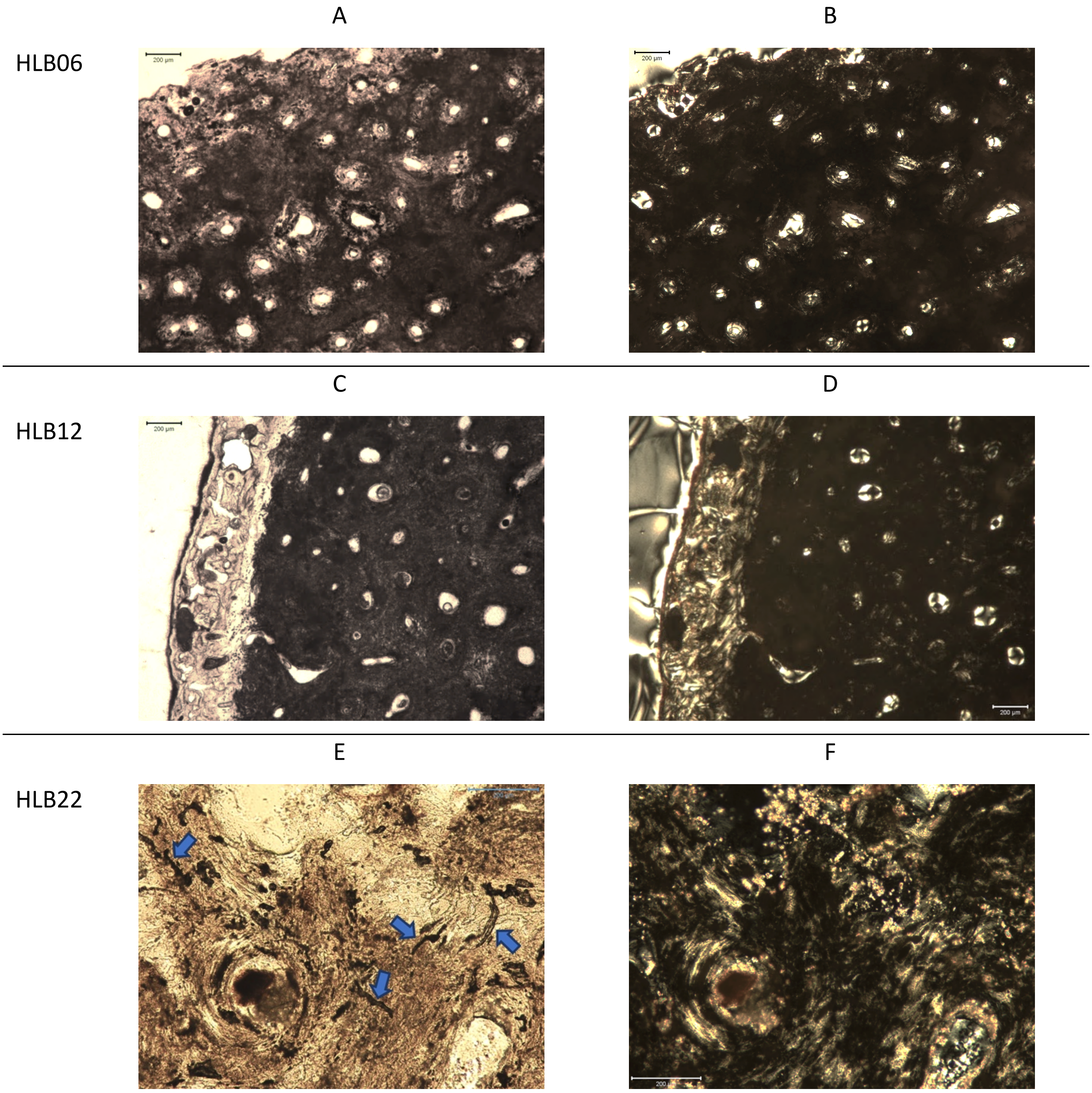


Figure 35. Micrographs of thin sections with poor histological preservation from articulated burials in cists at Harlyn Bay, Cornwall. **HLB06**: A) Periosteal aspect, normal light, x5 magnification. B) Polarised light, x5 magnification; **HLB12**: C) Periosteal aspect, normal light, x5 magnification. D) Periosteal aspect, polarised light, x5 magnification. **HLB22:** E) Central cortex with arrows pointing to Wedl tunnels, normal light, x10 magnification. F) Central cortex, polarised light, x10 magnification. Source: author

6.3.1.2. OHI 2-3

The samples with middle OHI scores of 2 and 3 (Figure 36) show arrested bacterial attack with most of the MFD concentrated towards the endosteal surface and sub-endosteal aspect of the cortex. HLB10 (Figure 36A) is from the proximal end of a right ulna shaft with no obvious taphonomic indicators and scored OHI 3. The sample shows arrested attack non-Wedl type attack that radiates from Haversian canals with most of the affected osteons located at the endosteum/sub-endosteum. The birefringence is medium to low, generally respecting the pattern of preservation (Figure 36B).

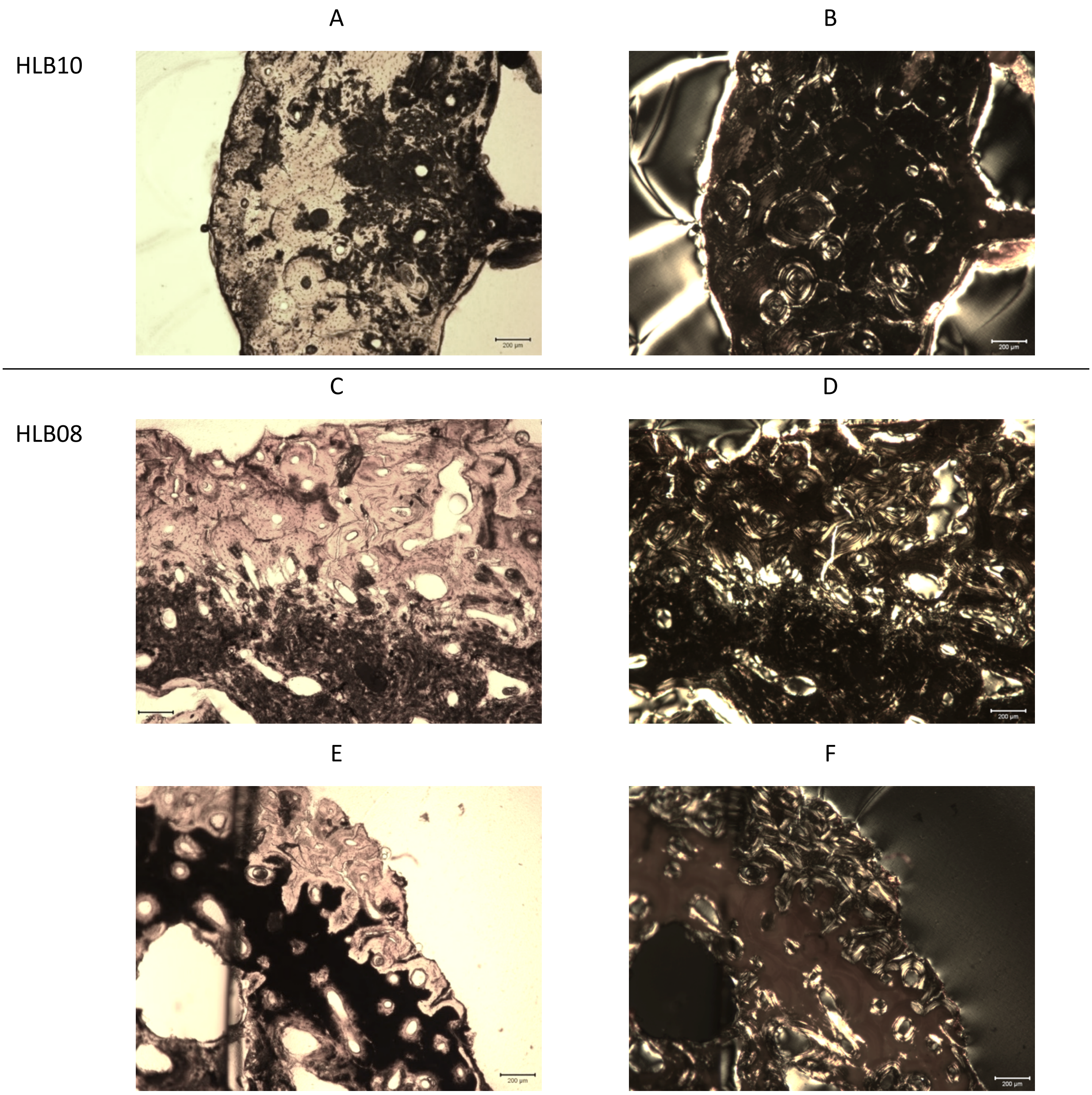


Figure 36. Micrographs of thin sections with middle-ranging histological preservation from articulated burials from cists at Harlyn Bay, Cornwall. **HLB10**: A) Transverse section showing both periosteal and endosteal surfaces, normal light, x5 magnification. B) Polarised light, x5 magnification; **HLB08**: C) Periosteal aspect, normal light, x5 magnification. D) Periosteal aspect, polarised light, x5 magnification, E) End of periosteal aspect, normal light, x5 magnification. F) End of periosteal aspect, polarised light, x5 magnification. Source: author

Sample HLB08 is from the proximal end of a right femur shaft with no obvious taphonomy suggestive of human alteration and scored OHI 2. Like HLB10, this displays the most MFD at the endosteal end of the transverse section (Figure 36C). The MFD appears to be arrested towards the centre of the cortex with areas of lamellar and budded MFD affecting some osteons. The periosteum has been removed from this thin section leaving a rough/jagged subperiosteal surface probably caused by external influence in the burial environment (e.g. acidic environment or intense cycles of wetting and drying). One end of the transverse section is affected by an intense band of bioerosion (Figure 36D) different in appearance to what is seen elsewhere on the sample, and similar to Bronze Age specimens from Bradley Fen and Cladh Hallan (Booth et al. 2015: 1165, fig.6). In the Bronze Age cases it was suggested to be evidence of limited exposure to putrefaction and therefore evidence for mummification, however HLB08 is more heavily affected by bacterial bioerosion. Alternatively, this infiltration may be carbon deposits from burning or being in contact with burnt material (Lemmers et al. 2000: 981 fig.4E). There is virtually no birefringence in the darkened margin (Figure 36F).

6.3.1.3. OHI 4-5

The sample which scored OHI 4 was cut from an occipital bone (HLB24). The cranium belonged to an adult probable male. It was noted by Alexis Jordan (pers. comm.) and the author that possible cut marks were evident on the left parietal (Figure 37A). Similar parallel marks are seen at a crania fragment from Battlesbury Bowl in Wiltshire (BB22), which was a disarticulated deposit in a pit. The location of the marks and similar scooped profile means it's more likely that these are naturally occurring ectocranial vascular impressions, which are often mistaken for cut marks (Dr Patrick Randolph-Quinney, Dr Christian Meyer and Dr Lauren McIntyre pers. comm.). There was no other obvious taphonomic indicators suggesting anthropomorphic manipulation present on HLB24 that was noticed at the time of sampling.

Sample HLB24 shows an arrested pattern of MFD with some obvious non-Wedl (budded) attack and tunnelling consistent with Wedl-type 1, but the majority of the microstructure was well preserved (Figure 37B, D). The birefringence for HLB24 was high (Figure 37C, E)—significantly higher than HLB21, which displayed less bacterial attack. The cortex of HLB21 also contained small granular specks which are only visible under polarised light, similar (though less extensive) to HLB22 (above, Figure 35E)—these might have infiltrated the bone microstructure from the sandy deposition environment at Harlyn Bay.

The sample which scored OHI 5 is HLB21, representing a left radius fragment (Figure 37F, I). Charcoal staining was evident on the bone surface, but no evidence for charring. The microstructure is unusual in appearance with few random osteons among unformed lamellae (Figure 37G). Osteocyte lacunae are well preserved across the whole sample, including the periosteal and endosteal surfaces. The birefringence of the sample was low (Figure 37H, J), which is surprising given the near-perfect preservation. The loss of birefringence within samples that are histologically well-preserved suggests the sample was subjected to accelerated chemical hydrolysis through a process resulting in protein loss, for example exposure to moderately high temperatures or an intense cycle of wetting and drying (Collins et al. 1995; Nielsen-Marsh et al. 2007; Smith et al.2007). The cortex of the sample was also extensively affected by microcracking. The charcoal stain, cracking, excellent microstructural preservation and low collagen birefringence may suggest that the bone was subjected to low-heat burning resulting in the removal of flesh and/or disarticulation prior to putrefaction. If this were the case, the temperature of the heat source would have been low because no macroscopic evidence of charring was observed on the sampled elements.

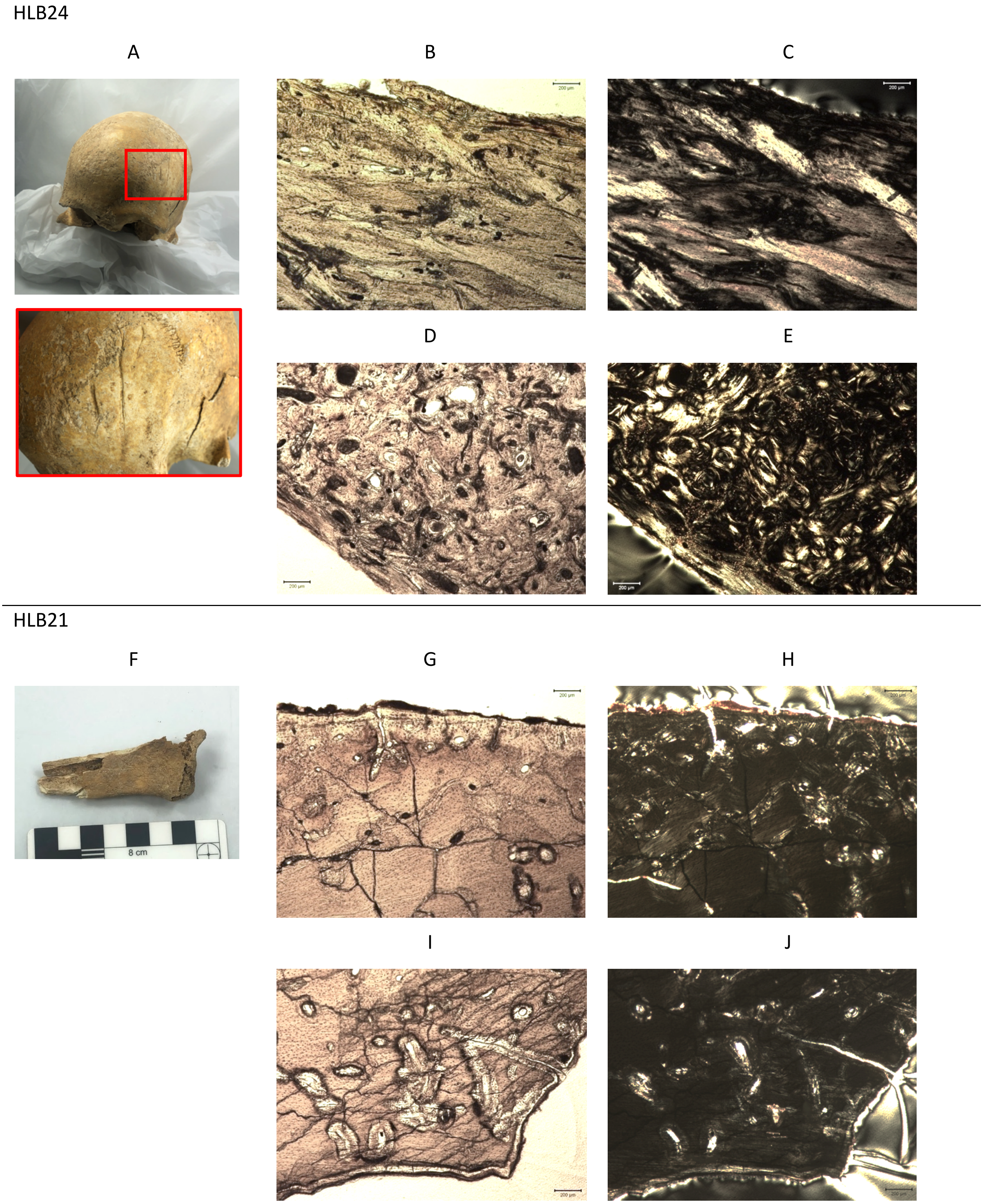


Figure 37. Samples from articulated burials in cists with good histological preservation. **HLB24**: A) Sampled element, crania with possible ectocranial lesions. B) Periosteal aspect, normal light, x5 magnification. C) Periosteal aspect, polarised light, x5 magnification. D) Endosteal aspect, normal light, x5 magnification. E) Endosteal aspect, polarised light, x5 magnification; **HLB21**: F) Sampled element, distal end of radius. G) Periosteal aspect, normal light, x5 magnification. H) Periosteal aspect, polarised light, x5 magnification. I) Endosteal aspect, normal light, x5 magnification. J) Endosteal aspect, polarised light, x5 magnification. Source: author

6.3.1.4. Summary

Overall, the majority of bone sampled from presumed articulated burials in cists scored low OHI and birefringence consistent with long-term primary inhumation. However, a few specimens from Harlyn Bay were very well preserved, and others displayed arrested bacterial attack and interesting diagenetic/microfocal changes like staining and infiltrations. Overall, the degree of collagen birefringence is consistent with the histological preservation, with some loss of birefringence probably attributing to hydrolysis via intense wetting and drying as a result of the sandy beach environment. The variation in histological preservation seen in some of the sampled elements may indicate some variation in mortuary practice at the site, however due to the lack of contextual information for each sampled skeleton, environmental influence cannot be ruled out.

6.3.2. Articulated – graves

Thirty-four samples from articulated burials in graves were taken from seven sites across the southwest and each sample is described in (Table 6). All of the sampled individuals were adults of varying ages, except for one adolescent (RBW08) and one foetus (RBW04) which was in utero (of RBW03). Of those whose sex could be determined, ten were female or probably female, nine were male, and 14 were indeterminate/information not available.

Table 6. Samples from articulated inhumation burials within graves. Source: author

Specimen	County	Element	Side	Age		Sex	OHI	Birefringence
RBW01	Wiltshire	Femur	R	Adult	>60	F?	2	Med
RBW03	Wiltshire	Femur	L	Adult	25-35	F	3	Med/high
RBW02	Wiltshire	Femur	L	Adult	40-50	F?	1	Low/Med
RBW04	Wiltshire	Femur	-	Foetus	32-34 wks	-	0	None
RBW05	Wiltshire	Femur	L	Adult	35-45	M	1	Med
RBW08	Wiltshire	Femur	R	Adolescent	14-16	M	1	None
RAF04	Vale of Glamorgan	Long bone	-	Adult	-	-	0	None
TPB01	Dorset	Femur	L	Adult	19-25	F	1	Low
TPB03	Dorset	Femur	L	Adult	-	M	2	Med
TPB05	Dorset	Femur	L	Adult	-	-	2	Med
TPB06	Dorset	Femur	L	Adult	-	-	0	Low
TPB09	Dorset	Long bone	L	Adult	26+	F	2	Med
TPB10	Dorset	Femur	L	Adult	45+	F	1	Low
WEY01	Dorset	Femur	L	Adult	18-25	-	0	None
WEY02	Dorset	Femur	R	Adult	26-35	M	1	Low
WEY03	Dorset	Femur	R?	Adult	36-45	F	1	Low
WEY04	Dorset	Femur	R	Adult	26-35	M	1	Low

WEY05	Dorset	Femur	R	Adult	18-25	M	1	Low
WEY06	Dorset	Femur	L	Adult	26-35	M	0	Low/None
WEY10	Dorset	Femur	L	Adolescent?	15?	-	1	Low
WEY11	Dorset	Femur	L	Adult	18-25		2	Med
WEY13	Dorset	Tibia	-	Adult	18-25	F	0	None
WHT01	Dorset	?	-	Adult	25-30	F	0	None
WHT02	Dorset	Tibia	-	Adult	40-50	M	2	Med
WHT03	Dorset	Femur	-	Adult	35-30	M	3	Med
WHT04	Dorset	Tibia	-	Adult	40-50	-	2	Med
WHT05	Dorset	?	-	Adolescent	15-17	F	0	None
TLF01	Cornwall	Frontal	-	Adult	-	-	0	None
TLF02	Cornwall	Long bone	L	Adult	-	-	0	Low
TLF03	Cornwall	Parietal	R	Adult	-	-	1	Low
TLF04	Cornwall	Humerus	L	Adult	-	-	1	Low/Med
TLF05	Cornwall	Crania	-	Adult	-	-	4	High
NP67	Somerset	Femur	R	Adult	-	-	2	Low
NP68	Somerset	Femur	L	Adult	-	-	0	?

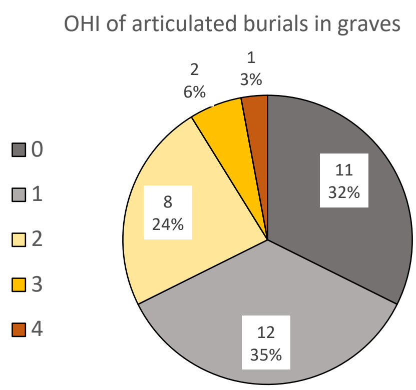


Figure 38. Chart showing OHI breakdown of articulated burials in graves. Source: author

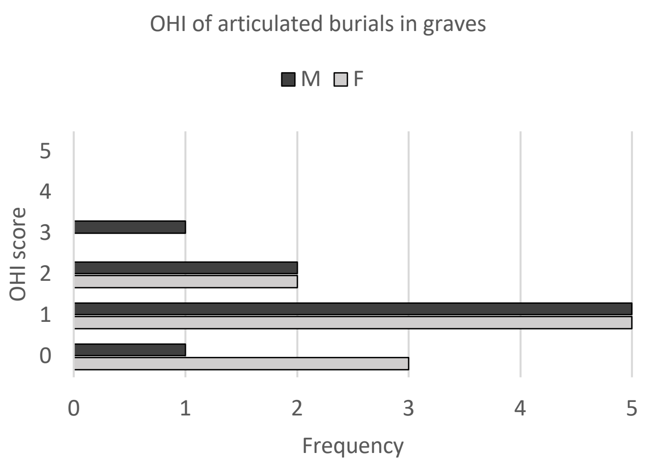


Figure 39. Graph showing the OHI score distribution for male and female inhumations in graves. Source: author

The OHI scores for articulated/probably articulated deposits in graves are shown in Figure 38. The majority of the specimen from articulated burials in graves scored OHI 0-1 (72%), nine samples had middle scores of OHI 2-3 (27%) and one scored high with OHI 4 (3%). The OHI scores of samples from female and male skeletons is shown in Figure 39. Although the sample size for sex is small, a minor pattern of males showing more arrested attack is shown. Most of the samples were extracted from long bones (n=30) with three crania from Trethellan Farm.

6.3.2.1. OHI 0-1

Most of the samples exhibited poor histological preservation, scoring OHI 0-1 with MFD consistent with long-term primary inhumation shortly after death. All of the sites sampled for articulated burials in graves (Table 6) are represented in the 0-1 OHI scores. Intra-site variation is common and will be discussed in more depth in the following chapters (Chapter 7 and 8). A particularly interesting example of variation in samples taken from the skeleton of a pregnant female and the foetus in utero will be detailed in Section 6.2.3.4.

One of the samples, TLF03 (Figure 40), was extracted from a cranial fragment and demonstrates advanced Wedl and non-Wedl tunnelling. All but one specimen from Trethellan Farm cemetery (TLF05, Figure 44) scored OHI 0-1 with low birefringence. The cemetery is close to the sea, located on a beach, so it is likely that some graves were susceptible to flooding. This could explain the Wedl tunnelling seen in TLF03.

TLF03 A B

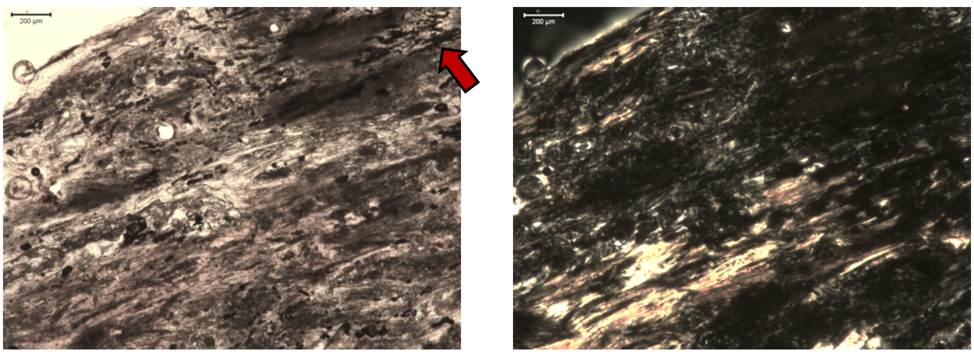


Figure 40. Sample from an articulated inhumation burial at Trethellan Farm, Cornwall showing advanced levels of Wedl and non-Wedl MFD. **TLF03**: A) Periosteal aspect, normal light, arrow pointing to Wedl tunnels, x5 magnification. B) Periosteal aspect, polarised light, x5 magnification. Source: author

WHT01

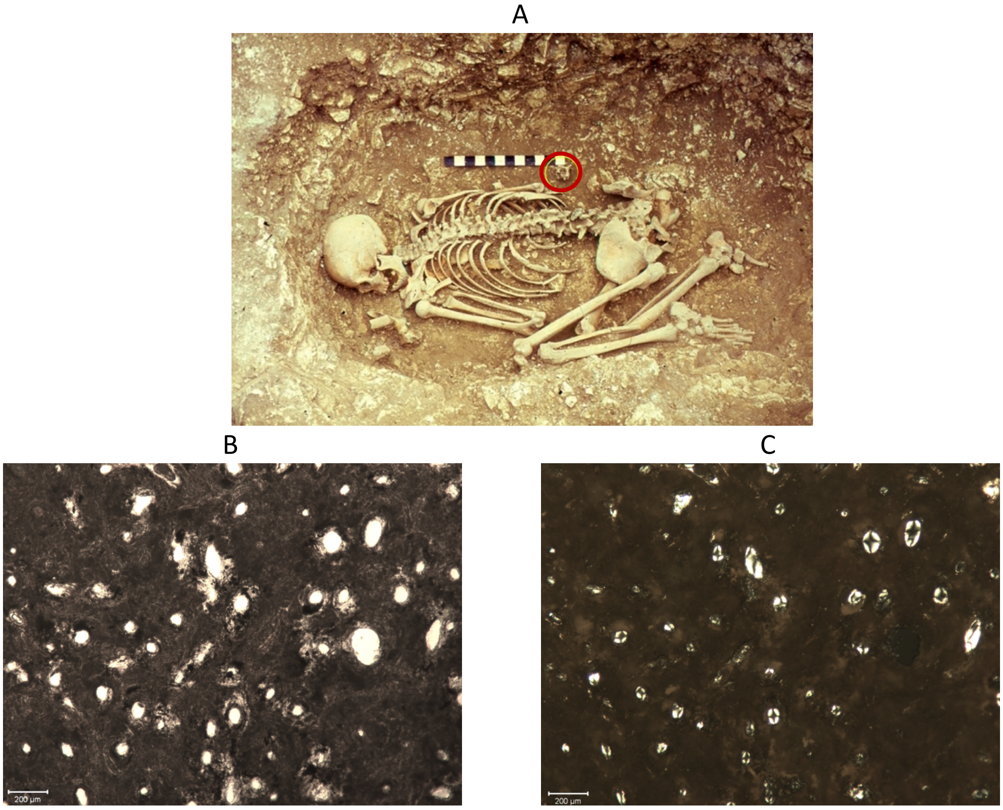


Figure 41. Sample from an articulated inhumation burial at Whitcombe, Dorset, showing advanced levels of Wedl and non-Wedl MFD. **WHT01**: A) photograph of the sampled inhumation with displaced atlas vertebrae circled in red. B) Central cortex, normal light, x5 magnification. C) Central cortex, polarised light, x5 magnification. Source: author (photograph of skeleton courtesy of Dorset County Museum)

Sample WHT01 is an interesting case study for potential multi-phase burial rite in an otherwise 'normal' looking inhumation burial. The body of a female aged 25-30 was placed prone in a crouched position, legs to the right, within an oval grave. The body is in correct anatomical position, however a single disarticulated cervical vertebra was located behind the skeleton near the pelvis (Figure 41A). The histological preservation of the sample, taken from a femur, was consistent with a long-term inhumation shortly after death (Figure 41B, C). This may suggest manipulation of the skull at some point in the individual's post-mortem history where the skull was either removed from the grave sometime after decomposition had occurred enough to cause disarticulation of the vertebrae, or placed in the grave in its normal anatomical position after the rest of the body had been buried. A follow-up histological investigation on a sample taken from the skull would be useful to determine if the skull was treated differently in the early post-mortem phase. Alternatively, it is possible that a small animal burrowing may have caused the disarticulation, but further disarticulation of elements would be expected if this were the case.

6.3.2.2. OHI 2-3

Ten specimens from articulated burials in graves had mixed histological preservation corresponding to OHI 2-3. Of these, all but one scored OHI 2. Sample WHT03 scored OHI 3 and is a clear example of arrested bacterial attack seen in Figure 42A radiating from Haversian canals. The areas of arrested attack/good preservation are limited to the centre cortex with more complete MFD along the endosteal and periosteal aspects. The collagen birefringence was very high where the preservation was good (Figure 42B).

It is interesting to note that of the five skeletons sampled from Whitcombe, three had middle scores and two scored OHI 0. It is also worth nothing that the two that scored 0 were female and of the middle-scoring samples, two were male. This may indicate a difference in treatment afforded based on sex, although more sampling of individuals from this cemetery would be needed to determine any relationship in sex and histological preservation. There is evidence that some of the graves at the site were disturbed at some point, covered, or both. The grave of the skeleton from which WHT03 was sampled was described as containing large stones and was suggested by excavators that these may have 'protected' the grave (Aitken and Aitken 1991: 62). It is possible that these stones represented a covering of some kind or an organic structure that created a void that facilitated more rapid decomposition similar to the covered pit scenario described by Booth and Madgwick (2016). This will be discussed further in Chapter 8 (Section 8.2.1).

Additionally, TPB05 was sampled from a skeleton from grave described to contain 35 iron nails, suggesting that the burial may have originally been placed in a coffin-like structure. This burial was likely of Roman date on this basis, but the OHI score of 2 (Figure 42C) is likely due to the void created by the coffin, which has interesting methodological implications. Further to this, fungal tunnelling seen in the well-preserved areas (Figure 42C, D) may indicate the coffin was aerated and moist, likely causing more rapid decomposition as well as harbouring fungal/water-borne microorganisms. Sample TPB03 had similar histological preservation (Figure 42E, F) and possible Wedl tunnelling (Figure 42G, H). The grave contained large lumps of chalk on either side of the skeleton (Hearne and Birbeck 1999: 48) so a covering or structure of some kind is likely. Considering the histological preservation of TPB05, this grave may have also facilitated more rapid decomposition and saprophytic fungi (Wedl) tunnelling by providing a cavity.

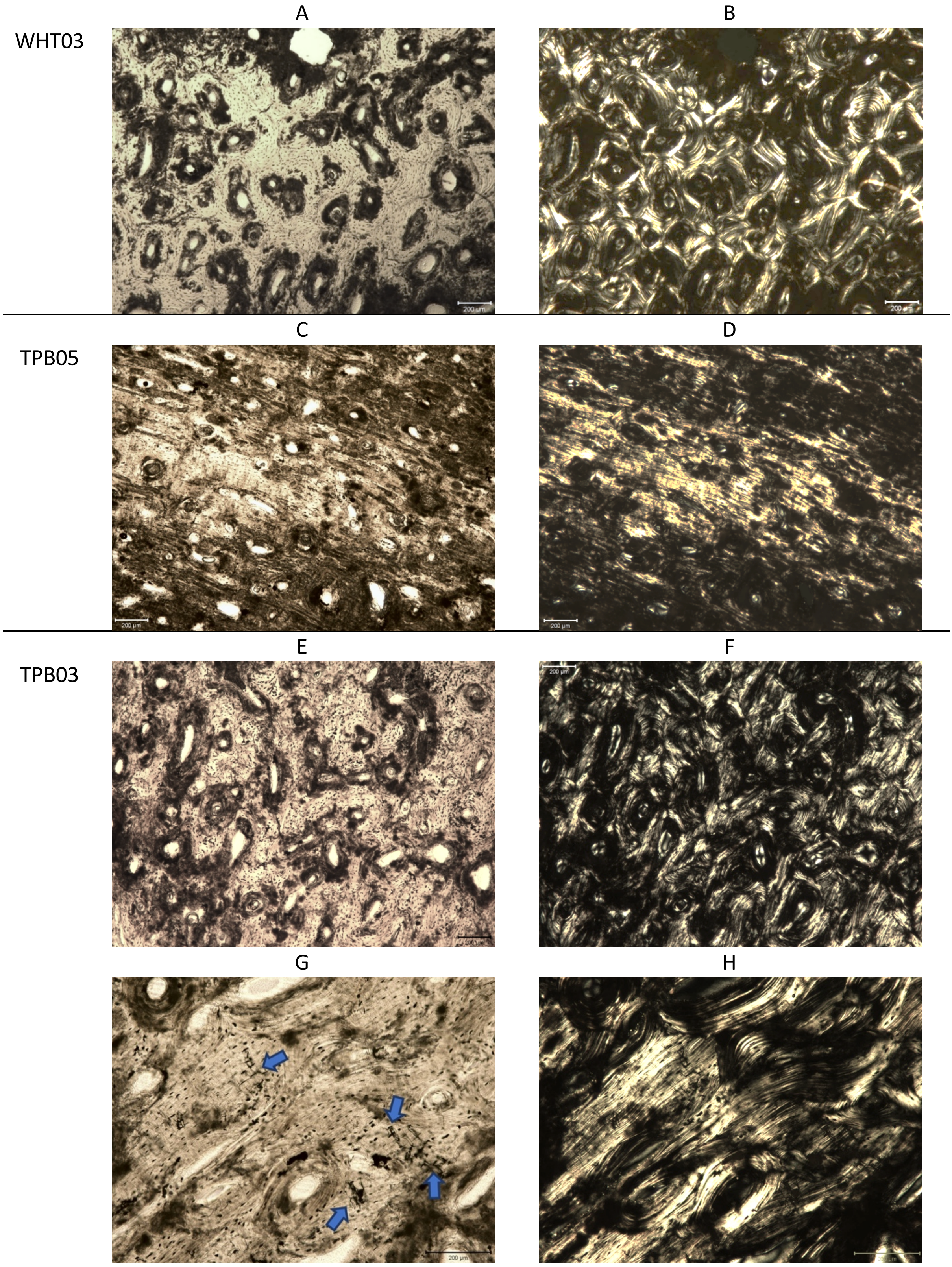


Figure 42. Samples from articulated burials in graves with middle-ranging histological preservation. **WHT03**: A) Central cortex, normal light, x5 magnification. B) Central cortex, polarised light, x5 magnification; **TPB05**: C) Central cortex, normal light x10 magnification. D) Central cortex, polarised light, x10 magnification. Source: author

Sample RBW01 was extracted from an adult female aged >60 years in a tightly flexed position lying on the left side and radiocarbon dated to the EIA (790-530 cal BC). A single fragment of animal rib, probably from a sheep/goat, was placed above the skull parallel with the body. The grave was backfilled with tightly packed flint nodules and, despite the chalky environment, the backfill contained virtually no chalk fragments. It was noted that the skull was in an 'odd position' – slipped back rather than rolled, bent back so it faced west (Figure 43A).

The histological preservation is mixed with several types of MFD present, the most frequent being budded and lamellate. The MFD appears to originate from Haversian canals and radiates outwards, sometimes consuming entire osteons, but many show arrested attack (Figure 43B). The birefringence is high where the microstructure is preserved (Figure 43C). This arrested pattern of attack and an OHI score of 2 suggests the body decomposed more quickly than an inhumation directly in the ground shortly after death. It is possible this person, and others at Rowbarrow, were left partly exposed which allowed more rapid decomposition. This may also explain the unnatural position of the skull – without the support of surrounding backfill, the skull may have slipped back after the connective tissue had deteriorated. An alternative explanation may be that the skull had been intentionally repositioned prior to backfilling.

RBW01

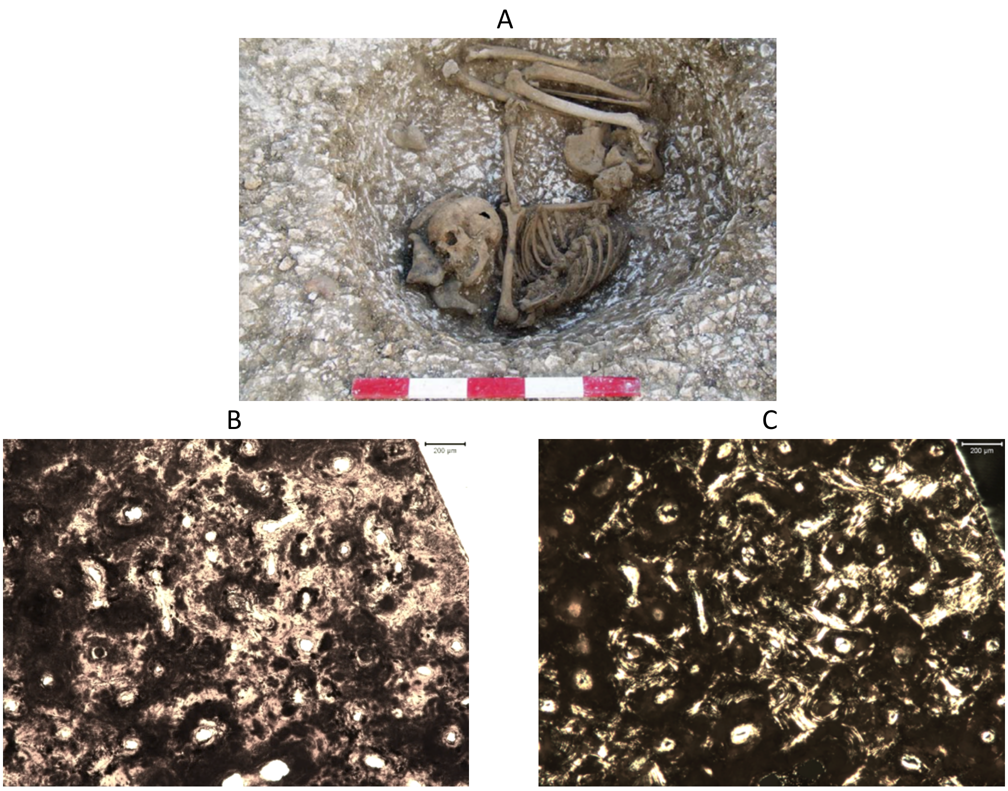


Figure 43. Sample from an articulated burial from a grave at Rowbarrow, Wiltshire, with middle-ranging histological preservation. **RBW01:** A) Photograph of the sampled skeleton in the grave (4636) with their skull turned backwards at an unnatural angle (source: Wessex Archaeology 2013: plate 7). B) Central cortex, normal light, x5 magnification. C) Central cortex, polarised light, x5 magnification. Source:

6.3.2.3. OHI 4

The only sample from an articulated deposit in a grave which scored high (OHI 4) was TLF05 (Figure 44) extracted from a cranial fragment. Preservation at the cemetery site at Trethellan Farm was generally very poor and the only osteological remains that preserved from the grave were skull fragments, with evidence of a 'body stain' (Nowakowski 1991: fig. 80). The sample is not heavily affected by MFD, and the birefringence was high at both the periosteal (Figure 44A, B) and endosteal (Figure 44C, D) aspects. This sample stands in contrast to the others from Trethellan Farm, which scored OHI 0 (n=2) and OHI 1 (n=2), demonstrating extensive Wedl and non-Wedl tunnelling.

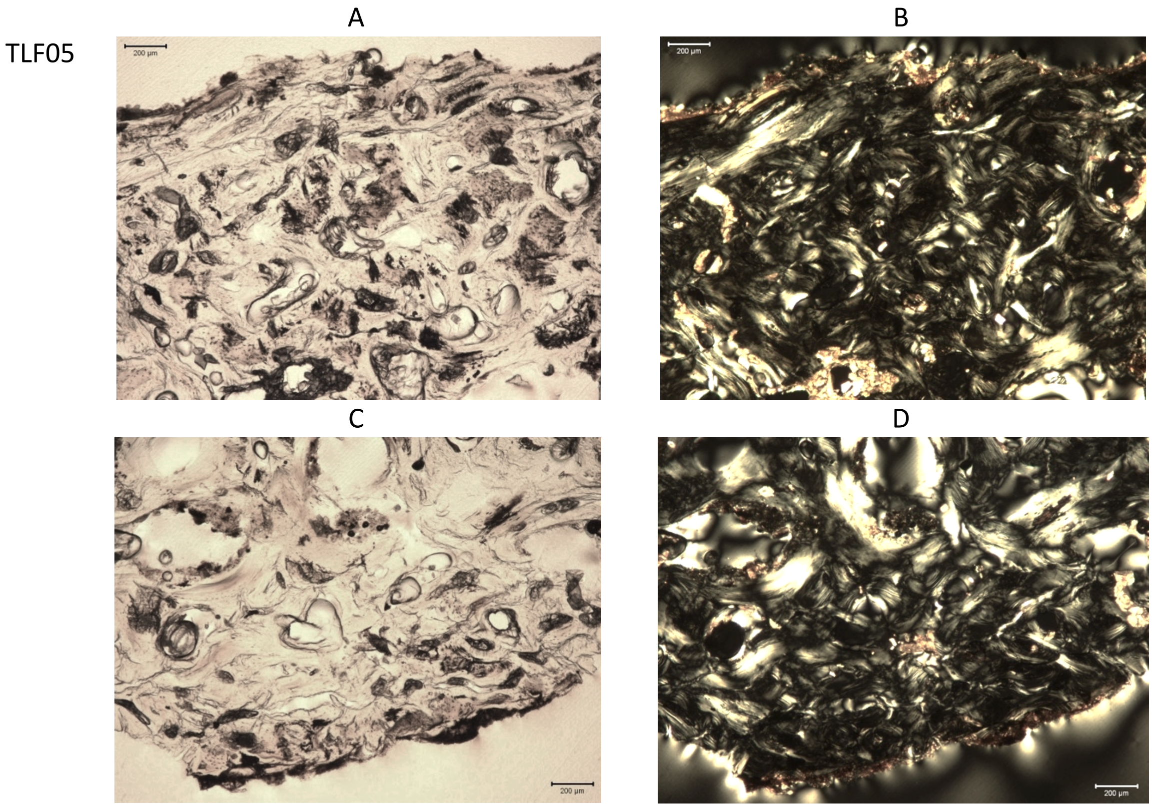


Figure 44. Sample from an articulated inhumation burial at Trethellan Farm, Cornwall showing good histological preservation. **TLF05**: A) Periosteal aspect, normal light, x5 magnification. B) Periosteal aspect, polarised light, x5 magnification. C) Endosteal aspect, normal light, x5 magnification. D) Endosteal aspect, polarised light, x5 magnification. Source: author

6.3.2.4. RBW03 and RBW04 – Pregnant female and foetus in utero

The sample taken from the foetus in utero aged c.32-34 weeks (RBW04) scored OHI 0 with advanced MFD across the transverse section (Figure 45A) and very little birefringence (Figure 45B). This is an interesting result because in previous histological studies, the microstructures of the sampled infants were very well preserved (White and Booth 2014; Booth 2016; Booth et al. 2016; Booth 2020), suggested to be at least partially due to the lack of developed gastric bacteria at the early stages of development. A similar result was recorded from a foetus in utero sampled from Bantycock Roman cemetery described in Booth (2016: 344, 403), who suggested that the bones of the infant may have been attacked by the enteric bacteria of the mother. This may also be the case for RBW04.

Sample RBW03 showed substantially better histological preservation than the foetus, scoring OHI 3. RBW03 was extracted from the left femur of an adult female aged c.25-35 years (Figure 45C). The site report described the burial position of RBW03 as flexed, lying on the right side, with several large flint nodules placed on top of the skull of the individual (SK 4243) which crushed the skull under their weight (Wessex Archaeology 2013: 11). The spatial positioning of the skeleton is potentially significant because the body was placed in the grave leaving a large, apparently empty area behind their back. If the feature was left open for some time prior to backfilling, the open space may further accelerate decomposition. The burial is dated to the Early Iron Age by association with other inhumations which were radiocarbon dated to the EIA (790 cal BC-410 cal BC) (Wessex Archaeology 2013: Appendix 4).

Sample RBW03 is a good example of arrested bacterial attack radiating from Haversian canals (Figure 45D). It is difficult to determine the types of MFD present but appears to be non-Wedl. The attack apparently stopped at some point potentially indicating the body was subjected to conditions that facilitated more rapid decomposition and skeletonisation (e.g. exposure for a limited time) leaving some microstructure well preserved with osteocyte lacunae and canaliculi unaffected by bacterial attack. The area of arrested attack/well preserved microstructure is limited to the centre of the transverse section with the periosteal and endosteal aspects more heavily affected by MFD (Figure 45D)). The birefringence is high in the well-preserved areas and virtually absent in the heavily affected areas (Figure 45E).

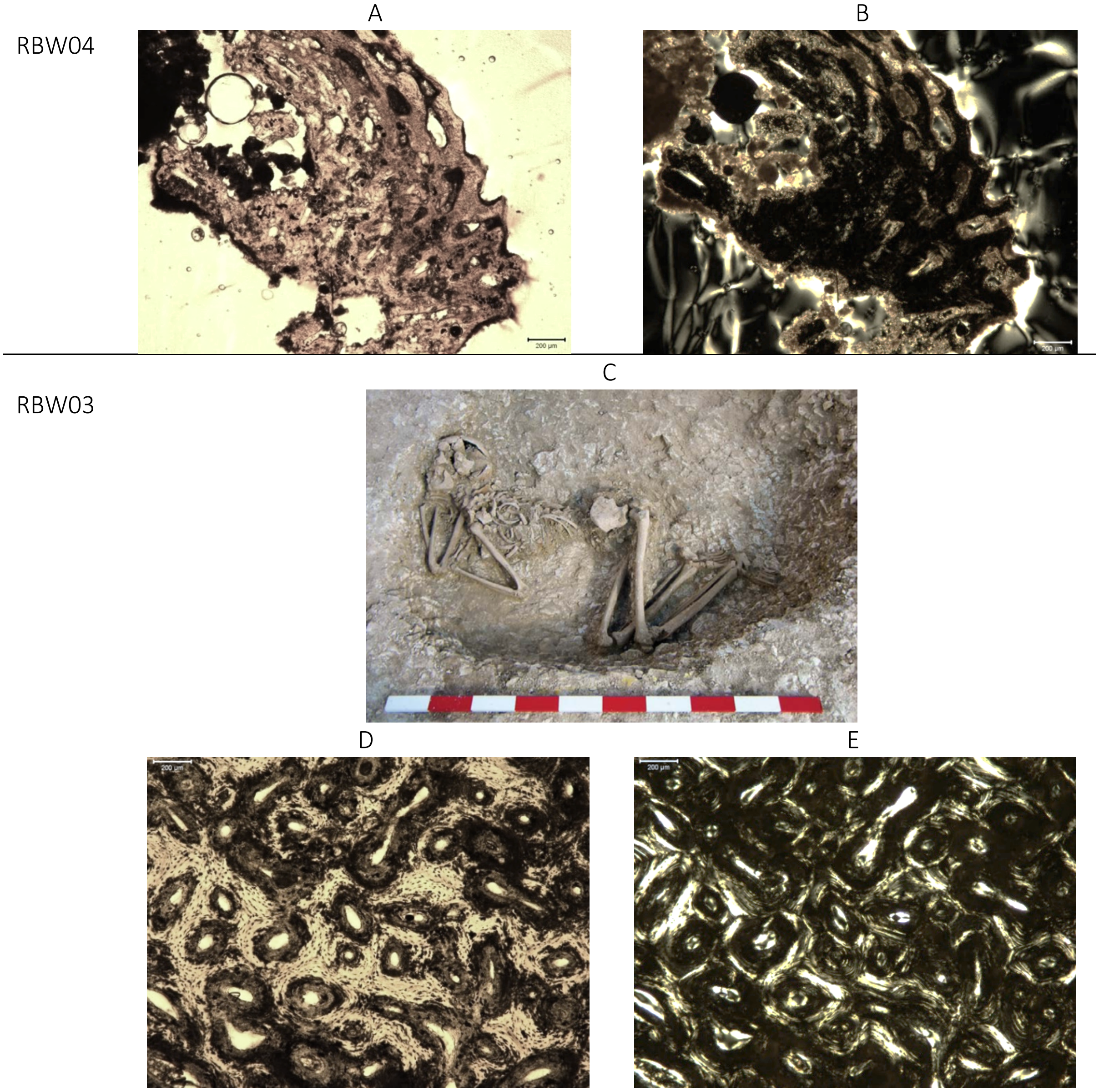


Figure 45. Sampled foetus in utero and pregnant female from Rowbarrow, Wiltshire showing different degrees of histological preservation. **RBW04**: A) Transverse section showing both periosteal and endosteal aspects, normal light, x5 magnification. B) Transverse section, polarised light, x5 magnification; **RBW03**: C) Photograph of sampled skeleton in the grave (4244) (source: Wessex Archaeology 2013: plate 9). D) Central cortex showing arrested pattern of attack, normal light, x5 magnification. E) Central cortex, polarised light, x5 magnification. Source: author

6.2.3.5. Summary

Overall, majority of the specimens had poor histological preservation, though more variation than may be expected from articulated inhumations buried shortly after death. It is interesting that more samples scored 1 than 0, with some of the specimen showing patches of well-preserved or arrested attack (samples RBW01, RBW05, TLF03). This may be because many of the graves were shallow, therefore facilitating more rapid skeletonisation. Several of the skeletons exhibited mixed preservation with clear examples of arrested bacterial attack radiating from Haversian canals, suggesting more rapid skeletonisation. It is possible that these individuals were placed in graves that were left open for a time with the body exposed before burial, or covered for some time prior to backfilling. Sample TLF05 scored OHI 4, possibly indicating different treatment afforded to this particular cranium, for example removal from the body or defleshing prior to burial. Alternatively, the entire body may have been subjected to a different mortuary rite or natural process that usually results in good histological preservation such as mummification, however the rest of the skeleton has been lost to time.

6.3.3. Articulated - pits

A total of 34 samples from articulated burials in pits were taken from ten sites and include mostly adults of varying ages with five subadults/adolescents and one neonate (TPB07). Sampled individuals from pits are described in Table 7 and the total breakdown of OHI scores is illustrated in Figure 46. Of those that could be sexed, the majority of the specimens represent females or probable females (n=16) with 8 males or probable males. There was no significant difference in histological preservation between males and females, however there is a preponderance of females that scored OHI 1 (Figure 47).

All but four of the samples showed poor histological preservation with 19 of the 34 samples scoring OHI 0 and 11 scoring OHI 1 (Figure 46). The exceptions are HH33, which scored OHI 2; BB06 and GUS01 which scored OHI 3, and HGV02 which scored OHI 4. These will be discussed in greater detail below.

Table 7. Samples from articulated inhumation burials within pits. Source: author

Specimen	County	Element	Side	Age		Sex	OHI	Birefringence
BB06	Wiltshire	Femur	R	Adult	>44	M	3	Med
BB07	Wiltshire	Femur	R	Subadult	>18	-	1	Low
BB08	Wiltshire	Femur?	R	Adult	35-55	F	0	None
BB11	Wiltshire	Femur	?	Adult	30-45	F	1	Low
BB12	Wiltshire	Femur	?	Adult	30-40	M	0	None
WRO01	Wiltshire	Femur	L	Adult			1	Low
WRO02	Wiltshire	Femur or tibia	R	Adult		?	1	Low
WRO03	Wiltshire	Fibula	L	Adult		?F?	1	Low
RAF02	Vale of Glamorgan	Long bone		Adult	30-40y	?F	1	Low/Med
RAF05	Vale of Glamorgan	Long bone		Adult		?F	1	Low/Med
FML01	Vale of Glamorgan	Femur		Subadult		F	1	None
HGV01	Gloucestershire	Femur		16-19?			0	Low
HGV02	Gloucestershire	Long bone		Adult			4	High

GYF01	Gloucestershire	Femur		Adult		F?	0	None
GYF03	Gloucestershire	Tibia		Adult		-	0	Low
GUS01	Dorset	Femur	L	Adult?		F?	3	High
GUS02	Dorset	Femur	L	Adult	>45	F	1	None
GUS03	Dorset	Femur	L	Adult	22	M	0	None
GUS04	Dorset	Femur	L	Adult	35-45	M	0	Low
GUS05	Dorset	Femur	L	Adult?		F	0	Low
GUS06	Dorset	Femur	L	Adolescent	>45	F	0	None
GUS07	Dorset	Femur	L	Adolescent	20-25	F	0	None
GUS08	Dorset	Femur	L	Neonate	>45	M	0	Low
GUS09	Dorset	Femur	L	Adult		F	0	None
GUS10	Dorset	Femur	L	Adult	16-19	F	0	None
TPB04	Dorset	Femur	L	Adult	13-18		0	Low
TPB07	Dorset	Femur		Adult			0	None
TPB11	Dorset	Long bone	-	Adult	26+		1	Low
WB01	Somerset	Humerus	R	Adult		M	1	Low
WB26	Somerset	?		Adult		M	0	None
HH32	Somerset	Mandible		Adult		F?	0	?
HH33	Somerset	Femur	L	Subadult		F?	2	?
HH34	Somerset	Femur	R	Adult	Young	M?	0	Low
NP66	Somerset	Femur	R	Adult			0	None

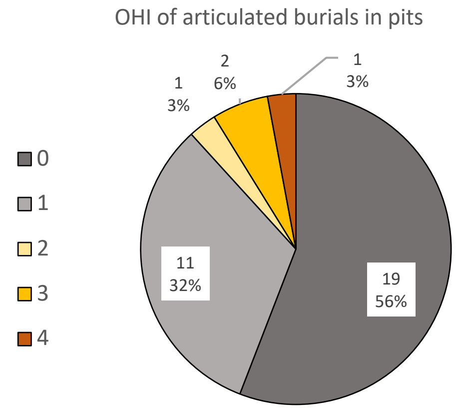


Figure 46. Graph showing the OHI scores of articulated burials in pits. Source: author

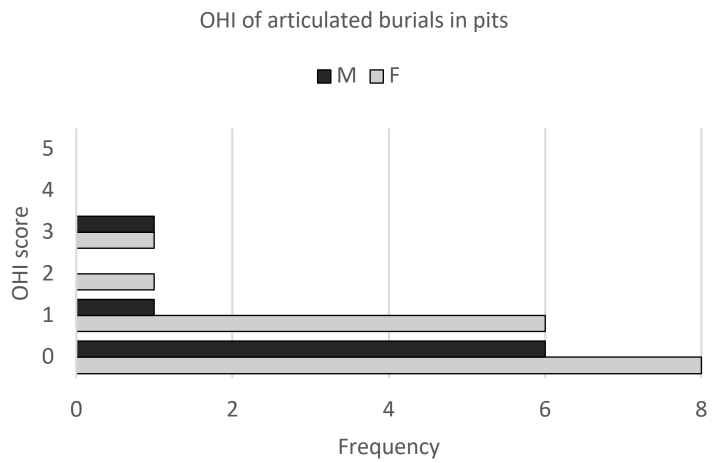


Figure 47. Graph showing the OHI scores of female and male articulated burials in pits. Source: author

6.3.3.1. OHI 1

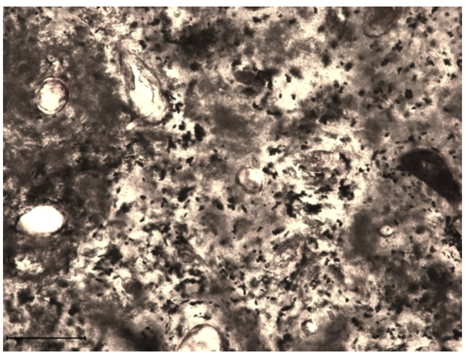
The majority of the samples from articulated skeletons in pits were poorly preserved with advanced levels of MFD throughout the transverse section, spanning from the periosteum to endosteum surfaces and with low to no birefringence (e.g. HGV01, Figure 48A, B). A few samples that scored OHI 1 had very small patches of preserved microstructure or microstructure that was visible through patterns of destructive foci. An example from an tightly crouched inhumation at Gussage All Saints (GUS02) shown in Figure 48D had small patches of microstructure preserved in the central cortex (Figure 48E). In these samples, the well-preserved areas have higher levels of collagen birefringence (Figure 48F).

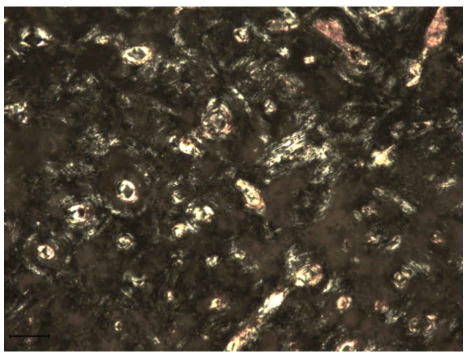
None of the elements from articulated burials from pits sampled in the present study had taphonomic indicators of exposure or manipulation (e.g. weathering, gnawing), but root etching was common to varying degrees. This, coupled with the poor histological preservation, suggests they were placed in the pits and buried shortly after death. Variation in the severity and patterns of bacterial attack may indicate slightly different treatments that either accelerate or delay soft tissue decomposition: for example, a covered body may decompose slightly faster as the space around the body and aeration may encourage invertebrate access, whilst a thickly wrapped body may prevent invertebrate access and therefore delay decomposition (Bell et al. 1996; Terrell-Nield and MacDonald 1997; Jans et al. 2004; Simmons et al., 2010; Kontopoulos et al. 2016). This will be further discussed in Section 8.2.1.

A

B

HGV01

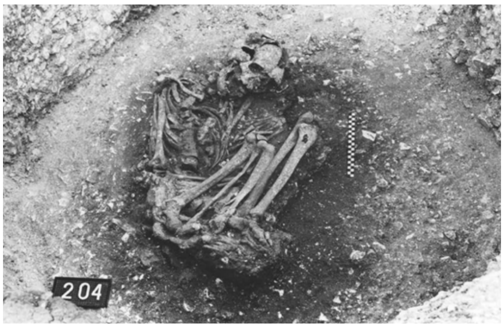




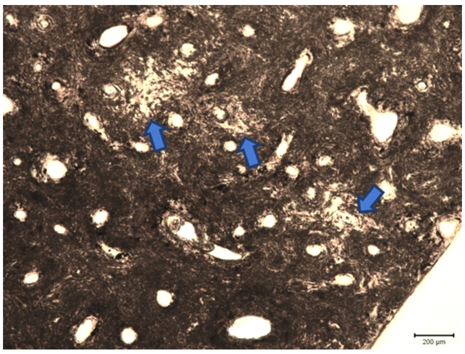
C

GUS02

D



E



F

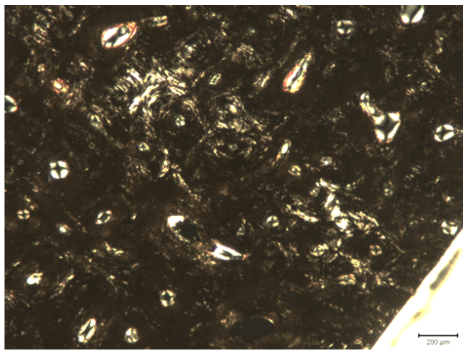


Figure 48. Samples from articulated burials in pits with poor histological preservation. **HGV01**: A) Central cortex, normal light, x10 magnification. B) Central cortex, polarised light, x10 magnification. C) Scan of entire transverse section showing poor histological preservation throughout the sample (image created by Anthony Hayes, Cardiff University); **GUS02**: D) Photograph of the sampled skeleton in a pit (204) at Gussage All Saints (source: Wainwright 1979: Plate XXVII). E) Central cortex, normal light, arrows pointing to areas of preserved microstructure, x5 magnification. F) Central cortex, polarised light, x5 magnification. Source: author

6.3.3.2. OHI 2-3

Only three samples from articulated burials in pits had middle-ranging OHI scores of 2 and 3. The only sample to score OHI 2 was from Ham Hill, Somerset (HH33) representing an adult probable female. The body position is described as being crouched on the right side, knees tight against chest, arms flexed and hands close to shoulders/face. The skeleton was poorly preserved and highly eroded (Brittain et al. 2014).

Two of the samples scored OHI 3: BB06 and GUS01. BB06 was sampled from an adult male aged >44 years and radiocarbon dated to MIA-LIA (360 cal BC-cal AD 60, NZA-13631), placing their death at the very end of Iron Age settlement activity at the site (Ellis and Powell 2008: Table 2.2). The skeleton was lying flexed on their left side with their back against the wall of the pit. The individual was placed directly on top of a deposit containing a broken 'phase 3' (mid 3rd-4th century BC) vessel, animal bone, and large blocks of greensand and chalk (Figure 49A). A single fragment of adult human bone from a different individual was recovered from the pit fill, which was also sampled for histological analysis (BB10, see Section 6.5.4). The skeletal elements from sample BB03 were in extremely dry and fragmented condition. The sample was taken from a small unsided femur fragment, probably from the proximal end of the diaphysis.

The histological preservation of sample BB06 was mixed with some areas of the transverse section showing well-preserved microstructure in the centre between heavily damaged cortex from the periosteal (Figure 49B) and endosteal (Figure 49C) aspects. Figure 49D shows an arrested pattern of attack with MFD radiating from Haversian canals and generally staying within individual osteons, either completely destroying the osteon but staying within cement lines or stopping before much of the osteon is affected. The birefringence is high where the microstructure is well preserved and low where it is affected by MFD (Figure 49G). Some areas of the transverse section were poorly preserved with the most advanced levels of bacterial bioerosion – the cortex towards the endosteal aspect and medullary surface being especially affected (Figure 49F). The birefringence is consistently low here (Figure 49G).

Sample GUS 01 represents an adolescent (c.16-19-year-old) probable female had very similar histological preservation to BB06 (Figure 49). The individual was lying on their face, arms and legs slightly flexed and hand resting below their pelvis (Figure 50A). At the periosteal aspect, a margin of dense MFD runs the length of the transverse section, but the cortex directly below has mixed preservation with some areas of well-preserved microstructure (Figure 50B). This pattern is confirmed by the birefringence which is absent in the margin but higher in the cortex (Figure 50C). Like BB06, the central cortex has areas of arrested attack centred around Haversian canals (Figure 50D, E) and the endosteal aspect is mostly destroyed by MFD (Figure 50F, G).

The divergence of these sample compared to the other articulated burials in pits suggests that these individuals may have been subjected to different burial treatments and/or conditions. The most likely explanation for the incomplete microstructural diagenesis, considering the absence of taphonomic signatures of exposure (gnawing, weathering), is protected exposure within the pit. Sheltered exposure as a potential mortuary practice is further discussed in Chapter 8 (Section 8.5.1).

BB06

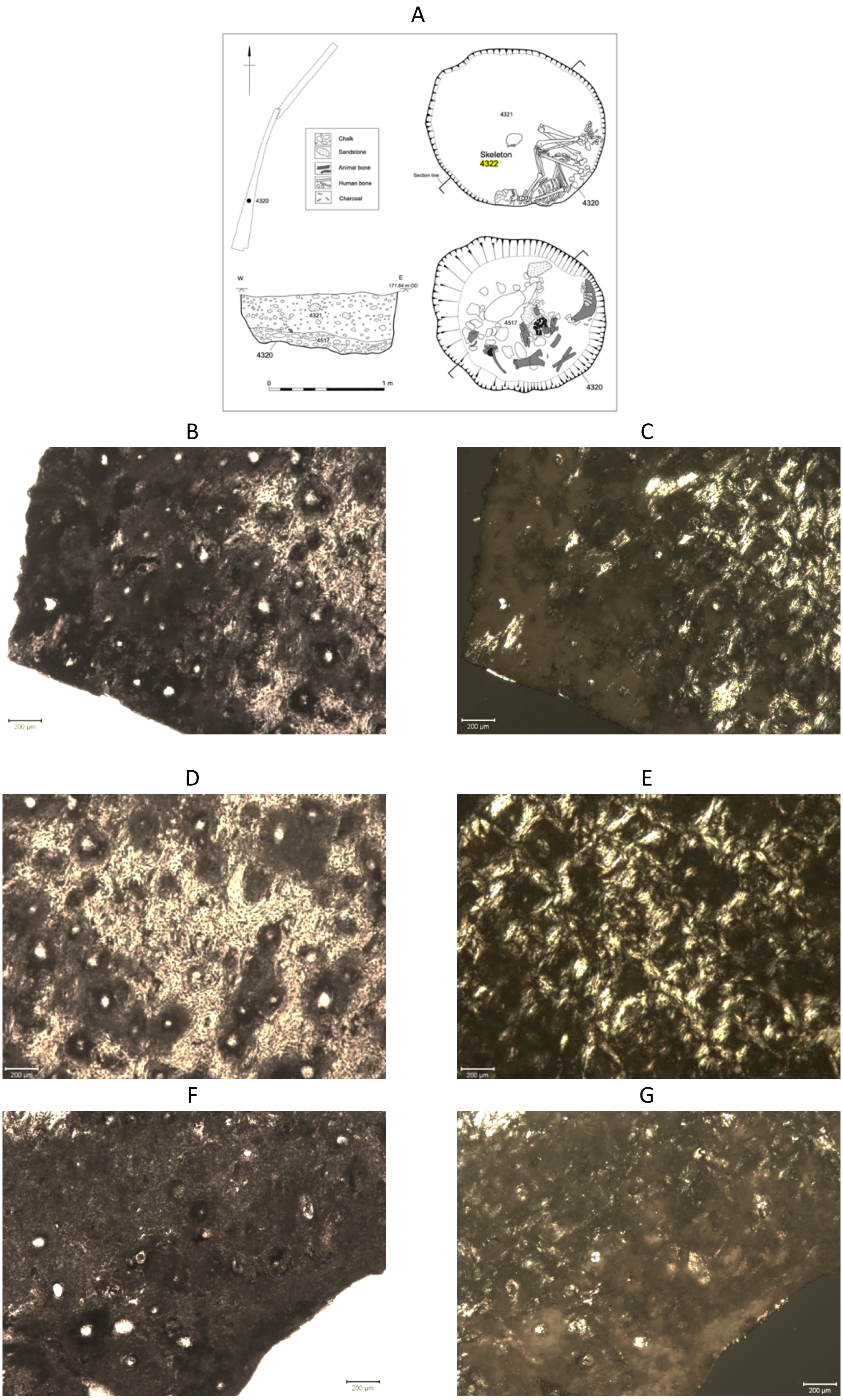


Figure 49. Sample from an articulated pit burial from Battlesbury Bowl, Wiltshire, with middle-ranging histological preservation (OHI 3). **BB06**: A) Illustration of sampled skeleton in a pit (4320) (source: Ellis and Powell 2008 fig.3.16). B) Periosteal aspect, normal light, x5 magnification. C) Periosteal aspect, polarised light, x5 magnification. D) Central cortex, normal light showing arrested pattern of bacterial attack, x5 magnification. E) Central cortex, polarised light, x5 magnification. F) Endosteal aspect, normal light, x5 magnification. G) Endosteal aspect, polarised light, x5 magnification. Source: author

GUS01

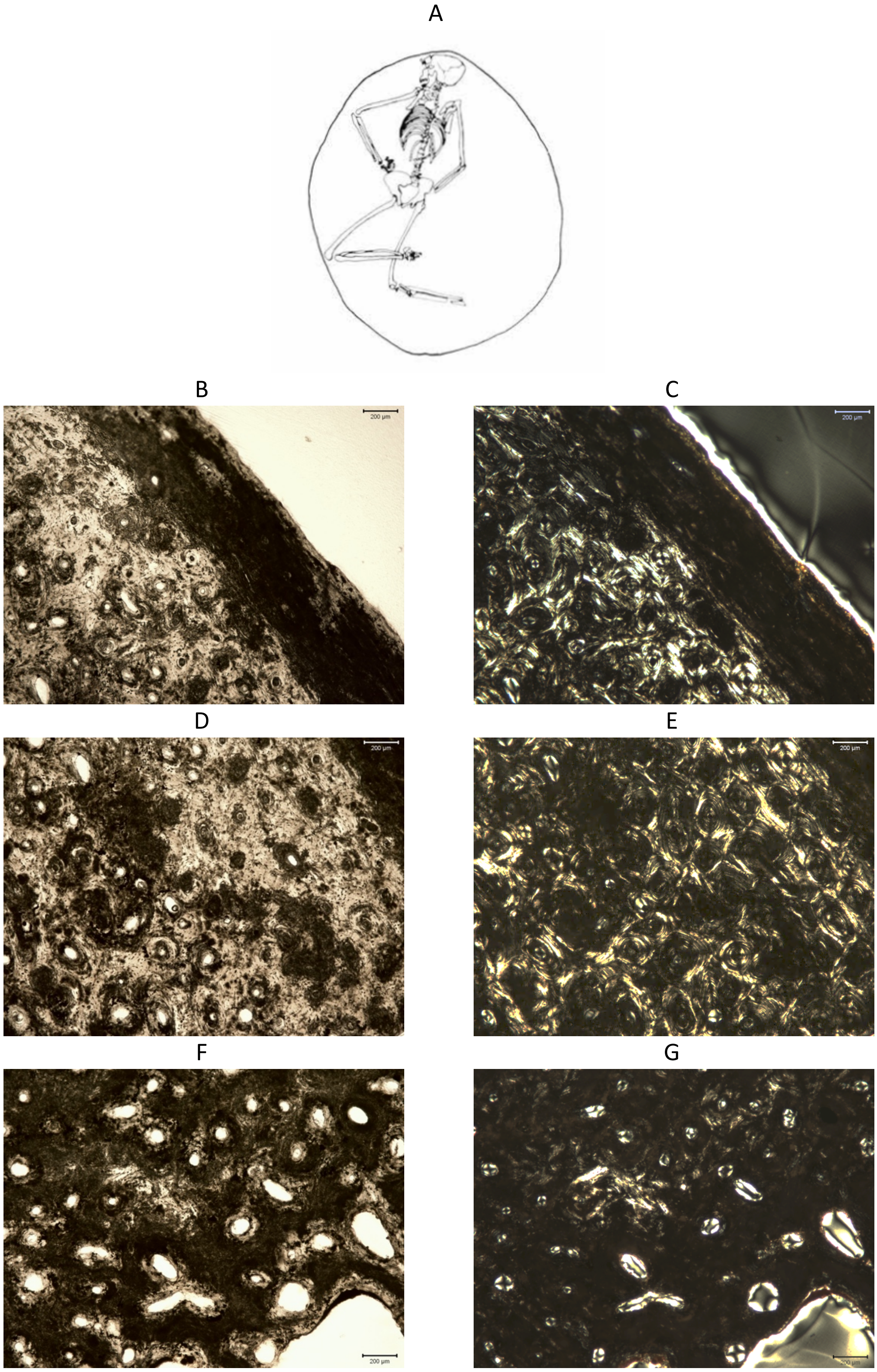


Figure 50. Sample from an articulated pit burial from Gussage All Saints, Dorset, with middle-ranging histological preservation (OHI 3). **GUS01:** A) Illustration of a sampled skeleton in a pit (31) (source: Wainwright 1979: fig.27). B) Periosteal aspect showing a margin of dense MFD in the sub-periosteum and mixed preservation below, normal light, x5 magnification. C) Periosteal aspect, polarised light, x5 magnification. D) Central cortex showing mixed preservation and arrested attack, normal light, x5 magnification. E) Central cortex, polarised light, x5 magnification. F) Endosteal aspect, normal light, x5 magnification. G) Endosteal aspect, polarised light, x5 magnification. Source: author

6.3.3.3. OHI 4

One of the most surprising results was the well-preserved specimen HGV02, sampled from a recently excavated burial at Hunt's Grove, Gloucestershire (Allen and Teague forthcoming). The skeleton was in poor condition and heavily fragmented, but the overall position of the surviving elements indicates the inhumation was very tightly crouched (Figure 51A).

Despite poor surface preservation, the histological preservation is nearly perfect (Figure 51B) and birefringence is very high (Figure 51C). There are only minor areas of arrested bacterial attack in the cortex (Figure 51D) and the birefringence respects the preservation, with high levels in the unaffected microstructure and absent where the MFD is present (Figure 51E). Microcracks are present throughout the transverse section, mostly toward the surfaces (periosteal and endosteal). This may be due to cycles of wetting and drying, although it is interesting that this did not seem to result in collagen hydrolysis. The degree of preservation and small areas of arrested MFD would suggest that this individual was defleshed or treated in some way that inhibited bacterial attack, for example preservation (e.g. mummification or smoking). A small area of blackish staining on one end can be seen in Figure 51F which may be related to a mortuary treatment (e.g. carbon infiltration from a burnt environment), however the infiltration cannot be confirmed within the scope of this research.

Unfortunately, the skeleton represented by HGV02 was too fragmented and surface preservation was too poor to make any meaningful taphonomic observations. The burial was interpreted by excavators (Oxford Archaeology) as being heavily disturbed with most of the elements having been lost to the disturbance or to natural taphonomic process, but the spatial arrangement suggested it was originally an articulated inhumation that had been tightly wrapped or bound. The site produced another burial likely contemporary and of Iron Age date (HGV01), an articulated inhumation lying prone and likely extended in a nearby pit. HGV01 scored OHI 0 with the highest levels of bacterial attack and no birefringence (see Figure 48A, B and C). This disparity between the histological preservation of two skeletons, in similar burial environments and within the same soil contexts, is significant and suggests different environmental or early post-mortem treatments afforded to each corpse. However, the absence of radiocarbon dating limits interpretation as they may not be contemporary.

HGV02

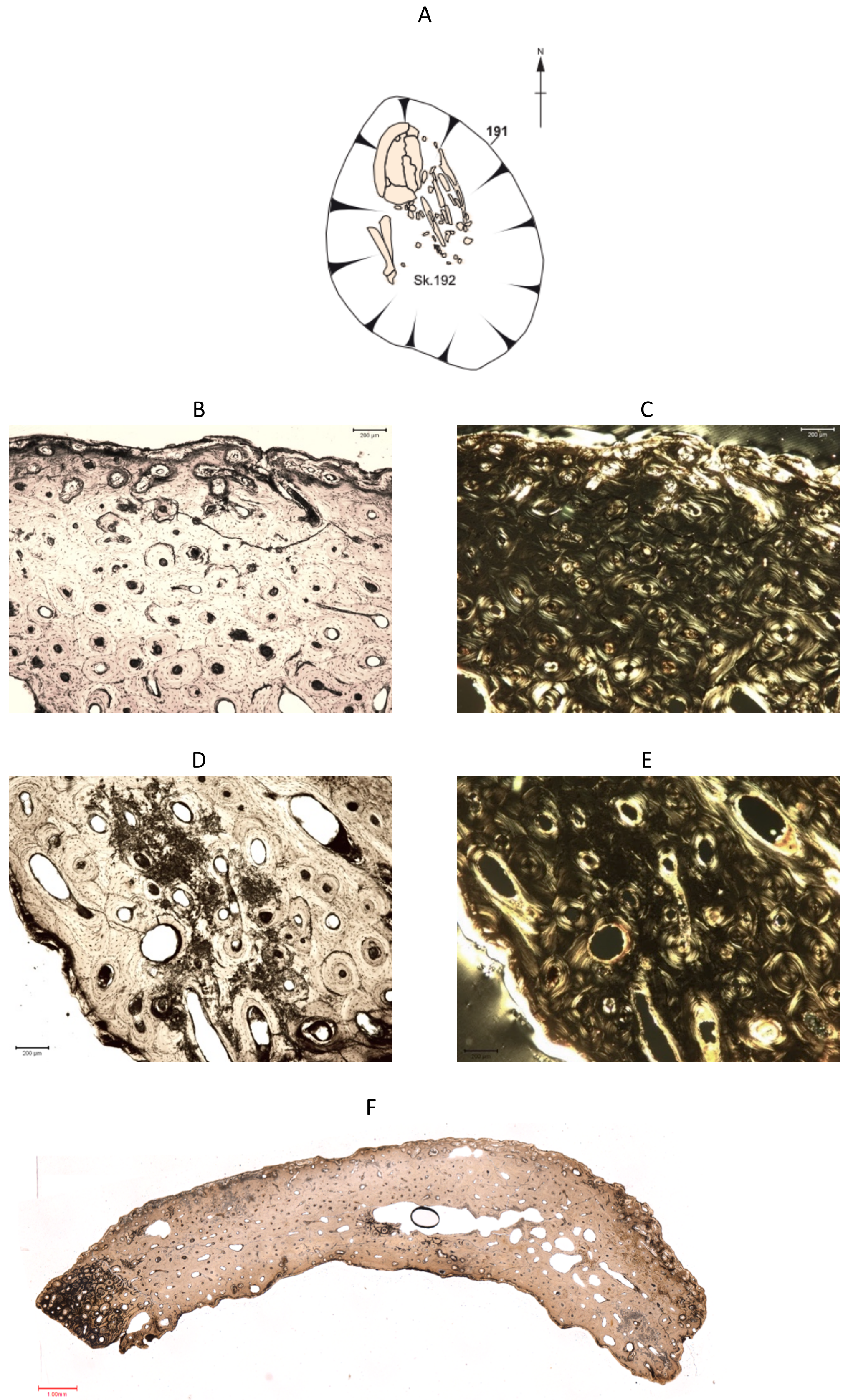


Figure 51. Sample from an articulated pit burial from Hunt's Grove, Gloucestershire, with excellent histological preservation (OHI 4). **HGV02:** A) Illustration of the sampled skeleton in a tightly crouched position (source: Allen and Teague forthcoming). B) Periosteal aspect, normal light, x5 magnification. C) Periosteal aspect, polarised light, x5 magnification. D) Endosteal aspect, normal light, x5 magnification. E) Endosteal aspect, polarised light, x5 magnification. F) Scan of entire transverse section showing excellent preservation throughout most of the sample (image made by Anthony Hayes, Cardiff University). Source: author

6.3.3.4. Summary

Overall, the histological preservation of the articulated inhumations in pits suggests most of the individuals were buried shortly after death with some disparity in the intensity of attack possibly indicating slight variations in treatment such as wrapping or covering the body. The exceptions which had mixed preservation scoring OHI 2 and 3, suggest that the individual may have been exposed but protected from scavenging animals, as well as HGV02 with excellent histological preservation suggesting rapid defleshing/decomposition shortly after death.

The result of the analysis on articulated inhumations in pits showing mostly low OHI scores is somewhat surprising as a 2016 study included 6 articulated skeletons from Iron Age pits at Danebury and Suddern Farm in Hampshire which had a modal OHI score of 2 (Booth and Madgwick 2016). Only one of the six skeletons in the study by Booth and Madgwick (2016) scored OHI 0, suggesting that this individual was buried immediately after death whilst the others were left exposed but protected from weather and scavenging animals in their respective pits. The diverging results are interesting and may imply differing local traditions.

6.3.4. Articulated – boundaries

Two samples represent probably articulated burials, one from an enclosure ditch (DIN01) and one from beneath a rampart (DIN02) surrounding the large (now mostly destroyed) hillfort at Dinorben in Denbighshire (Table 8). Despite being the most extensively excavated hillfort in Wales, there is little information regarding the burials in the report, which describes complete inhumations that are not reflected in the surviving skeletal material housed at Amgueddfa Cymru/National Museum Wales. It may be that the missing elements were lost to natural taphonomic processes, or they may have been disarticulated upon deposition. In any case, the histological preservation is poor, suggesting the early post-mortem treatment was fully fleshed burial shortly after death with any subsequent disturbance occurring after complete skeletonisation. Radiocarbon dates funded by the Cambrian Archaeological Association (Bricking et al. forthcoming). Both samples exhibit the highest levels of bacterial attack (Figure 52A, C) with very little to no birefringence (Figure 52B, C).

Table 8. Samples from possible articulated inhumation burials in settlement boundaries. Source: author

Specimen	County	Element	Side	Age	Sex	OHI	Birefringence	C14 date
DIN01	Denbighshire	Femur?	-	Adult	-	0	Low	353-93 cal BC (UBA-44575)
DIN02	Denbighshire	Femur	-	Adult	-	0	None	353-93 cal BC (UBA-44576)

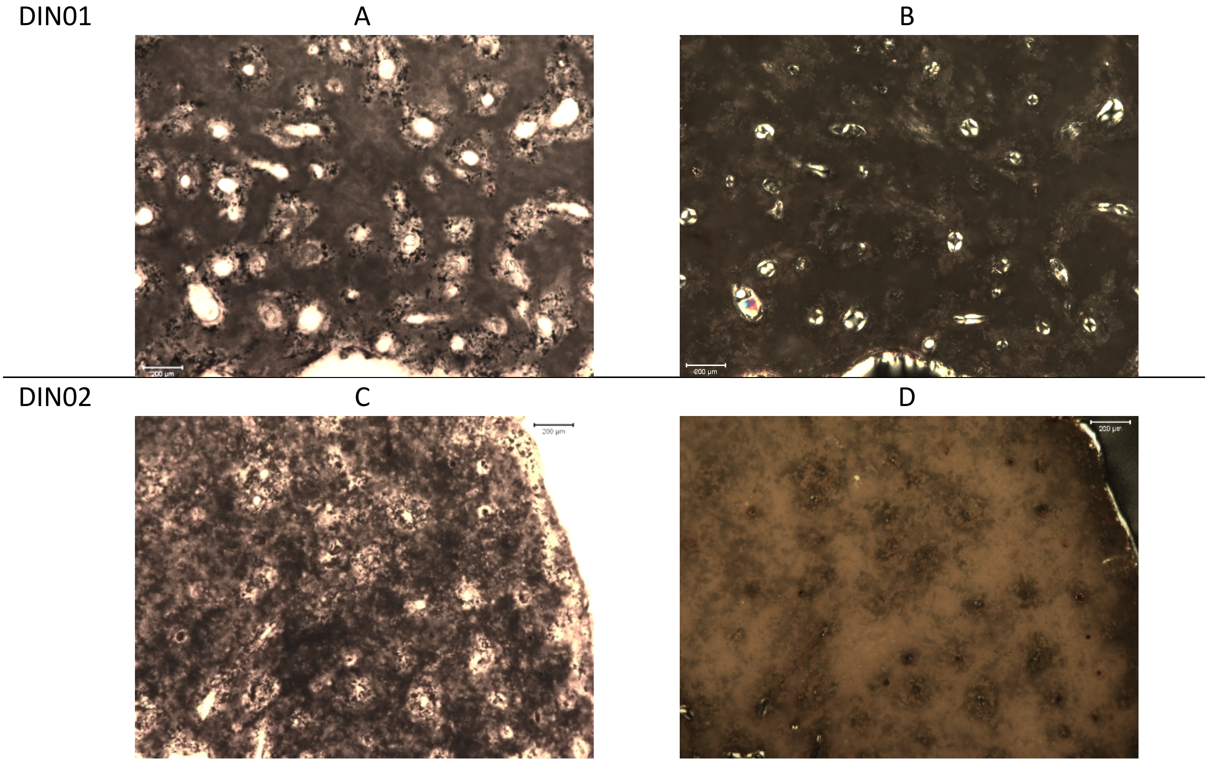


Figure 52. Samples from possible articulated burials from boundaries at Dinorben, Denbighshire showing poor histological preservation. **DIN01**: A) Endosteal aspect, normal light, x5 preservation. B) Endosteal aspect, polarised light, x5 magnification. **DIN02**: C) Periosteal aspect, normal light, x5 magnification. D) Periosteal aspect, polarised light, x5 magnification. Source: author

6.3.5. Articulated - unknown features

The last category for articulated burials are from unknown features. 5 samples represent individuals from Ham Hill (n=2), Cadbury Castle (n=1) and North Perrott (n=1) in Somerset and Tolpuddle Ball (n=1) in Dorset (Table 9). All but one of the articulated burials from unknown features had the lowest possible histological preservation (Figure 53).

Table 9. Samples from articulated inhumation burials from unknown features. Source: author

Specimen	County	Element	Side	Age	Sex	OHI	Birefringence
HH08	Somerset	Femur	-	Adult	M	0	None
HH31	Somerset	Femur	-	Adult	-	0	Low
SC77	Somerset	Femur	R	Adult	-	3	Med
NP69	Somerset	Femur	L	Adult	-	0	None
TPB08	Dorset	L. Long bone	-	Adult	-	0	None

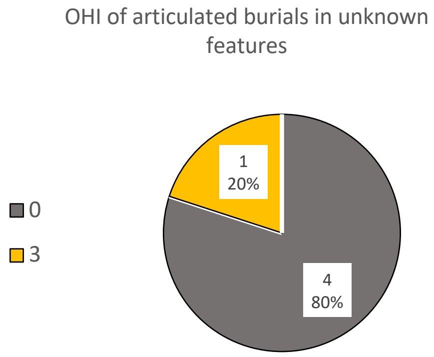


Figure 53. Chart showing the OHI scores of articulated inhumation burials from unknown features. Source: author

6.3.5.1. OHI 0-1

All but one of the articulated burials from unknown features had poor histological preservation with the highest levels of bacterial attack, for example the entire cortex of TPB08 is fully destroyed by MFD (Figure 54A) and birefringence is virtually absent (Figure 54B). These samples are histologically consistent with inhumation shortly after death.

TPB08 A B

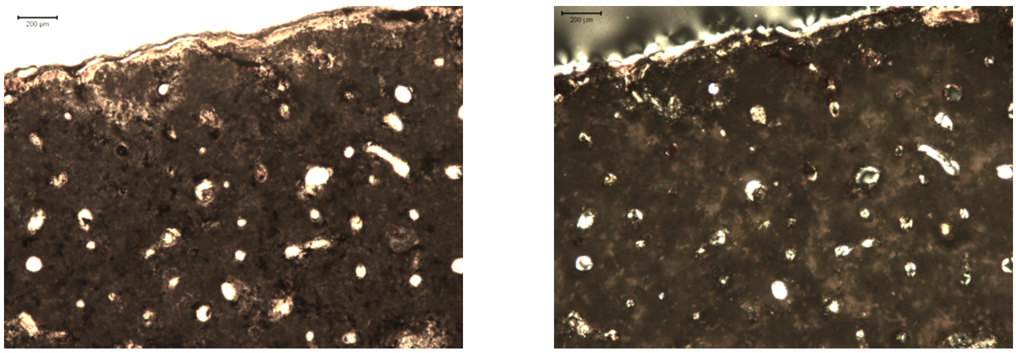


Figure 54. Sample from an articulated burial from an unknown feature at Tolpuddle Ball, Dorset showing poor histological preservation. **TPB08**: A) Periosteal aspect, normal light, x5 magnification. B) Periosteal aspect, polarised light, x5 magnification. Source: author

6.3.5.2. OHI 3

The exception, SC77, represents a possibly articulated skeleton recovered from the upper passageway (Context Group III) at Cadbury Castle, part of the ‘massacre deposit’ described Barrett et al. (2000: 107). The sample shows arrested bacterial attack in the centre cortex (Figure 55A) and birefringence respecting the preserved areas (Figure 55B). A thick margin of opaque MFD runs the length of the transverse section at the periosteal aspect extending into the cortex (Figure 55C). The trabecular bone is also heavily affected by MFD at the endosteal surface. The area of mixed preservation in the centre shows bacteria radiating from Haversian canals and stopping at various stages of advancement. The rest of the sampled specimen from Cadbury Castle is described below in Section 6.7.

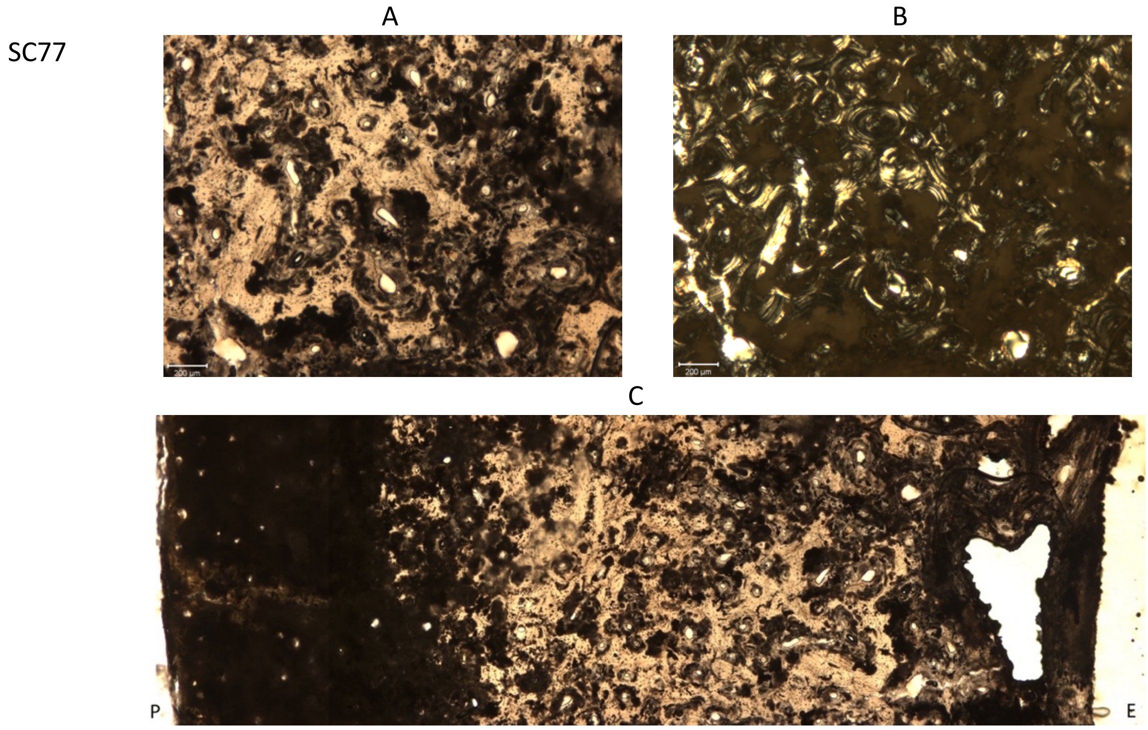


Figure 55. Sample from a possible articulated skeleton (K650) from an unknown feature at Cadbury Castle, Somerset. **SC77**: A) Central cortex showing mixed histological preservation and arrested bacterial attack, normal light, x5 magnification. B) Central cortex, polarised light, x5 magnification. C) Transverse section showing periosteal surface (P) to endosteal/medullary surface (E), normal light. Micrographs at 5x magnification were stitched together by the author. Source: author.

6.3.5.3. Summary

Interpretation is limited by the lack of contextual detail recorded by excavators. However, based on the histological preservation, it appears that all but one may have originated from an articulated inhumation. The exception, SC77, shows an arrested pattern of attack and may represent a different early post-mortem treatment such as protected exposure or removal from the dead individual earlier than the others.

6.4. Partially articulated deposits

Partially articulated deposits indicate the body part(s) retained some soft connective tissue upon deposition, or represent a skeleton that had elements removed at some point. The sample includes 14 specimens from partially articulated deposits representing different body parts. The samples are described in Table 10 and the OHI breakdown of the sampled remains from partially articulated deposits can be seen in Figure 56. The samples represent both biological female (n=4) and male (n=6) adults, and 4 of unknown sex. The OHI scores for the female and male samples is shown in Figure 57. Most of the samples representing partially articulated deposits are from Ham Hill, Somerset (Appendix 3) with one from Worlebury in Somerset, Tolpuddle Ball in Dorset, and Rowbarrow in Wiltshire respectively. Seven of the samples were recovered from boundary ditches/ramparts, four from pits, one from a grave and two from unknown features. Sampled elements include both long bones (n=4) and skulls (n=10) and the OHI breakdown for these is illustrated in Figure 58.

Table 10. Samples from partially articulated deposits. Source: author

Specimen	County	Element	Side	Age	Sex	Feature	OHI	Birefringence	C14 date
RBW07	Wiltshire	Femur	L	Adult	F?	Grave	2	Med	780-410 cal BC (SUERC-41681)
TPB02	Dorset	tibia	L	Adult	-	Pit	3	Low	
WB21	Somerset	Occipital	-	Adult	M	Pit	0	None	
HH02	Somerset	Ulna	L	Subadult	-	?	2	Low	
HH05	Somerset	Parietal	L	Adult	M?	Ditch	0	None	
HH06	Somerset	Parietal	L	Adult	M?	Rampart	0	None/low	
HH07	Somerset	Occipital	-	Adult	M	Ditch?	0	None	
HH10	Somerset	Frontal	-	Adult	M	?	0	None	
HH35	Somerset	Parietal	-	Adult	F?	Ditch	0	None	
HH39	Somerset	Parietal	R	Adult	F?	Ditch	0	None	
HH45	Somerset	Occipital	-	Adult?	F?	Pit	0	None	
HH46	Somerset	Parietal	-	Adult	-	Pit	0	None	
HH55	Somerset	Femur	R	Adult	M?	Rampart	1	Low	
HH61	Somerset	Frontal	-	Adult	-	Ditch?	0	None	

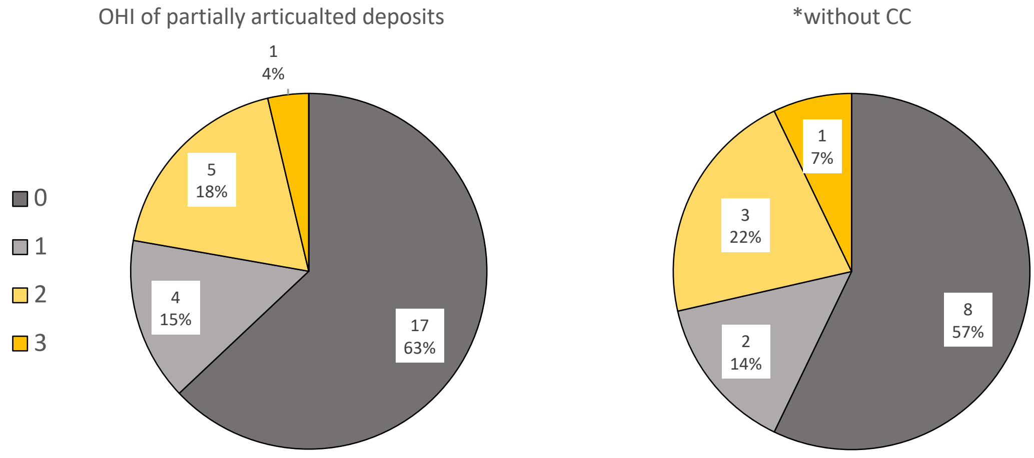


Figure 56. Chart showing OHI score breakdown of samples from total partially articulated deposits (left) and without Cadbury Castle (right). Source: author

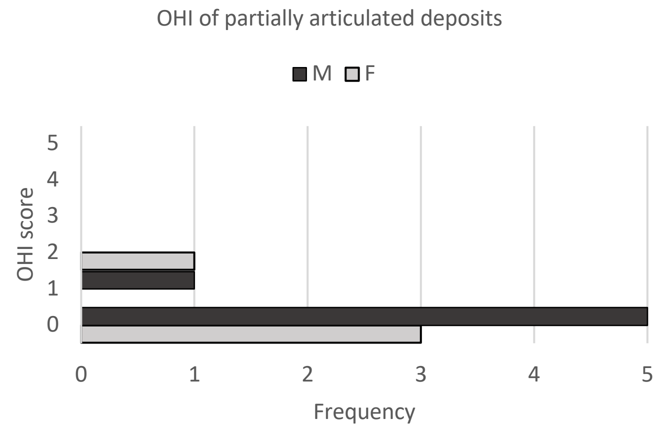


Figure 57. Graph showing OHI score distribution of female and male articulated deposits. Source: author

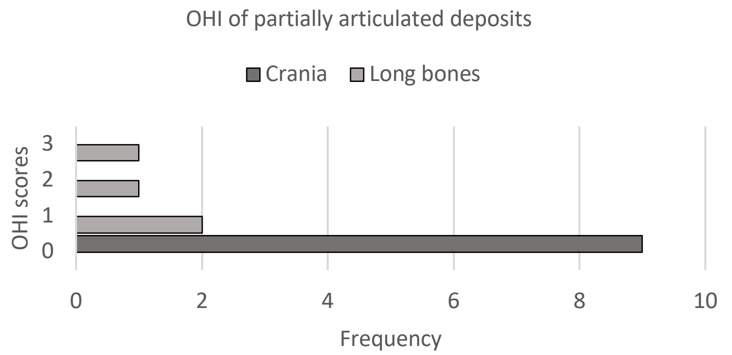


Figure 58. Graph showing OHI scores distribution of long bones and crania from partially articulated human remains. Source: author

6.4.1. Partially articulated – grave

Sample RBW07 represents the partially articulated deposit from a grave. The deposit was radiocarbon dated to the EIA (780-410 cal BC) and is described being an adult aged 25-30-years-old, possible female (elsewhere recorded as male, Powell 2015: 53) lying in a flexed position on right side with 'head' to the west, except the head is missing along with the lower legs and feet (Wessex Archaeology 2013: 11). The bone was extremely fragmented, eroded, covered in root etching and pale in colour with an old break at the midshaft (Figure 59A).

The histological preservation of RBW07 was mixed (OHI 2) with some areas of well-preserved microstructure and an arrested pattern of bacterial attack seen throughout the cortex (Figure 59B, D, F). The areas of preserved microstructure are orientated toward the centre of the transverse section with the periosteum and endosteum more heavily affected by MFD. Non-Wedl MFD is found throughout the sample, often radiating outwards from Haversian canals with interstitial lamellae less affected (Figure 59D, E). The arrangement of collagen birefringence respects the pattern of diagenesis – that is, higher where the microstructure is well preserved and low/absent where it is destroyed by bacterial attack (Figure 59C, E, G).

This sample is similar in appearance to the contemporary articulated burials from Rowbarrow described above in Section 6.3.2. This suggests that RBW07 likely represents an articulated burial and the elements (skull, lower legs) were removed by grave disturbance. Evidence of re-opening graves at Rowbarrow (Powell 2015: 77) indicates this disturbance was likely a deliberate action as part of an established mortuary practice available to some corpses during the Iron Age in this area. This will be discussed further in the following chapter.

RBW07

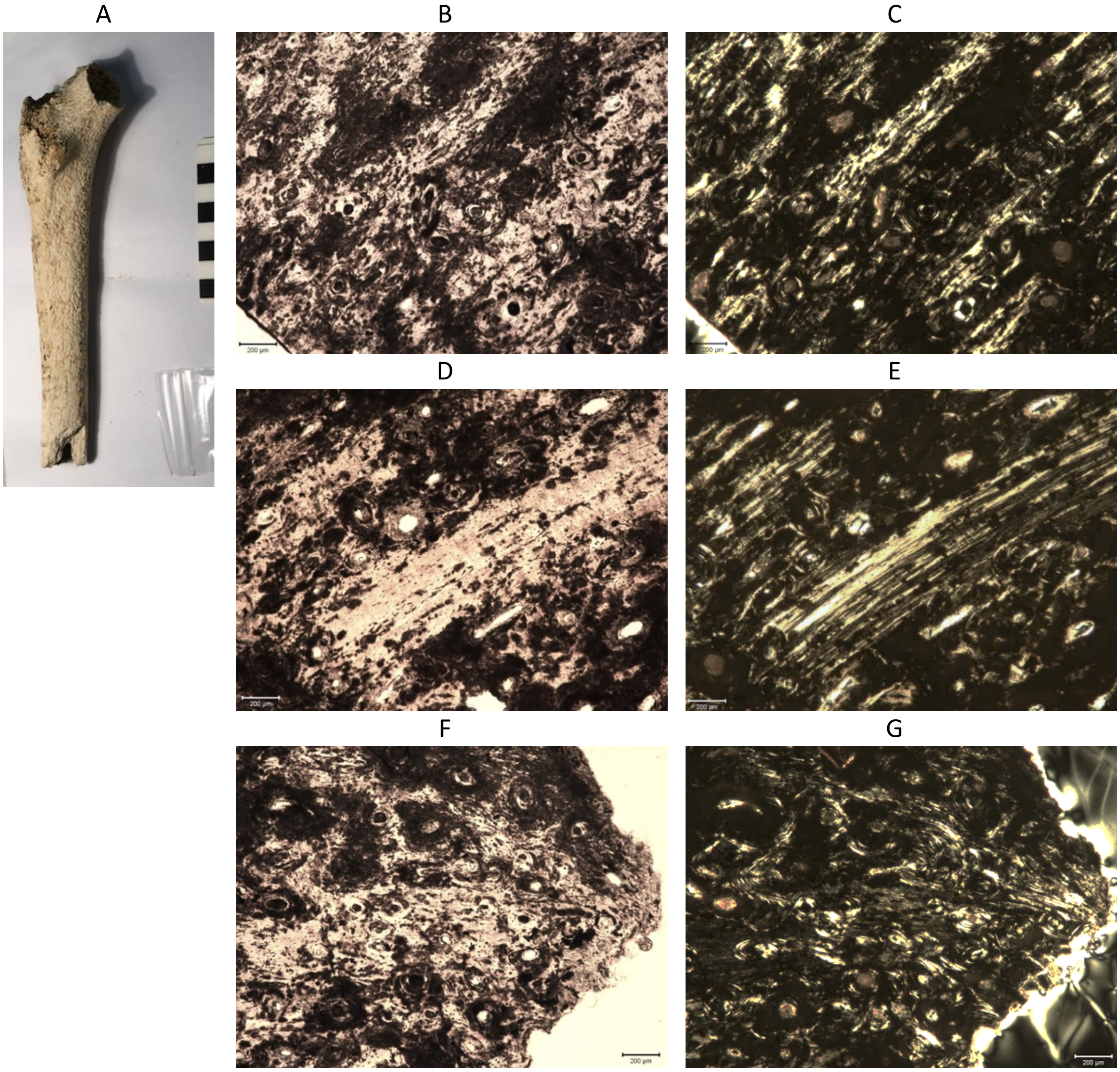


Figure 59. Sample from a partially articulated deposit a grave (4104) at Rowbarrow, Wiltshire, with mixed histological preservation (OHI 2). **RBW07**: A) Sampled element, proximal end of adult left femur with root etching and an old break. B) Periosteal and subperiosteal aspect, normal light, x5 magnification. C) Periosteal and subperiosteal aspect, polarised light, x5 magnification. D) Central cortex, normal light showing well-preserved interstitial lamellae, x5 magnification. E) Central cortex, polarised light, x5 magnification. F) Endosteal aspect, normal light, x5 magnification. G) Endosteal aspect, polarised light x5 magnification. Source: author

6.4.2. Partially articulated – boundaries

All of the samples (n=7) from settlement boundaries come from the large multivallate hillfort, Ham Hill in Somerset. This section includes remains recovered, or probably recovered, from within the bottoms of/fills of ditches as well as ramparts. All of the samples showed low histological preservation consistent with OHI 0 (n=6) and OHI 1 (n=1) (Figure 60).

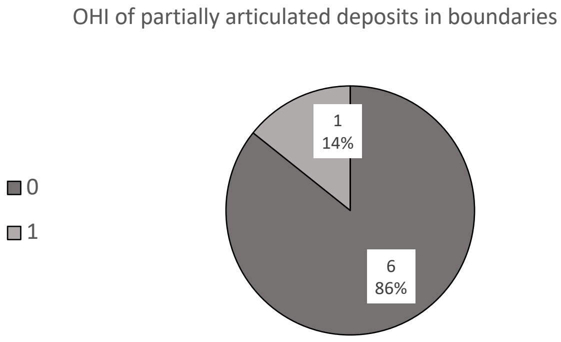


Figure 60. Chart showing OHI score breakdown of partially articulated deposits from settlement boundaries. Source: author

All of the thin sections were covered in thick, homogenous, opaque MFD that could not be identified by type. The only specimen which scored OHI 1, HH55, was sampled from a slightly weathered femur. The deposit was described as consisting of a right proximal femur (sampled), six unsided femur fragments, a right cuboid and left distal fibula (Dodwell 2014: table 14). The size of the femoral head suggests the sex was male.

The areas of preserved microstructure in HH55 are shown in Figure 61A. The preservation is limited to the outer parts of osteons orientated into two clusters (indicated by red arrows). The arrested MFD appears to be of non-Wedl (lamellate) type. The birefringence is high respecting the boundaries of the small areas of preserved osteons, but otherwise it is absent throughout the rest of the sample (Figure 61B). Apart from the small areas, the sample is covered in the highest possible levels of MFD.

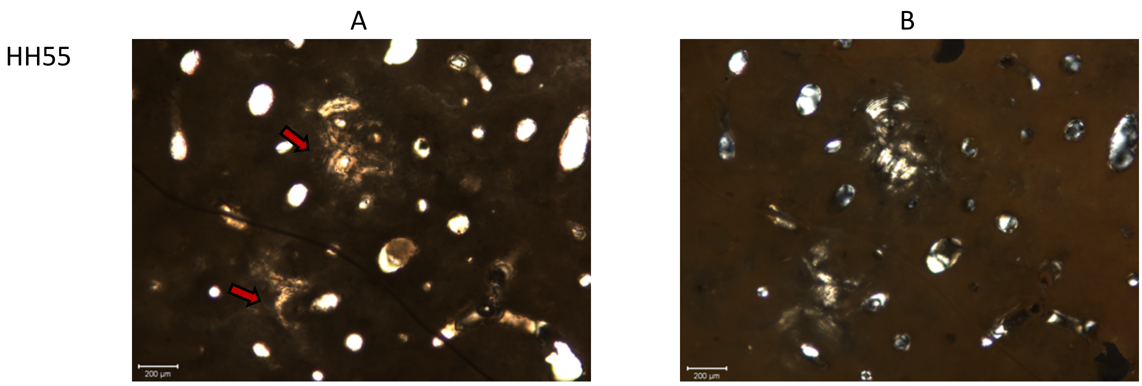


Figure 61. Sample from a partially articulated deposits in a boundary from Ham Hill, Somerset. **HH55:** A) Centre cortex, normal light, showing thick MFD with arrows showing small areas of preservation, x5 magnification. B) Centre cortex, polarised light, x5 magnification. Source: author

The poor histological preservation suggests that these deposits likely originated from fully articulated inhumation burials. In some cases, it is likely that the partially articulated remains are what is left from the inhumation, the rest of the skeleton having been removed and redeposited, possibly within other features within the settlement (e.g. disarticulated bone in ditch or pit fill). For example, HH05 (shown in situ in Figure 62) includes the bones of the upper half of an older adult individual, possibly male, with blunt force trauma to the upper left temporal bone. The poor histological preservation (OHI 0) and the partially articulated anatomical position with a portion of articulated axial skeleton, suggests this individual was buried within the ditch shortly after death and remained in situ. The missing elements (arms, lower half of body) were probably removed sometime after skeletonisation (otherwise the connective tissue would have likely shifted the spine/ribs/head).

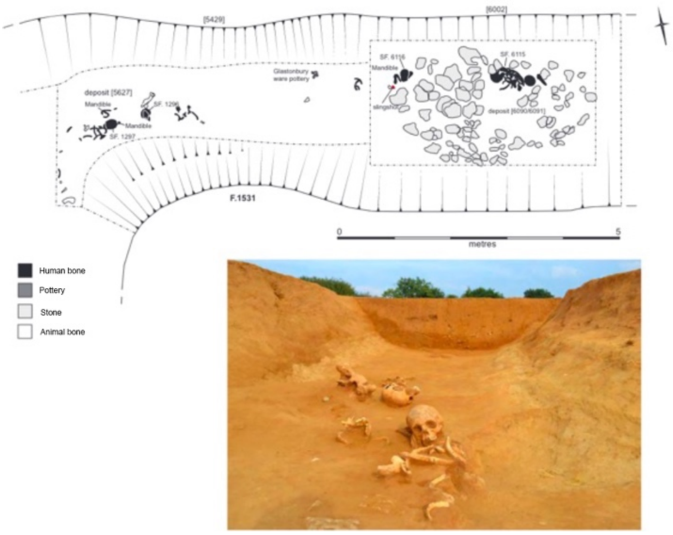


Figure 62. Human remains deposited in the boundary ditch at Ham Hill, Somerset (HH05). Adapted from Brittain et al. 2014: fig.10.

6.4.3. Partially articulated – pits

Partially articulated deposits from pits were sampled from Ham Hill (n=3) and Worlebury (n=1) in Somerset and Tolpuddle Ball in Dorset (n=1) (Figure 63). All but TPB02, a tibia, were taken from crania fragments and all but TPB02 scored OHI 0 with no microstructure remaining except for Haversian canals (Figure 64). The poorly preserved samples did not have any obvious taphonomic evidence for exposure, but WB21 displayed sharp force trauma to the left parietal known as a “coward’s blow”. It is possible that this individual was an articulated inhumation – it is difficult to determine from the site report, which lacks detail around human remains.

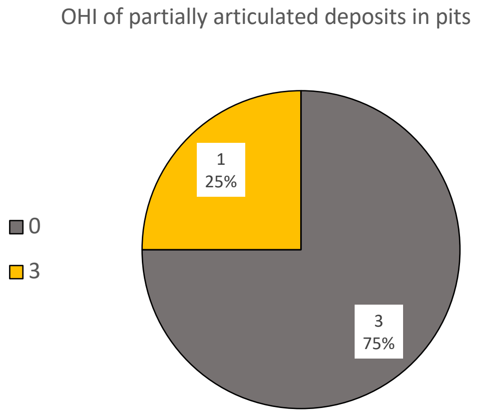


Figure 63. Chart showing OHI score breakdown of partially articulated deposits from pits. Source: author

TPB02

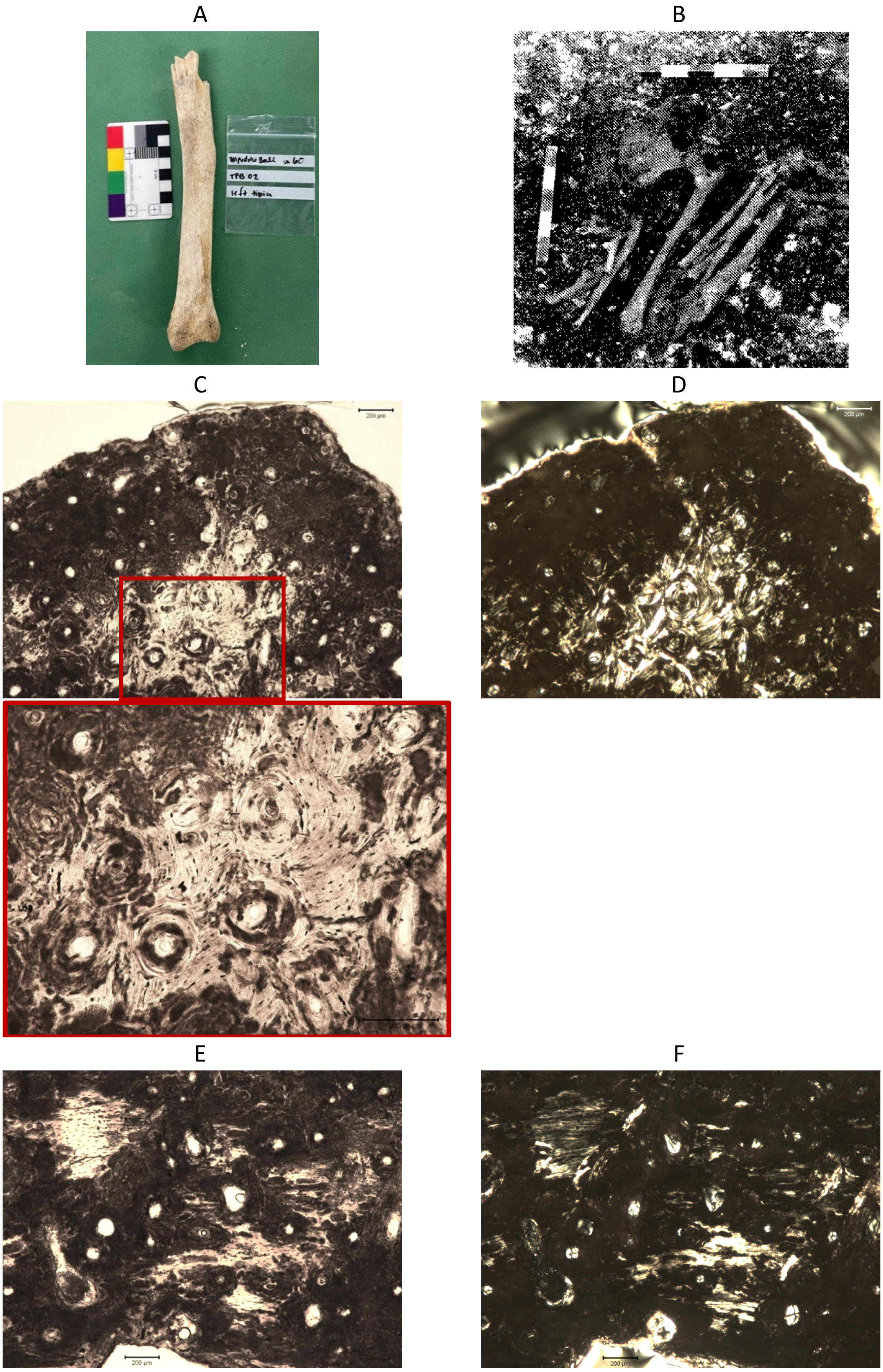


Figure 64. Sample from a partially articulated deposit in a pit at from Tolpuddle Ball, Dorset, with mixed histological preservation (OHI 2). **TPB02**: A) Sampled element, adult left tibia fragment. B) Photograph of the sampled deposit in a pit (source: Hearne and Birbeck 1999: pl.18). C) Periosteal aspect into the centre cortex showing arrested MFD within osteons, normal light, x5 and 10x magnification. D) Periosteal aspect into the central cortex, polarised light, x5 magnification. E) Endosteal aspect showing patches of well-preserved microstructure, normal light, x5 magnification. F) Endosteal aspect, polarised light, x5 magnification. Source: author

The exception, TPB02, was sampled from a left tibia (Figure 64A) fragment recovered from a Middle-Late Iron Age (400-100 BC) pit within the settlement area. The deposit was described as "a partial human skeleton (60A, SF 165) found within this pit. It is unclear whether the human remains were a discrete deposit within the pit itself or if they represent a later grave cut into it. It is probable that the burial was originally complete but was damaged by later ploughing" (Hearne and Birbeck 1999: 38). The remains represent c.40% of a skeleton and include the pelvis and legs (Figure 64B).

TPB02 had large areas of well-preserved bone microstructure, particularly in the centre of the cortex consistent with OHI 3. Arrested non-Wedl MFD is present within these areas to varying degrees, usually restricted to single osteons (Figure 64C). The periosteal (Figure 64C, D) and endosteal (Figure 64E) aspects are more thoroughly affected by bacterial bioerosion concentrated within osteons. Figure 64E shows the sub-endosteum with totally destroyed osteons situated within well preserved interstitial lamellae. The collagen birefringence is high where the sample shows good histological preservation and low to absent where it is covered in MFD Figure 64F).

This sample is similar in appearance to RBW07, a partially articulated skeleton in a grave. It is possible that these individuals were afforded a similar post-mortem treatment, or underwent similar processes. The depth of TBP02 within the pit is unclear, but the lack of other taphonomic evidence (e.g. gnawing) suggests that they had more rapid decomposition than a fully articulated inhumation in the ground shortly after burial. Protected exposure in their respective features, followed by removal of the elements that are now missing, is one possibility.

6.4.4. Partially articulated - other

Two further samples from partially articulated remains come from unknown features within Ham Hill hillfort in Somerset (HH02, HH10). HH02 was sampled from a juvenile ulna and HH10 from an adult frontal bone. The latter deposit was described as being a skull with mandible with a smooth, clean cut across the cranium (Richard Madgwick pers comm.) This sample scored OHI 0 with the highest level of MFD across the sample and no collagen birefringence. Based on the histological evidence, and with no other evidence e.g. burial characteristics, this deposit was likely once part of a complete inhumation burial.

The histological preservation of HH02 was generally poor, but a small pocket of preserved microstructure remained in the centre of the transverse section (Figure 65). Birefringence was high over the patch, further confirming the advancement of bacterial attack was arrested. No other details regarding the deposition are known for HH02, but the small area of preservation may be due to a change of environment, for example extraction from the burial environment, or from the more rapid skeletonisation of the extremity.

HH02

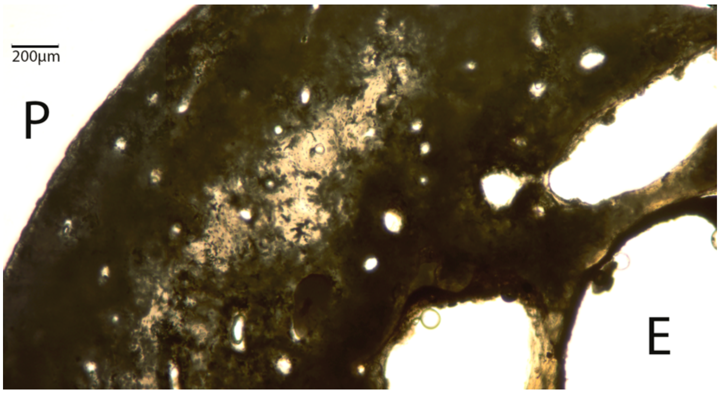


Figure 65. Sample from a partially articulated deposit from an unknown feature at Ham Hill, Somerset. HH02: Transverse section showing advanced bacterial attack at the periosteal (P) and endosteal (E) aspect with an area of well-preserved microstructure in the centre. Source: author

6.4.5. Summary

To summarise, most of the partially articulated deposits sampled in this study had poor histological preservation consistent with inhumation shortly after death. This would suggest that partially articulated deposits, especially in boundary ditches, represent the original primary inhumation rather than redeposited fleshy parts. The few samples with middle-ranging histological preservation from graves at Rowbarrow and Tolpuddle Ball are histologically similar to the articulated inhumations from the sites (Sections 6.3.2 and 6.3.3), further suggesting these represent articulated inhumations. The incompleteness of the skeleton in these instances may point to selective removal of elements at some point, leaving the rest in situ.

6.5. Disarticulated deposits

Disarticulated deposits are the most common deposit type in this analysis totalling 162 samples (57%). The total percentage of OHI scores for the disarticulated samples are shown in Figure 66. As previously stated, Glastonbury Lake Village and Cadbury Castle are presented separately as they may represent outliers and thus skew the data, so the total percentage of OHI scores without the two sites is shown separately (Figure 66, right). Without these samples, the overall portion of OHI scores higher than 0-1 is reduced from 32% to 21% of the sampled corpus. In order to explore any potential differences in early post-mortem treatments, for example if skulls and skull fragments are indeed representative of 'headhunting' or display of war trophies as proposed by earlier scholarship (see Chapter 3 and discussed in Chapter 8, Section 8.3.6). The OHI scores for skulls and long bones are shown in Figure 67 (without Glastonbury Lake Village in Figure 68) and show a slightly higher proportion of crania have middle (2-3) and high (4-5) OHI scores than long bones.

Disarticulated elements with taphonomic indicators of post-mortem anthropogenic manipulation which may indicate complex mortuary practice (e.g. fracturing, gnawing, polishing, cut marks) are described in detail in order to give context to the histological preservation and inform on wider processes.

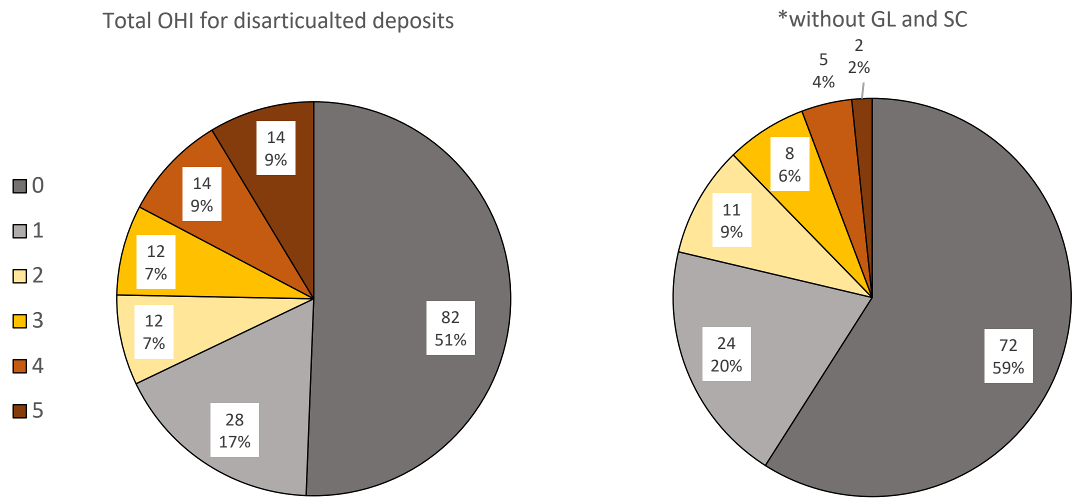


Figure 66. Chart showing the total OHI score breakdown of disarticulated deposits (left) and without Glastonbury Lake Village and Cadbury Castle (right). Source: author

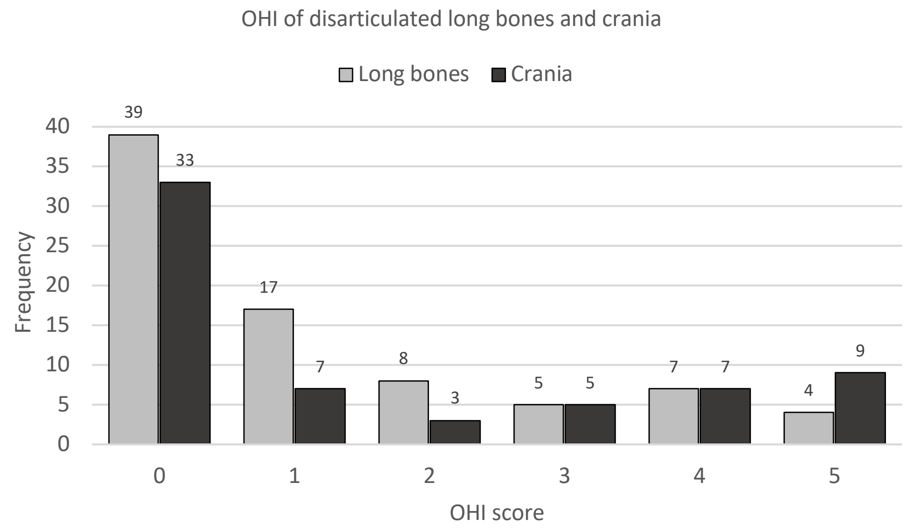


Figure 67. Graph showing OHI score distribution for disarticulated long bones and crania. Source: author

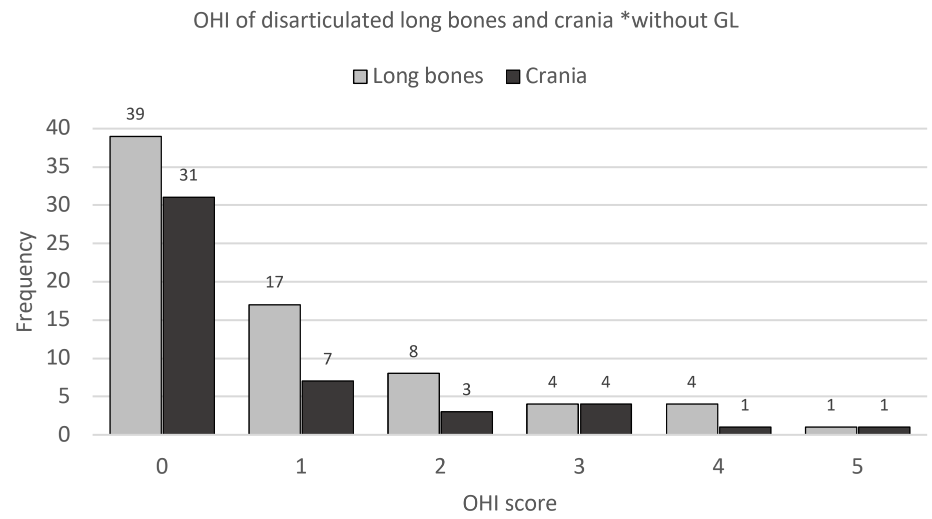


Figure 68. Graph showing OHI scores for disarticulated long bones and crania without Glastonbury Lake Village. Source: author

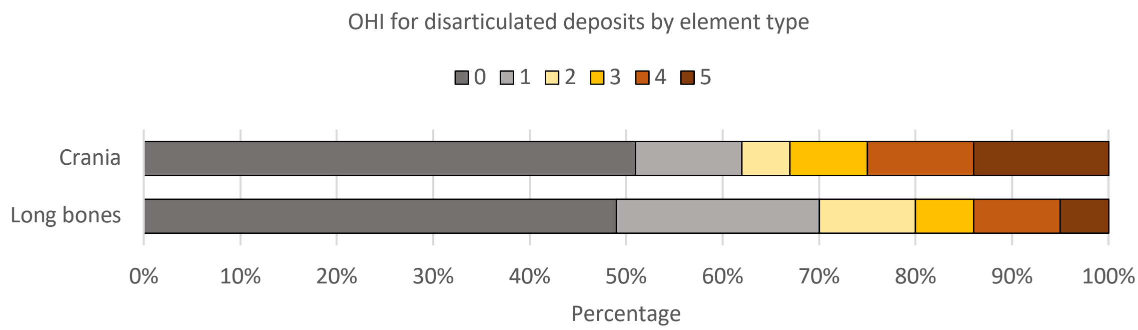


Figure 69. Graph showing the percentage of OHI scores for disarticulated long bone and crania. Source: author

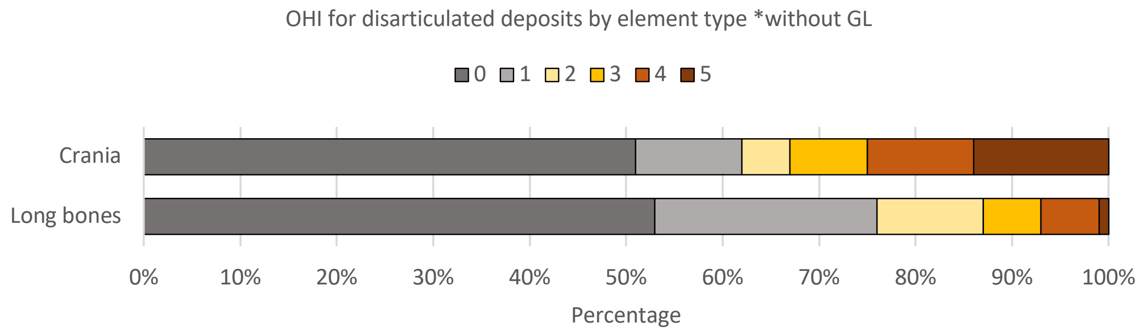


Figure 70. Graph showing the percentage of OHI scores for disarticulated long bones and crania without Glastonbury Lake Village. Source: author

6.5.1. Disarticulated – cave

All of the samples from disarticulated deposits in caves come from one site - Fishmonger's Swallet, located in Alveston (Gloucestershire). The cave has been the subject of extensive collaborative study to understand its use as a place of burial by the author and University of Bristol Speleological Society (UBSS) Museum. A detailed history of the cave, including its discovery (Hardwick 2022), previous archaeological work (Horton 2022), geology (Tringham 2022), and skeletal analysis (Cox and Loe 2022) has recently been published, but a brief summary is offered here.

In 1998, local cavers led by Hades Caving Club entered a 10-metre-deep chamber and discovered a substantial assemblage of comingled human and animal bone. Subsequent archaeological investigations revealed the assemblage comprised mostly of canid (minimum nine individual dogs, Peto et al. 2022) and human (minimum five individuals, Cox and Loe 2022) with other animal bone representing horse, sheep, pig and cattle. A recent programme of radiocarbon dates from four human bones and three canid bones from the site produced a tightly defined range of Late Iron Age dates, with the human bone dating from 162 cal BC-cal AD 62 (Bricking et al. 2022). The close range of dates suggests deposition of human remains within the cave occurred within a narrow timeframe, however the disarticulation and comingling caused by seasonal flooding makes it impossible to know whether the remains entered the cave articulated (fleshed), partially articulated (partly decomposed) or disarticulated. However, many of the human elements display evidence suggesting intentional manipulation including fresh fractures, cut marks and gnawing. The presence of fresh fractures and cut marks means it is likely that the elements were broken prior to deposition within the cave and therefore likely entered the cave in a disarticulated, or at least partially articulated, state. The most obvious example of such manipulation is a longitudinally split femur (FSH01). This type of fracture is usually seen in archaeological animal bone which have been exploited for marrow extraction (Binford

1981: 149-163), leading to interpretations of cannibalism in earlier investigations (see Cox and Loe 2022: 48-51). Additionally, long bones and skull fragments are overrepresented compared to the smaller bones, further suggesting secondary deposition of elements (Cox and Loe 2022: 35 table 1; 36).

Table 11. Samples from disarticulated deposits within Fishmonger's Swallet, Gloucestershire. Source: author

Specimen	County	Element	Side	Age	Sex	Taphonomy	OHI	Bire.	C14 date
FSH01	Gloucs.	Femur	L	Adult	-	Split fracture, poss. cut marks	2	Med	154 cal BC-cal AD 26 (BRAMS-5060)
FSH02	Gloucs.	Femur	L?	Adult	-	Shallow pitting	3	Med	107 cal BC-cal AD 62 (BRAMS-55057)
FSH03	Gloucs.	Mandible	-	Adult	F?	-	3	Med/ high	162 cal BC-cal AD 10 (BRAMS-5059)
FSH04	Gloucs.	Mandible	R	Adult	-	-	1	Low	156 cal BC-cal AD 23 (BRAMS-5058)
FSH07	Glouces .	Long bone	-	Adult	-	-	2	Med	-
FSH08	Glouces tershire	Femur	-	Adult	-	Shallow pitting, poss. gnawing	0	Low	-
FSH10	Glouces tershire	Cranium	-	Adult	-	-	0	Low	-

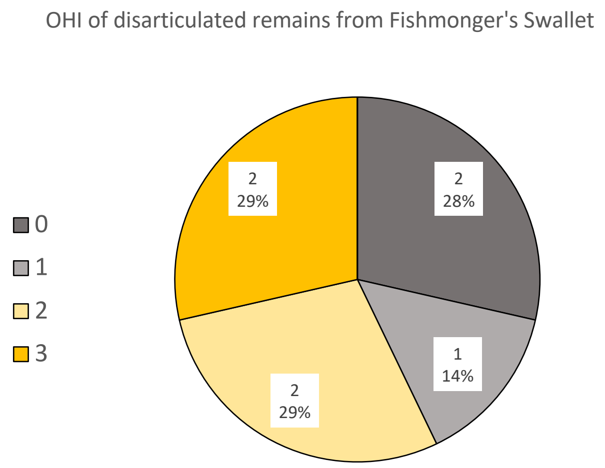


Figure 71. Chart showing OHI scores of disarticulated human remains from Fishmonger’s Swallet. Source: author

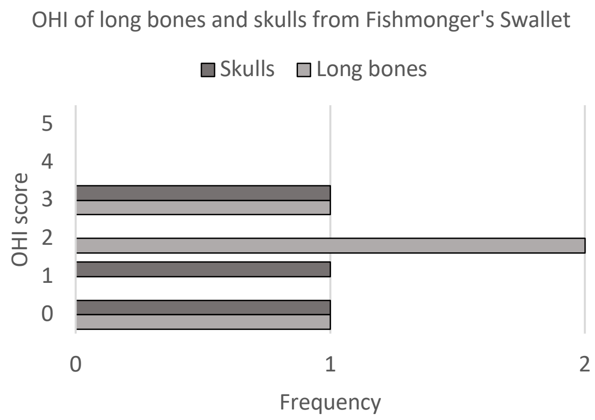


Figure 72. Graph showing OHI scores of long bones and skull fragments from Fishmonger's Swallet. Source: author

Ten elements and fragments from the human assemblage were sampled for histological analysis, however the results from carbon and nitrogen isotope analysis on the same elements showed that three of them had substantially lower nitrogen isotope values and were likely from herbivorous animals instead (Bricking et al. forthcoming). These three were removed from the histology dataset, resulting in seven samples from disarticulated bone deposited in the cave. Four of the samples (FSH01, 02, 03, 04) were radiocarbon dated (Table 14). The remaining three samples (FSH07, 08, 09) were extracted from heavily fragmented material to minimise damage to the assemblage. The OHI breakdown is provided in Fig.71 and the difference in OHI scores between skull fragments (including mandibles) and long bone fragments is shown in Figure 72.

It should be noted that the environment of the bone chamber in Fishmonger's Swallet is wet, muddy, and prone to flooding. A small creek runs into the cave and has historically carried midden material and sewage into the chamber where the human remains are recovered. The character of flooding has been described as a 'washing-machine effect' which churns the contents of the chamber and exposes the bones to dynamic micro-environments. Wedl types 1 and 2 are present with varying severity, so it is likely that fungal attack from the depositional environment is responsible for, or at least contributes to, much of the histological diagenesis seen in the samples.

6.5.1.1. OHI 0-1

Two samples, one from a long bone fragment (FSH08, Figure 73A) and one from a cranial fragment (FSH10, Figure 73D) showed extensive bioerosion throughout the transverse sections consistent with OHI 0. Some clusters of osteons in FSH08 seemed less affected by MFD, appearing lighter in colour, but no microstructural features are visible except for Haversian canals (Figure 73B). The birefringence is also low – slightly higher over the central cluster, but does not display the concentric ring appearance characteristic of collagen preservation (Figure 73C). Likewise, the microstructure of FSH10 is completely destroyed across the transverse section (Figure 73E) and the birefringence is very low to absent (Figure 73F). The extent of the microfocal attack is relatively balanced across the section (Figure 73G).

Sample FSH04, representing a fragmented right mandible (Figure 73H), scored OHI 1 with small patches of preserved lamellae present in the cortex, closer to the periosteal surface, among totally obliterated microstructure (Figure 73I). As seen in the patch indicated by the arrow in Figure 73I, the bacterial attack is arrested with some probable non-Wedl MFD concentrated around the Haversian canal and dissipating as it extends toward the cement line, virtually stopping before the interstitial lamellae beyond. The birefringence is high respecting the boundaries of this well-preserved patch, but is otherwise low, further supporting the 'arrested' pattern of osteolytic bacteria (Figure 73J). This arrested attack suggests the individual represented by this sample may have had an early post-mortem treatment that allowed for slightly quicker decomposition than FSH08 and FSH10, which scored OHI 0 (e.g. this individual may have been covered) or the mandible may have disarticulated more quickly by either natural or anthropogenic means (e.g. exhumation).

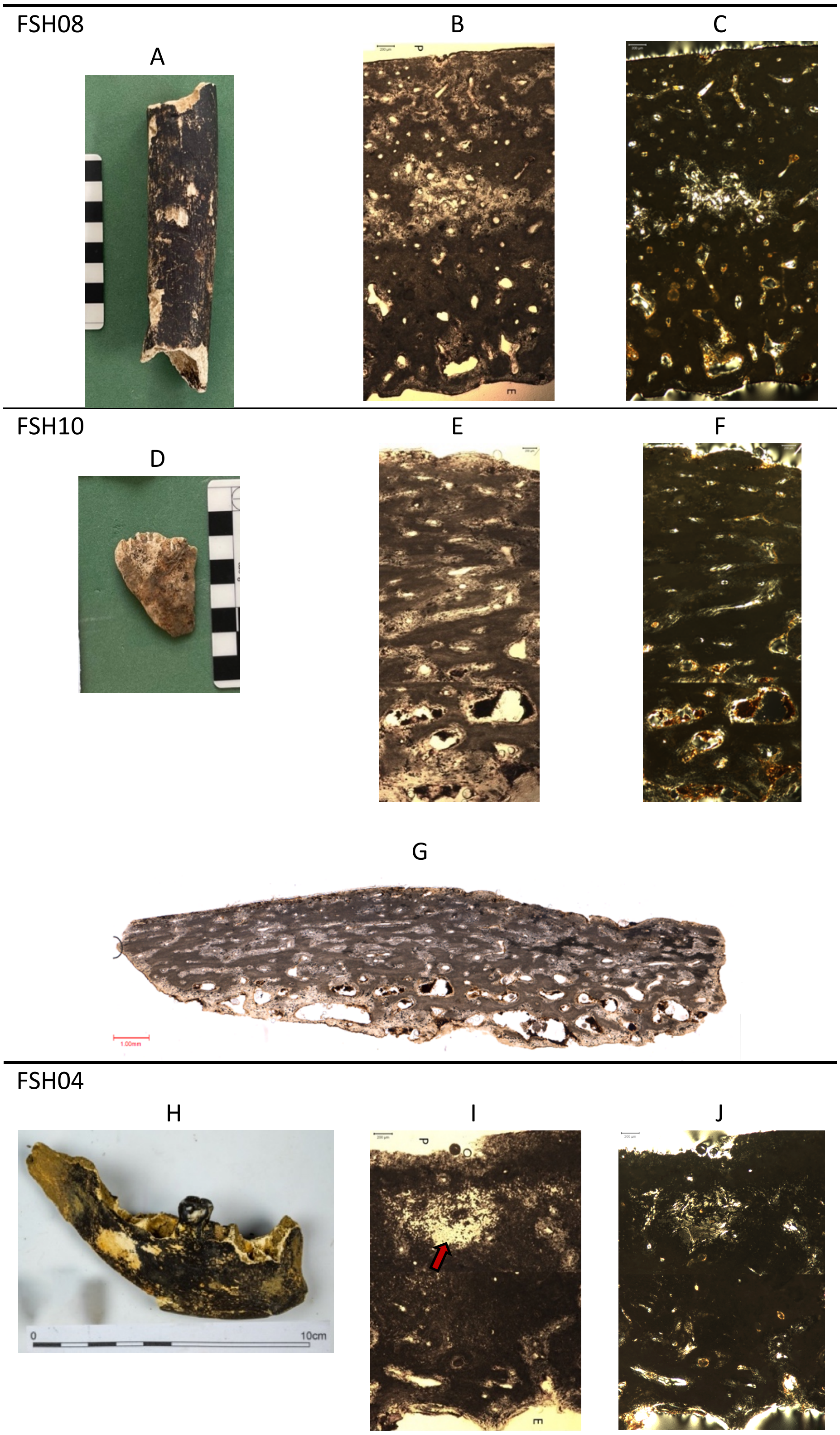


Figure 73. Samples from disarticulated deposits from Fishmonger's Swallet, Gloucestershire, showing poor histological preservation (OHI 0-1). **FSH08**: A) Sampled element (femur shaft) with black staining likely from the cave environment. B) Transverse section from periosteal to endosteal surface, normal light, stitched micrographs x5 magnification. C) Transverse section, polarised light, stitched micrographs x5 magnification. **FSH10**: D) Sampled element (cranium fragment). E) Transverse section from periosteal to endosteal surface, normal light, stitched micrographs x5 magnification. F) Transverse section, polarised light, stitched micrographs x5 magnification. G) Scan of thin section (image made by Anthony Hayes, Cardiff University). **FSH04:** H) Sampled element, right mandible. I) Transverse section from periosteal to endosteal surface with arrow pointing to well-preserved osteon, normal light, stitched micrographs x5 magnification. J) Transverse section, polarised light, stitched micrographs x5 magnification. Source: author

6.5.1.2. OHI 2-3

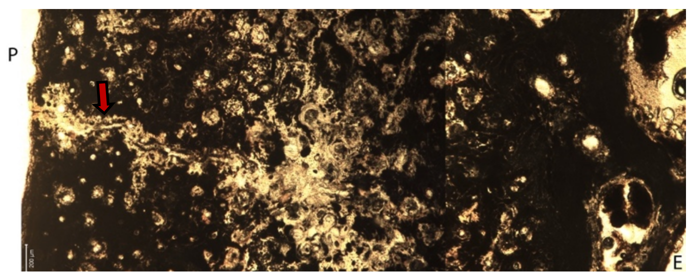
Sample FSH07 is from a small long bone fragment, possibly a femur based on the breadth of the fragment and thickness of the cortex (Figure 74A). The surface of the fragment is not extensively stained like the other sampled elements, instead it is a lighter buff colour with some black staining peppering the surface. Otherwise, the fragment is too small to discern any macroscopic taphonomy. However, the histological preservation of the sample is interesting. Although extensively damaged by MFD, there is a margin in the central cortex where microstructure is preserved (Figure 74B). This is especially clear when viewed under polarised light – the birefringence is surprisingly high in this area, confirming better collagen preservation (Figure 74C). Arrested non-Wedl attack is evident in this margin with some MFD bearing morphological similarities to budded and lamellate types. A microcrack penetrates the cortex originating from the periosteal surface (Figure 74B) and terminates in the centre. It is curious that bacterial attack is different around the crack than elsewhere which is particularly evident in the polarised image (Figure 74C), possibly indicating different kinds of diagenetic agents present in this sample. The The overall histological preservation is consistent with a score of OHI 2 and suggests the corpse was treated to, or placed in conditions which, encourage more rapid removal of soft tissue than a long-term inhumation in the ground but not as quick as unprotected exposure.

Two elements from Fishmonger's Swallet showed interesting surface taphonomy suggesting post-mortem manipulation and had mixed histological preservation consistent with OHI 2 and 3. These will be discussed in detail beginning with FSH01.

FSH07

A

B



C

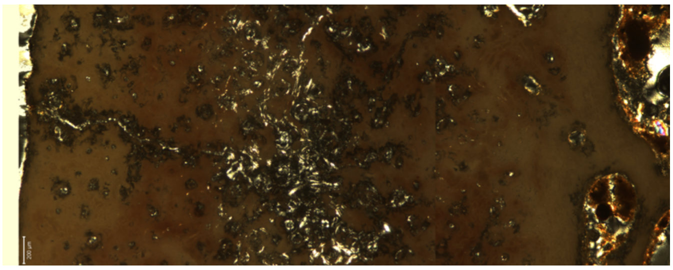


Figure 74. Sample from a disarticulated element from Fishmonger's Swallet, Gloucestershire, showing an area of preserved microstructure in the centre (OHI 2). **FSH07**: A) Sampled long bone fragment. B) Transverse section showing periosteal surface (P) to endosteal/medullary surface, arrow indicating microcrack, normal light, stitched micrographs at 5x magnification. C) Transverse section, polarised light, stitched micrographs at 5x magnification. Source: author

Sample FHS01 was extracted from a fragment comprising c.40% of an adult posterior femur (Cox 2001: 18) shown in Figure 75A. This element is of particular interest because of the distinctive split fracture of 'elongated splinter' type as described by Villa and Mahieu (1991). As mentioned above, this type of fracture is common in archaeological animal bone which has been exploited for marrow extraction. The surface of the bone is stained black, likely from bacteria and/or manganese present in the cave environment. Possible cut marks and a possible tooth mark was observed toward the proximal end (Cox 2001). Additionally, the bone surface is smooth and shiny compared to other femora in the assemblage.

The histological preservation in this sample is consistent with OHI 2. MFD is concentrated in the cortex beneath the periosteum and endosteum, with areas of well-preserved bone concentrated in the central cortex (Figure 75B) confirmed by the pattern of collagen birefringence respecting the histological preservation (Figure 75C). Arrested bacterial attack appears to radiate from Haversian canals in some osteons (Figure 75C, D). The pockets of arrested attack are similar in appearance to non-Wedl MFD (linear longitudinal type), and Wedl type 2 may explain some of the longer, dendritic tunnelling across much of the sample which gives it a more granular appearance. The margin of preservation runs the width of the transverse section with larger areas of preservation concentrated toward one end (Figure 75F).

FSH01

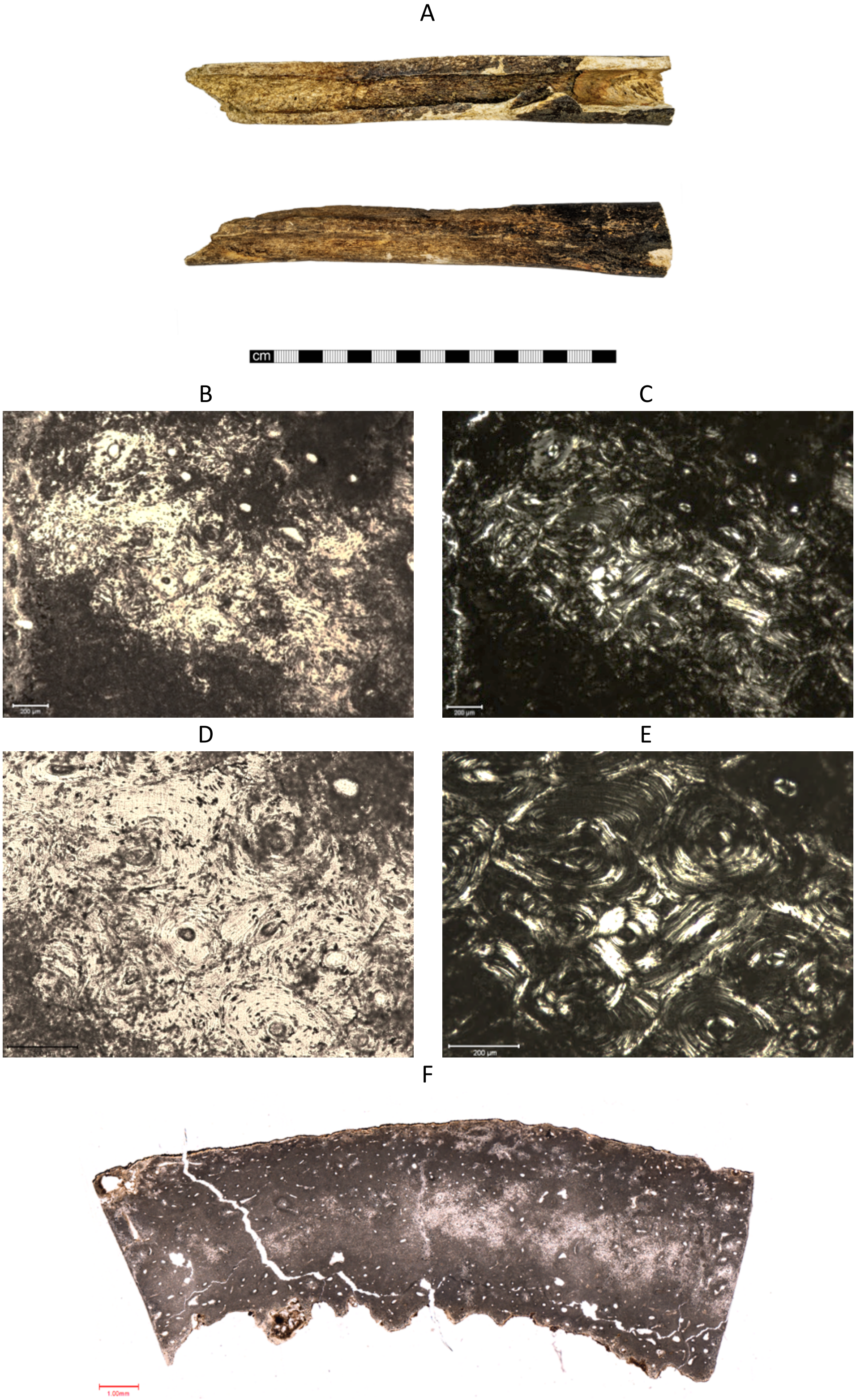


Figure 75. Sample from a disarticulated element from Fishmonger's Swallet, Gloucestershire, showing a margin of preserved microstructure in the centre (OHI 2). **FSH01**: A) Sampled element (left femur shaft) with a longitudinal fracture and black staining. B) Central cortex, normal light, x5 magnification. C) Central cortex, polarised light, x5 magnification. D) Central cortex, normal light, x10 magnification. E) Central cortex, polarised light, x10 magnification. F) Scan of thin section (image made by Anthony Hayes, Cardiff University). Source: author

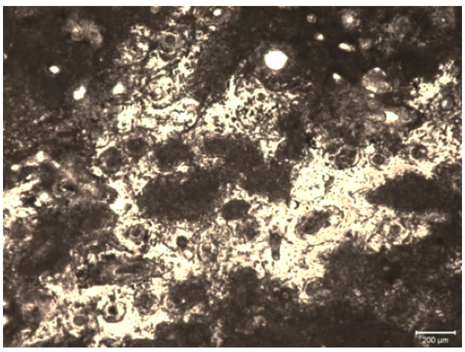
Sample FSH02 was cut from a robust left femur shaft fragment with unusual and perplexing taphonomy. The bone surface is covered in irregular pits and shallow depressions (Figure 76A), possibly percussion marks, although the indentions could be inflicted from the cave environment. The chamber floods and drains quickly, causing a 'washing machine' effect as previously mentioned, so if the bone was tossed around it is plausible that the pitting could be caused by knocking into rocks and walls. However, if that were the case, this type of taphonomic marking would be expected to be common on other elements from the excavated material. The fracture surfaces are unaffected by the black staining that covers the rest of the femur shaft, so it is likely that the fractures occurred more recently, probably during excavation.

Similarly to FSH01, the histological preservation is mixed with well-preserved patches in the centre cortex and the most extensive bacterial attack concentrated in the cortex closest to the periosteal and endosteal surfaces (Figure 76B, C), although the well-preserved area covers slightly more of the transverse section than in FSH01. The MFD appears to radiate from Haversian canals in an 'arrested' pattern, some completely enveloping the osteon and others stopping at varying levels of advancement (Figure 76D), also shown in the pattern of birefringence (Figure 76E) Overall, the histological preservation is consistent with OHI 3.

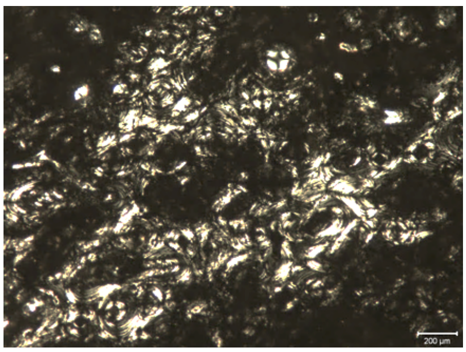
FSH02

A

B



C



D E

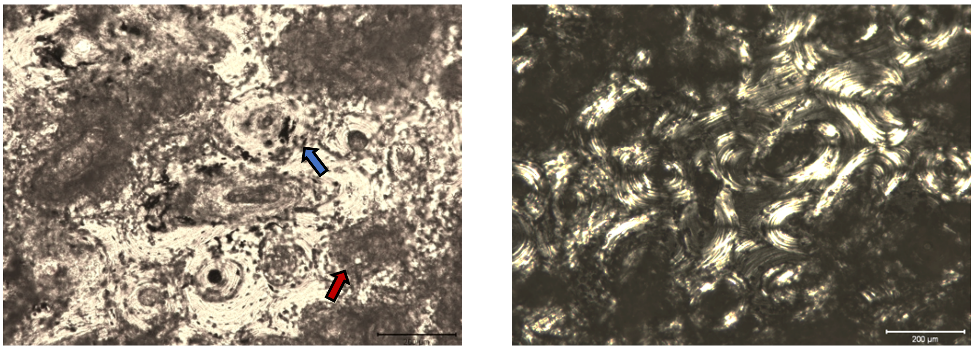


Figure 76. Sample from a disarticulated element from Fishmonger's Swallet, Gloucestershire, with mixed histological preservation (OHI 2). **FSH02**: A) Sampled element (femur shaft) with black staining and shallow pits covering the surface. B) Central cortex, normal light, x5 magnification. C) Central cortex, polarised light, x5 magnification. D) Central cortex with arrows pointing to completely destroyed osteons (red) and arrested attack (blue), normal light, x10 magnification. E) Central cortex, polarised light, x10 magnification. Source: author

FSH03 has the best-preserved microstructure of the disarticulated remains in Fishmonger's Swallet. The specimen was cut from a mandible, probably an elderly female. The mandible had a large abscess between the two central incisors (Figure 77A). The mandible is fractured at the abscess, but this was likely due to post-depositional damage as the fractured surfaces appeared to indicate a more recent dry break. The surface of the mandible is stained black from the cave environment and some manganese encrustations adhere to the bone surface, but there was no taphonomy indicative of manipulation or exposure, e.g. gnawing or weathering.

As with the other specimen with middle ranging OHI scores, the MFD is most extensive toward the surfaces, with the central microstructure remaining mostly intact. There is some Wedl tunnelling in this specimen (Figure 77B) which likely infiltrated the bone from the wet cave environment. The collagen birefringence matches the pattern of histological preservation with the well-preserved central areas high in birefringence and low to no birefringence in the cortex nearest the surfaces (Figure 77C). It is worth noting that, in vertebrate carcasses, mandibles are typically among the first elements to disarticulate during decomposition (Weigelt 1927; Hill 1979; Hill and Behrensmeyer 1984), so the earlier separation from the soft tissue may contribute to higher microstructural preservation, although experimental work is needed to confirm this. The overall pattern of preservation is shown in Figure 77D.

FSH03

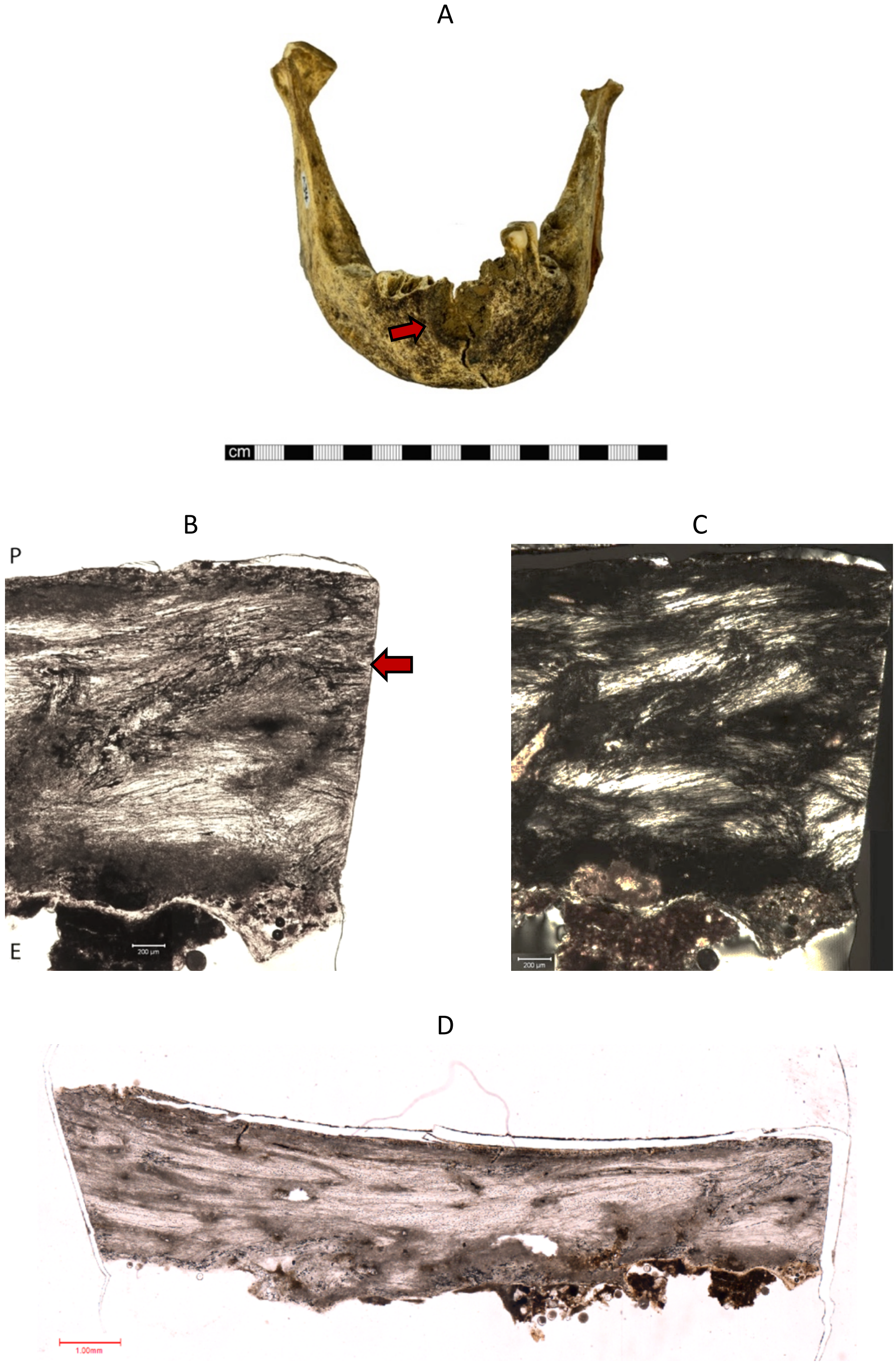


Figure 77. Sample from a disarticulated element from Fishmonger's Swallet, Gloucestershire, with mixed histological preservation (OHI 3). **FSH03**: A) Sampled element (mandible) with arrow pointing to large abscess. B) Transverse section from periosteal (P) to endosteal (E) surfaces with arrow pointing to Wedl tunnelling, normal light, stitched micrographs at 5x magnification. C) Transverse section, polarised light, stitched micrographs at 5x magnification. D) Scan of thin section (image made by Anthony Hayes, Cardiff University). Source: author

6.5.1.3. Summary

The histological preservation of the disarticulated samples from Fishmonger's Swallet suggests some possible variation in pre-depositional treatment among the represented individuals. Contrary to previous interpretations about the fragmented assemblage, the histology does not support cannibalism – at least, not of freshly dead corpses. The specimen with middle-ranging OHI scores are consistent with decomposition that was interrupted at some point by a process that removed the bones from the decomposing soft tissue or otherwise caused accelerated skeletonisation. This is particularly significant for FSH01, which was taken from a longitudinally split femur. The morphology and freshness of the fracture implies the bone was intentionally broken while still relatively fresh/wet. Additionally, the gnawing present on some of the elements from the cave means that the disarticulated bones were accessible to animals, most notably dogs, at some point in their post-mortem history – whether within the cave, or prior to deposition within the cave. A possible scenario for the specimen with middle OHI scores could be certain elements were removed from decomposing corpses, some of them fractured, and then deposited within the cave. It is not clear if animals would have been able to access the cave at the same time as its use for burial deposition, so the gnawing may have occurred prior to, or after, deposition.

Other samples from Fishmonger's Swallet showed very poor histological preservation consistent with long-term inhumation. Since the cave is a dynamic environment prone to flooding, it is unlikely that these individuals were interred as an articulated body within the cave because the corpses would probably disarticulate more rapidly than an inhumation, thus preventing the bacteria from completely destroying the microstructure. With this in mind, it is possible that the elements were selected from already-skeletonised burials and deposited within the cave at a later time as part of a ritual or mortuary practice. This is further discussed in Chapter 8 (Section 8.3).

6.5.2. Disarticulated – midden

Disarticulated human remains from midden contexts were sampled from Potterne, Wiltshire. The site is a monumental midden that was used for centuries and represents a discrete site type that appears the end of the Late Bronze Age and continues into the Early Iron Age, particularly in the Vale of Pewsey (see Chapter 2, Section 2.4). Excavations at Potterne covered only 0.75% of the known site, but disarticulated human remains were found within the midden deposit thoroughly mixed amongst the refuse from feasting (animal bone, broken pottery, etc). The report on human remains is published by McKinley (2000: 95-101), but to briefly summarise, 139 fragments of human bone were identified with an MNI of 15 representing a range of ages from neonate (<6 months) to older adult (45+ years) and both sexes with distribution occurring across the site, the majority of the bone coming from the base of the midden deposit with frequency decreasing in the upper layers (McKinley 2000: 96). Many of the elements displayed interesting taphonomy including abrasion (17%), polishing (two skull fragments), burning (0.7%), cut marks (2%), and fresh fracturing. Skull fragments are the most frequent element (52%), although this figure may be inflated due to the recognizability of human skull fragments amongst animal bone during excavation (indeed most of the human bone was identified during faunal analysis by Alison Locker); the rest comprising long bones (48%), the majority of which were lower limb bones (28.9%) especially femora (58.8%). A surprising majority of lower limb bones were from the right side of the body (82.3%) with equal representation for both left and right elements in the corpus of upper limbs.

Table 12. Samples from disarticulated deposits in the midden at Potterne, Wiltshire. Source: author

Specimen	County	Element	Side	Age	Sex	Taphonomy	OHI	Bire.
PTN01	Wiltshire	Femur	L?	Adult	-	Spiral fracture	3	High
PTN02	Wiltshire	Radius?	?	Adult	-	Fresh fracture?	4	High
PTN03	Wiltshire	Humerus	R	Adult	-	Orange staining	0	None
PTN04	Wiltshire	Ulna	R	Adult	-	-	0	Low
PTN05	Wiltshire	Femur	R	Adult	F?	Gnawing, weathering, orange staining	0	None
PTN06	Wiltshire	Femur	R	Subadult	-	Gnawing	1	Low
PTN07	Wiltshire	Femur	L	Adult	-	Gnawing, weathering, fractured, orange/yellow/black staining	1	Low
PTN08	Wiltshire	Femur	R	Adult	-	Spiral fracture, gnawing	4	High
PTN09	Wiltshire	Femur	R	Adult	-	Gnawing, weathering, orange staining	0	None
PTN10	Wiltshire	Femur	-	Adult	-	Splinter fracture, gnawing, poss trampling,	0	Low
PTN11	Wiltshire	Humerus	-	Adult	-	Splinter fracture, poss gnawing, black staining	1	Low
PTN12	Wiltshire	Tibia	-	Adult	-	Fresh fracture, poss cut marks, poss gnawing	2	Med
PTN13	Wiltshire	Femur	R	Subadult?	-	Fresh fracture, gnawing (canid)	3	Med
PTN14	Wiltshire	Parietal?		Adult	F	Dry breaks, root etching, brown colour	1	Low
PTN15	Wiltshire	Frontal	-	Adult	F	Poss polished (shiny/smooth), orangey yellow staining	3	Med
PTN16	Wiltshire	Parietal?	-	Adult	-	Yellow staining, orange in meningeal grooves	0	Low
PTN17	Wiltshire	Frontal	-	Adult	F?	Poss polished (v shiny/smooth), patches of reddish orange staining, hole	1	Low
PTN18	Wiltshire	Femur	R	Adult	M?	Poss fresh fracture, poss gnawed	0	Low
PTN19	Wiltshire	Parietal?		Adult	M?	Orange staining outside, yellowy brown inside	0	None
PTN20	Wiltshire	Femur	L	Adult	M?	Fresh and dry fractures, shiny/smooth surface, brown colour	3	High
PTN21	Wiltshire	Humerus		Adult	-	Poss fresh fracture	1	None
PTN23	Wiltshire	Fibula?		Adult	-	Fresh fractures, yellow staining	2	Med
PTN24	Wiltshire	Femur	R	Adult	-	Poss fresh fracture	4	High

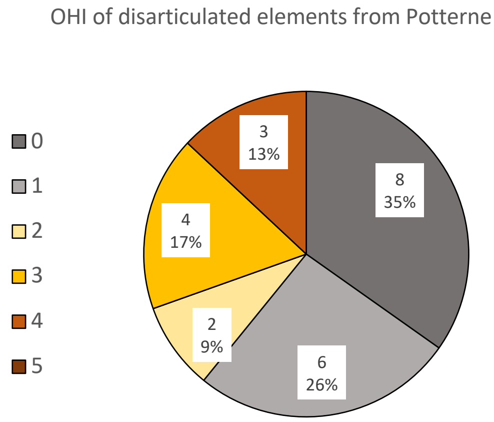


Figure 78. Chart showing OHI breakdown of disarticulated deposits from Potterne midden. Source: author

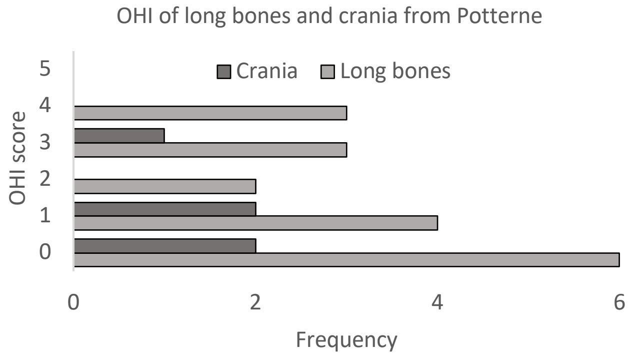


Figure 79. Graph showing OHI distribution of disarticulated crania and long bone fragments from Potterne midden. Source: author

Twenty-three elements were sampled for histological analysis from Potterne (Table 12). Twenty-four were originally sampled, however it was clear during analysis that one of the elements was a misidentified animal bone (the microstructure was arranged in a plexiform pattern found only in animal bone). The animal bone had the best histological preservation of all the samples from Potterne, suggesting a comparative study in the future would be beneficial to understanding the nature of human and animal deposition at the site (as well as improve methodology, particularly if animal bone from the same immediate area as sampled human bone were analysed).

Figure 78 shows the breakdown of OHI scores from the disarticulated human bone from the monumental midden at Potterne. Poor histological preservation corresponding to OHI 0-1 was seen in 14 of the 23 samples (61%), with six samples scoring OHI 2-3 (16%) and three samples scoring OHI 4 (13%). Crania and long bone samples showed varied preservation with crania samples scoring OHI

0-2 and long bones scoring OHI 0-4 (Figure 79). Although the sample size is small, this result does not support head removal and display during the early post-mortem period.

6.5.2.1. OHI 0-1

The majority low OHI from disarticulated remains in the feast midden at Potterne is interesting and somewhat unexpected. Among the low scoring specimen are elements with taphonomic indicators of post-mortem alteration, especially fresh and semi-fresh fractures (PTN21, PTN18, PTN14, PTN10, PTN11), which implies a long-term practice of revisiting/reopening 'old' graves, manipulating, and re-depositing within the feast midden. Three samples from elements with surface taphonomy which displayed evidence of potential modification, but poor histological preservation, will be described below.

Sample PTN17 was taken from a fragmented frontal bone that displays some possible fresh fracturing (Figure 80A, B) and a small hole perforating the bone near the 'coronale', where the breadth of the frontal bone is greatest (White et al. 2012: 58) (Figure 80C). It is uncertain if the hole was worked/created through drilling, or naturally occurring (e.g. pathological), however skull fragments with perforations are known from elsewhere in the southwest (e.g. Glastonbury Lake Village, Bulleid and Gray 1911, 1917). The bone surface had mottled patches of an orange colour, either from iron staining or manganese present in the burial environment (Dupras and Schultz 2013: 336, table 12.1). The histology showed extensive MFD throughout the sample with only a small margin of well-preserved microstructure at the periosteum and endosteum surfaces (Figure 80D). The birefringence is low overall with some areas of birefringence amongst the destroyed central cortex (Figure 80E) with a small margin of preservation at the endosteum (Figure 80F) where birefringence is higher (Figure 80G). It is possible that this frontal bone was exhumed from an old (skeletonised) primary inhumation burial and then curated for a time, possibly suspended from the small hole (although closer macroscopic and microscopic analysis is needed to determine the plausibility of this).

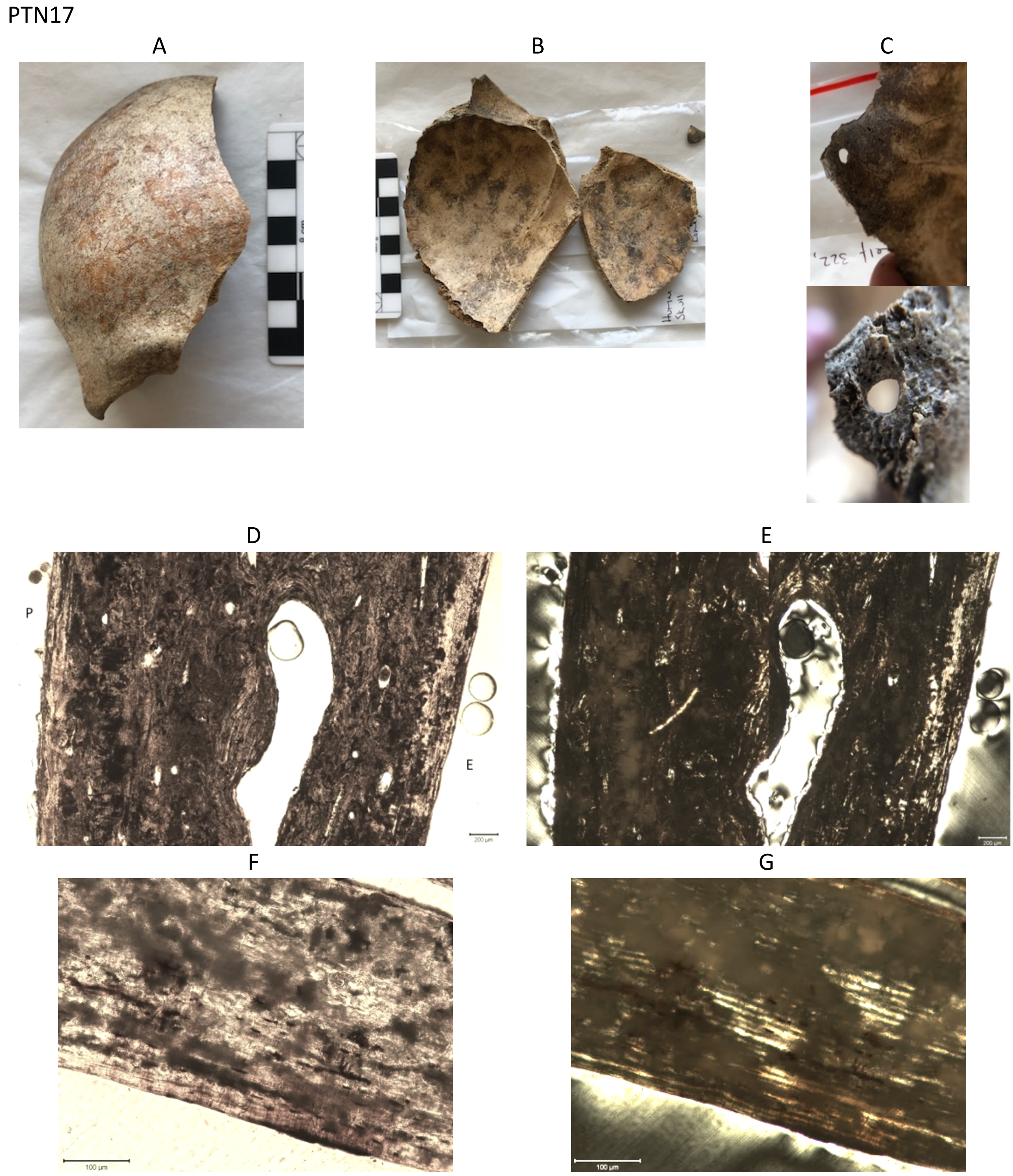


Figure 80. Sample from a disarticulated crania fragment from Potterne, Wiltshire, with poor histological preservation (OHI 1). **PTN17**: A) Anterior view of sampled element (frontal bone fragment) with some orange staining on the bone surface. B) Interior view of frontal bone fragments. C) Perforation at the edge of the frontal bone (coronale) showing the interior surface (above) and exterior surface (below). D) Transverse section from periosteal (P) to endosteal (E), normal light, stitched micrographs at 5x magnification. E) Transverse section, polarised light, stitched micrographs at 5x magnification. F) Endosteal margin with preserved microstructure, normal light, x10 magnification. G) Endosteal margin, polarised light, x10 magnification. Source: author

PTN10 is a longitudinally fractured femur (Figure 81A), probably a 'splinter' fracture similar to FSH01 (see Figure 75A). The fracture would have been made whilst relatively fresh and, as explained in the example at Fishmonger's Swallet above, the fracture is associated with marrow extraction in archaeological animal bone. However, the histological preservation of PTN10 is poor with virtually no microstructural features remaining except for Haversian canals (Figure 81B). The birefringence is low with small areas of collagen preserved, possibly indicating variation in the intensity of microfocal attack across the transverse section (Figure 81C). It is interesting that, although the fracture is similar to FSH01, the histological preservation of PTN10 is more suggestive of an articulated inhumation in the ground left undisturbed until skeletonisation had completed. This could suggest that the practice of fragmenting human remains could occur at various stages of decomposition or variations in early post-mortem treatments.

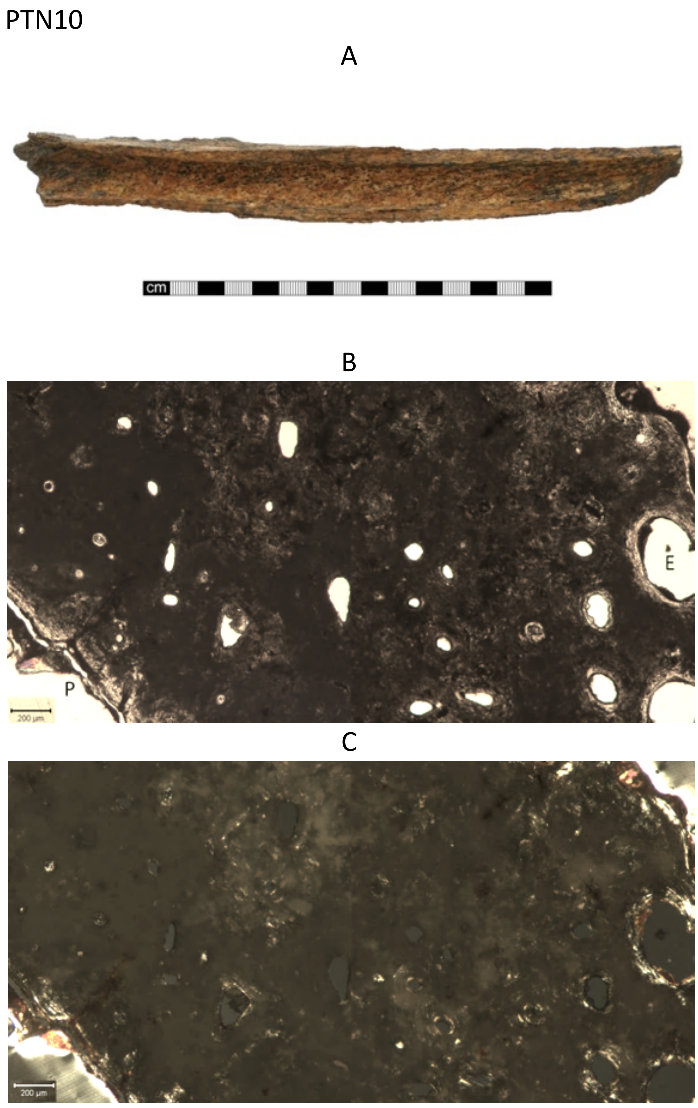


Figure 81. Sample from a disarticulated long bone fragment from Potterne, Wiltshire, with poor histological preservation (OHI 0). **PTN10**: A) Sampled element (femur) with longitudinal fracture. B) Transverse section from periosteal (P) to endosteal (E) surfaces, normal light, stitched micrographs at 5x magnification. C) Transverse section, polarised light, stitched micrographs at 5x magnification.

Sample PTN11 is from a humerus, also longitudinally fractured (Figure 82A) in a similar break to PTN10 (see Figure 81A). The histological preservation of this sample is slightly better than PTN10 with a few individual osteons preserved, mostly toward the periosteum (Figure 82B). The pattern of bacterial attack is similar to PTN10 – the microstructure is completely obliterated by the highest levels of MFD, and only Haversian canals remain. Birefringence is high over the preserved osteons and virtually absent otherwise (Figure 81C).

PTN11

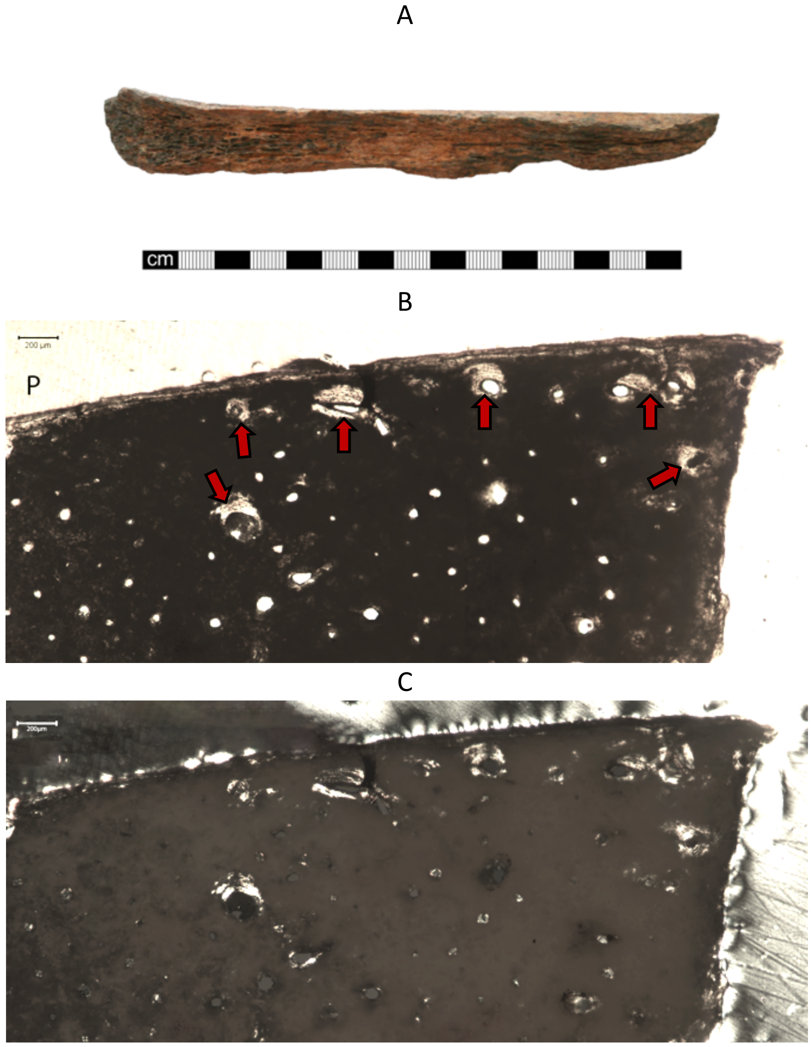


Figure 82. Sample from a disarticulated long bone fragment from Potterne, Wiltshire, with poor histological preservation (OHI 0). **PTN10**: A) Sampled element (humerus) with longitudinal fracture. B) Periosteal aspect (P) with arrows pointing to preserved osteons, normal light, stitched micrographs at 5x magnification. C) Periosteal aspect, polarised light, stitched micrographs at 5x magnification. Source: author

6.5.2.2. OHI 2-3

Five of the six samples which scored OHI 2-3 had fractures on one or both ends with varying degrees of freshness. The exception is a complete, unbroken frontal bone (PTN15). The fresh fractures and middle OHI scores together suggest a complex sequence of post-mortem treatments afforded to the corpse, for example exhumation and element removal before decomposition is complete, or protected exposure and element removal after skeletonisation.

Sample PTN01 was cut from the tip of a distal femur fragment, missing the epiphysis (Figure 83A) with a spiral fracture on the shaft indicating the bone was broken whilst in a fresh state (Johnson 1985: 175). The histological preservation is consistent with OHI 3 (Figure 83B) with high birefringence in areas of well-preserved microstructure (Figure 83C). The sample shows clear examples of non-Wedl MFD (budded, lamellate and linear longitudinal) radiating from Haversian canals and an arrested pattern of bacterial attack (Figure 83D, E). The most extensively destroyed area is the endosteum and surrounding cortex whilst the periosteum is largely unaffected (Figure 83F). The centre cortex shows MFD concentrated in clusters of osteons whilst other osteons and areas of interstitial lamellae are completely preserved. The birefringence is very high amongst the well-preserved microstructure, including the periosteum, but low to absent at the endosteal aspect and areas of arrested bacterial attack in the centre cortex. The histology indicates a post-mortem treatment where the body was manipulated before complete skeletonisation had occurred, for example burial for a short time followed by exhumation and removal of certain elements, or remaining soft tissue removed from the skeleton; or the body was placed in an environment which allowed for more rapid decomposition than inhumation but less rapid than exposure (e.g. placed at the bottom of a pit prior to backfilling, but covered).

PTN01

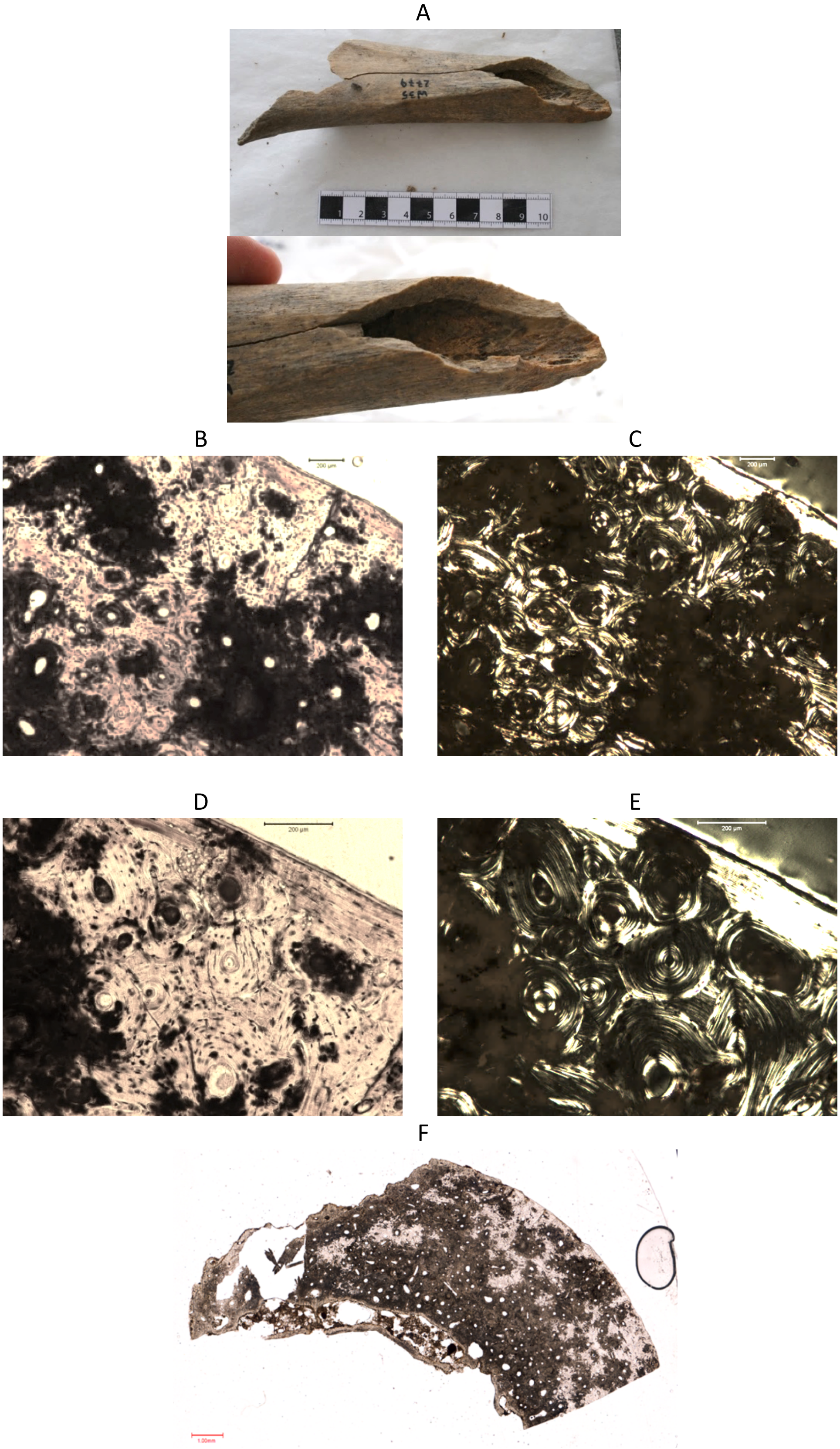


Figure 83. Sample from a disarticulated long bone fragment from Potterne, Wiltshire, with mixed histological preservation (OHI 3). **PTN01**: A) Sampled element (femur) with fresh fracture. B) Periosteal aspect, normal light, 5x magnification. C) Periosteal aspect, polarised light, 5x magnification. D) Periosteal aspect, normal light, 10x magnification. E) Periosteal aspect, polarised light, 10x magnification. F) Scan of thin section (image made by Anthony Hayes, Cardiff University). Source: author

Sample PTN13, taken from the right femur of a subadult with evidence of canid gnawing on the proximal end (Figure 84A) and a break at the distal midshaft showed a mixed fracture pattern that suggests the bone was fractured when relatively fresh, then later fractured again when in a dry state (Figure 84B). Like PTN01, PTN13 scored OHI 3 with most of the endosteal cortex showing the most advanced levels of bacterial attack with some well-preserved microstructure in the centre cortex (Figure 84C, D). However, PTN13 has a thick margin of MFD in the sub-periosteum (seen in Figure 84E), appearing to come from Haversian canals. Directly below this margin, the sample has the best preservation, then gradually shows more attack towards the endosteum.

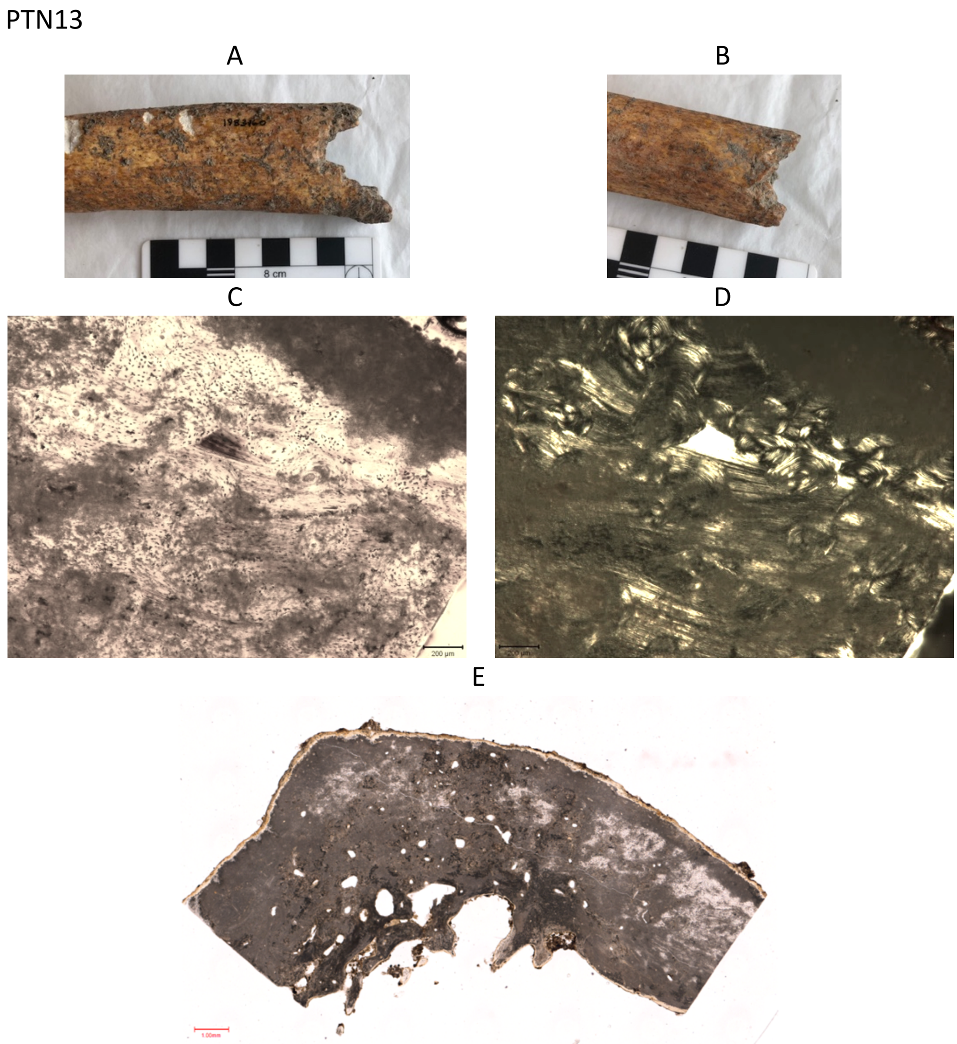
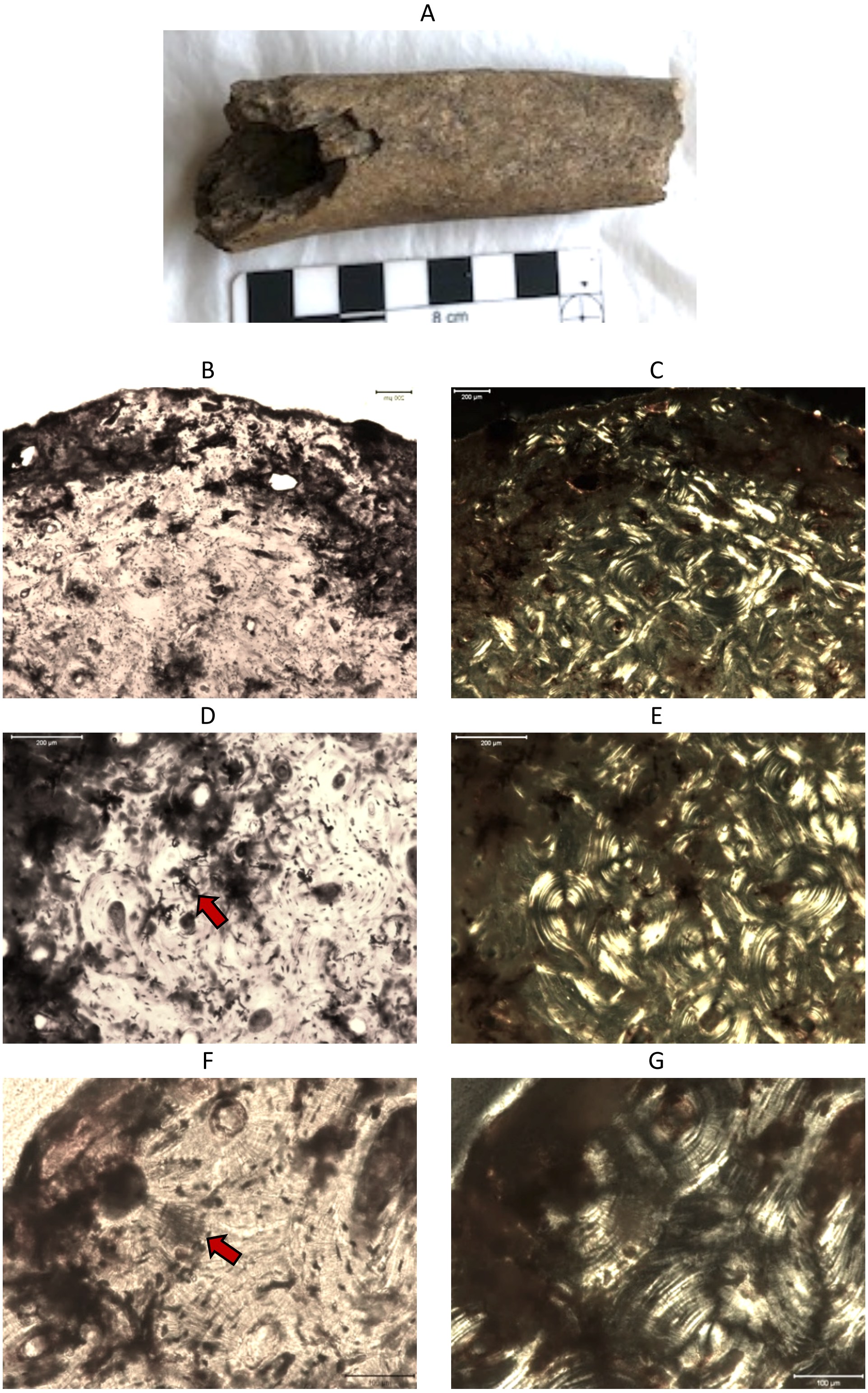


Figure 84. Sample from a disarticulated long bone fragment from Potterne, Wiltshire, with mixed histological preservation (OHI 3). **PTN13**: A) Sampled element with canid gnawing on the proximal end and B) mixed fracture (fresh and dry) on the distal end. C) Periosteal aspect, normal light, 5x magnification. D) Periosteal aspect, polarised light, 5x magnification. E) Scan of thin section (image made by Anthony Hayes, Cardiff University). Source: author

Sample PTN20 represents a particularly robust left femur shaft, possibly indicating that the sex was male (Figure 85A). The fragment was fractured on both ends with a fresh appearance on the proximal end including an *in situ* 'wedge flake' described by Johnson (1985: 177 fig.5.5), which may indicate the point of impact that led to the fracture on the proximal end of the shaft. The distal fracture has less of a fresh appearance with a rough, undulated fracture surface but still likely happened in antiquity since the colour is the same as the rest of the bone.

The microstructure showed large areas of excellent histological preservation and the highest levels of birefringence (Figure 85B, C). The bacterial bioerosion is more densely concentrated toward the centre cortex and endosteal aspect in localised patches of MFD (Figure 85H), although areas of the periosteum and sub-periosteum are also affected. The sample showed patches of different colourations/staining, particularly greenish, orange and brown staining (which does not show up well in micrographs), which may be a by-product of the midden environment. Non-Wedl MFD (budded and linear longitudinal) are the most common types of MFD across the transverse section, with examples of Wedl type 2 (Figure 85D, E) and enlarged canaliculi (Figure 85F, G) also occurring. As previously explained in Chapter 4, fungal tunnelling (Wedl types) have been attributed to wet environments or aerated sub-terranean environments (like covered pits, see Jans 2004; Booth 2016; Booth and Madgwick 2016; Brönimann 2019), so it is highly likely that the element had been deposited in a different environment for a time prior to interment within the midden. The midden matrix is comprised of complex and varied micro-environments, depending on the composition and quantity of deposited material and the depth of the element within the midden; therefore, alternatively, it is possible that these particular destructive microbes entered the microstructure of PTN20 via the depositional environment. However, it is interesting that the pattern of diagenetic attack is arrested and localised, suggesting a change of circumstance had occurred which terminated microfocal advancement (see Figure 85H). It is also potentially significant that the MFD is not more densely concentrated at the existing fractured surface – arguably, if the microbes were originating from the depositional environment they would enter the bone microstructure at the exposed inner surface, but this does not appear to be the case in sample PTN20.

PTN20


A
B
C
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8 cm
200 µm
100 µm

H

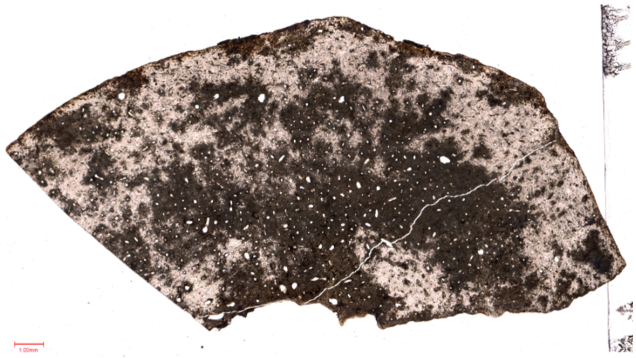


Figure 85. Sample from a disarticulated long bone fragment from Potterne, Wiltshire, with mixed histological preservation (OHI 3). **PTN20**: A) Sampled element with a wedge flake fracture on the proximal end. B) Periosteal aspect, normal light, 5x magnification. C) Periosteal aspect, polarised light, 5x magnification. D) Centre cortex, arrow pointing to Wedl type 2 tunnels, normal light, 10x magnification. E) Centre cortex, polarised light, 10x magnification. F) Periosteal aspect, arrow pointing to enlarged canaliculi/Wedl type 2 tunnels, 20x magnification. G) Periosteal aspect, polarised light, 10x magnification. H) Scan of thin section (image made by Anthony Hayes, Cardiff University). Source: author

Sample PTN15 represents a complete frontal bone from an adult female (Figure 86A). The in-tact and well-preserved appearance of the bone in a heavily fragmented assemblage is potentially significant and may indicate curation and relatively careful, deliberate deposition. The periosteal surface was shiny and smooth, possibly from being handled, hinting at curation. Additionally, the surface colour is a medium mottled brown except for yellow staining towards the distal cranial sutures (Figure 86B). The internal surface was covered in an orangey-yellow stain (Figure 86C).

Figure 86D shows a well-preserved portion of the thin section at the existing fragment edge (as opposed to the cut edge) of the frontal bone. This patch has very little MFD, but canaliculi are enlarged throughout, especially at the endosteal surface. The rest of the sample is largely covered in MFD to varying degrees of severity with the periosteum and sub-periosteum showing generally better preservation than the cortex. The birefringence is low across most of the sample but higher where the microstructure remains intact (Figure 86E).

The advancement of MFD appears to have been arrested (as indicated by the high levels of bacterial attack/remineralisation on the right side of Figure 86D) suggesting a change in environment (removal from corpse) or skeletonisation before bacterial bioerosion could complete. As there are no obvious cut marks, weathering, erosion or evidence from any taphonomic agent that would indicate exposure, it is possible that the frontal bone was removed from a skeleton and kept in conditions that allowed it to remain unbroken and intact (i.e. curated) until its final deposition within the midden.

PTN15

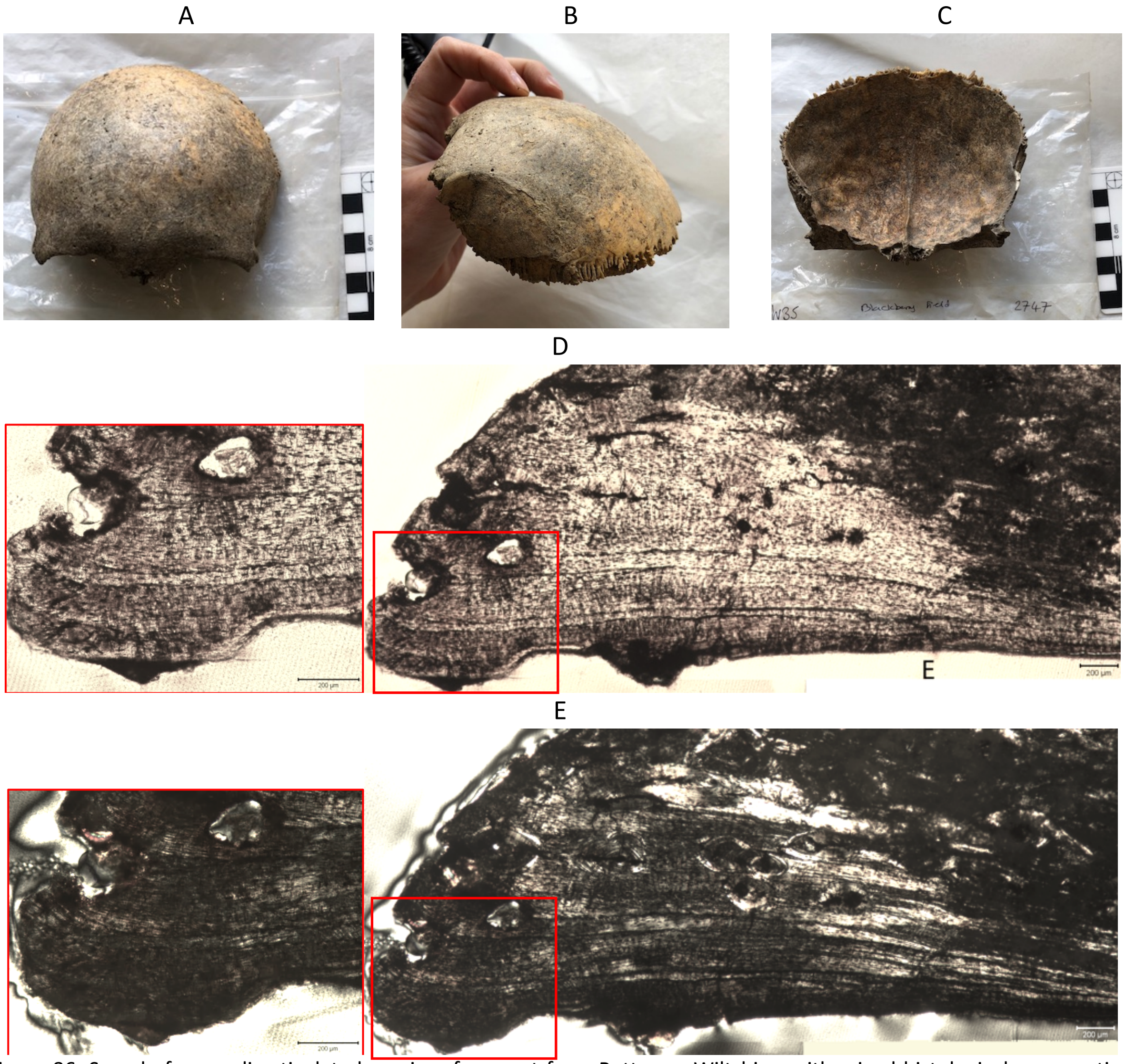


Figure 86. Sample from a disarticulated cranium fragment from Potterne, Wiltshire, with mixed histological preservation (OHI 3). **PTN20**: A) Anterior view of sampled frontal one. B) Interior (posterior) view of sampled frontal bone. C) Left side view of sampled frontal bone, noting the colour change toward the posterior. D) Transverse section showing part of the periosteal aspect and endosteal surface, normal light, stitched micrographs at 5x magnification. (E) highlighting enlarged canaliculi in the well-preserved end, normal light, 5x magnification. E) Transverse section, polarised light, stitched micrographs at 5x magnification. Source: author

Sample PTN23 had fractures on both ends of the shaft and the bone surface had a polished appearance with a distinct pale yellow colour (Figure 87A). This colouration was not noticed in other sampled elements and the cause is unclear, but could potentially inform on the deposition environment or pre-depositional treatment. For example, a study of heated animal bone by Spennemann and Colley (1989: 57) produced a permanent yellowish-brown stain on experimentally burnt bone after coming into contact with hot cooking fluids, but manifold scenarios could be responsible for this pattern. No other surface taphonomy (e.g. cutmarks, gnawing, weathering) was noticed on the bone surface at the time of sampling.

The histological preservation was mostly poor with thick MFD throughout, but small patches of microstructure preserve throughout the cortex (Figure 87B). The MFD appears to be of non-Wedl type (particularly linear longitudinal) with attack seeming to radiate from Haversian canals as well as osteocyte lacunae. The birefringence is generally low or absent, but higher over patches of preserved microstructure (Figure 86C). Overall, the sample scores OHI 2.

The difference in surface colour and slightly different MFD intensity may indicate a different post-mortem treatment afforded to this element. However, the difference in bone element (fibula v. femur) may also have an impact.

PTN23

A

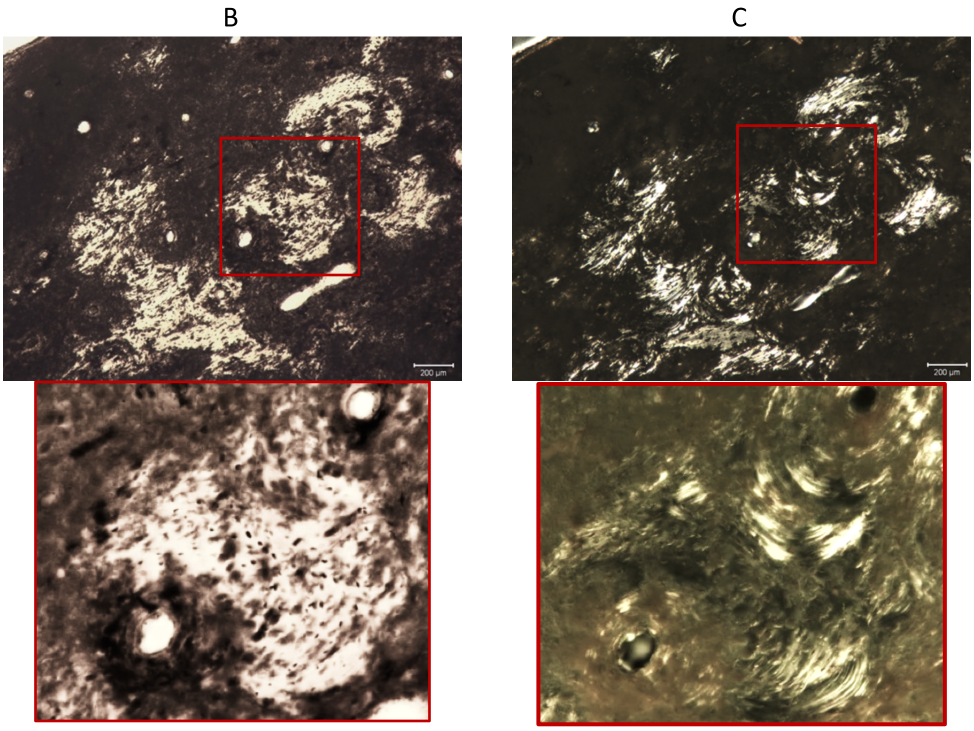


Figure 87. Sample from a disarticulated long bone fragment from Potterne, Wiltshire, with mixed histological preservation (OHI 2). **PTN23**: A) Sampled element (fibula) with fresh fractures on both ends and a yellow surface colour. B) Central cortex showing areas of preserved microstructure and an arrested pattern of attack, normal light, 5x magnification. C) Central cortex, polarised light, 5x magnification. Source: author

6.5.2.3. OHI 4

Three of the thin sections from the midden at Potterne scored OHI 4. All of these samples were from fragmented adult long bones that were likely deliberately fractured on both sides with both dry and fresh fractures represented. These may provide insight into different mortuary processes from the samples described above, so each sample with high histological preservation will be described in turn here.

First, sample PTN02 is a small radius fragment approximately 6cm in length with old, possibly mixed fractures (both fresh and dry) at both ends (Figure 88A). The surface has patches of black staining likely from the burial environment. The microstructure is overall well preserved, particularly at the endosteal aspect (Figure 88B) and the birefringence is high (Figure 88C). As seen in Figure 88B, some osteons near the periosteum have dark coloured material that infiltrated the microstructure (similar to illustration in Booth 2014: 20, image 2.10). It was also noticed during analysis that the Haversian canals near the periosteum are also filled with dark reddish infiltrations, indicating this dark coloured material may be extraneous influence from the burial environment, for example mineral precipitation during the downward movement of groundwater (Garland 1987; Garland et al. 1988; Grupe and

Dreses-Werringloer 1993). The cortex is mostly well preserved, although unlike other samples from Potterne with similar preservation (e.g. PTN24, PTN08, PTN01) most of the individual osteons are lightly peppered with non-Wedl MFD, particularly linear longitudinal and budded types. Bacterial bioerosion is concentrated in localised areas and crosses a few osteons that are longitudinally arranged and a large patch of MFD is located at the endosteum (Figure 88D). A portion of the endosteal surface and sub-endosteal cortex is well preserved with one area showing enlarged canaliculi.

Overall, the histological preservation of PTN02 suggests the element was articulated to the corpse for a relatively short time before being removed and fractured. The fragment is small, but bears no other taphonomic marks that suggest long-term exposure to the elements or scavenging animals.

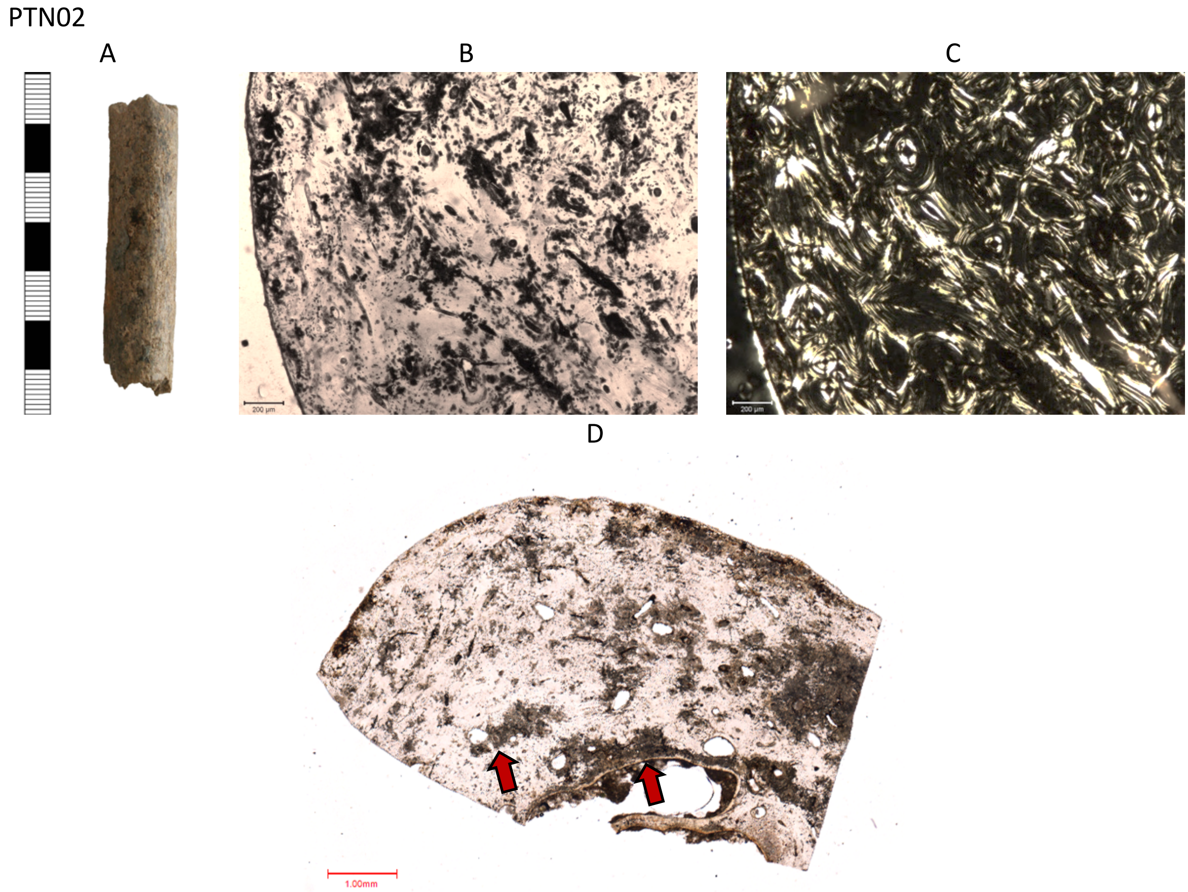


Figure 88. Sample from a disarticulated long bone fragment from Potterne, Wiltshire, with good histological preservation (OHI 4). **PTN02**: A) Sampled element (radius fragment) with mixed fractures on both ends. B) Periosteal aspect, normal light, 5x magnification. C) Periosteal aspect, polarised light, 5x magnification. D) Scan of thin section (image made by Anthony Hayes, Cardiff University) with arrows pointing to bio-eroded osteons arranged in a cluster. Source: author

Sample PTN08 is a proximal right femur fragment from a subadult missing the proximal epiphysis and the shaft terminating in a fresh fracture at the distal end (Figure 89A). The angularity of the fracture suggests it splintered into a few fragments and likely indicates the site of impact with whatever caused the fracture. The epiphysial end shows evidence of gnawing, probably from a canid (Figure 89B)—studies have shown that the proximal epiphysis of femora are the first to be gnawed by wolf populations (e.g. Haynes 1981: 88). Shallow score marks on the shaft are consistent with canid gnawing, but there was no obvious gnawing on the fractured end of the midshaft, which may suggest that the fracturing here happened after the bone was accessible to animals.

The histological preservation of PTN08 is generally good but some areas are heavily attacked by non-Wedl MFD (budded and lamellate types) (Figure 89C). The birefringence is very high respecting the well-preserved microstructure and absent over the areas of bacterial attack (Figure 89D). Wedl type 2 tunnels are also present emerging from osteocyte lacunae (Figure 89E, F). Microfocal destruction is generally concentrated in localised areas, but many osteons in the centre cortex show some arrested bacterial attack to varying degrees, sometimes limited to one single instance of budded type tunnelling. One such example (Figure 89G) showed MFD appearing to emerge from the Haversian canal, affecting half of the osteon but not the other and the birefringence matches this pattern (Figure 89H).

An interesting feature of this sample is a clear linear margin of near-perfectly preserved periosteum and sub-periosteum with advanced bioerosion directly below (seen in Figure 89 C). This pattern is seen in other samples, but the reason is not presently clear – it may be related to the higher density of bone structure near the periosteum. The Haversian canals in the well-preserved periosteum contain dark brown infiltrations, but the majority of those in the centre cortex are empty. Additionally, some cracks/tunnelling originate from the periosteum and extend into the cortex which may be isolated incidents of Wedl type 2 tunnelling.

The arrested MFD suggests the individual was left to decompose for a short time before the element was removed. The Wedl type 2 tunnelling suggests the element spent some time in a wet environment. Alternatively, rapidly-silting pits would have maintained an accessible, aerated environment more conducive to fungal growth than a quickly backfilled grave (Marchiafava et al. 1974; Terrell-Nield and MacDonald 1997). However, the conditions that promote fungal bioerosion are poorly understood, and the extent to which Wedl tunneling can support interpretations of early post-mortem treatment is questionable (Booth and Madgwick 2016: 22). At some point, the element was accessible to a scavenging animal(s) and fractured – presumably by anthropogenic means, since there is no gnawing on the fracture surface – before interment within the midden.

PTN08

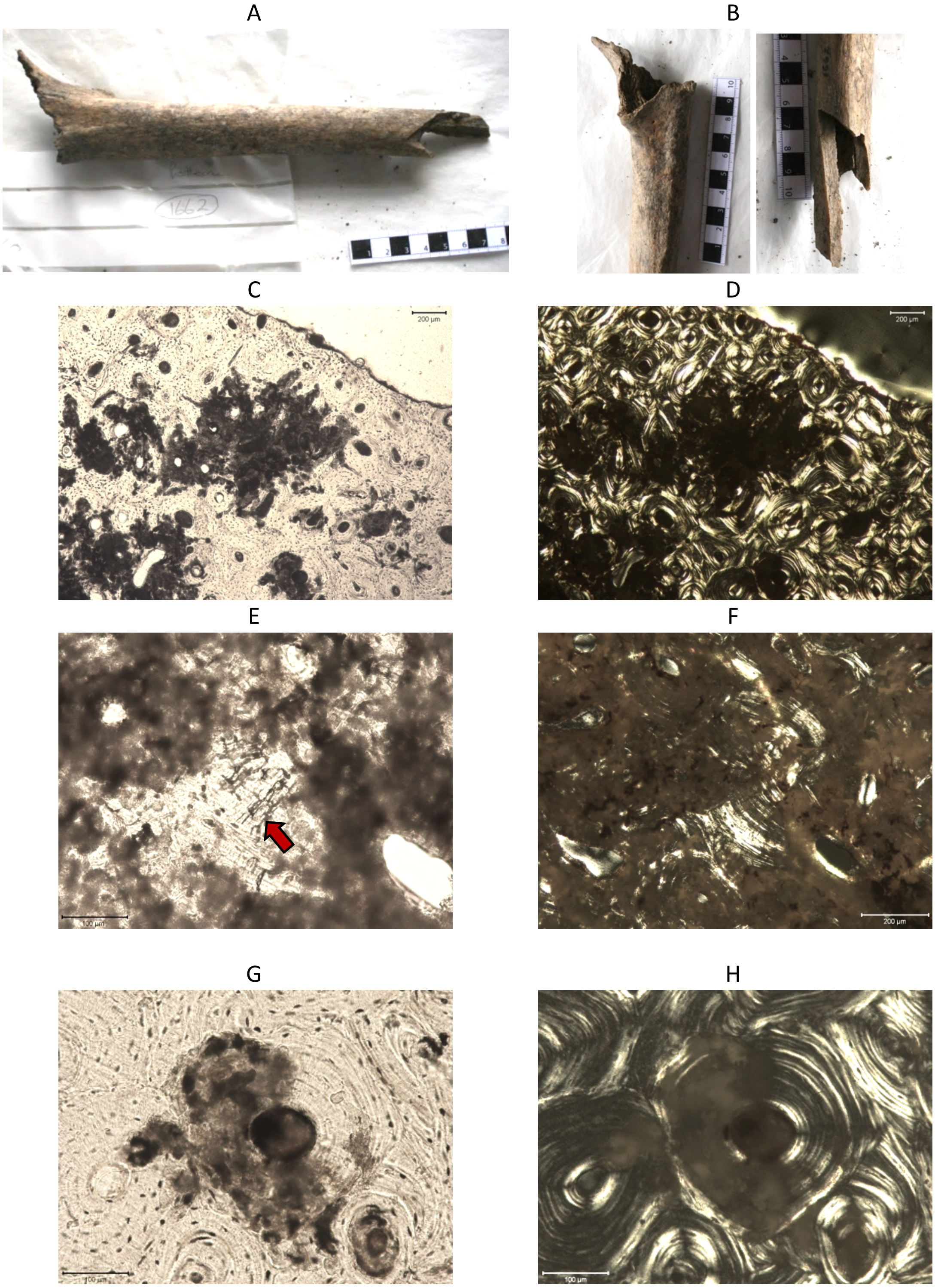


Figure 89. Sample from a disarticulated long bone fragment from Potterne, Wiltshire, with good histological preservation (OHI 4). **PTN02**: A) Sampled element (right femur shaft). B) Proximal end missing the epiphysis with evidence for gnawing and the distal end showing a close-up of the fresh fracture. C) Periosteal aspect, normal light, 5x magnification. D) Periosteal aspect, polarised light, 5x magnification. E) Central cortex with arrow pointing to Wedl type 2 tunnelling, normal light, 10x magnification. F) Central cortex, polarised light, 10x magnification. G) Osteon showing arrested bacterial attack radiating from Haversian canal, normal light, 20x magnification. H) Osteon with arrested attack, polarised light, 20x magnification. Source: author

Sample PT24 represents a femoral head and neck (Figure 90A) with the posterior half missing in a fresh break that left one side almost completely straight (Figure 50B) with small shards/splinters of bone still in situ, connected by the trabeculae (Figure 90C). A small portion of the shaft remains, the fracturing characteristic of having been done whilst still fresh – a small, indented shard of bone is still connected at the end which may indicate a point of impact (Figure 90D).

The sample was taken from the remaining shaft where the cortex was the thickest. The level of preservation is among the best of all the specimen from Potterne, especially at the periosteum and sub-periosteum which is mostly unaffected by MFD (Figure 90E). The birefringence is very high respecting the preserved microstructure (Figure 90F). Some slight Wedl type 2 tunnelling is seen in the periosteum (Figure 90G, I). Additionally, localised portions of the cortex are affected by MFD to varying degrees originating from Haversian canals in groups of osteons arranged longitudinally in relation to each other – for example, Figure 50E shows a row of c.10 osteons with similar degrees of MFD (linear longitudinal type) whilst those above and below show less bioerosion. Much of endosteal aspect is poorly preserved, again with MFD appearing to radiate from Haversian canals where the destruction is less complete. The trabeculae shows mixed preservation with patches of well-preserved microstructure among more heavily affected areas. A dark substance (probably sediment) fills the space between the trabeculae with some fuzzy green inclusions which may be remnants of vegetative midden waste. Figure 90I shows the overall preservation of the thin section with MFD concentrated near the endosteal aspect.

Overall, the straight angle of the posterior break and the freshness of the fracture, together with the high level of histological preservation, all point to this element having been removed from the body shortly after death and then chopped/processed to remove the shaft. Chopping the epiphyses in this way is one technique for marrow extraction in experimental animal bone processing (Binford 1981: 149-163) so it is possible that this element was treated in a similar way.

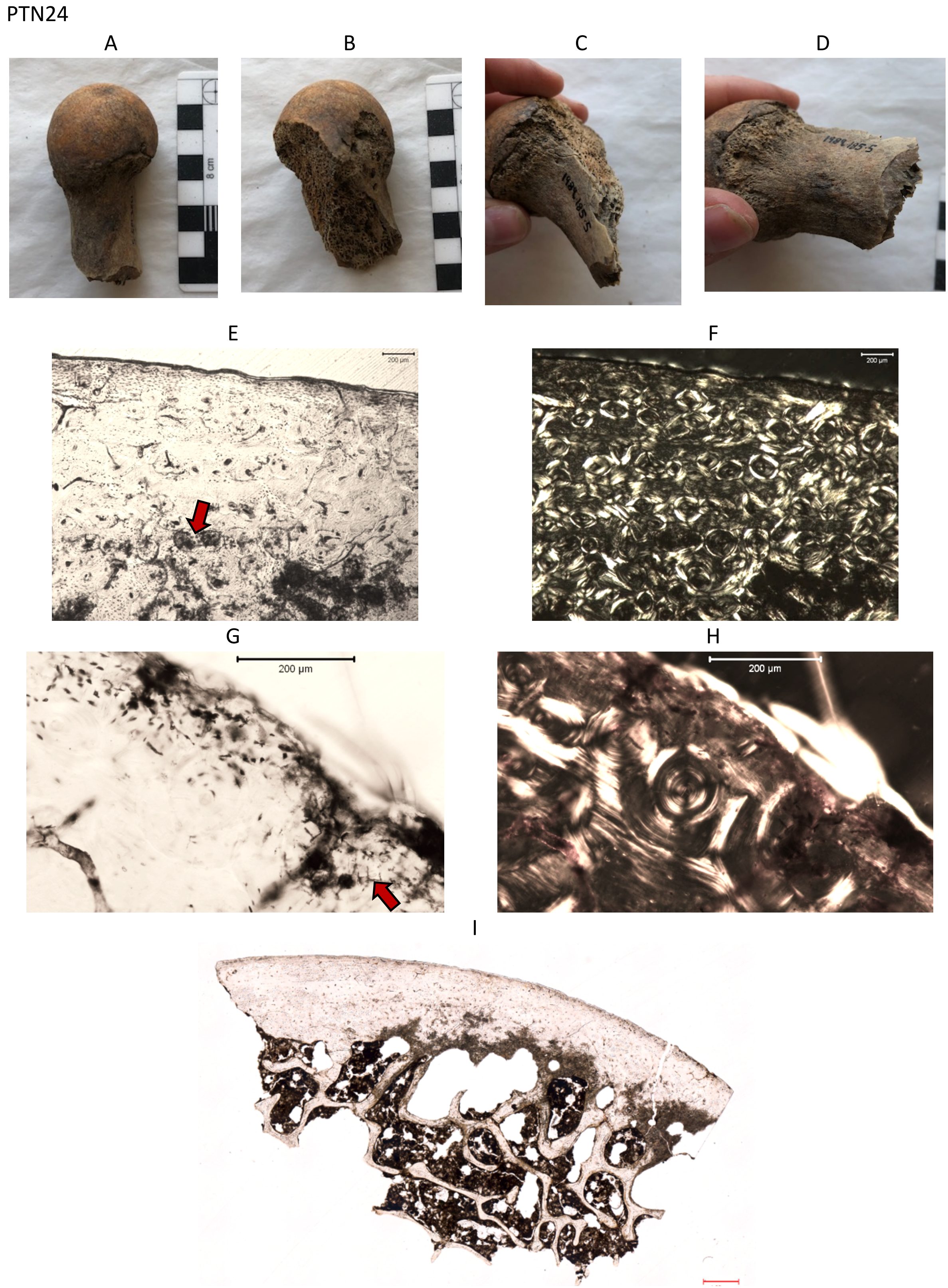


Figure 90. Sample from a disarticulated long bone fragment from Potterne, Wiltshire, with good histological preservation (OHI 4). **PTN24**: A) Sampled element (right femoral head). B) Angular fracture across the femoral head. C) Fracture edge with small splinters connected by trabeculae D) Wedge flake likely from percussion fracture whilst still relatively fresh. E) Periosteal aspect with arrow pointing to line of osteons affected by MFD,, normal light, 5x magnification. F) Periosteal aspect, polarised light, 5x magnification. G) Periosteal aspect with arrow pointing to Wedl type 2 tunnels, normal light, 20x magnification. H) Periosteal aspect, polarised light, 20x magnification. I) Scan of thin section (image made by Anthony Hayes, Cardiff University). Source: author

6.5.2.4. Summary

The majority of the samples from Potterne had low histological preservation with OHI scores of 0-1 suggesting most of the sampled elements represent individuals who were buried as articulated corpses and later exhumed. However, many of the samples showed arrested bacterial attack and areas of well-preserved microstructure. Considering the taphonomic evidence, particularly fracturing and gnawing, the histological results indicate the elements were subjected to (or afforded) varied processes prior to interment within the midden. This was suggested by McKinley (2000) who noted the variation in physical condition within the human remains assemblage from Potterne midden may indicate that the generally contemporaneous elements may have originated from different sources and subjected to different processes, including episodes of redeposition and disposal. This is supported by the histology. In short, the taphonomic and histological evidence are indicative of a long, multi-stage process where human remains are moved around, manipulated, and intentionally redeposited.

It is worth noting that middens can create anaerobic environments which prohibits bacteria (Nicholson 1998). On the other hand, a midden would be full of organic material creating an environment rich in bacteria and fungus. Depending on where the bones are located within the midden matrix, this could potentially influence preservation. The degree of histological variation within the Potterne samples, along with the taphonomic evidence for manipulation and exposure, would suggest different post-mortem histories. The evidence for varied mortuary treatment including multi-phase processes is discussed in Chapter 8 (Section 8.3.5).

6.5.3. Disarticulated – boundaries

25 samples represent disarticulated human remains from settlement boundaries including ditches (n=22) and ramparts (n=3). The sampled specimens are described in Table 13. All of the samples showed poor histological preservation, scoring OHI 0 (n=19) and 1 (n=6) (Figure 91). The breakdown of OHI score by county is shown in Figure 94. The majority of the specimens were sampled from long bones (n=20), 3 from skulls, one clavicle and one rib (Figure 92). Only four sampled elements could be sexed: three female and one male, all scoring OHI 0 (Figure 93). Taphonomic alterations to the bone were common in the sampled assemblage, particularly fracturing, erosion, and canid gnawing (see Table 13).

Table 13. Samples from disarticulated deposits in boundaries. Source: author

Specimen	County	Element	Side	Age	Sex	Trauma	Taphonomy	OHI	Bire.	C14 date
BB01	Wiltshire	Femur	-	Sub-adult/ adult	-	-	Fresh fracture, canid gnawing, root etching, abraded	0	Low	
BB02	Wiltshire	Tibia?	-	Adult	-	-	Heavily eroded, black staining, fresh and dry breaks (old)	0	None	
BB09	Wiltshire	Femur	?	Adult	-	-	Canid gnawing on epiphyses, root etching, abrasion	0	None	
BB14	Wiltshire	Humerus	L	Adult	F?	Healed trauma?	Canid gnawing, trampled, root etching, abraded, blackish discolouration	0	None	
BB15	Wiltshire	Femur	-	Adult	-	-	Split fracture	1	Low	
BB16	Wiltshire	Femur	-	Adult	-	-	Fresh fractures, gnawing on distal, polished	1	Low	
BB17	Wiltshire	Tibia		Adult	M?	-	Canid gnawing, angular breaks, root etching	1	Low	
RBW13	Wiltshire	Humerus	?	Adult	-	-	Root etching, dry breaks	1	None	
CAE01	Vale of Glamorgan	Long bone	-	Adult	-	-	Heavily eroded	0	None	350-115 cal BC
RAF01	Vale of Glamorgan	Humerus	-	Adult	-	-	Fragmented	1	Low	160 cal BC - cal AD 60 (Wk-15363)
GUS11	Dorset	Femur	-	Adult	-	-	Weathering, root etching, fractures on both ends	0	None	
GUS12	Dorset	Crania	-	Adult	F	Possible trauma	-	0	None	
HH04	Somerset	Humerus	L	Sub-adult/ Adult	-	-	Encrusted with indurated sand	0	None	
HH38	Somerset	Rib	-	Adult?	-	-	Weathering	0	Low	
HH40	Somerset	Femur	L	Sub-adult	-	-	Eroded	0	None	
HH41	Somerset	Femur	L	Adult	-	-	Eroded	0	None	
HH53	Somerset	Parietal	-	Subadult/Adult	-	-		0	Low	
HH56	Somerset	Tibia	R	Adult	-	-	Eroded	0	None	
HH57	Somerset	Femur	-	Adult	-	-	Eroded	1	Low	
HH59	Somerset	Clavicle	L	Sub-adult/ Adult	-	-	Animal gnawing, eroded	0	None	
HH60	Somerset	Tibia	-	Adult	-	-	-	0	None	
HH63	Somerset	Humerus	L	Adult	-	Pene-trating injury	Weathering, gnawing	0	None	
HH64	Somerset	Tibia	-	Adult	-	-	-	0	None	
HH65	Somerset	Humerus		Adult?	F?	Knife marks	-	0	None	
HH66	Somerset	Parietal	L	Adult	-	Poss blunt force trauma, pene-trating injury	-	0	Low	

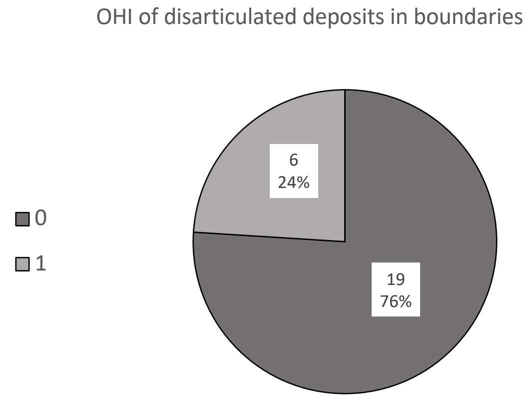


Figure 91. Chart showing OHI scores of disarticulated deposits from boundaries. Source: author

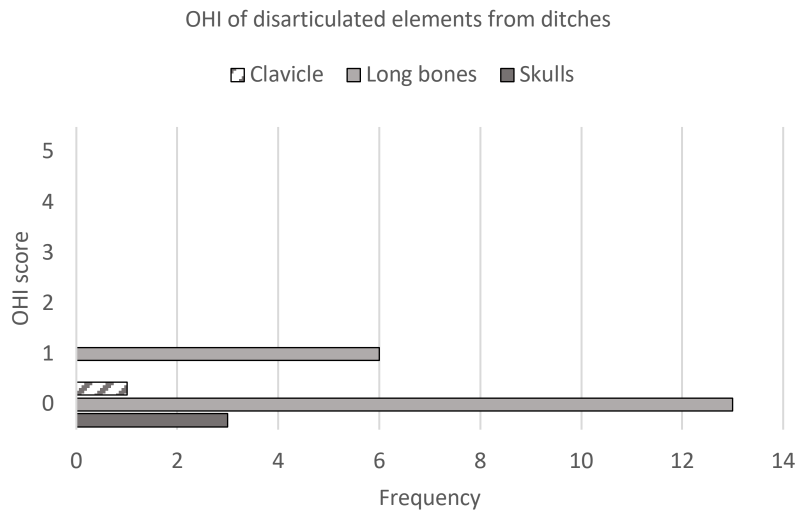


Figure 92. Graph showing OHI scores distribution of disarticulated long bones, crania and a clavicle from ditches. Source: author

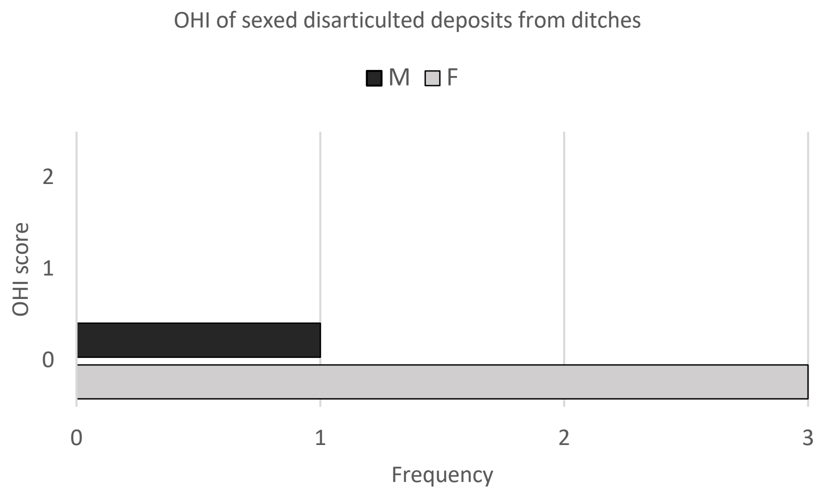
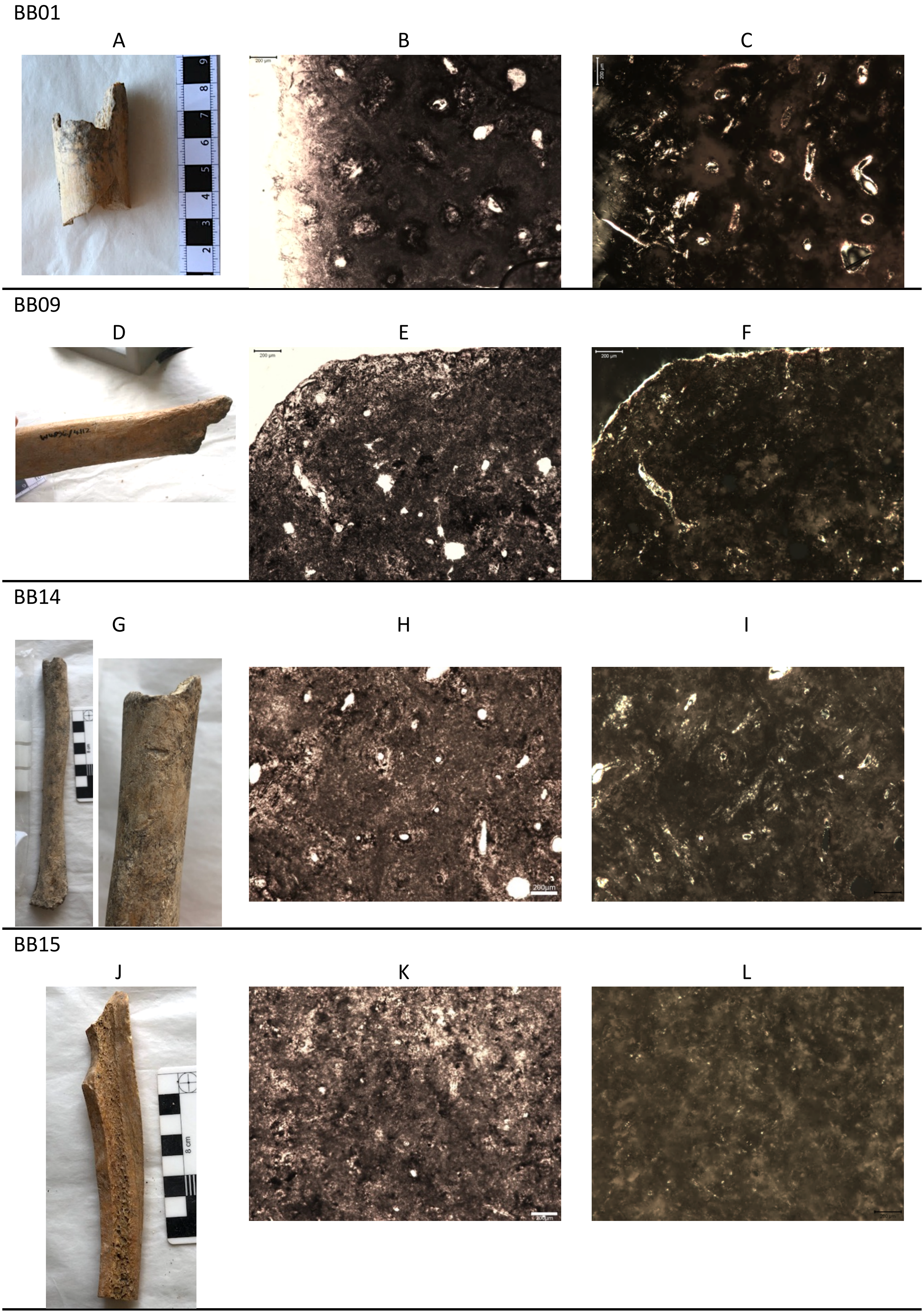


Figure 93. Graph showing OHI scores of female and male disarticulated deposits from ditches. Source: author


BB01
A
B
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BB09
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BB14
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H
I
BB15
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K
L

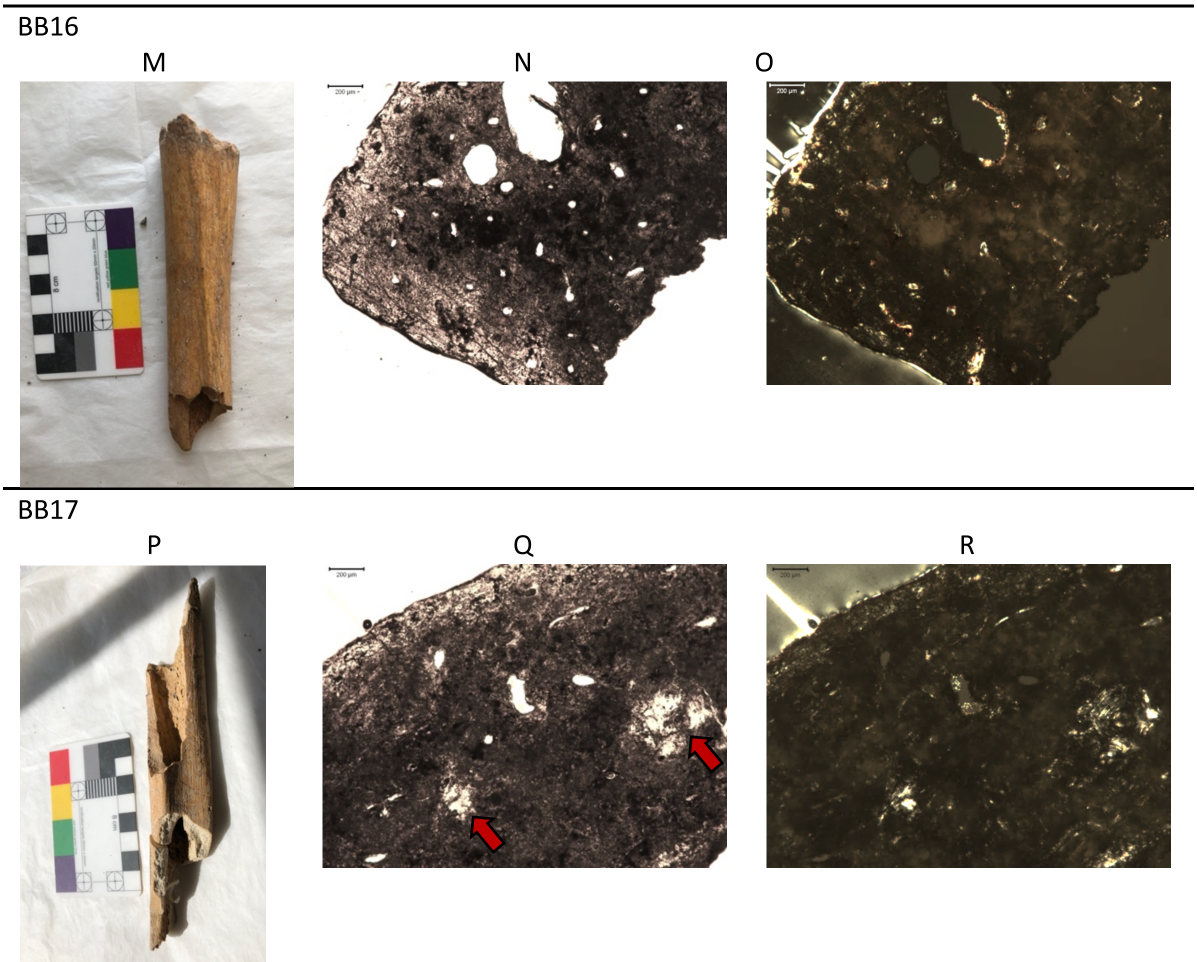


Figure 94. Samples from disarticulated deposits in boundaries surrounding Battlesbury Bowl, Wiltshire, with poor histological preservation. **BB01**: A) Sampled element (long bone fragment) heavily gnawed by canids. B) Periosteal aspect, normal light, 5x magnification. C) Periosteal aspect, polarised light, 5x magnification. **BB09**: D) Sampled element (femur shaft) heavily gnawed by canids. E) Periosteal aspect, normal light, 5x magnification. F) Periosteal aspect, polarised light, 5x magnification. **BB14**: G) Sampled element (left humerus) with a chop mark on the proximal midshaft. H) Central cortex, normal light, 5x magnification. I) Central cortex, polarised light, 5x magnification. **BB15**: J) Sampled element (femur) with a fresh longitudinally split fracture. K) Central cortex, normal light, 5x magnification. L) Central cortex, polarised light, 5x magnification. **BB16**: M) Sampled element (femur shaft) fractured on both ends. N) Periosteal aspect, normal light, 5x magnification. O) Periosteal aspect, polarised light, 5x magnification. **BB17**: P) Sampled element (tibia shaft) fractured on both ends. Q) Periosteal aspect with arrows pointing to small patches of preserved microstructure, normal light, 5x magnification. R) Periosteal aspect, polarised light, 5x magnification. Source: author

The results from histological analysis are interesting because, although the histological preservation was poor throughout all sampled elements from boundaries, many of the elements showed evidence for post-mortem manipulation and exposure. Figure 94 shows elements from Battlesbury Bowl with interesting taphonomy and OHI scores 0-1 and low to no birefringence:

- BB01 (Figure 94A, B, C) and BB09 (Figure 94D, E, F) both have clear evidence of canid gnawing and poor histological preservation;
- BB14 (Figure 94G, H, I) has a chop mark toward the proximal end of the humerus shaft;

- BB15 (Figure 94J, K, L) has a fresh longitudinally split fracture similar to those from Fishmonger's Swallet (FSH01) and Potterne (PTN10, PTN11) and, like those from Potterne, the sample was completely destroyed by MFD;
- Similarly, BB16 (Figure 94M, N, O) is fractured on both ends with a relatively fresh appearance;
- BB17 (Figure 94P, Q, R) is fractured on both ends of the shaft with a relatively dry appearance to the fracture surface.

The only element with any preservation is BB17, where two small patches of microstructure survive amidst total destruction throughout the cortex (Figure 94Q) and birefringence is higher over these areas (Figure 94R).

It is potentially significant that the elements from ditches at Battlesbury Bowl are orange in colour compared to the pale buff colour of disarticulated remains from pits within the same site, and more similar in appearance to the elements from the midden site at Potterne (see Section 6.5.2). This may be caused by differences in the depositional environment between pits and ditches, although a study incorporating more samples would be needed to determine this.

6.5.3.1. Summary

All of the disarticulated samples from ditches showed very poor histological preservation consistent with OHI 0-1 across all sampled sites. These results suggest that the represented elements originated from articulated inhumations in the ground, however the taphonomic histories are apparently complex. Fresh and dry fractures are present, suggesting that post-mortem manipulation happened when the bone was still relatively fresh (i.e. skeletonised but only just so that there was sufficient collagen for a fresh fracture), whilst others were fractured when the bone was in a dry state. Additionally, the evidence for canid gnawing indicates some (but not all) elements were exposed at some point following exhumation. To summarise, disarticulated elements from ditches appear to represent primary articulated inhumations followed by secondary manipulation at various points after skeletonisation, prior to followed by redeposition. and any post-mortem manipulation happened after the corpse had completely skeletonised.

6.5.4. Disarticulated – pits

Twenty-four disarticulated elements were sampled from pits (or probably from pits) from six sites (Table 14). The overall OHI distribution is shown in Figure 95. Most of the samples showed little to no preserved microstructure resulting in scores of OHI 0-1 (84%) with few samples scoring OHI 2-3 (12%) and one sample scoring OHI 5. Ten long bones and 14 skulls were sampled representing four female (or probable female) and six male skeletons, the rest of the elements being too incomplete to ascribe sex. There was no significant difference in histological preservation between long bones and skulls, but skulls did show slightly more variation (Figure 96). The female and male elements were also generally similar in preservation with males having slightly more variation (Figure 97). The OHI scores are broken down by county in Figure 98) and shows samples from Somerset had more variation in histological preservation than the other counties.

Table 14. Samples from disarticulated deposits in pits. Source: author

Specimen	County	Element	Side	Age	Sex	Trauma	Taphonomy	OHI	Bire.	C14 date
BB03	Wiltshire	Femur?	-	Sub-adult	-	-	Fractured, ?gnawing	0	None	
BB04	Wiltshire	Femur	R	Adult	M?	-	-	0	None	
BB05	Wiltshire	Humerus ?	R?	-	-	-	-	0	None	
BB10	Wiltshire	Femur	R	Adult	F?	-	Gnawing, root etching	0	None	
BB13	Wiltshire	-	-	-	-	-	White patch/sediment concretion?	0	Low	
BB19	Wiltshire	Skull	-	Adult?	-	-	-	0	Low	
BB20	Wiltshire	Skull	-	Sub-adult/ adult	-	-	-	0	Low	
BB22	Wiltshire	Frontal	-	Adult	F?	-	Poss worked? Root etching	0	Low	
BB23	Wiltshire	Crania	-	Adult	-	-	Poss worked? Root etching	0	None	
BB24	Wiltshire	Crania	-	Sub-adult/ adult	-	-	Canid gnawing (punctures), polished, fractured	1	Low	
RBW09	Wiltshire	Femur	R?	Adult	?F	-	Black stain, heavy root etching	0	None	
RBW10	Wiltshire	Long bone	-	Adult	-	-	Heavy erosion, root etching	0	Low	
RBW11	Wiltshire	Humerus	-	Adult	-	-	Poss fresh fracture (flake), heavy erosion, root etching	1	Low	
RBW12	Wiltshire	?Radius	?L	Adult	F	-	Root etching	2	Low	
RAF03	Vale of Glamorgan	Femur	L	Sub-adult	-	-	-	1	Low	170 cal BC - cal AD 60
GYF02	Gloucestershire	Frontal	-	Adult	M?	-	Staining on left half of frontal	0	Low	
WB13	Somerset	Parietal	R	Adult	M	-	-	2	Med	
WB14	Somerset	Frontal	-	Adult	M?	-	-	3	Med	
WB20	Somerset	Skull	-	Adult	M?	7 sword cuts	-	1	Low	
HH47	Somerset	Parietal	-	Adult	-	-	-	5	High	
HH49	Somerset	Frontal	-	Child	-	-	Weathering	0	None	
HH50	Somerset	Parietal	-	Adult	-	-	-	0	Low	

HH51	Somerset	Parietal	-	Sub adult/ adult	-	-	-	0	Low	
HH52	Somerset	Frontal	-	Adult	M?	-	-	0	None	

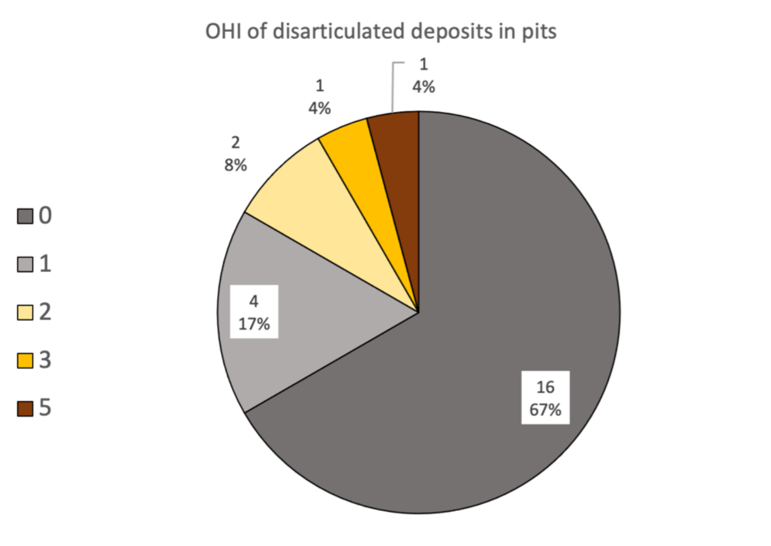


Figure 95. Chart showing OHI score breakdown of disarticulated human remains from pits. Source: author

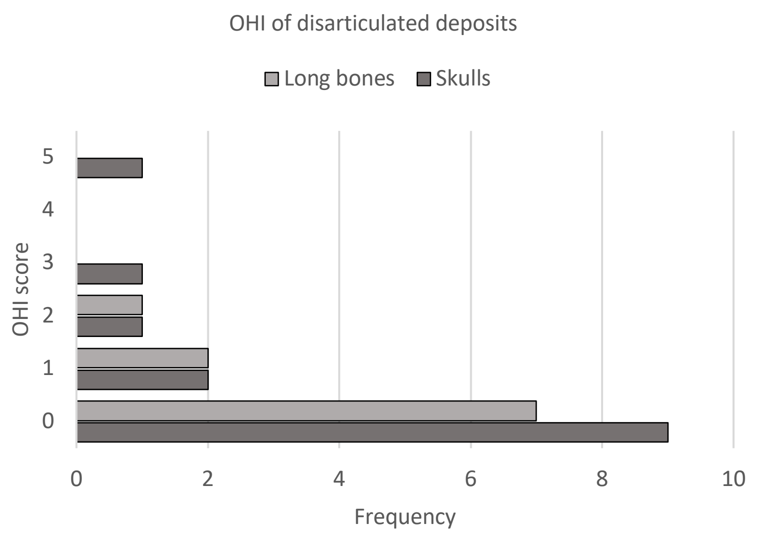


Figure 96. Graph showing OHI score distribution of disarticulated long bones and crania from pits. Source: author

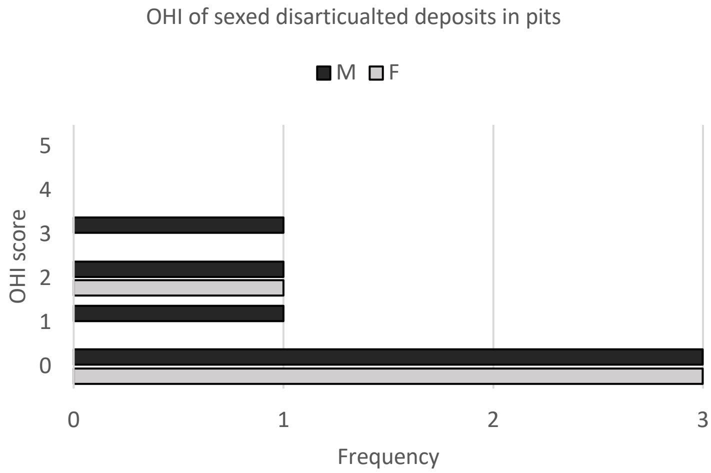


Figure 97. Graph showing OHI score distribution of disarticulated male and female deposits in pits. Source: author

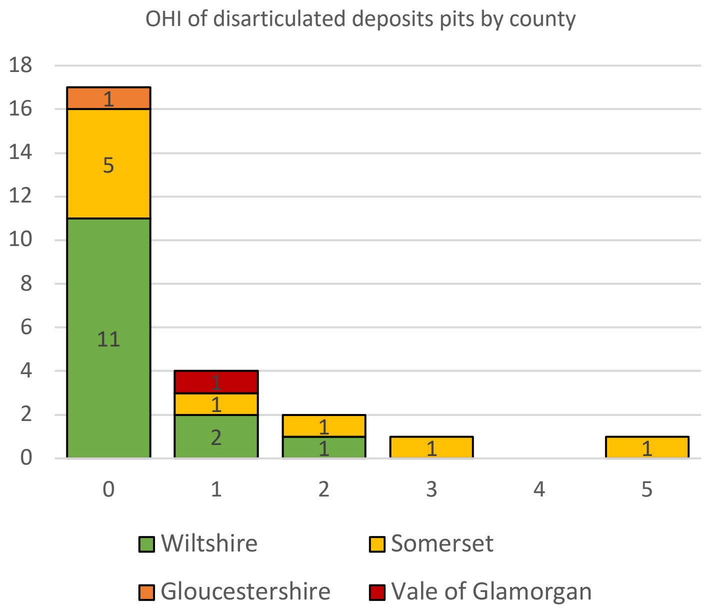


Figure 98. Graph showing OHI scores distribution of disarticulated deposits in pits by county. Source: author

6.5.4.1. OHI 0-1

A number of the 19 sampled elements which scored OHI 0-1 had evidence for taphonomic modification including gnawing (n=3), fracturing (n=2) and possible working (n=2) (Table 14). Figure 99 presents sampled elements with interesting taphonomy and poor histological preservation:

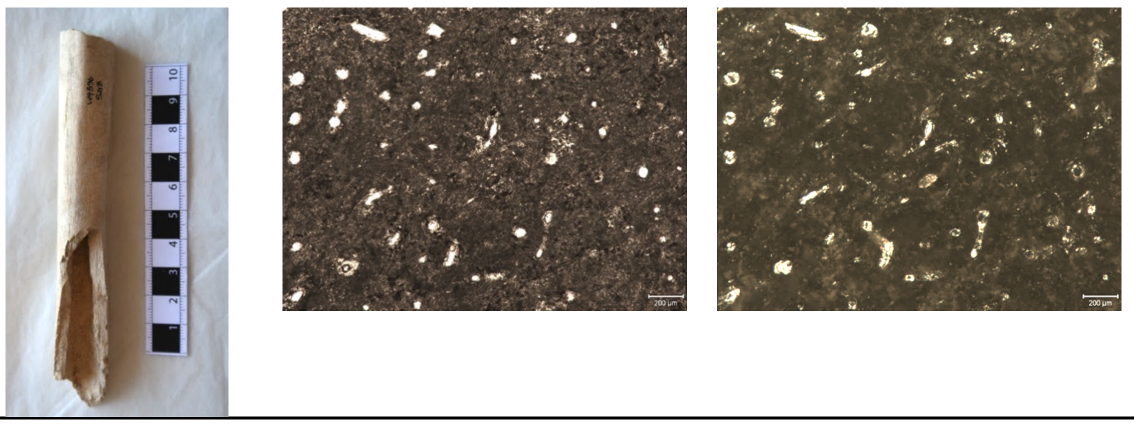
- BB03 (Figure 99A, B, C) is a subadult femur shaft with a mixed fracture appearance suggesting the bone was broken whilst not completely fresh, nor completely dry. The fracture has with a similar appearance to BB16 recovered from a boundary ditch at the same site (see Figure 94P). Unlike BB16, which is a rich orange colour, BB03 is pale buff;
- BB10 (Figure 99D, E, F) represents an adult femur shaft with dry breaks and canid gnawing at both ends. The element is also heavily affected by root etching;

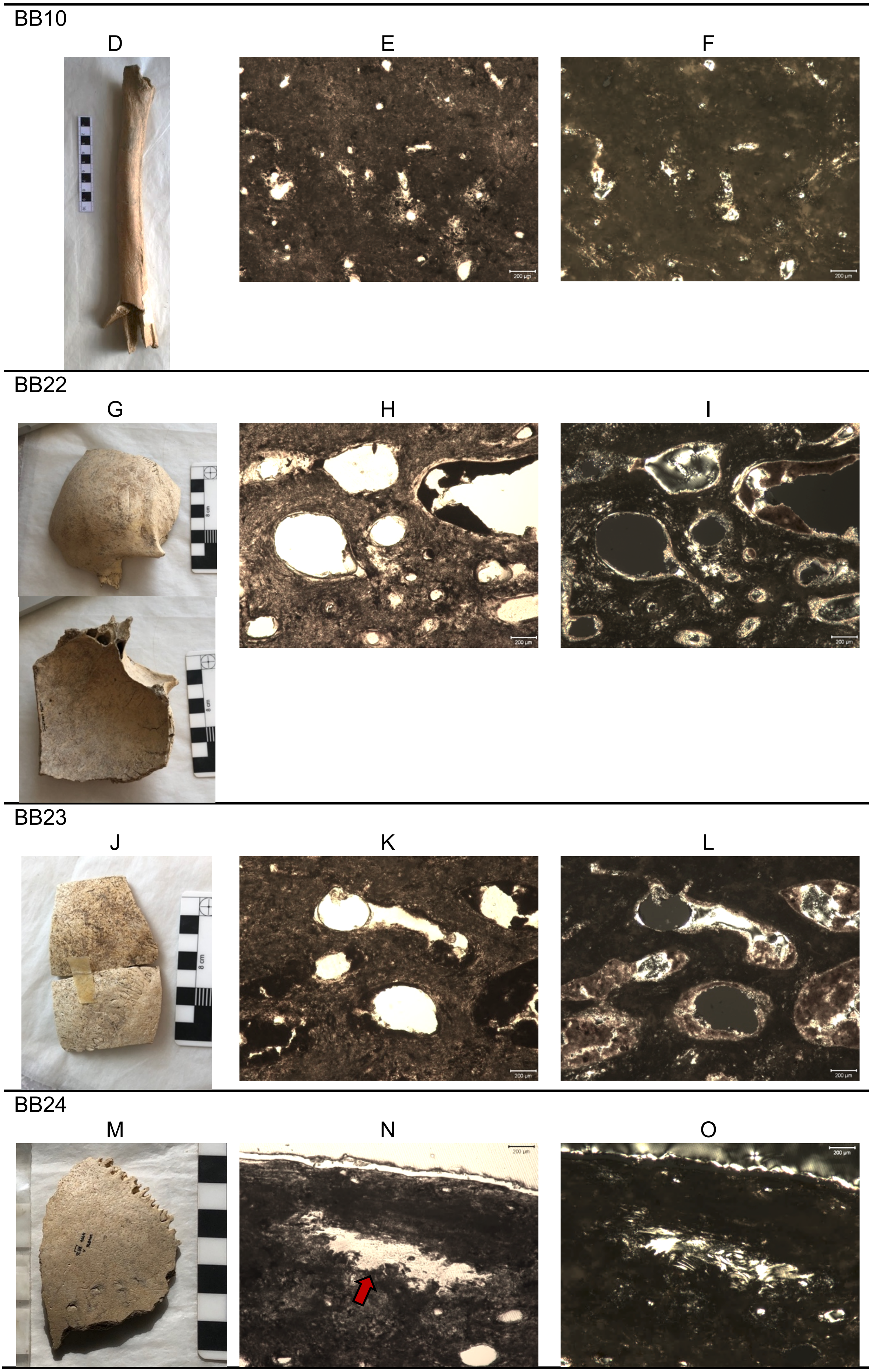
- BB22 (Figure 99G, H, I) is half of a frontal bone with straight, regular edges suggesting the element was likely worked into shape. The fragment is similar to PTN17 (Figure 80A);
- BB23 (Figure 99J, K, L) comprises two halves of a cranial fragment likely worked into a rectangular shape;
- BB24 (Figure 99M, N, O) is another cranial fragment with strong evidence for gnawing in a series of crescentic punctures penetrating the periosteum. The element also has a slightly polished surface, possibly from being handled. A small patch of microstructure preserves near the periosteal aspect where advancement of MFD is arrested (Figure 99N, O);
- GFY02 (Figure 99P, Q, R) represents a fragmented frontal bone from Greystones Farm, located within Salmonsbury Camp Hillfort in Gloucestershire. The cranium is that of a mature adult, probably male, that appears to have been deliberately placed in the centre of the upper fill of a large pit with no other finds. The skull was described in the site report as "in good condition with no signs of curation suggesting it was either freshly buried or rapidly reburied from a disturbed context" (Barclay et al. 2019: 4). The poor histological preservation would suggest the latter is likely. The surface of the frontal bone shows reddish-brown staining limited to the left side of the bone, which may be indicate the pit was backfilled with reddish-brown silty clay described in other pits from the side (Barclay et al. 2019: 5).

The small patch of preservation seen on BB24 is interesting considering all of the other samples from Battlesbury Bowl had no preserved microstructure. This pattern of arrested attack might indicate a slightly different post-mortem process than the others, for example disarticulation from the body may have happened sooner (but still probably after skeletonisation).

BB03

A B C




BB10
D
E
F
BB22
G
H
I
BB23
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K
L
BB24
M
N
O

GYF02

P Q R

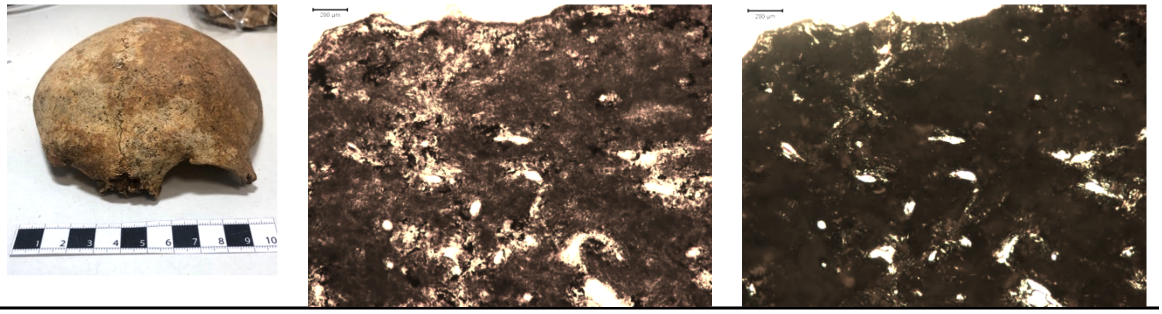


Figure 99. Samples from disarticulated deposits in pits with poor histological preservation. **BB03**: A) Sampled element (long bone shaft) with fractures on both ends. B) Central cortex, normal light, 5x magnification. C) Central cortex, polarised light, 5x magnification. **BB10**: D) Sampled element (femur shaft) with canid gnawing at both ends. E) Central cortex, normal light, 5x magnification. F) Central cortex, polarised light, 5x magnification. **BB22**: G) Sampled element (frontal bone fragment), possibly worked. H) Central cortex, normal light, 5x magnification. I) Central cortex, polarised light, 5x magnification. **BB23**: J) Sampled element (cranial fragment) probably worked. K) Central cortex, normal light, 5x magnification. L) Central cortex, polarised light, 5x magnification. **BB24**: M) Sampled element (cranial fragment) with punctures likely inflicted by canid gnawing. N) Periosteal aspect, arrow pointing to an area of well-preserved microstructure, normal light, 5x magnification. O) Periosteal aspect, polarised light, 5x magnification. **GYF02**: P) Sampled element (frontal bone) with staining on one side. Q) Periosteal aspect, normal light, 5x magnification. R) Periosteal aspect, polarised light, 5x magnification. Source: author

6.5.4.2. OHI 2-3

Three samples showed middle-ranging histological preservation, as seen in Figure 100. First, the element represented by RBW12 (Figure 100A) was described as a ‘distinct deposit within the backfill’ comprising c.10 fragments of skull, axial, and upper limb bones (Powell 2013: 36, Appendix 2). Small patches of well-preserved microstructure are arranged within the centre of the transverse section with the endosteal and periosteal aspects more thoroughly destroyed by MFD. Non-Wedl (lamellate) type attack radiates from Haversian canals, leaving some patches of interstitial lamellae intact (Figure 100B, C). The pattern of attack is similar to the other samples from Rowbarrow, including the articulated inhumation RBW03 (Figure 45D, E), disarticulated RBW06 (Figure 102, below) and partially articulated RBW07 (Figure 59). This may suggest early post-mortem treatments afforded to these very different deposits were broadly similar.

Two samples from Worlebury, WB13 (Figure 100D, E) and WB14 (Figure 100 F, G), also had mixed histological preservation resulting in OHI scores of 2 and 3 respectively. The provenance for the sampled elements is uncertain, but they possibly come from pits: ‘No.8’ was written on the skull of WB13 and ‘No.4’ on WB14, which may indicate these were from in Pit 8 and Pit 4 respectively. If WB14 was recovered from Pit 4, associated material included an iron spear, many animal bones, broken pottery, pebbles, red earth containing ochre – one of which was rubbed down into the form of a small egg (Dymond 1902: 76). However, the exact findspots remain unknown.

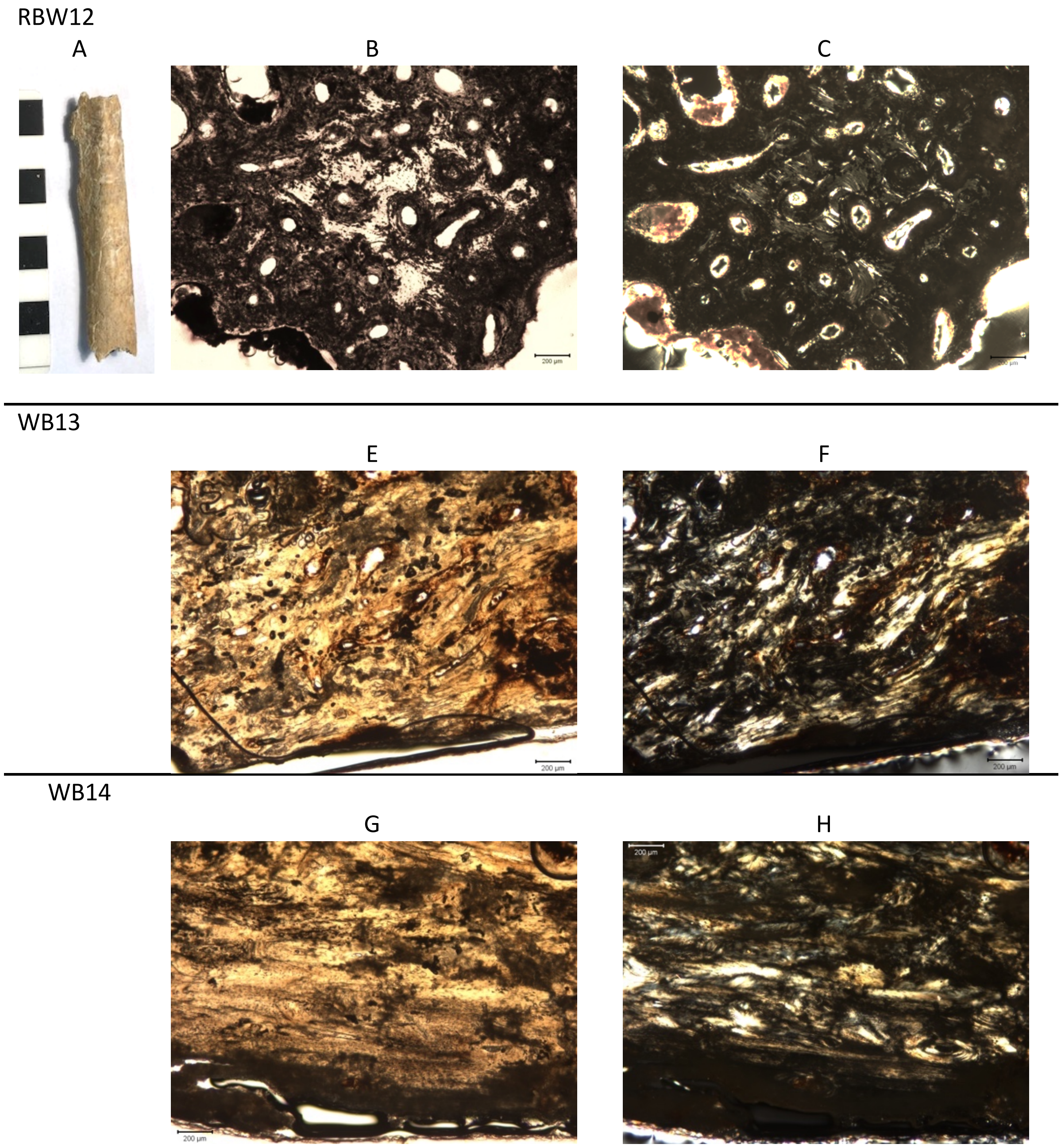


Figure 100. Samples from disarticulated deposits in pits with middle-ranging histological preservation. **RBW12:** A) Sampled element (?radius fragment). B) Central cortex, normal light, 5x magnification. C) Central cortex, polarised light, 5x magnification. **WB13**: E) Endosteal aspect, normal light, 5x magnification. F) Endosteal aspect, polarised light, 5x magnification. **WB14**: G) Endosteal aspect, normal light, 5x magnification. H) Endosteal aspect, polarised light, 5x magnification. Source: author

6.5.4.3. OHI 5

One sample, HH47, showed perfect histological preservation consistent with OHI 5 (Figure 101). The sample represents a parietal of a mature adult recovered from the middle of storage pit fill (F.1509) at Ham Hill, Somerset. The sampled element was not noted to have any taphonomic evidence for exposure or manipulation, so it is possible that the skull of this individual was removed from the body shortly after death and then deposited or curated in a way that did not cause obvious evidence of exposure or handling on the bone surface. Alternatively, the body may have undergone rapid decomposition, which prevented diagenetic bacteria from entering the bone structure of this element.

HH47

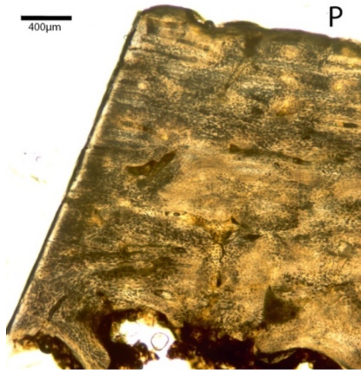


Figure 101. Sample from a disarticulated deposit in a pit with perfect histological preservation. The micrograph shows a transverse section from the periosteum (P) to endosteum surfaces, normal light, stitched micrographs 5x magnification. Source: author

6.5.4.4. Summary

Overall, the disarticulated elements from pits showed poor histological preservation with a few exceptions showing mixed histological preservation (RBW12, WB13, WB14) and only one sample unaffected by MFD (HH47). These results suggest that majority of disarticulated human remains from pits were redeposited or left over from older, articulated inhumation burials; a few from corpses that decomposed more rapidly (e.g. protected exposure) or the sampled element was removed from the corpse before complete decomposition; and one instance where the skull or skull fragment may have been removed from the body very shortly after death. An alternative explanation may be that the well-preserved fragment originated from a corpse that was given a different early post-mortem treatment than the others, for example mummification.

6.5.5. Disarticulated – graves

Two disarticulated elements were sampled from the fill of graves that also contained articulated inhumations. These have been separated from disarticulated remains from pit fills because the incidence of disarticulations in pits that had been used as storage containers may have different implications to those in graves that were specially cut for burial. Both of the sampled deposits were heavily fragmented, but did not show any evidence for fresh fracturing or other taphonomic indicators that would suggest anthropogenic manipulation.

Table 15. Sampled disarticulated elements from graves. Source: author

Specimen	County	Element	Side	Age	Sex	OHI	Birefringence
RBW06	Wiltshire	Long bone frag	-	Adult	-	1	Med/low
WEY07	Dorset	Long bone frag	-	Adult	-	1	Low

Sample RBW06 was taken from a small fragment of long bone (Figure 102A) recovered from the fill of a grave containing an articulated inhumation of a male aged 35-45 years (RBW05, 4178). The body was covered in a layer of flint nodules and a small pile of long bones and shafts representing c.5% of a second adult individual (4180) was placed on top of this layer. Details on the spatial arrangement of the bones is not provided in the site report, only that the deposit is comprised of upper and lower limbs (Wessex Archaeology 2013: Appendix 1) so it is unclear if these may have been partially articulated limbs or a collection of defleshed, disarticulated elements. In a 2015 report, this deposit appears to include teeth as a pathological assessment by Egging Dinwiddy (2015: 60, table 2) listed enamel hypoplasia present in this deposit. Based on the information provided in reports, it seems most likely that this deposit was interred as disarticulated remains rather than fleshed body parts.

The microstructure of RBW06 was poorly preserved with the highest concentrations of MFD orientated towards the periosteal and endosteal surfaces and low birefringence over (Figure 102B, C). Small areas of preserved lamellae can be seen in the centre cortex, identifiable by the osteocyte lacunae (Figure 103D) and slightly higher birefringence (Figure 103E). In the well-preserved areas, 'arrested' attack appears to be non-Wedl (budded and lamellate types). Additionally, Haversian canals are enlarged across most of the transverse section. Overall, the histological preservation scores OHI 1.

Sample WEY07 was cut from a small fragment of long bone (Figure 102A) recovered from the fill of a (7372) which contained three inhumations: two adults (SK7371/WEY10, SK7384/WEY06) and one adolescent (SK7383). The grave fill contained a number of disarticulated bones including long bones, vertebrae, phalanges, ribs and skull fragments representing an MNI of 1. It was suggested that these fragments may be part of SK7371 (WEY10), thought to be a later interment than the other two within the same grave (Brown et al. 2014: 252), but no refitting could be undertaken. The grave was cut into the fill of a ditch (7276) and intersected by a short NW-SE aligned gully (7591).

The microstructure of WEY07 is thoroughly destroyed with dense, homogenous MFD covering most of the transverse section apart from a thin margin of well-preserved periosteum (Figure 102G). The collagen birefringence is higher over this margin and virtually absent throughout the rest of the sample (Figure 102H). The OHI score is 1.

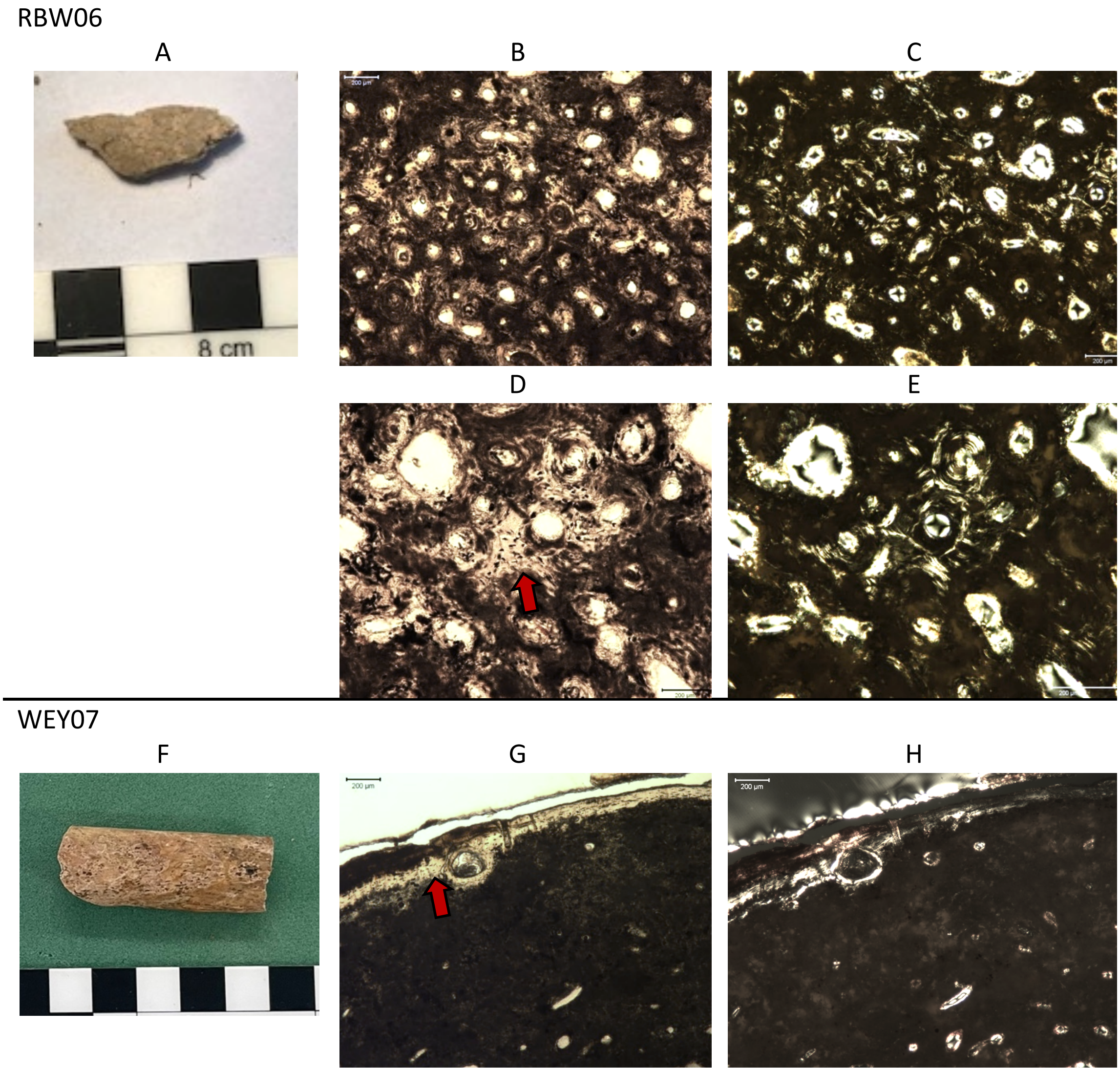


Figure 102. Samples from disarticulated deposits in pits with poor histological preservation. **RBW06**: A) Sampled long bone fragment. B) Central cortex, normal light, 5x magnification. C) Central cortex, polarised light, 5x magnification. D) Central cortex with arrow pointing to area of preserved microstructure, normal light, 10x magnification. E) Central cortex, polarised light, 10x magnification. **WEY07**: F) Sampled long bone fragment. G) Periosteal aspect with arrow pointing to a margin of preservation along the periosteum, normal light, 5x magnification. H) Periosteal aspect, polarised light, 5x magnification. Source: author

6.5.5.1. Summary

The histological and taphonomic evidence from these two samples indicates that disarticulated bone from the fill of their respective graves may be redeposited bone from exhumed skeletons. It is also possible that the graves were re-used over time with elements being removed and relocated, redeposited around various features around or within settlements, and the disarticulated elements recovered from graves may be left over from earlier exhumations in the same feature.

6.5.6. Other disarticulated deposits

Other features containing disarticulated human remains will be discussed in the following sections.

6.5.6.1. Possible ossuary

Three disarticulated skull fragments were sampled from a possible ossuary at Harlyn Bay (the articulated inhumations in cists from Harlyn Bay are described above). As previously mentioned, it is not possible to say with certainty where individual skeletons and skeletal elements originated from within the site, but recent and ongoing PhD research by Alexis Jordan (University of Wisconsin, Milwaukee) means some spatial information can be inferred by marrying the osteological evidence with archival material. At the time of sampling, some elements had been identified as possibly originating from a foundation ossuary containing disarticulated remains described by Bullen (1912).

Table 16. Samples from disarticulated deposits in a possible ossuary from Harlyn Bay, Cornwall. Source: author

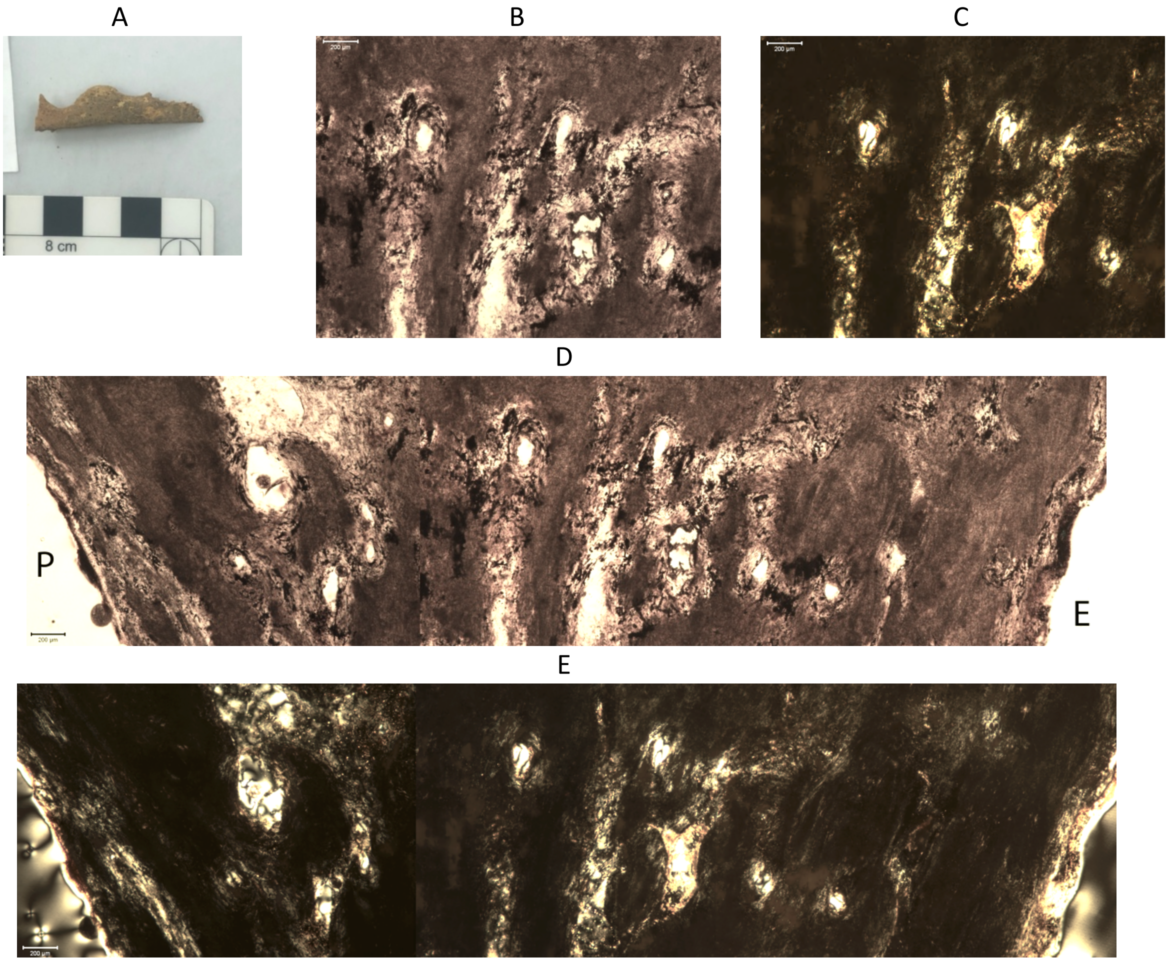
Specimen	County	Element	Side	Age	Sex	OHI	Birefringence
HLB01	Cornwall	Temporal	L	Adult?	-	0	None
HLB02	Cornwall	Cranial frag	-	Adult?	-	0	None
HLB03	Cornwall	Temporal	R	Adult	F?	4	High

Samples HLB01 and HLB02 were sampled from a temporal and cranial fragment respectively (Figure 103A-E) and Figure 103F-H). The histological preservation of both was consistent with OHI 0 and the appearance of the MFD was near-identical (see Figure 103B and 103G). There was little to no collagen birefringence in both samples (Figure 103C, E and 103H) It is possible that the fragments originated from the same individual, likely a disturbed inhumation or inhumations.

Sample HLB03 diverges significantly from the other two fragments in the possible ossuary. The temporal bone was paler yellow in colour and had better surface preservation (Figure 103I). The histological preservation was near-perfect and crisp (Figure 103J, L, M) with high birefringence throughout the entire transverse section (Figure 103K, N). Small areas of MFD appear to emerge from osteocyte lacunae, and near these areas, the canaliculi are enlarged (Figure 103L), resulting in OHI 4. The birefringence is reduced over the areas affected by bioerosion (Figure 103K).

If these three fragments did originate from the foundation ossuary, the results of histological analysis indicate some variation in early post-mortem treatment prior to deposition within the ossuary. Samples HLB01 and HLB02 are consistent with long-term inhumation shortly after death, so likely represent disturbed or exhumed inhumations, whilst the near-perfect preservation of HLB03 suggests disarticulation, rapid removal of soft tissue shortly after death, or mummification. In the absence of other taphonomic evidence, it is unclear if HLB03 is likely from an exposure, beheading, or deliberate defleshing. A number of samples from presumed articulated burials in cists at Harlyn Bay discussed in Section 6.3.1 were similarly well-preserved: for example, HLB24 is also from a cranium (albeit more complete than HLB03) with similar preservation and histological appearance.

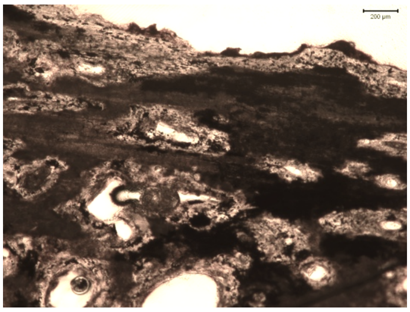
HLB01



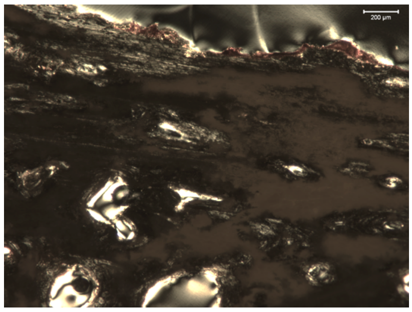
HLB02

F

G



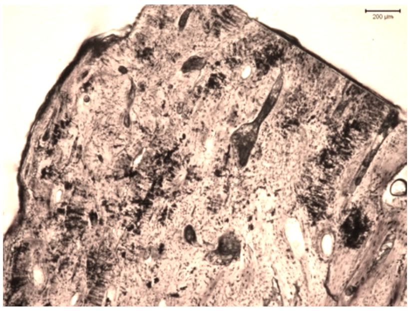
H



HLB03

I

J



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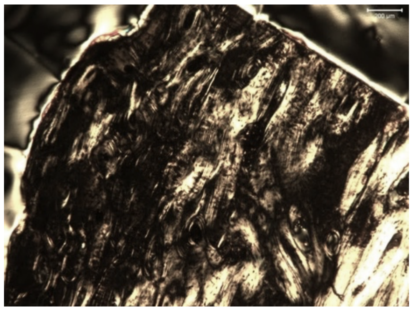

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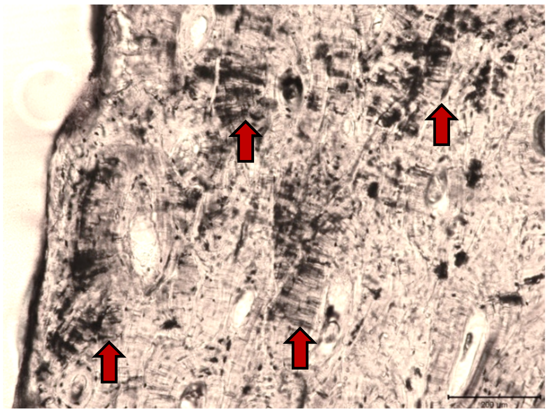

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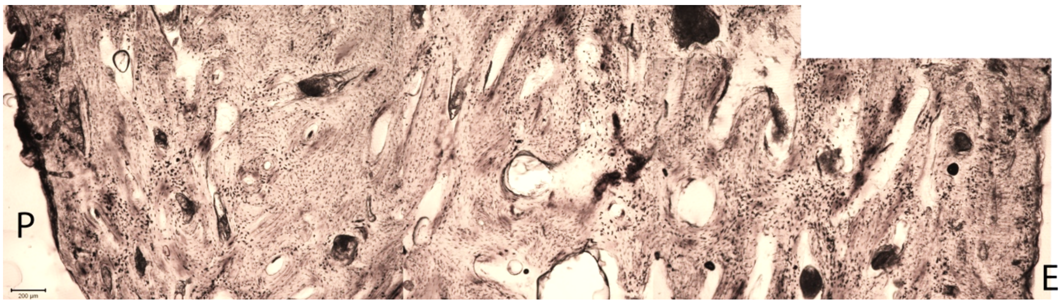

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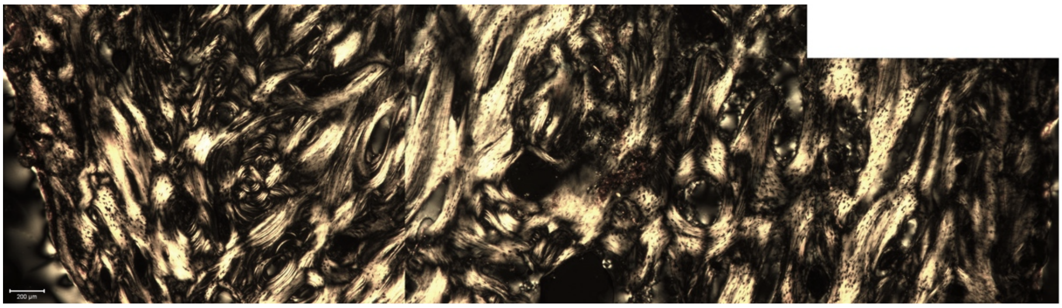


Figure 103. Samples from disarticulated deposits in the possible 'ossuary' from Harlyn Bay, Cornwall. **HLB01**: A) Sampled element (zygomatic arch fragment). B) Central cortex, normal light, 5x magnification. C) Central cortex, polarised light, 5x magnification. D) Transverse section from periosteum (P) to endosteum (E) surfaces, normal light, stitched micrographs at 5x magnification. E) Transverse section, polarised light, stitched micrographs at 5x magnification. **HLB02**: F) Sampled element (cranial fragment). G) Central cortex, normal light, 5x magnification. H) Central cortex, polarised light, 5x magnification. **HLB03**: I) Sampled element (temporal bone). J) Periosteal aspect, normal light, 5x magnification. K) Periosteal aspect, polarised light, 5x magnification. L) Periosteal aspect with arrows pointing to areas of MFD and enlarged canaliculi, normal light, 10x magnification. M) Transverse section from periosteum (P) to endosteum (E) surfaces, normal light, stitched micrographs at 5x magnification. N) Transverse section, polarised light, stitched micrographs at 5x magnification. Source: author.

6.5.6.2. Post holes

Two cranial fragments recovered from post holes at Battlesbury Bowl, Wiltshire were sampled for histological analysis (Table 17). Sample BB21 represents a small cranial fragment from a posthole (5636) likely comprising part of a small rectangular structure possibly used for above-ground storage of foodstuffs, commonly called ‘granaries’ (Ellis and Powell 2008: 29). In addition to the human cranial fragment BB21, the post holes of the structure contained some pieces of pottery, worked and burnt flint, burnt stone. The fragment is likely from an adult older than 18 years and had a small circular depression, possibly from healed trauma, with a dry break dividing the fragment approximately in half (Figure 104A). The fragment is sub-rectangular in plan, possibly indicating the fragment was worked into shape. The surface of the bone was a pale buff colour with extensive root etching, erosion, and some abrasion. The histological preservation of BB21 is very poor with an OHI score of 0 and MFD was evenly distributed across the transverse section (Figure 104B). The sample had very low collagen birefringence, consistent with the extensive bacterial attack (Figure 104C).

Table 17. Samples from disarticulated deposits in post holes. Source: author

Specimen	County	Element	Side	Age	Sex	OHI	Birefringence
BB18	Wiltshire	Crania	-	Adult?	-	0	Low
BB21	Wiltshire	Crania	-	Adult	-	0	None

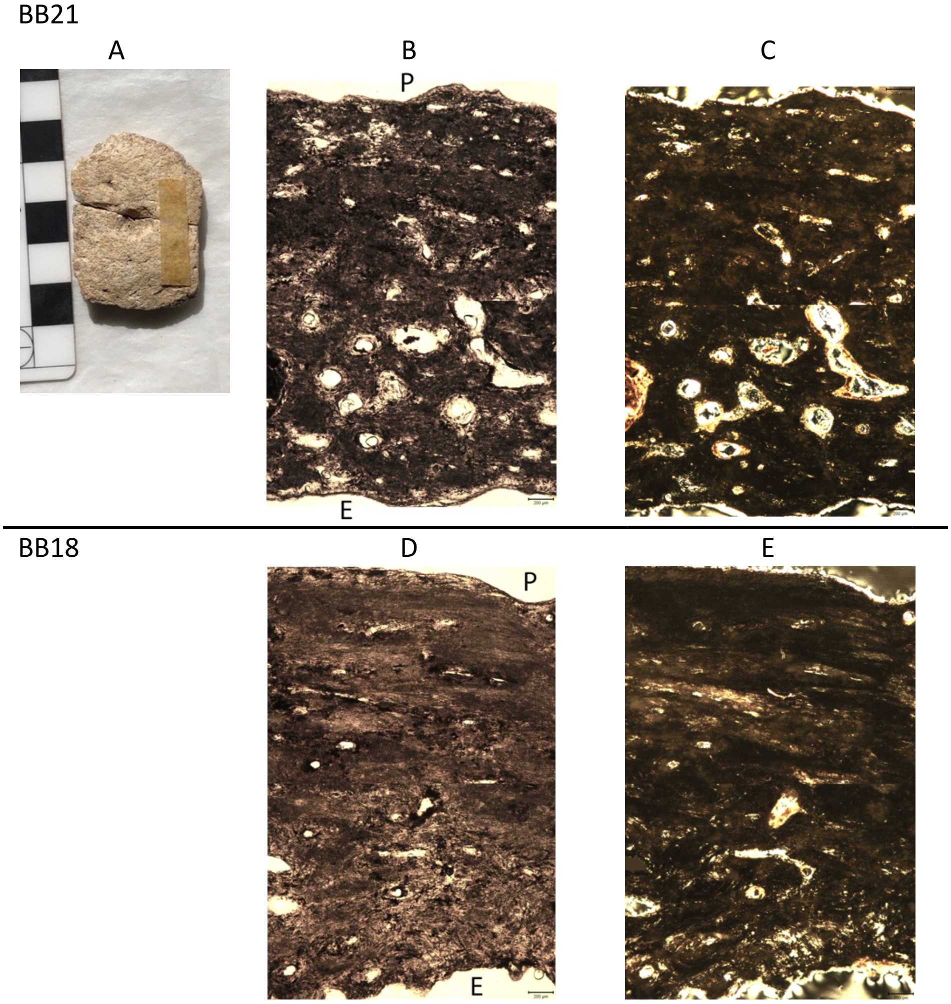


Figure 104. Samples from disarticulated deposits in post holes with poor histological preservation. **BB21**: A) Sampled element (cranial fragment) possibly worked. B) Transverse section from the periosteum (P) to endosteum (E) surfaces, normal light, stitched micrographs at 5x magnification. C) Transverse section, polarised light, stitched micrographs at 5x magnification. **BB18**: D) Transverse section from the periosteum (P) to endosteum (E) surfaces, normal light, stitched micrographs at 5x magnification. E) Transverse section, polarised light, stitched micrographs at 5x magnification. Source: author

Sample BB18 was cut from a piece of fragmented cranial vault of an individual aged 9-25 years recovered from a large post hole 4199 located toward the edge of the trench, so the structure it may have been associated with is unknown. In addition to the cranial fragment (BB18), the site report identifies a fragment of long bone pierced at one end (Ellis and Powell 2008: 69-70, fig.4.9 no.18), but it is unclear if this was human or animal bone. The histological preservation of BB18 was similar in appearance to BB21 – the sample scored OHI 0 with the most advanced levels of MFD across the transverse section (Figure 104D) and low collagen birefringence (Figure 104E).

It is unclear if the fragments were deliberately placed in the postholes or migrated to the bottom of the postholes through natural processes such as animal burrowing. A recent study on the experimental excavation of a reconstructed roundhouse at Castell Henllys found a small number of ‘artefacts’ within postholes that had not been deliberately deposited, prompting the authors to issue a word of caution for archaeologists interpreting such material (Mytum and Meek 2020: 78). In any case, the poor histological preservation would suggest that these fragments may have come from inhumation burials and exhumed sometime after complete soft tissue decomposition and skeletonisation.

6.5.6.3. Roundhouse floor surface

A single sample, DIN05, was taken from a cranial fragment reported to have been recovered from the surface of a roundhouse floor (‘Hut Floor 9’) within Dinorben hillfort settlement (Table 18). The report had proposed an Early Iron Age date for the crania recovered from the site and interpreted these as evidence for ‘the display of human heads’ (Gardner and Savory 1964: 221), however a recent radiocarbon date places the fragment within the Late Iron Age 169-47 cal BC (UBA-44579). A fragment of saddle quern and perforated antler object were also recovered from the floor surface, likely representing an abandonment deposit. No other detail on the human remains deposit is provided in the report.

Table 18. Sample from disarticulated deposits recovered from a roundhouse floor. Source: author

Specimen	County	Element	Side	Age	Sex	OHI	Birefringence	C14 date
DIN05	Denbighshire	Cranium	-	Adult	-	0	Low	169-47 cal BC

The histological preservation of sample DIN05 is poor with no microstructural features remaining, resulting in a score of OHI 0 (Figure 105B). The birefringence is low, albeit slightly higher near the periosteum (Figure 105C). Overall, the histological results are consistent with articulated inhumation shortly after death, so if heads were being displayed amongst the settlement as suggested in the report, it is more likely that the skull had been removed from a grave after skeletonisation. This is consistent with the other human remains sampled from the boundary ditches enclosing Dinorben (DIN01, DIN02) discussed in Section 6.3.4 (see Figure 52). The radiocarbon date range for DIN01 and DIN02 was slightly broader than DIN05 (see Table 8), but the overlap means all three deposits may be contemporary and may represent abandonment/closing deposits.

Disarticulated deposits from roundhouse floors were also sampled from Glastonbury Lake Village, Somerset, which will be discussed in Section 6.6.

DIN05

A B C

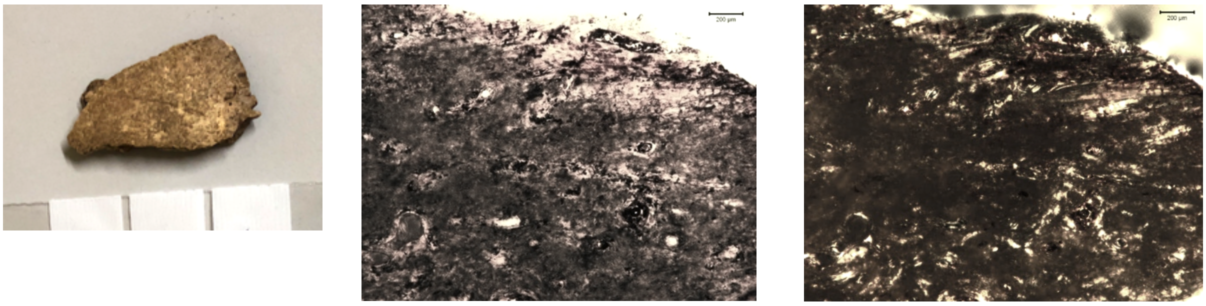


Figure 105. Sample from a disarticulated deposit in a roundhouse floor with poor histological preservation. **DIN05**: A) Sampled element (cranial fragment). B) Periosteal aspect, normal light, 5x magnification. C) Periosteal aspect, polarised light, 5x magnification. Source: author

6.5.6.4. Occupation level

One sample, WEY09, represents a disarticulated left parietal fragment from an Early Iron Age occupation layer (Brown et al. 2013: 251, Table 6.16) (Table 19, Figure 106A). It was suggested that this, along with the small number of other disarticulated fragments from 'miscellaneous contexts' across the site, were from burials disturbed by modern activity. However, it is interesting that this sample had more microstructure preservation than the other samples from Weymouth, scoring OHI 2.

Table 19. Sample from a disarticulated deposit in an 'occupation level'. Source: author

Specimen	County	Element	Side	Age	Sex	OHI	Birefringence
WEY09	Dorset	Parietal	L	Adult	-	2	Med

Patches of microstructure unaffected by MFD are present throughout the sample, particularly toward the periosteum (Figure 106B, C) and endosteum surfaces (Figure 106D, E). The centre was thoroughly destroyed by MFD and appears to emerge from Haversian canals where the attack is arrested. The collagen birefringence matches the pattern of MFD and preservation – it is very high over the well-preserved areas, but otherwise lacking throughout the sample. The middle-ranging OHI score (OHI 2) indicates the element may have been removed from the corpse before decomposition of the bone microstructure had completed, or the corpse was subject to a post-mortem treatment that allowed for more rapid decomposition than inhumation in the ground (e.g. covered, but not immediately backfilled).

WEY09

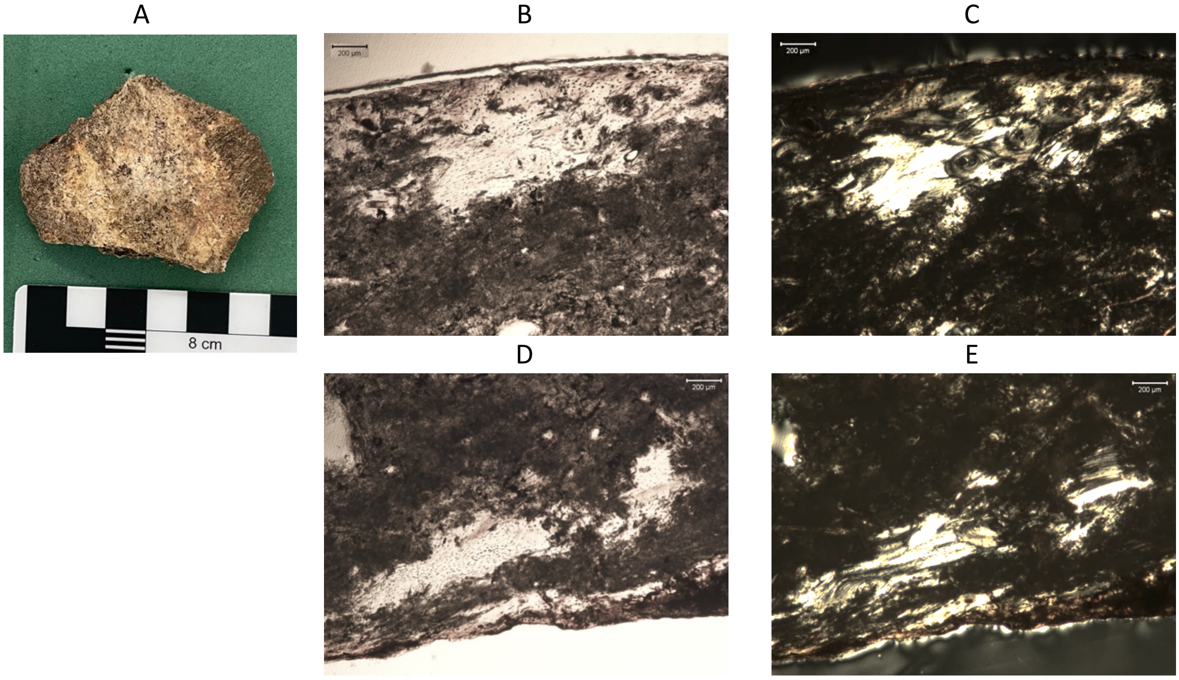


Figure 106. Sample from a disarticulated deposit in an 'occupation level' with mixed histological preservation. **WEY09**: A) Sampled element (left parietal fragment). B) Periosteal aspect, normal light, 5x magnification. C) Periosteal aspect, polarised light, 5x magnification. D) Endosteal aspect, normal light, 5x magnification. E) Endosteal aspect, polarised light, 5x magnification. Source: author

6.5.7. Disarticulated – unknown

A substantial amount of the disarticulated samples (n=34) could not be traced back to a feature within site reports. Most of these are from Somerset: Worlebury (n=22) and Ham Hill (n=3); and Maiden Castle (n=7) and Weymouth (n=2) in Dorset (see Table 20). Apart from Weymouth, all of the specimens are from hillfort settlements, so it is likely that they were recovered from either storage pits or boundary ditches. As shown in Figure 107, most of the specimen had low histological preservation scoring OHI 0-1 (79%) with five samples showing mixed histological preservation (15%) and two samples with mostly well-preserved microstructure (6%). This distribution is generally consistent with the rest of the disarticulated assemblages previously described, especially from pits (Section 6.5.4, Figure 95). The sampled corpus from unknown features includes specimens from long bones (n=17) and skulls (n=15) with histological preservation of long bones showing slightly more variation including the full range of OHI scores (Figure 108). Males/probable males (n=10) and females (n=4) also show some variation in histological diagenesis (Figure 109).

Table 20. Samples from disarticulated deposits in unknown features and context. Source: author

Specimen	County	Element	Side	Age	Sex	Trauma	Taphonomy	OHI	Bire.
MDN01	Dorset	Femur?	-	Adult	-	-	-	0	None
MDN02	Dorset	Crania	-	Adult	-	-	-	0	None
MDN03	Dorset	Femur?	-	Adult	-	-	Fresh fractures	1	Low
MDN04	Dorset	Femur?	-	Adult	-		Dry fractures?	0	None
MDN05	Dorset	Parietal	-	Adult	-	-	-	0	None
MDN06	Dorset	Tibia	-	Adult	-		Dry fractures, gnawing	2	Med
MDN07	Dorset	Humerus?	R?	Adult?	-	-	Fresh fracture, gnawing	0	None
WEY08	Dorset	Femur?	-	Adult	-	-	Fractured, gnawing	1	Low
WEY12	Dorset	Femur	-	Adult	-	-	Fractured (dry)	0	None
WB02	Somerset	Humerus	L	Adult	M?	-	Weathering (1)	0	None
WB03	Somerset	Parietal	L	Adult	-	-	-	0	None
WB04	Somerset	Mandible	L	Adult	-	-	-	0	Low
WB05	Somerset	Ulna	L	Adult	M?	-	Weathering (1)	0	None
WB06	Somerset	Femur	R	Adult	-	-	-	0	None
WB07	Somerset	Mandible	L	Adult	F	-	-	0	None
WB08	Somerset	Parietal	-	Adult	M	-	-	0	None
WB09	Somerset	Femur	R	Adult	M	-	-	0	None
WB10	Somerset	Femur	R	Adult	M?	-	Excellent surface preservation	2	Med
WB11	Somerset	Humerus	R	Adult	M	-	weathering (1)	0	None
WB12	Somerset	Frontal	-	Adult	-	-	-	2	Med
WB15	Somerset	Radius	R	Adult	-	-	-	0	None
WB16	Somerset	Mandible	-	Adult	M	-	Weathering (1)	0	None
WB17	Somerset	Frontal	-	Adult	F	-	-	0	Low
WB18	Somerset	Femur	R	Adult	M?	Axe wound	Weathering (1)	1	Low
WB19	Somerset	Parietal	-	Adult	F	-	-	0	None
WB23	Somerset	Humerus	-	Adult	-	-	Probable burning on distal epiph	0	None
WB24	Somerset	Mandible	-	Adult	F	-	-	3	Med
WB25	Somerset	Skull	-	Adult	M?	-	-	1	Low
WB27	Somerset	Skull	-	Adult	M	-	Weathering (1)	0	None
WB28	Somerset	Parietal	-	Adult	-	-	Black staining	0	None
WB29	Somerset	Parietal	-	Adult	-	-	-	1	Low
HH01	Somerset	Femur	-	Adult	-	-	-	3	High
HH03	Somerset	Femur	R	Adult?	-	-	Polished, 'fresh' condition with yellow surface	5	High
HH09	Somerset	Femur	R	Adult	-	-	Poss gnawing, weathered	4	High

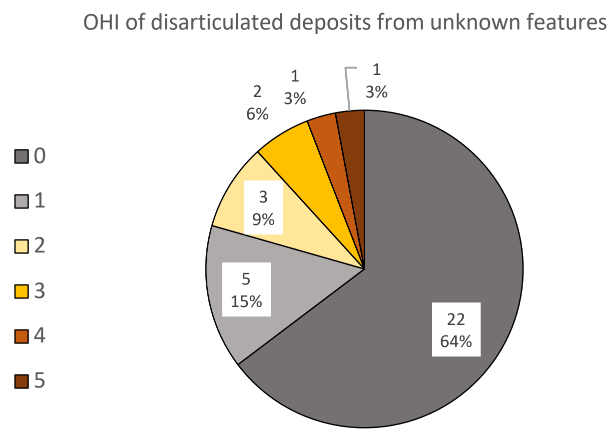


Figure 107. Chart showing OHI score breakdown of disarticulated elements in unknown features. Source: author

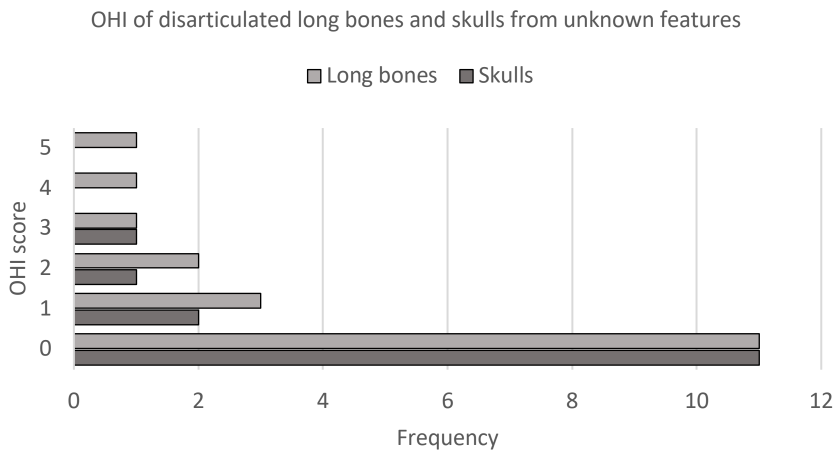


Figure 108. Graph showing OHI score distribution from disarticulated long bones and skulls from unknown features. Source: author

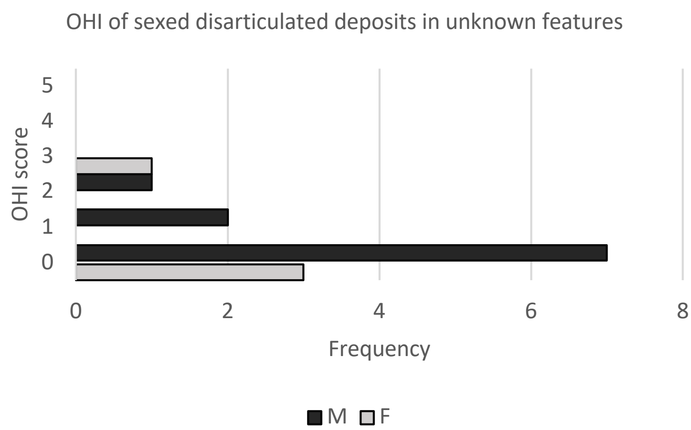


Figure 109. Graph showing OHI score distribution from disarticulated deposits of female and male elements in unknown features. Source: author

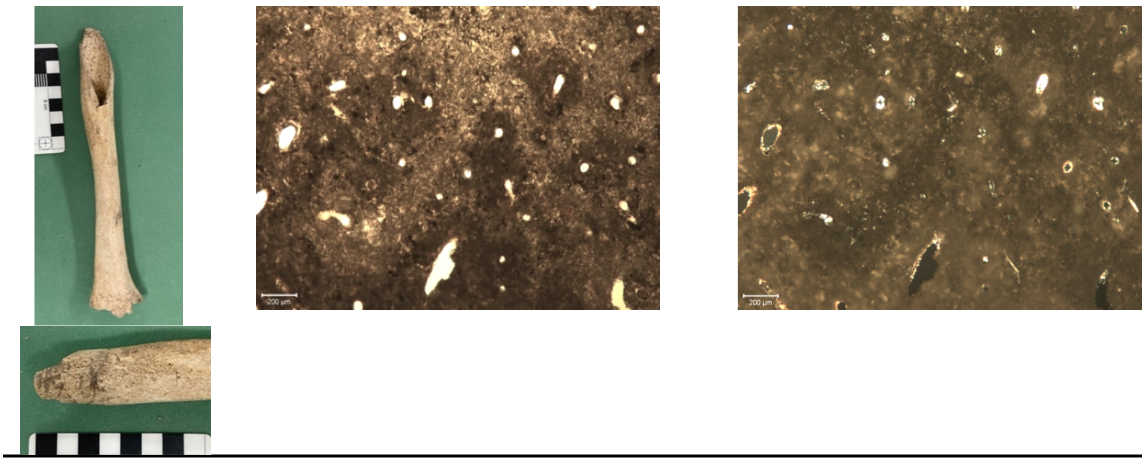
6.5.7.1. OHI 0-1

The majority of the samples from disarticulated elements in unknown features scored OHI 0-1, including six of the seven samples from Maiden Castle and 19 of 22 samples from Worlebury. Few elements with poor histological preservation had taphonomic evidence for manipulation. The most obvious exception is sample MDN07, which represents an adult humerus with a relatively fresh spiral fracture on the proximal shaft, possibly worked into a gouge or scoop (Figure 110A). The element was gnawed on both ends, including the fractured end, although the exposed medullary surface did not seem to be affected. Despite the taphonomic evidence, the histological preservation is very poor with no original microstructure remaining except Haversian canals (Figure 110B) and no collagen birefringence (Figure 110C). Sample MDN03 (Figure 110D, E, F) and MDN04 (Figure 110G, H, I) are also poorly preserved with no birefringence, except for a few small portions of osteons preserved in MDN04 resulting in a score of OHI 1 (Figure 110 H).

No taphonomic evidence for post-mortem manipulation was obvious in the sampled elements from Worlebury, however an adult right femur from a possible male (WB18) had an axe cut wound on the outer proximal surface. The histological preservation was poor and most of the sample was covered in dark, opaque MFD, apart from a small patch of preservation near the sub-periosteum (Figure 110 J) where birefringence is only slightly higher(Figure 110K). It was noted that six of the low-scoring samples from Worlebury had evidence for slight weathering, one was possibly burnt, and another had black stains.

MDN07

A B C



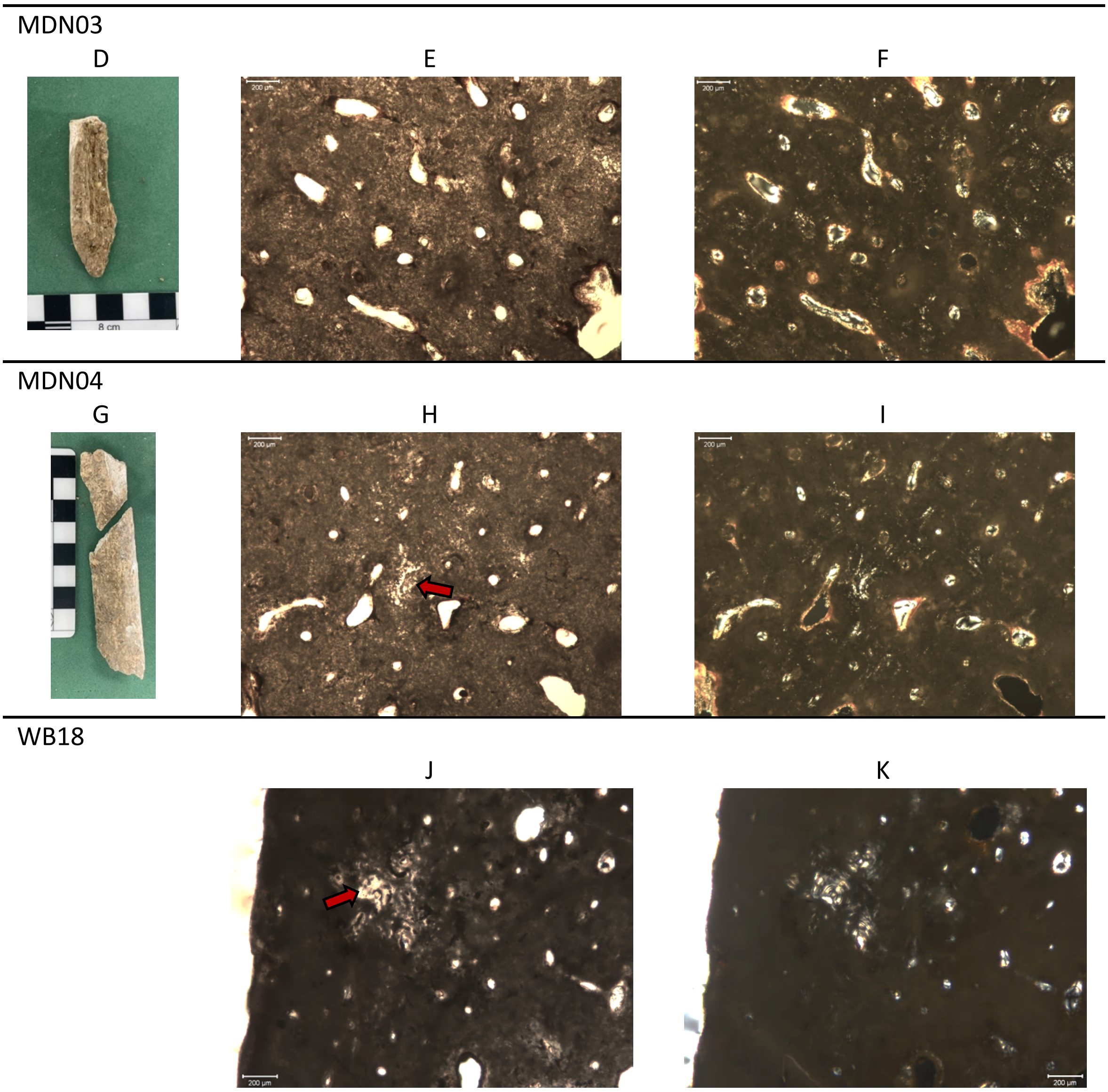
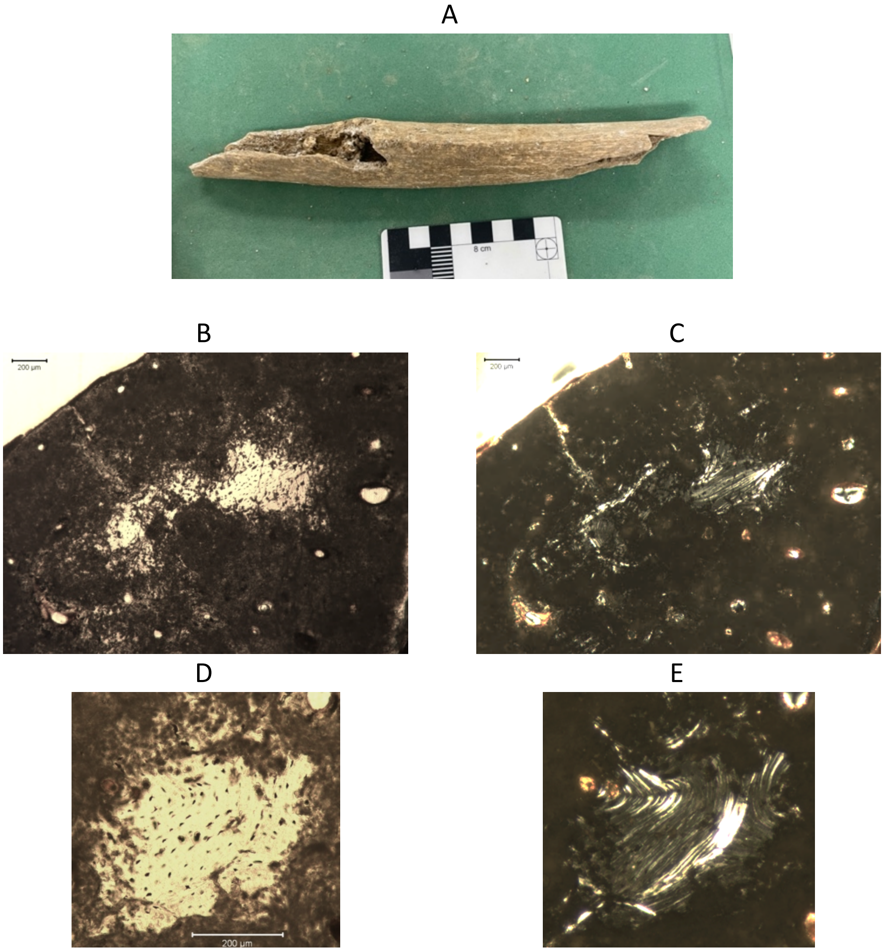


Figure 110. Samples from disarticulated deposits in unknown features with poor histological preservation. **MDN07**: A) Sampled element (humerus) with a fracture on the proximal end, possibly worked, and gnawed on both ends. B) Central cortex, normal light, 5x magnification. C) Central cortex, polarised light, 5x magnification. **MDN03**: D) Sampled element (long bone fragment). E) Central cortex, normal light, 5x magnification. F) Central cortex, polarised light, 5x magnification. **MDN04**: G) Sampled element (long bone fragment). H) B) Periosteal aspect with arrow pointing to small area of preserved microstructure, normal light, 5x magnification. C) Periosteal aspect, polarised light, 5x magnification. WB18L J) Periosteal aspect with arrow pointing to small area of preserved microstructure, normal light, 5x magnification. K) Periosteal aspect, polarised light, 5x magnification. Source: author.

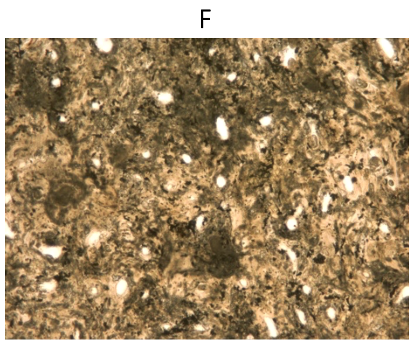
6.5.7.2. OHI 2-3

The five samples from disarticulated deposits from unknown features with middle-ranging histological preservation originated from three different sites: Maiden Castle (n=1) in Dorset, Worlebury (n=3), and Ham Hill (n=1) in Somerset. The sample from Maiden Castle, MDN06, was sampled from an adult tibia shaft with fractures on each end (Figure 111A). The fracture surfaces are rough and undulating suggesting the bone was not fresh when broken. Scoring from canid teeth is evident on the shaft, but the gnawing is not extensive anywhere on the bone, including the fractured ends. The histological preservation is generally poor, but patches of well-preserved bone show an arrested pattern of non-Wedl bacterial attack (primarily of linear longitudinal type) (Figure 111B). The attack appears to have ceased at some point, leaving small areas virtually unaffected (Figure 111D, E) possibly due to a change in circumstance such as exhumation (Birefringence is low, but higher over the areas that are preserved (Figure 111C).

MDN06



WB10



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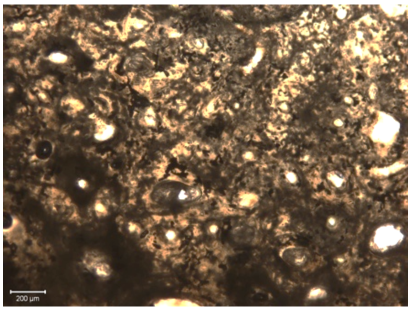

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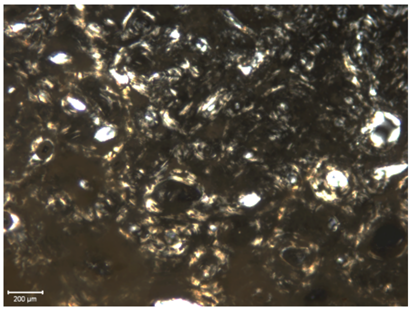
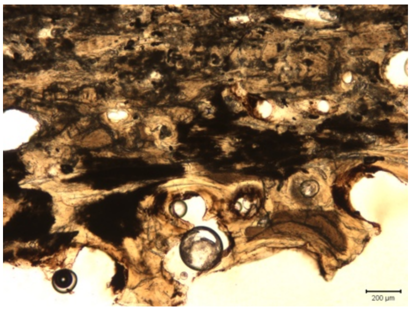


WB12

I



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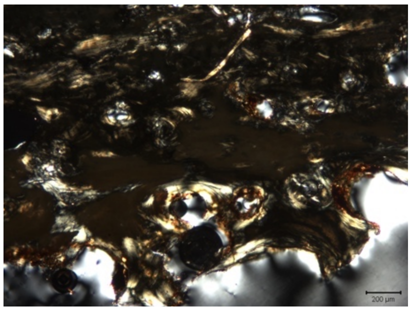
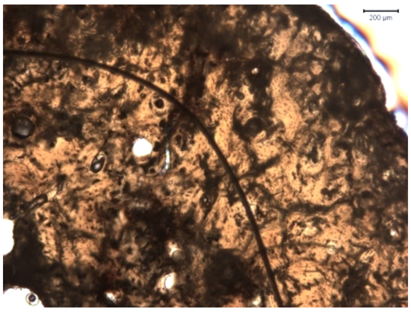


WB24

K



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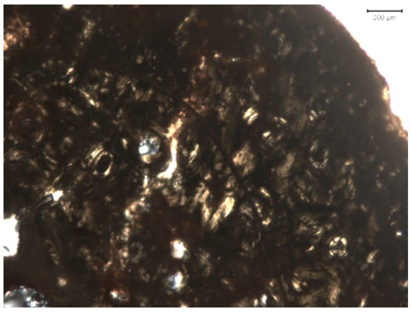

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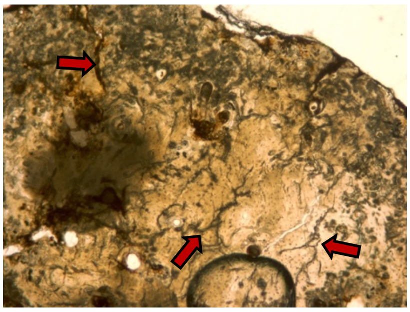


HH01

N

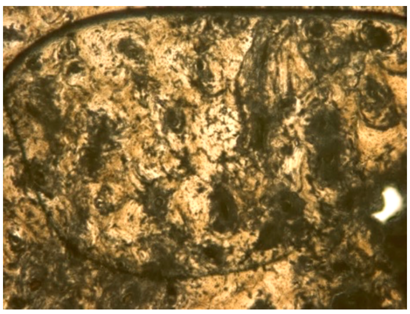


Figure 111. Samples from disarticulated elements in unknown features with middle-ranging histological preservation. **MDN06**: A) Sampled element (tibia shaft) with dry fractures on both ends and canid gnawing. B) Periosteal aspect with a patch of preservation in the centre, normal light, 5x magnification. C) Periosteal aspect, polarised light, 5x magnification. D) Patch of a preserved osteon with arrested bacterial attack, normal light, 20x magnification. E) Patch of preserved osteon, polarised light, x20 magnification. **WB10**: F) Central cortex, normal light, 5x magnification. G) Central cortex, normal light, 5x magnification. H) Central cortex, polarised light, 5x magnification. **WB12**: I) Endosteal aspect, normal light, 5x magnification. J) Endosteal aspect, polarised light, 5x magnification. WB24: K) Transverse section from periosteum to endosteum surfaces, normal light, 5x magnification. L) Transverse section from periosteum to endosteum surfaces, polarised light, 5x magnification. M) Periosteal aspect with arrows pointing to microcracks, normal light, 5x magnification. **HH01**: N) Centre cortex, normal light, 5x magnification. Source: author

The middle-scoring samples from Worlebury—WB10 (Figure 111F, G, H), WB12 (Figure 111I, J), WB24 (Figure 111K, L, M) show similar types of non-Wedl MFD (budded, linear longitudinal and lamellate), but some notable differences in intensity of bacterial attack may indicate different post-mortem histories. Unlike MDN06 which is extensively destroyed with small patches of virtually unaffected microstructure, WB10 has a relatively even spread of bacterial attack across the transverse section with several types of MFD present (Figure 111F, G). The sample was taken from an adult right femur with excellent surface preservation, so it is unlikely to have been exposed. Birefringence is reduced, but higher where microstructure is preserved (Figure 111H). WB12 has dark infiltrations at the endosteal aspect (Figure 111I), possibly from carbon deposits, indicating the bone may have been burnt or shared an environment with burnt material. Exposure to heat may have caused reduced birefringence across the sample, although hydrolysis from percolation of water/cycles of wetting and drying is also possible. There was no evidence on WB12 that suggested burning, exposure or manipulation at the time of sampling (Madgwick pers, comm.). WB24 has more preserved microstructure than WB10 and WB12, resulting in a score of OHI 3 (Figure K), however bacterial attack is thinly spread across the sample. Microcracks are abundant even where the microstructure is unaffected by MFD (Figure 111M). The histological appearance of WB24 is similar to that of HGV02, which was a highly fragmented, possibly tightly bound inhumation (Figure 51). It is possible the individual represented by WB24 was subjected to a similar post-mortem treatment, however, unlike HGV02, the birefringence in WB24 is reduced across the sample (Figure 111L). This may be caused by wet and dry cycling, such as initial deposition in an area of seasonal inundation.

The sample from Ham Hill (HH01) represents an adult femur with both epiphyses missing. Microfocal destruction is concentrated at the surfaces with arrested attack originating from Haversian canals and osteocyte lacunae in the centre (Figure 111N). No other taphonomic evidence was noted on the sampled element.

6.5.7.3. OHI 4-5

The two samples which scored OHI 4 (HH09) and 5 (HH03) were recovered from Ham Hill, Somerset. The samples were taken from right femora: HH09 an adult, HH03 an older juvenile or young adult, both with interesting taphonomy that indicates exposure and manipulation.

The element represented by HH09 had possible gnawing on the distal end and a heavily weathered surface described as 'rough and drab' (Madgwick pers comm.). The sample showed excellent microstructural preservation overall, but some areas of MFD were present, particularly where canaliculi are enlarged near the endosteal surface (Figure 112A). This element was likely removed from the corpse in the early post-mortem period and then exposed.

The femur sampled for HH03 had a polished, 'fresh' condition with a yellow surface. The microstructure did not show any bacterial or fungal attack anywhere on the sample and was perfectly preserved with a histological appearance similar to that of a fresh cadaver (OHI 5) (Figure 112C) Darker sections in Figure 112C are areas of densely clustered osteocyte lacunae shown in Figure 112D. These areas are concentrated within interstitial lamellae (the unformed lamellae are further evidence that the individual was an older juvenile/young adult). The lack of any MFD on this sample indicates this element was likely removed from the body and any soft tissue in the immediate post-mortem period and was kept in, or deposited in, an environment free from exogenous diagenetic microbials such as fungus and cyanobacteria. Alternatively, the individual may have been preserved (e.g. mummified) and given the polish and fresh surface texture, the element may have been intentionally curated for some time prior to deposition.

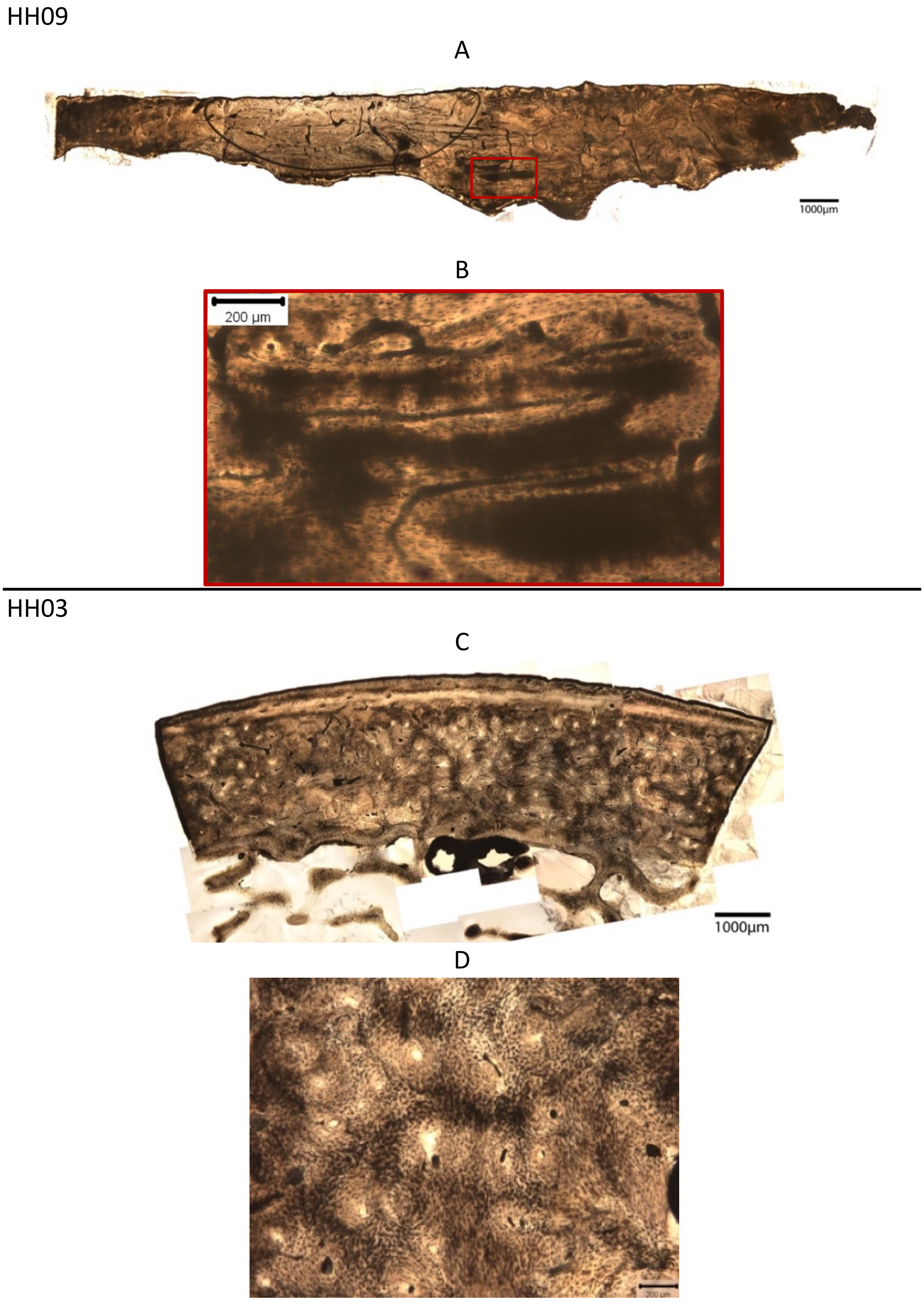


Figure 112. Samples from disarticulated deposits in unknown features with excellent histological preservation. **HH09**: A) Scan of thin section (created by stitching micrographs at 5x magnification), normal light. B) An area towards the endosteal aspect showing enlarged canaliculi and dark MFD and possible infiltrations. **HH03**: C) Scan of thin section (created by stitching micrographs at 5x magnification), normal light. D) Central cortex, normal light, 5x magnification. Source: author

6.5.7.4. Summary

Interpretation is limited without knowing the features/contexts of the sampled elements. In any case, the results are suggestive of primary articulated inhumation shortly after death with subsequent removal and redistribution of elements. Some variation in the histological preservation indicates different early post-mortem treatments were afforded to fewer individuals with decomposition or separation of sampled elements occurring more quickly or immediately after death, particularly in Somerset. Alternatively, these well-preserved samples may represent mummified or otherwise preserved individuals.

6.6. Glastonbury Lake Village

The histological results of human remains sampled from Glastonbury Lake Village are separately described here because the unusual wetland environment of the settlement makes the site unique to the others and because the lack of recorded detail means the origins of the sampled specimens (feature, context, date, articulation) are unclear. The histological samples from the site also diverge significantly from the others in this study, so the site is currently considered an outlier regarding Iron Age mortuary practice. Human remains were reported as occurring throughout the site in all contexts: within foundations, in and on the floors of roundhouses, placed within peat, amongst clay spreads, and from both inside and outside of the settlement enclosure (palisades) (Coles and Minnitt 1995: 173). Additionally, only a few of the human remains can be dated to a phase of occupation with any certainty, and indeed it appears deposition occurred throughout the site's history. Nevertheless, the human remains display interesting and comparatively rare taphonomy such as burning and a relatively high frequency of cut marks, as well as many being deposited within unique environments (peat) that add necessary variety to this histological research.

Sampling of human remains from Glastonbury Lake Village was undertaken by Dr Richard Madgwick with the help of undergraduate students on Cardiff University Research Opportunities Programme (CUROP). Taphonomic observations were recorded during sampling and extracted from site reports (Coles and Minnitt 1995; Bulleid and Gray 1917).

Each sample and corresponding OHI score from Glastonbury Lake Village is provided in Table 21. The assemblage is highly fragmented so determination of age and biological sex is limited, but as far as can be discerned, all of the sampled specimen were adults or older subadults and both female and male individuals are represented (2 female, 2 male). All but one of the samples likely represent disarticulated deposits, the exception (GL50) may have been articulated or partially articulated at the time of deposition. Most of the samples which could be traced to a feature were recovered, or probably recovered, from peat outside of the settlement enclosure (n=9). The samples were taken from 18 skulls/skull fragments, 7 from long bones and 1 clavicle. There was no significant difference in OHI scores between skulls and long bones (Figure 115).

Table 21. Samples from Glastonbury Lake Village, Somerset. Source: author

Specim.	County	Element	Side	Age	Sex	Feature	Trauma	Taphonomy	OHI	Bire.
GL40	Somerset	Occipital	-	Adult	M	Peat	Cut mark	-	5	High
GL41	Somerset	Mandible	L	Adult	F	Peat	Cut mark	-	5	High
GL42	Somerset	Mandible		Adult	M	Peat	Cut marks x6	-	5	High
GL43	Somerset	Skull	-	Adult	-	Peat	-	-	4	High
GL44	Somerset	Tibia	L	-	-	Floor deposit	-	Gnawing, abrasion	4	High
GL45	Somerset	Humerus	R	-	-	-	Sharp force trauma	Gnawing, weathering	5	Med
GL46	Somerset	Femur	L	-	-	-	-	Weathering	5	Med
GL47	Somerset	Skull	-	Adult	-	Peat	-	-	5	High
GL48	Somerset	Mandible	L	Adult	-	Sub-structure	-	-	5	High
GL49	Somerset	Parietal	-	Adult	-	Sub-structure	-	-	0	Low
GL50	Somerset	Skull	-	Adult	-	'brush-wood'	-	Burnt	4	None
GL51	Somerset	Skull	-	-	-	?	-	-	4	High/ Med
GL52	Somerset	Mandible	R	Adult	-	?	-	-	4	High
GL53	Somerset	Skull	R	-	-	Peat?	-	-	3	Med/ high
GL54	Somerset	Humerus	R	-	-	?	-	Burning, Gnawing, weathering	4	Med/l ow
GL55	Somerset	Clavicle	L	-	-	Peat	-	Gnawing, abrasion	5	High
GL56	Somerset	Skull	-	-	-	Floor deposit?	-	-	4	High/ Med
GL57	Somerset	Skull	R	Adult?	F	Peat	-	-	5	High
GL58	Somerset	Skull	-	-	-	Peat?	-	-	0	None
GL59	Somerset	Femur	R	-	-	?	-	Gnawing, fresh fracture	5	High
GL60	Somerset	Tibia	L	-	-	?	-	Weathering	3	None
GL61	Somerset	Femur	L	-	-	?	-	-	4	?
GL62	Somerset	Skull	L	-	-	?	Sharp force trauma	-	4	High
GL63	Somerset	Skull	L	-	-	?	-	Burning	4	Low/ Med
GL64	Somerset	Skull	L	-	-	?	Sharp force trauma	-	5	High
GL65	Somerset	Skull	-	-	-	?	-	Burning	5	High

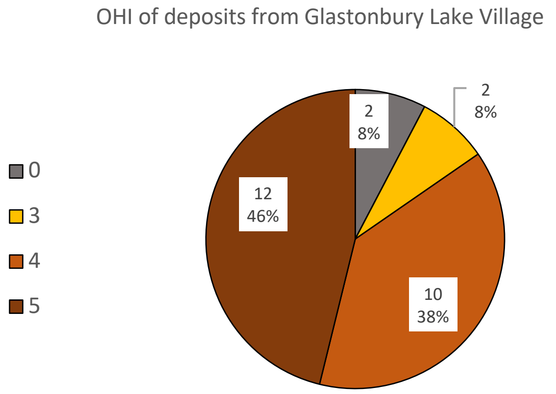


Figure 113. Chart showing OHI score breakdown of samples from Glastonbury Lake Village. Source: author

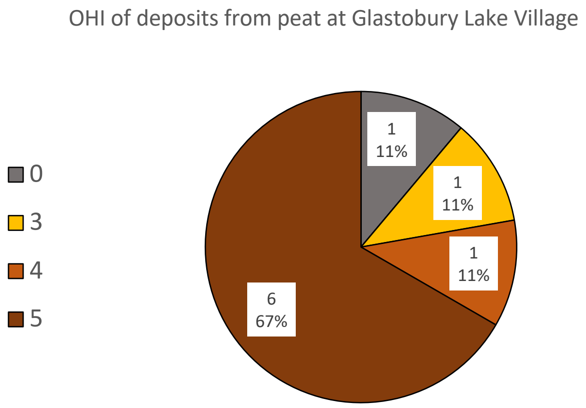


Figure 114. Chart showing OHI score breakdown from deposits within peat at Glastonbury Lake Village. Source: autho

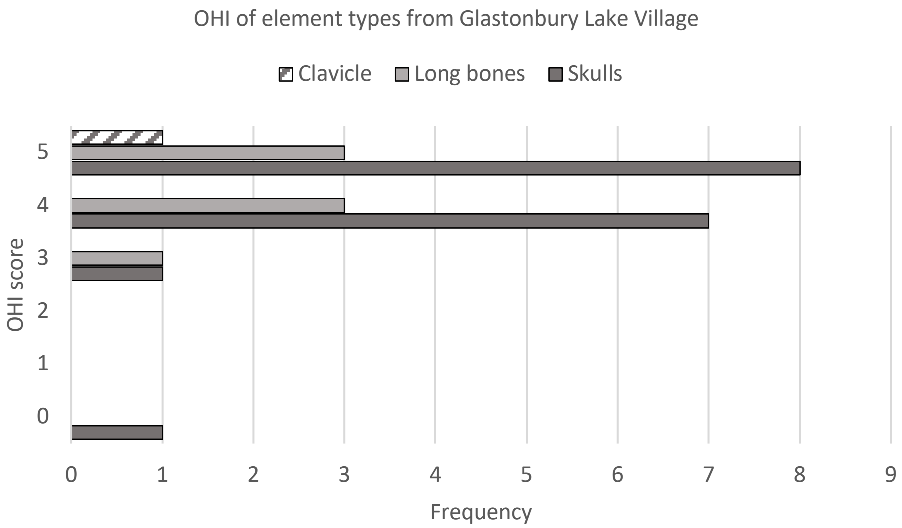


Figure 115. Graph showing OHI score distribution of long bone, skull, and a clavicle from Glastonbury Lake Village. Source: author

6.6.1. All features

6.6.1.1. OHI 0

Only two samples from Glastonbury Lake Village scored OHI 0 (GL49, GL58). Both were taken from cranial fragments with no obvious taphonomic evidence for exposure or manipulation. These low OHI scores should be considered outliers because the preservation is obscured by infiltrations, as described below.

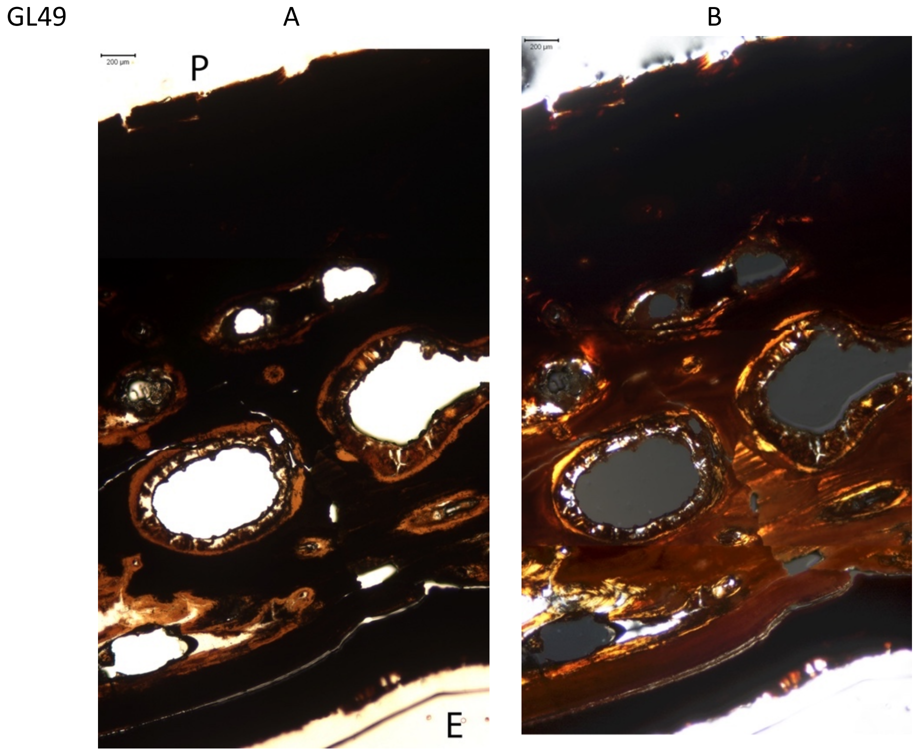


Figure 116. Sample from Glastonbury Lake Village with poor histological preservation. **GL49:** A) Transverse section with the periosteum (P) and endosteum (E) surfaces, normal light, stitched micrographs at 5x magnification. B) Transverse section with the periosteum (P) and endosteum (E) surfaces, polarised light, stitched micrographs at 5x magnification. Source: author

The histological appearance of the two low-scoring samples was unusual, characterised by opaque black infiltrations covering most of the sample (Figure 116A). Despite this, GL49 still showed some reduced birefringence limited to the centre of the cortex (seen in Figure 116B). The discolouration of the samples may be due to a peaty depositional environment: GL58 probably came from a cranium deposited in peat, but GL49 is described as having been recovered from a clay spread within a 'substructure'. Additionally, other samples originate from peat deposits and are not affected by infiltrations or staining seen in GL49. The destruction of the microstructure does not appear to be caused from bacterial attack, so it is likely this is either carbon infiltration from being burnt or sharing an environment with charred material, or (perhaps more likely) infiltrations from the peaty environment. It is also possible that some elements were affected by both burning and the bog.

6.6.1.2. OHI 3

Two samples scored OHI 3 (GL53 and GL60). The samples are very different in appearance from one another and the OHI score in this case does not necessarily imply similar treatment. This will be elaborated below.

GL53 A B

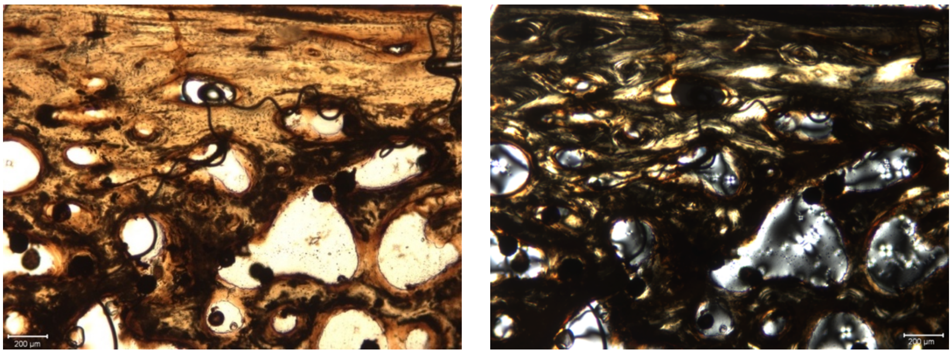
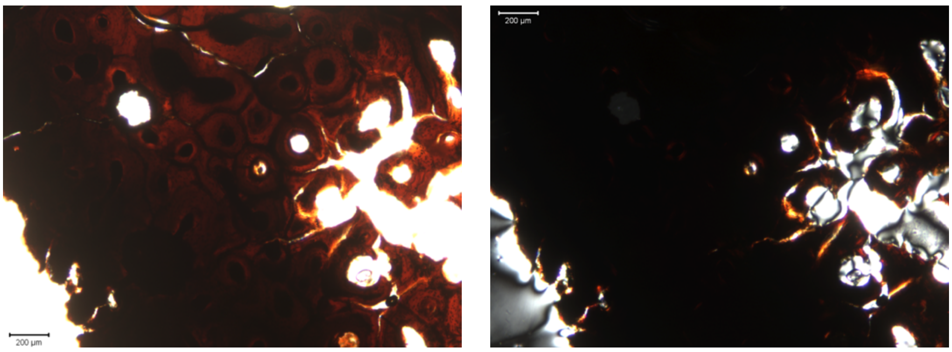


Figure 117. Sample from Glastonbury Lake Village with middle-ranging histological preservation. **GL53:** A) Periosteal aspect, normal light, 5x magnification. B) Periosteal aspect, polarised light, 5x magnification. Source: author

Sample GL53 is from a skull fragment possibly deposited in peat outside the settlement palisade. No taphonomic evidence for exposure or manipulation was noted during sampling. The MFD is concentrated in the centre of the transverse section and birefringence is reduced to absent where the sample is affected by bioerosion. The sample shows near-perfect preservation at the periosteum (Figure 117A) where the birefringence is high (Figure 117B). Unlike most of the samples from Glastonbury Lake Village, GL53 is not affected by extensive staining or infiltrations and has a more 'normal' appearance with histological damage clearly caused by collagenolytic bacteria.

GL60 A B



C D

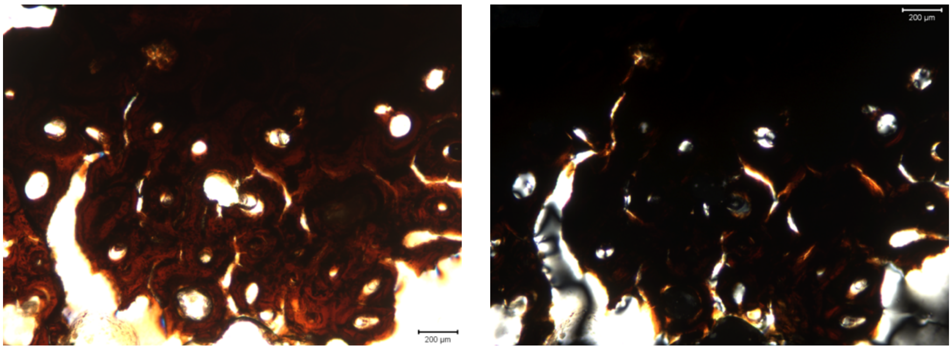


Figure 118. Sample from Glastonbury Lake Village with mixed histological preservation. **GL60:** A) Periosteal aspect, normal light, 5x magnification. B) Periosteal aspect, polarised light, 5x magnification. C) Central cortex, normal light, 5x magnification. D) Central cortex, polarised light, 5x magnification. Source: author

Sample GL60 represents a weathered tibia from an unknown context. The overall histological appearance is unusual (but typical for the site) with a deep red stain and an angular fragmented appearance (Figure 118A). The periosteum has been stripped away, possibly from an acidic deposition environment, leaving the cortex exposed. Much of the sample is concealed by a dark reddish black stain similar to GL49, but less opaque. This staining is most severe at the periosteal aspect (Figure 118A) and the centre of the sample shows well-preserved but fragmented Haversian systems. The sample shows virtually no collagen birefringence across the whole transverse section (Figure 118B). The staining may have been caused by infiltrations from the depositional environment: a sample from a bog in Derrycashel showed very similar staining and fragmentation (Booth et al. 2015: 1160 fig. 3). Alternatively, GL60 may have been exposed to medium-intensity heat, causing the dark reddish-brown discoloration and fragmentation of the microstructure. A histological study involving experimentally heated bone showed similar results (Hanson and Cain 2007). Considering the frequency of burnt bone in the assemblage (at least four sampled elements had taphonomic evidence for burning), the latter is arguably just as likely as the former.

6.6.1.3. OHI 4-5

The majority of the samples from Glastonbury Lake Village were well preserved with OHI scores of 4 (n=10) and 5 (n=12) totalling 84% of samples from the site. Of these, 9 of the elements had obvious taphonomic modifications, some with multiple: 5 had been gnawed, 3 showed weathering, 2 showed abrasion, and 6 had perimortem trauma/cut marks, and 4 had been burnt. Among the burnt samples was the single possibly articulated deposit (GL50).

GL50 A B

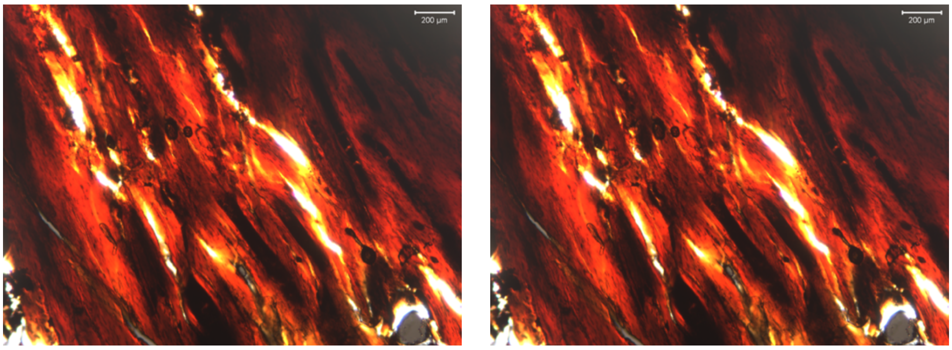


Figure 119. Sample from Glastonbury Lake Village with good histological preservation. **GL50:** A) Central cortex, normal light, 5x magnification. B) Central cortex, polarised light, 5x magnification. Source: author

The possibly articulated deposit (GL50) scored OHI 4. The remains represented an adult of unknown sex aged 33-45 years located “in brush wood” (Coles and Minnitt 1995: 170-174). The original report describes the deposit as consisting exclusively of human remains including the skull, two femora, tibiae and fibulae, however all but the skull have been lost. The deposit was further described as being charred to a black colour, suggesting this may represent the remains of a cremation or attempted cremation. The deposit was orientated with the head to the northwest, but no other spatial information is provided by the excavators.

The histological appearance of GL50 is broadly consistent with burnt bone (Figure 119A). The sample is an intense red colour and covered in microcracks/fractures, consistent with experimentally burnt bone by Hanson and Cain (2007: 1907 Fig.1 C and H). Some dark black infiltrations, likely carbon deposition, are present amidst the overall well-preserved microstructure. The sample did not change appearance when viewed with polarised light resulting in a virtually identical image as normal transmitted light (Figure 119B). The absence of MFD in this sample, coupled with the severe charring noted by macroscopic analysis, indicates this individual was burnt shortly after death, though it is possible that bones were defleshed in the early post-mortem phase and burnt at a later date. However, it is also possible that the bones were already defleshed when they were burnt. Additionally, tannins from a peaty deposit have been shown to stain bone samples red in previous histological studies (e.g. a tibial thin section from Derrycashel in Booth et al. 2015: 1159-1160, fig.3) so it is impossible to determine the extent to which heat may have caused the colour change.

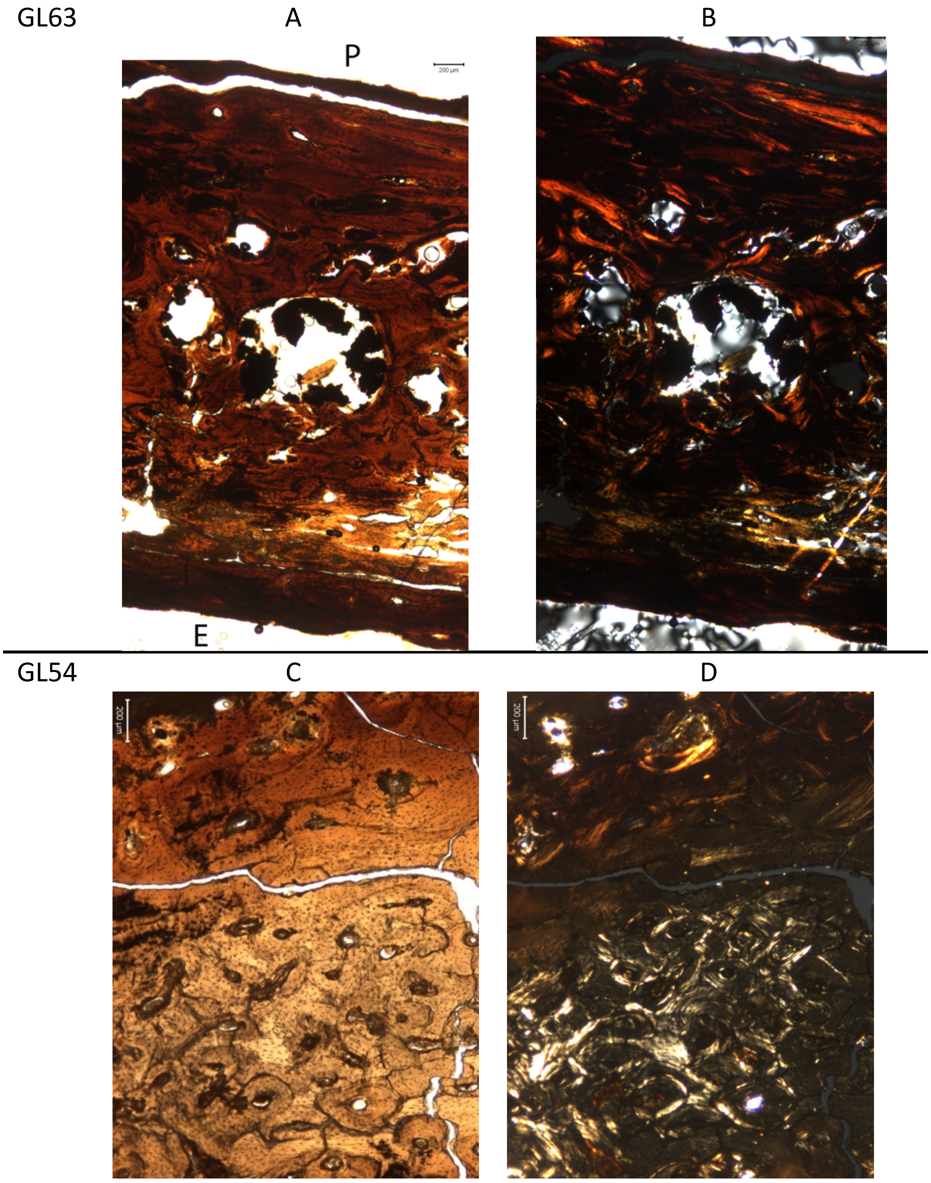
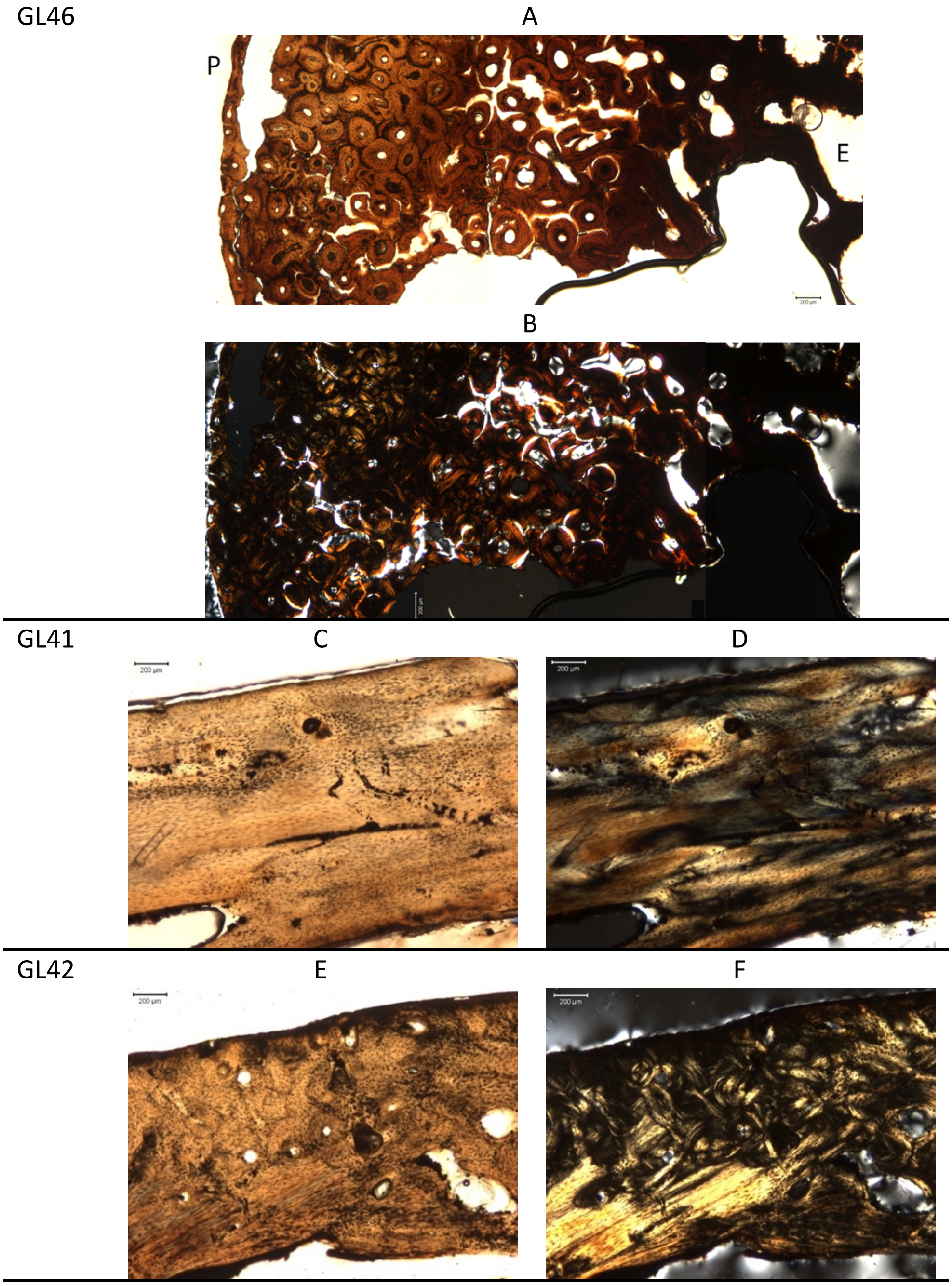


Figure 120. Samples from Glastonbury Lake Village with excellent histological preservation. **GL63**: A) Transverse section with periosteum (P) and endosteum (E) surfaces, normal light, stitched micrographs at 5x magnification. B) Transverse section, polarised light, 5x magnification. **GL54**: C) Central cortex, normal light, 5x magnification. D) Central cortex, polarised light, 5x magnification. Source: author

All of the samples from burnt elements (GL50, GL54, GL63, GL65) had a similar histological appearance characterised by red staining, fracturing, low incidence of MFD and reduced birefringence. There is some variation in the possible intensity of burning, however: GL63 shows dark reddish-brown colouration throughout the entire transverse section spanning from the periosteum to endosteum surfaces as well as infiltrations (Figure 120A). Birefringence is drastically reduced throughout the sample (Figure 120B). Sample GL54 was also burnt, and additionally showed evidence for gnawing and weathering. The sample shows reddish browns staining orientated towards the periosteum (Figure 120C) and microcracks/fractures cleave through the cortex, however the intensity of the stain has a gradient appearance with the centre cortex considerably less affected. The birefringence matches this pattern with reduction where the staining is intense and high birefringence in the centre (Figure 120D). It is possible that GL54 was exposed to less intense heat and therefore less severely stained in the central cortex.

Additionally, some samples were histologically similar in appearance to burnt bone (e.g. GL46, Figure 121A), which may imply a higher percentage of bone at Glastonbury Lake Village was exposed to heat than what can be identified by surface condition alone. However, as mentioned, this may also be caused by peat.



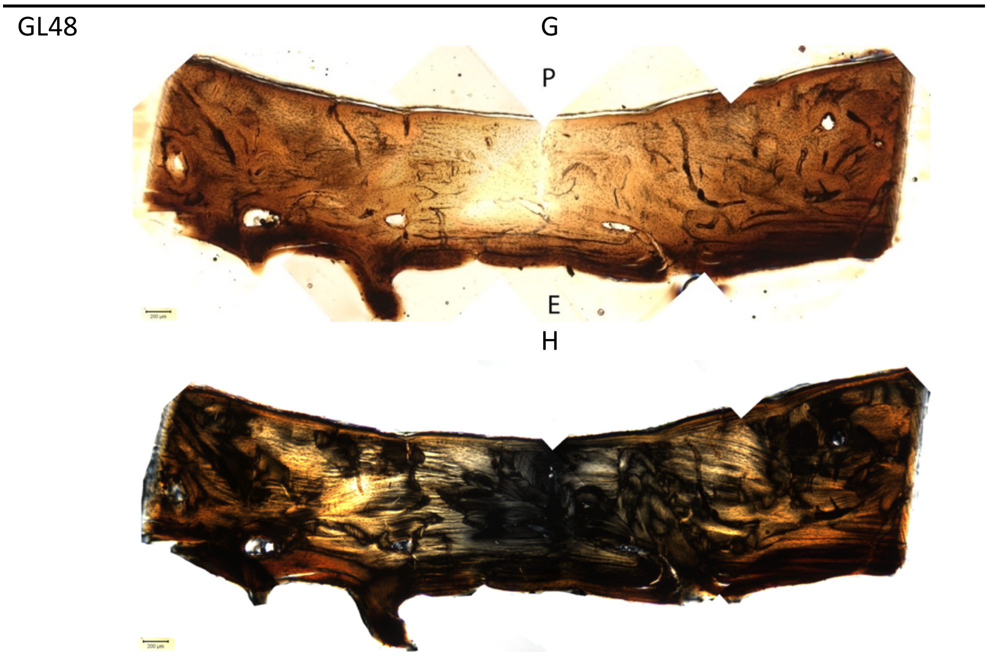


Figure 121. Samples from Glastonbury Lake Village with excellent histological preservation. **GL46**: A) Transverse section with periosteum (P) and endosteum (E) surfaces, normal light, stitched micrographs at 5x magnification. B) Transverse section, polarised light, 5x magnification. **GL41**: C) Transverse section, normal light, 5x magnification. D) Transverse section, polarised light, 5x magnification. **GL42**: E) Transverse section, normal light, 5x magnification. F) Transverse section, polarised light, 5x magnification. **GL48:** G) Scan of thin section (created by stitching micrographs at 5x magnification), normal light. H) Scan of thin section (created by stitching micrographs at 5x magnification), polarised light. Source: author

The unburnt elements also show excellent histological preservation and high birefringence. Seven samples that scored OHI 4 (n=1) and 5 (n=6). Sampled elements were recovered from peat deposits outside the palisade surrounding the settlement, including GL41 (Figure 121C, D) and GL42 (Figure 121E, F). These were sampled from crania representing an adult female and male respectively, and both with cut marks. Both samples scored OHI 5 with high collagen birefringence. The excellent preservation and cut marks might indicate the heads had been removed from the body immediately following death and manually defleshed. There was no obvious taphonomic evidence for exposure noted on the elements during sampling. This evidence together may indicate the bones were deposited within the peat relatively soon after death and disarticulation. Similarly, three samples from structures – floor deposits and 'substructures' – also showed excellent microstructural preservation and high birefringence (e.g. GL48, Figure 121G, H).

6.6.1.4. Summary

Glastonbury Lake Village had the highest proportion of high OHI scores than any of the case study sites in this study. This may be due in part to the wetland environment, and the site reports describe some deposits were recovered from peat. Additionally, there is a higher frequency of burnt bone present at this site compared to other case study sites. This may suggest a local funerary preference for burning human remains at Glastonbury Lake Village followed by distribution of elements within and around the settlement. However, other funerary processes may have been available that did not include burning, as evidenced by the well-preserved samples that were not burnt. Cut marks, gnawing and weathering may represent other post-mortem processes used to rapidly remove soft tissue from recently dead individuals. Overall, the variation in macro- and micro- taphonomy suggests a variety of early post-mortem treatments afforded to the individuals represented by the sampled elements. An alternative explanation for the high histological preservation at Glastonbury Lake Village is burial within the surrounding wetlands which would also prevent bacterial attack, however considering the other taphonomic evidence, this is less likely. It is also worth considering that the mortuary practices at Glastonbury Lake Village involved both burning and intentional deposition within the peat, some of which were retrieved and redeposited elsewhere in the site.

6.7. Cadbury Castle

This section presents the histological results from human remains at Cadbury Castle hillfort (often known as South Cadbury). This material is described separately because the human remains were recovered from unusual depositional circumstances following an apparent 'massacre', where bodies and body parts were subjected to various treatments, but may not necessarily reflect mortuary practices of the Iron Age. Many of the bones had been burnt to various degrees and it was noted that the variation may be caused by proximity to the heat source: extremities (especially hands and feet) were less burnt or not burnt at all, so it was proposed that some of the bodies were haphazardly stacked and burnt on a pyre, then subsequently became disarticulated and scattered through natural processes (Woodward and Hill 2000: 109-111). Additionally, it was noted that skulls and skull fragments were concentrated in the upper passageway (Group III), leading excavators to propose that many, or all, of the corpses were decapitated and the heads were displayed here for some time, then taken down and burnt (Woodward and Hill 2000: 111). The minimum number of individuals from the 'pure massacre deposits', comprising Context Groups I-V, is 22 (Woodward and Hill 2000: 109).

Since the precise spatial arrangement of the bones in each deposit is unclear, these will be described as disarticulated assemblages. Here, 'disarticulated assemblage' refers to discrete deposits of human remains that contain multiple elements from different individuals with uncertain degrees of articulation, but are clearly not fully articulated skeletons. In the site reports, human remains deposits are described as deposits of disarticulated bone, but considering the unusual 'massacre' circumstances, it is possible that body parts were articulated upon deposition and became disarticulated through time.

Sampling was undertaken by Richard Madgwick and observations on taphonomy and trauma were made by him.

Table 22. Samples from Cadbury Castle, Somerset. Source: author

Spec.	County	Element	Side	Age	Sex	Feature	Trauma	Taphonomy	OHI	Bire.
CS11	Somerset	Parietal	-	Adult	F	GROUP V: Sealing rubble; lower and middle passageway	Trauma to femur	Green staining on phalanx, various burning	0	None
CS12	Somerset	Femur	L	Adult	F?	GROUP III: Upper passageway	-	Burning, gnawing	0	None
CS13	Somerset	Femur	L	Adult	M	GROUP III: Upper passageway	Femoral trauma	Burning, gnawing	0	None
CS14	Somerset	Femur	-	Adult	M	GROUP III: Upper passageway	-	Burning, gnawing	0	None
CS15	Somerset	Humerus	R	Adult	-	GROUP I: Outside threshold	-	Burning, weathering	0	None
CS16	Somerset	Femur	L	Adult	M?	GROUP V: Sealing rubble; lower and middle passageway	-	Burning, fracture	2	Low
CS17	Somerset	Femur	R	Adult	M	GROUP V: Sealing rubble; lower and middle passageway	-	Burning, fracture	0	None
CS18	Somerset	Femur	L	Juven.	-	GROUP V: Sealing rubble; lower and middle passageway	-	-	1	Low
CS19	Somerset	Tibia	L	Adult	M	GROUP V: Sealing rubble; lower and middle passageway	-	Burning, fracture	2	Low
CS20	Somerset	Humerus	R	Adult	-	GROUP V: Sealing rubble; lower and middle passageway	-	-	1	Low
CS21	Somerset	Humerus	L	Adult	-	GROUP III: Upper passageway	-	Burning, weathering	1	Low
CS22	Somerset	Parietal	R	Adult	-	GROUP III: Upper passageway	-	Burning	1	Low
CS23	Somerset	Radius	R	Adult	-	GROUP I: Outside threshold	-	-	0	None
CS24	Somerset	Radius	R	Adult	-	GROUP I: Outside threshold	-	-	2	Med
CS25	Somerset	Humerus	R	Sub-adult	-	GROUP I: Outside threshold	-	Weathering	0	None
CS26	Somerset	Humerus	L	Sub-adult/adult	-	GROUP II: Middle passageway	-	Burning	0	Low
CS27	Somerset	Parietal	-	Sub-adult/adult	-	GROUP I: Outside threshold	-	?	2	Med
CS28	Somerset	Occipital	-	Adult	M?	GROUP V: Sealing rubble; lower and middle passageway	-	Burning	1	Low
CS29	Somerset	Ulna	-	Adult	-	GROUP II: Middle passageway	-	?	0	None
CS30	Somerset	Tibia	L	Sub-adult	-	GROUP II: Middle passageway	-	?	0	Low
CS31	Somerset	Ulna	L	Adult	-	GROUP II: Middle passageway	-	Burning, gnawing, weathering	2	Low
SC71	Somerset	Frontal	-	Adult	-	GROUP III: Upper passageway	Violent blow to skull	Heavily abraded	0	None
SC72	Somerset	Ulna	R	-	-	GROUP III: Middle passageway	-	Weathering	0	None

SC73	Somerset	Ulna	R	Adult	-	GROUP III: Middle passageway	-	Burning	1	Low
SC74	Somerset	Ulna	L	Adult	-	GROUP III: Middle passageway	-	Burning	3	Med/ low
SC75	Somerset	Clavicle	L	Adult	M	GROUP I: Outside threshold	-	Burning, abraded	0	None
SC76	Somerset	Calvarium	-	Adult	-	Unknown	-	-	3	Med/ low
SC77	Somerset	Femur	R	Adult	M?	Unknown	Violent blow to femur	-	3	Med/ high
SC78	Somerset	Mandible	L	Adult	F?	Unknown	-	-	0	None

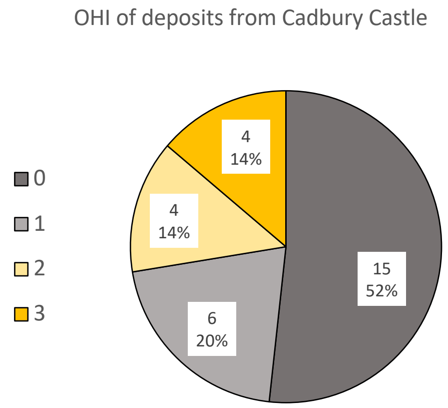


Figure 122. Chart showing OHI score breakdown from Cadbury Castle. Source: author

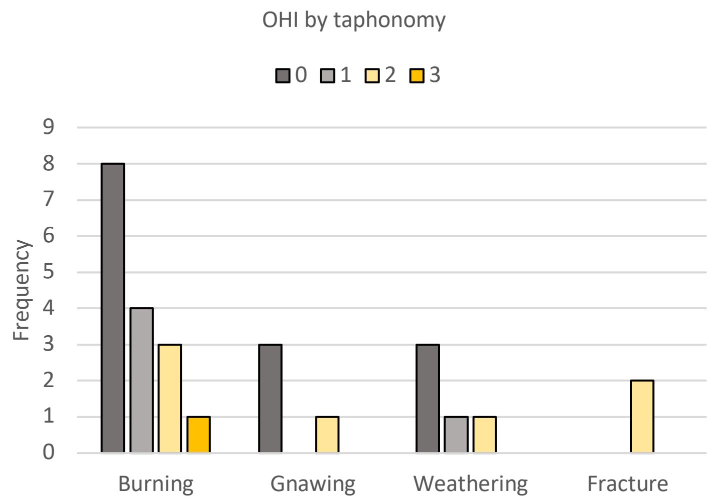


Figure 123. Graph showing OHI score distribution of samples with taphonomic markers from Cadbury Castle samples. Source: author

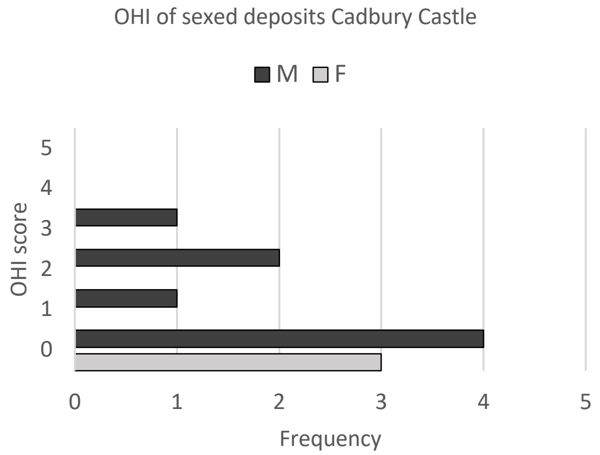


Figure 124. Graph showing OHI score distribution for female and male deposits at Cadbury Castle. Source: author

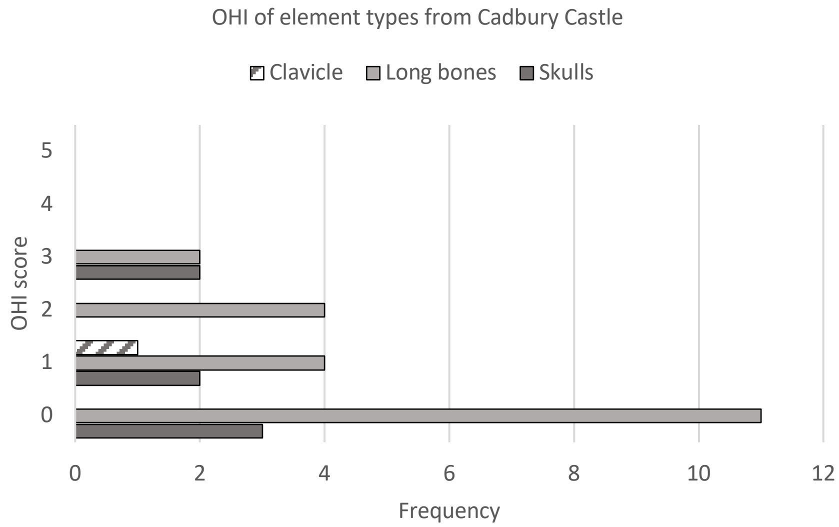


Figure 125. Graph showing OHI score distribution of long bones, skulls and a clavicle from Cadbury Castle. Source: author

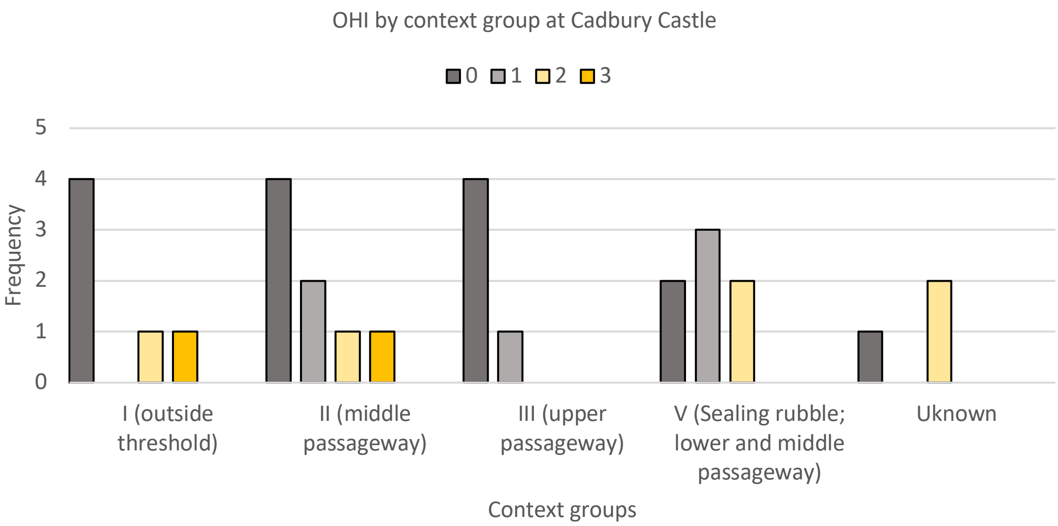


Figure 126. Graph showing OHI score distribution from each context at Cadbury Castle. Source: author

The details of the sampled elements from Cadbury Castle are provided in Table 22 and the breakdown of OHI scores is shown in Figure 122. All but one of the deposits were from disarticulated assemblages; the exception, SC77, is described above in Section 6.3.5.2. The sample included taphonomically altered and unaltered elements. The most frequent alteration was burning, and others were gnawed, weathered, and fractured (identified in Table 22). As shown in Figure 123, most elements with evidence for burning, gnawing and weathering have poor histological preservation (OHI 0), suggesting that taphonomic alterations likely happened after skeletonisation. It should also be considered that carbon deposits may mask histological features if carbon deposits leached into the bone microstructure. The sample preparation must also be considered here – the bones were extremely friable and created using a minitome (prior to procurement of a microtome), so many of the samples are far in excess of the ideal thickness for histological analysis. Nevertheless, some of the samples were clearly better preserved than others. Samples with middle-ranging histological preservation (OHI 2 and 3) are represented in elements with burning, gnawing, weathering and fracturing, suggesting that human remains at Cadbury Castle were subjected to various combinations of early post-mortem and later treatments.

The sampled corpus also includes both females (n=3) and males (n=8). All of the female and most of the male samples scored OHI 0, with some male samples showing better histological preservation (Figure 124). The sampled elements from Cadbury Castle include both long bones (n=21) and crania (n=7), plus one clavicle. There was no significant difference in OHI score between the long bones and crania, though a slightly larger proportion of crania had better preservation (Figure 125. The preservation of samples from each sampled context group is illustrated in Figure 126, which shows similar OHI distribution for Contexts I, II and III with samples from Context V showing slightly better preservation.

6.7.1. All features/contexts

6.7.1.1. OHI 0-1

Most of the samples from Cadbury Castle had poor histological preservation scoring OHI 0-1 (n=21). Of the low-scoring samples, 12 showed signs of burning, three of which also had evidence for gnawing and two for weathering (Table 22, Figure 123).

For example, CS11 was sampled from an adult female parietal that was part of a disarticulated assemblage (MNI 12) from Context Group V, comprising sealing rubble from the lower and middle passageway. Bones from this assemblage were described as having been burnt to varying degrees and an adult femur had evidence for trauma. No microstructural features are visible for CS11, resulting in OHI 0 (Figure 127) and there was no collagen birefringence. The opaqueness and homogeneity of the sample may indicate carbon infiltrations from sharing an environment with burnt material. However, other samples from the same context showed better histological preservation and will be described below.

CS11

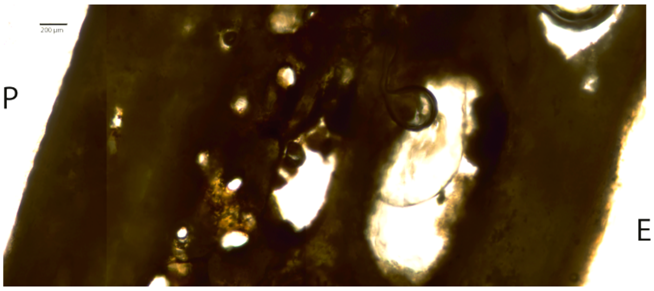
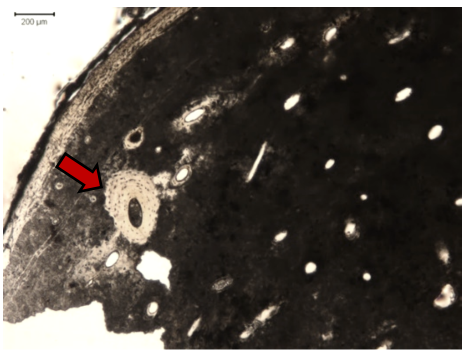


Figure 127. Sample from a deposit at Cadbury Castle with poor histological preservation from the periosteum (P) to endosteum (E) surfaces. Source: author

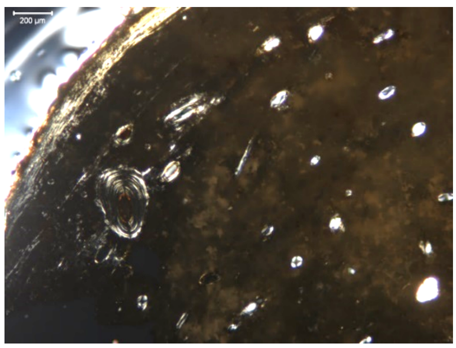
Sample SC73 represents an adult right ulna from Context Group III (middle passageway) with evidence for burning. The sample is similarly covered by thick, opaque MFD, but a thin margin of preservation at the periosteum (Figure 128). Interestingly, a single osteon that has been unaffected by the bacterial attack (Figure 128A) and birefringence is high repsecting the osteon (Figure 128B). A few other sporadic individual osteons show an arrested pattern of bacterial attack (Figure 128C) confirmed by birefringence (Figure 128D). In these instances, the attack does not appear to originate from Haversian canals, suggesting the diagenetic change may not be from endogenous gut bacteria, but rather from the deposition environment. However, the periosteum is not affected as would be expected if that were the case.

SC73

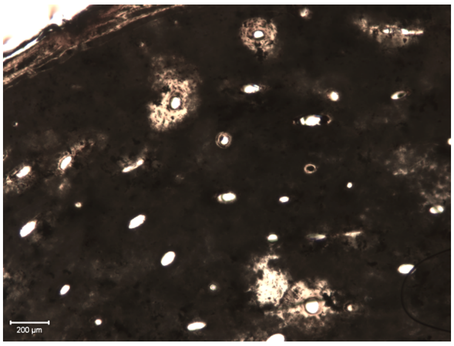
A



B



C



D

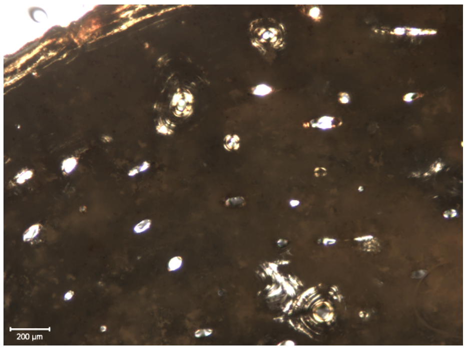


Figure 128. Sample from a deposit within Context Group III (middle passageway) at Cadbury Castle with poor histological preservation. A) Periosteal aspect with arrow pointing to a single well-preserved osteon, normal light, 5x magnification. B) Periosteal aspect, polarised light, 5x magnification. C) Periosteal aspect and central cortex, normal light, 5x magnification. D) Periosteal aspect and central cortex, polarised light, 5x magnification. Source: author

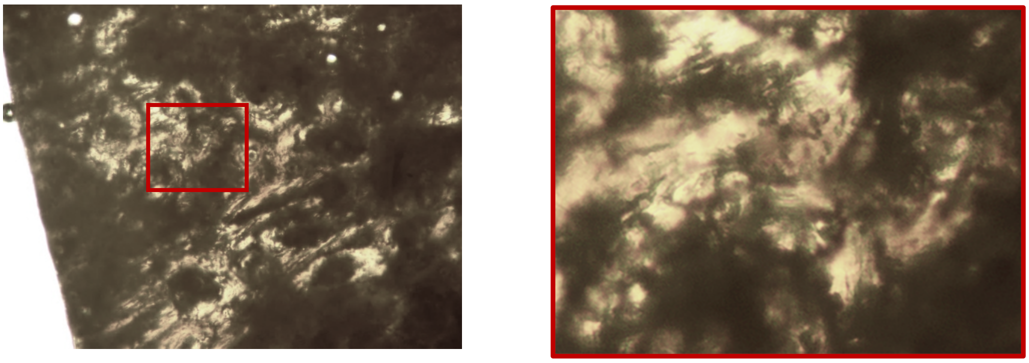
6.7.1.2. OHI 2-3

Mixed preservation consistent with OHI 2-3 is seen in eight samples from Cadbury Castle. Of these, four were burnt; two of which were also fractured, and one also showed evidence for gnawing and weathering (Table 22, Figure 123). Most of the samples had a similar pattern of MFD with tunnelling consistent with, or similar to, Wedl-types.

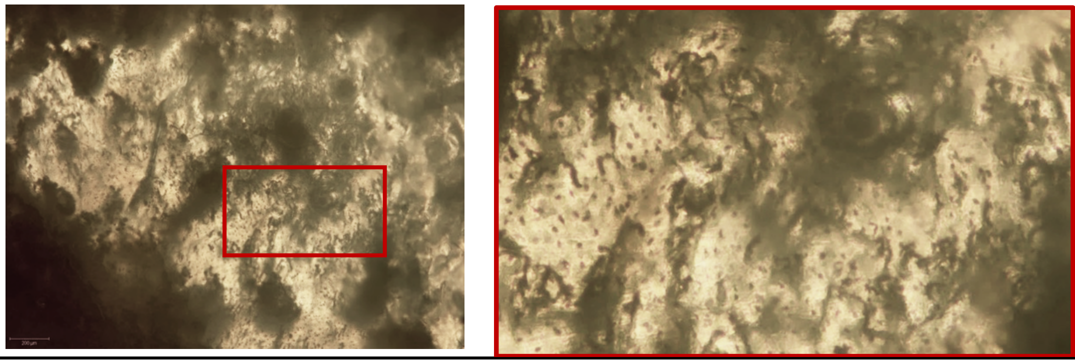
Samples CS16 and CS19 represent an adult male femur and tibia (respectively) recovered from Context Group V, and unlike CS11, both show preservation in the centre cortex (Figure 129A and B). Burning and fracturing were observed on both of the elements and the histological appearance is similar in both samples. Where the microstructure is preserved, tunnelling similar to Wedl Type 2 can be seen emerging from osteocyte lacunae. The same type of tunnelling is seen in CS31 and SC74 from Context Group II (middle passageway) (Figure 129 C and D). Samples CS31 and SC74 were sampled from left adult ulnae and both had evidence for burning. Sample CS31 had further evidence for gnawing and weathering. Sample CS24, an adult right radius from Context Group I (outside threshold), also displayed similar tunnelling (Figure 129E).

This type of MFD present in a 'massacre deposit' is interesting – and puzzling – as they resemble Wedl MFD, which is typical of wet/aquatic environments. Cadbury Castle is not a wet nor aquatic environment. It is possible that a different fungus present in the deposition environment caused the tunnelling seen in the above mentioned samples, however it is also possible that mortuary practice was more complex than previously interpreted and may have involved deposition in a moist environment then brought to the site for deposition.

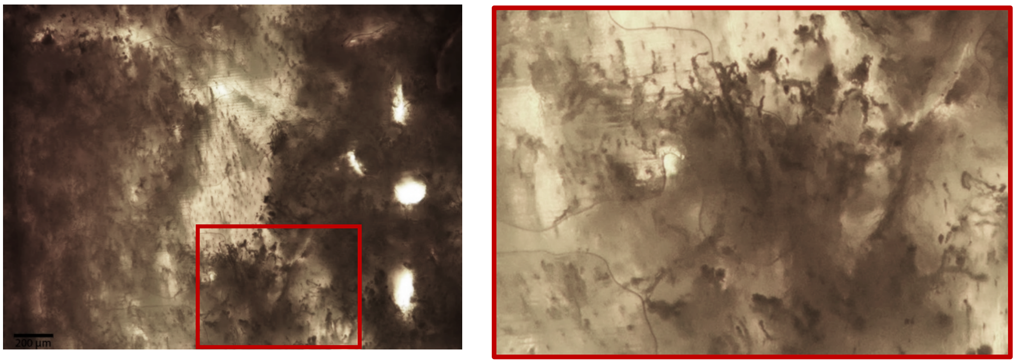
CS16 A



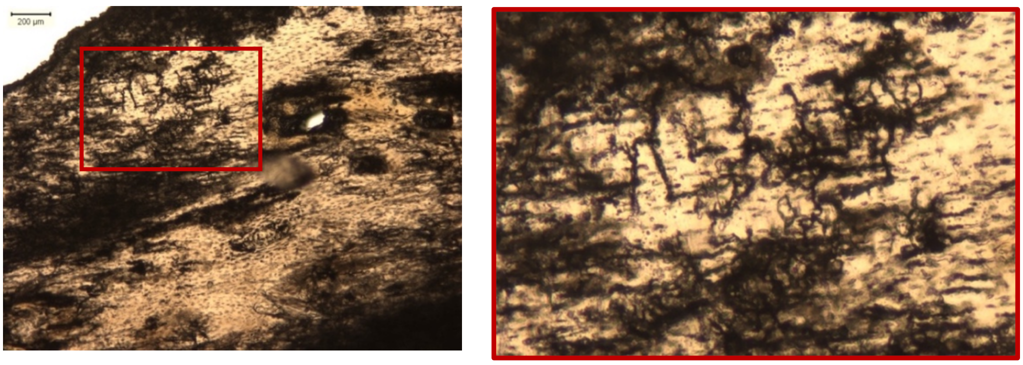
CS19 B



CS31 C



SC74 D



CS24 E

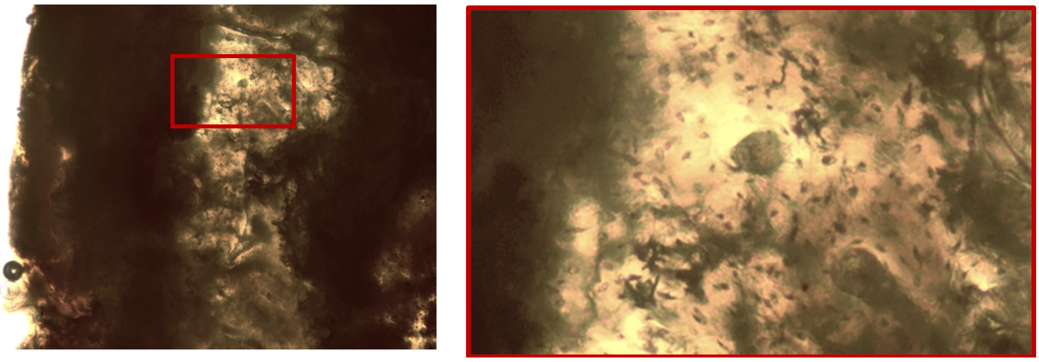


Figure 129. Samples from deposits at Cadbury Castle with middle-ranging histological preservation (OHI 2-3) and Wedl tunnelling. **CS16**: A) Periosteal aspect showing an area of advanced Wedl type 2 tunnelling, normal light, 5x magnification. **CS19**: B) Central cortex showing an area of advanced Wedl type 2 tunnelling, normal light, 5x magnification. **CS31**: Centre cortex showing an area affected by Wedl type 2 tunnelling, normal light, 5x magnification. **SC74**: D) Periosteal aspect showing an area of well-preserved microstructure heavily affected by Wedl type 2 tunnelling, normal light, 5x magnification. **CS24**: Periosteal aspect with a margin of preserved microstructure in the centre cortex with Wedl type 2 tunnelling seen emerging from osteocyte lacunae in an otherwise well-preserved osteon. Source: author

6.7.1.3. Summary

If authors of the site report are correct and these elements represent bodies left in situ or haphazardly burnt following a massacre, then Cadbury Castle does not necessarily represent Iron Age burial rites. The lack of histological preservation within the sampled elements would suggest individuals were buried – whether intentionally, or covered by a collapse of structures/defences shortly after death – however, the high instance of burning on the elements may also be responsible for some of the low scores. Alternatively, if the human remains were in a charnel-like, bacterial-rich environment, this may also impact microstructural preservation.

The presence of Wedl tunnels in several samples shown in Figure 129 would suggest these particular elements were exposed to a wet or aerated but sheltered environment (such as a covered pit, see Booth and Madgwick 2016) at some point during their post-mortem trajectory. It is possible that the human remains recovered from Cadbury Castle were subjected to more complex mortuary practice than what was originally thought by excavators, potentially challenging the ‘massacre deposit’ interpretation.

6.8. Conclusion

To summarise, this chapter presented the results of histological analysis performed on 286 elements sampled from 23 sites across the southwest. This evidence was described with consideration to taphonomic observations and depositional information whenever applicable to include as much information about the represented mortuary processes as possible. This integrated approach allows for a more comprehensive appraisal of the available evidence.

Overall, the results of the histological analysis show that the majority of sampled elements had poor histological preservation (OHI 0-1) likely represent primary inhumation burials. This is also true for the partially articulated and disarticulated remains, suggesting these were left over or redeposited from disturbed or exhumed primary inhumations. There was some interesting variation in articulated burials which may imply different treatments afforded to some individuals, for example coverings and protected inhumation in graves (e.g. Rowbarrow) resulting in middle-ranging (OHI 2-3) histological preservation.

The sampled disarticulated bone from Potterne showed the most interesting variation in histological preservation and taphonomy. Many remains showed fresh and dry fractures indicating manipulation at different points in the post-mortem process. None of the samples had perfect histological preservation, although three were slightly affected by MFD. This variation indicates that individual elements were brought to Potterne after undergoing a variety of mortuary practices including (but not limited to) exhumation of old and possibly recent burials, breaking of old and fresh bones, and some were exposed whilst others weren't.

The overall lack of well-preserved microstructure (OHI 4 and 5) identified in this study is surprising given the previous popularity of excarnation as a popular mortuary practice. Most of the remains from Glastonbury Lake Village were exceptionally well preserved, potentially indicating a site-specific mortuary practice afforded to individuals here, such as interment within the surrounding peat, mummification, or excarnation. Additionally, the majority of sampled skull and crania fragments showed poor histological preservation which is surprising considering the popularity of theories purporting headhunting and display of slain enemies. The examples of good preservation, then, may indicate discrete treatments afforded to a minority of individuals whilst the rest were inhumed shortly after death and quickly backfilled.

7. Results: frequency and distribution analysis of burial characteristics

7.1. Introduction

This chapter describes the Iron Age burial evidence from southwest Britain gathered through reviews of literature and unpublished site reports. The results of frequency analyses performed on this data are provided to demonstrate the character of burial and deposition across the study region. A detailed understanding of burial characteristics representing the final stage of a complex funerary rite, considered alongside the taphonomic and histological data described in the previous chapter, ensures a more robust and holistic discussion of the evidence in Chapter 8.

This chapter begins with an overall summary of the burial evidence across the southwest region. First, the distribution of burial data is presented and omissions from the dataset are explained. Following this, a general chronological pattern of the burials/deposits is provided—however, as discussed in previous chapters (Section 1.3, 3.1.1), establishing chronology for Iron Age burial is fettered by issues with radiocarbon dating (particularly in the Early Iron Age), poor preservation of human remains, and the characteristic lack of material accompanying burials throughout much of the Iron Age. Therefore, the chronology will undoubtedly change as the material is studied more extensively in the future, but is here offered as a general summary. Next, the frequency of deposit types across the southwest is described for articulated, partially articulated, disarticulated and cremated burials and deposits; the features from which the burials/deposits are recovered; followed by the overall distribution of age and sex. As explained in Section 5.4, the accuracy of this data is weakened by older reports of large sites which do not describe the human remains in detail. Nevertheless, this chapter demonstrates the general frequency of adults, sub-adults and infants/neonates as well as the representation of male and female burials/deposits when possible.

7.2. Summary of total characteristics

7.2.1. Overall distribution

This study includes data from 218 sites across the southwest region identified to have evidence for Iron Age burial with a total of 1391 burials/deposits. The number of sites and burials from each sub-region are shown in Table 23 and the distribution of sites across the southwest are shown in Figure 130. Appendix 5 provides supplementary figures on the distribution of deposit types, features, age and sex for each of the sub-regions (South Wales, Gloucestershire, Somerset, Wiltshire, Dorset, Devon, Cornwall and Scilly).

Table 23. Frequency of total burials/deposits from sites across the study region. Source: author

	South Wales	Gloucs.	Somerset	Wiltshire	Dorset	Devon	Cornwall/ Scilly	Total
Sites	38	30	47	29	44	4	26	218
Deposits	89	97	344	297	399	8	157	1391

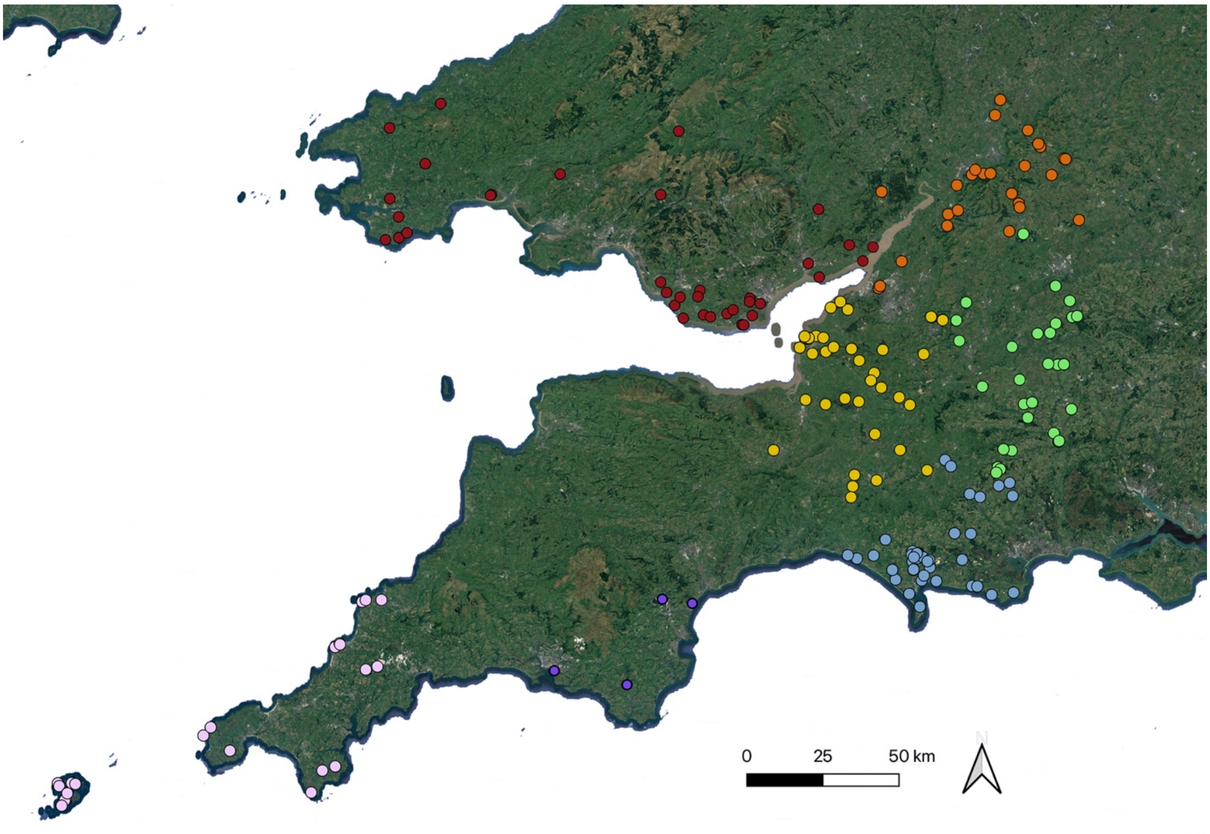


Figure 130. Map of the study region showing the distribution of sites where human remains have been recovered. The colour of the symbology indicates subregion: red = South Wales; orange = Gloucestershire; yellow = Somerset; green = Wiltshire; blue = Dorset; purple = Devon; pink = Cornwall and Scilly. Source: author (base map from Google Satellite)

The sub-region with the most burial evidence from the southwest is Dorset, where large inhumation cemeteries have been revealed by large-scale excavations. The largest of the inhumation cemeteries from Dorset is at Poundbury which included at least 59 articulated or probably articulated inhumations dating to the LIA/RB; 24 from Fordington Bottom; 19 from Weymouth (Southdown Ridge) and 16 from Winterbourne Kingston. The figures do not include cemetery sites where details are vague, including:

- The Grove, Portland – 200 or more inhumations in stone cists were found (Smith 1909).
- Corfe Castle, Blashenwell Tufa Pit – cist inhumations (R.C.H.M. Dorset 1970: 599)
- Allington Avenue/Wareham Road – Unknown number of earth graves. Two associated pottery vessels in Dorset County Museum. Additional grave found in 1884 with three other vessels (Fox, A. 1952: 82; R.C.H.M. 1970: 576 and 11-13, figs 8-9).

- Max Gate – "Numerous" graves found in 1884, no detailed records survive (R.C.H.M. Dorset 1970: 577).
- Victoria Park – "Several burials" but no individual details (R.C.H.M. Dorset 1970, 581-582).
- The Verne - Various inhumations in the area from 1734-1933 (Whimster 1981: 258; R.C.H.M. Dorset 1970: 605; Fox 1949: 40).
- Verne Common – 20-30 inhumations, mostly crouched or contracted (Whimster 1981: 25; R.C.H.M. Dorset 1970: 605).
- Jordan Hall, Weymouth – Burial group near Romano-Celtic temple, mostly late 1st-2nd century AD, but pre-Conquest origins were noted (Smith 1909; Joy 2012: table 21.1).

Human remains from Somerset are also well-represented owing in part to environmental conditions that are favourable to bone preservation, as well as several large-scale archaeological excavations particularly at Ham Hill, Cadbury Castle and Glastonbury Lake Village. Similarly, the deposition environment for sites across Wiltshire allow for preservation of bone and a large corpus of human remains have been recovered from sites (especially the midden at Potterne). Evidence from South Wales and Gloucestershire is more disparate, including a few deposits per site, usually near settlements. No large formal cemeteries have been discovered in south Wales and only one cemetery site in Gloucestershire has been excavated (Henbury School).

As seen in Figure 130, there is a noticeable gap in burial evidence across much of Devon. Only eight burial deposits, or possible burial deposits, from four sites have been dated (or tentatively dated to the Iron Age in Devon. Although few in number, the burials are interesting and suggest high status individuals: four of the seven included decorated bronze mirrors (the Holcombe mirror likely accompanied a burial, but this is not certain); four of the burials were in cists (typical of the 'southwest cist tradition'); and one is a cremation deposit.

Numerous cemeteries from Cornwall are mentioned in late 19th and early 20th century sources, however the lack of detail concerning these means they offer little interpretive value and so have been omitted from the dataset, apart from single data points (one per site) for spatial representation. Several cist inhumations are known from the Isles of Scilly, either isolated or within small groups. A complete breakdown of burials/deposits per site for each sub-region can be viewed in Appendix 5.

The distribution of articulated, partially articulated, disarticulated, and cremated deposits across the study region are shown in Figures 131, 132, 133, 134 respectively. The distribution of each deposit type will be explained further in the following sections, but to briefly summarise, articulated burials are found across the southwest with notable concentrations near the area of Dorset and the west coast of Cornwall where large inhumation cemeteries have been extensively excavated (Figure 131). Smaller densities of inhumations indicate small groups or isolated burials particularly in South Wales and Gloucestershire. Partially articulated deposits (Figure 132) are also well represented spatially, although considerably less frequent than articulated inhumations. Disarticulated deposits are concentrated in the 'Wessex' area, especially east of Somerset and Wiltshire where large hillfort sites have been excavated (Figure 133). Cremation deposits are the least frequent deposit type, but have been recovered from across the region with a higher concentration in eastern Somerset and West Wales with a notable absence in the Dorset area (Figure 134).

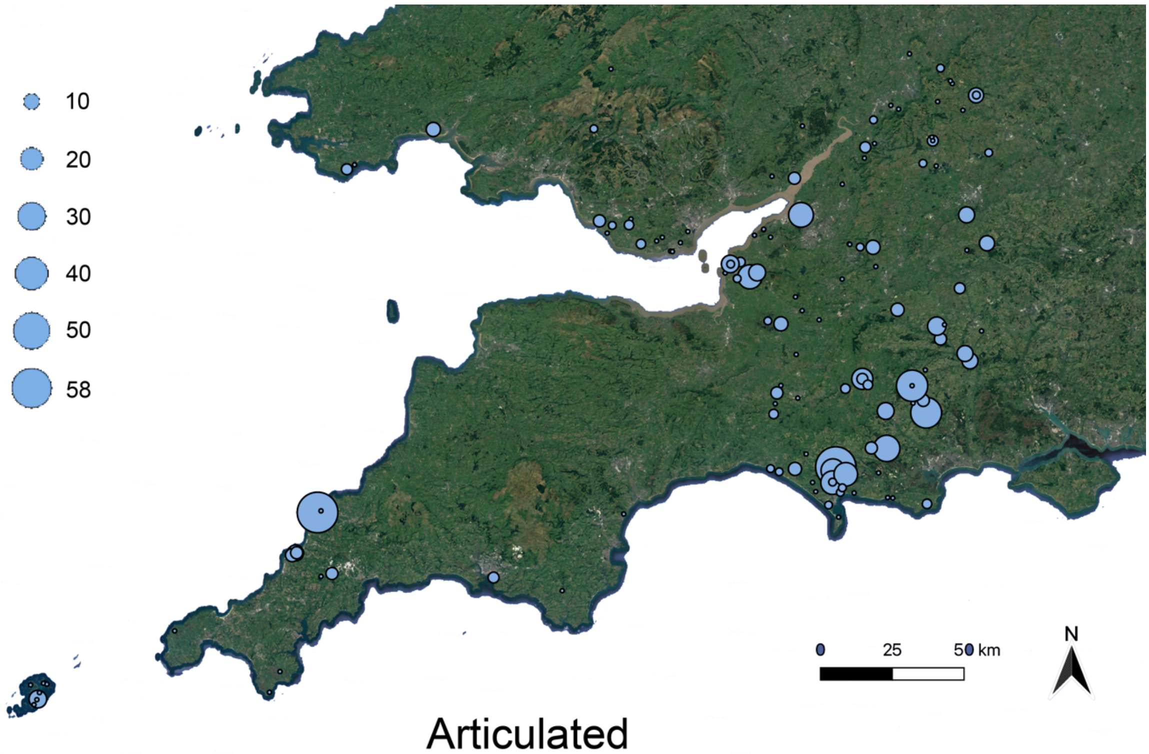


Figure 131. Map showing the frequency of articulated inhumation burials in the study region. Source: author

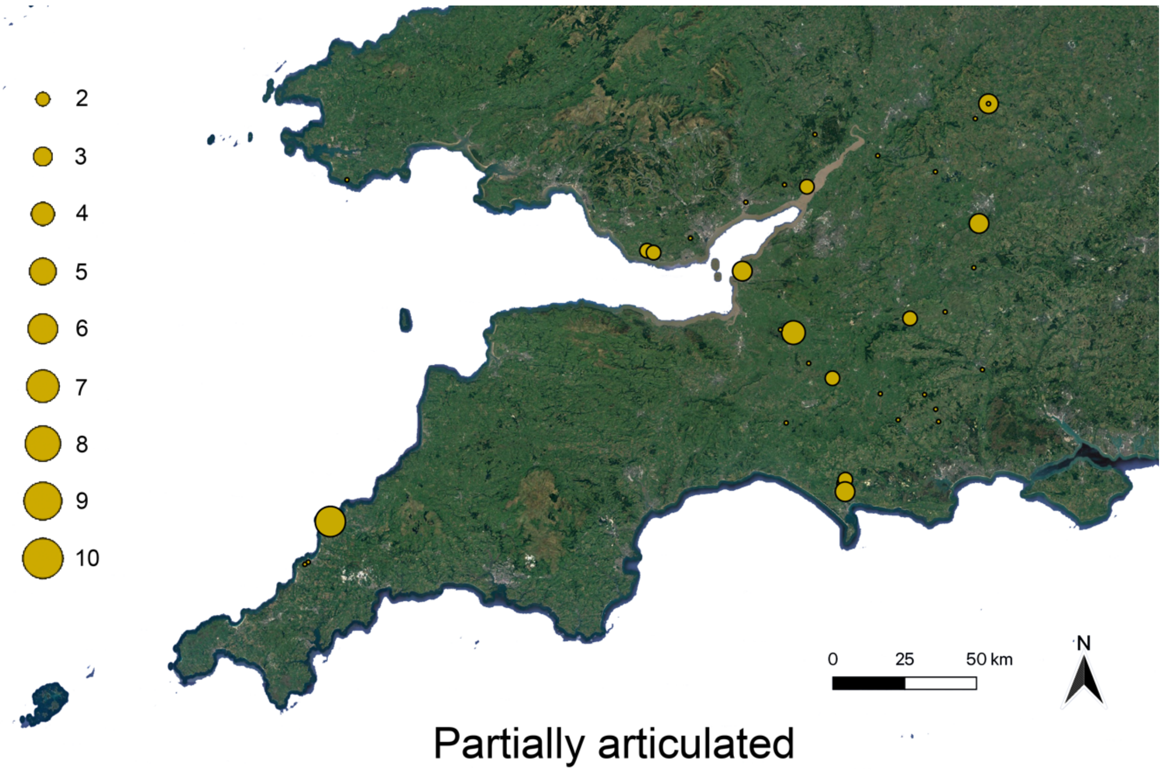


Figure 132. Map showing the frequency of partially articulated deposits in the study region. Source: author

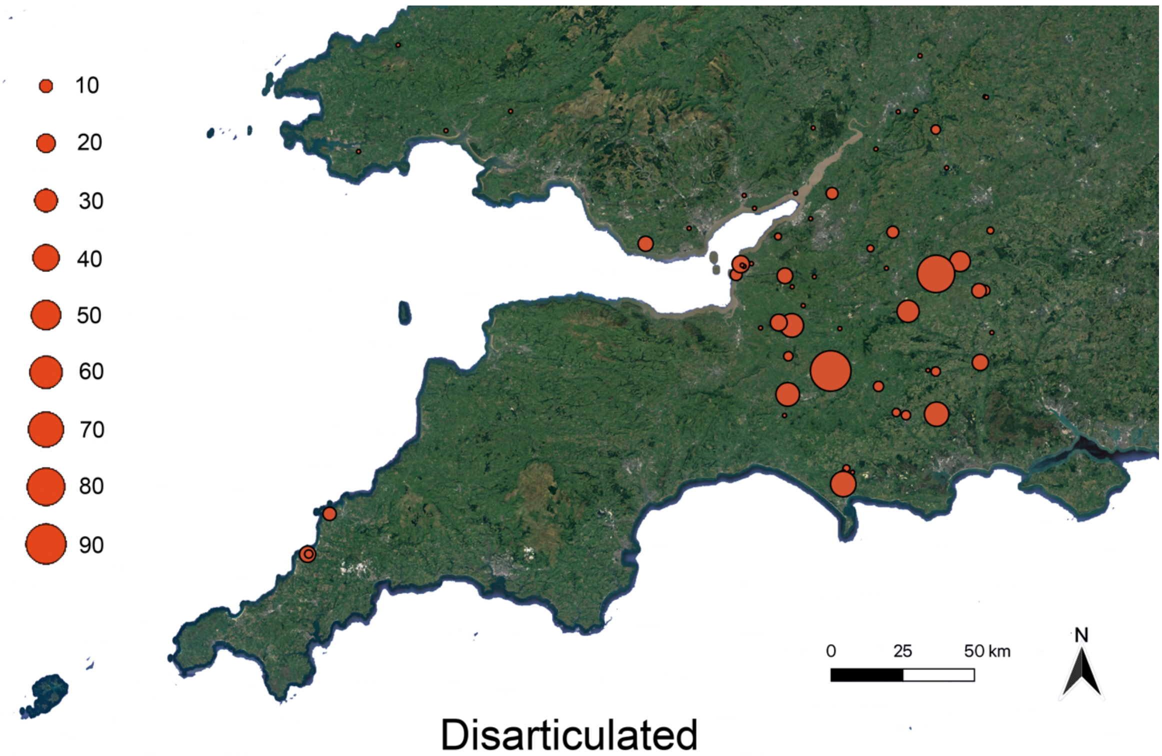


Figure 133. Map showing the frequency of disarticulated deposits in the study region. Source: author

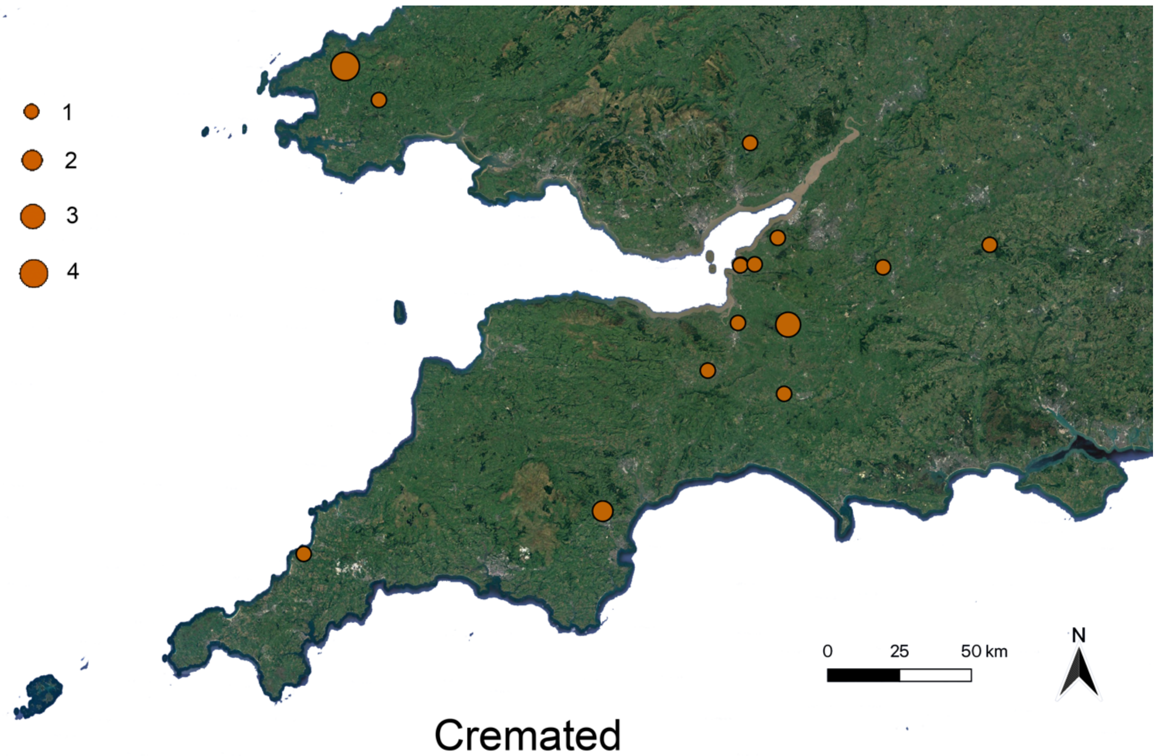


Figure 134. Map showing the frequency of cremated deposits in the study region. Source: author

7.2.2. Overall chronology

The issues with establishing chronology for Iron Age burials have been discussed in Section 1.3, but to summarise, it is often difficult to determine the chronological phase of burials within and associated with Iron Age sites. Burials are not often accompanied by datable grave goods until the Late Iron Age and acidic soils destroy otherwise diagnostic or dateable organic material. When radiocarbon dates are possible, the calibration curve of the 'Hallstatt Plateau' means that narrow ranges of dates cannot be achieved for the Early-Middle Iron Age (Waddington et al. 2019). As previously discussed in Section 1.3.1, there have been advancements in the field that can help narrow a range down, especially when radiocarbon dates are coupled with Bayesian modelling (e.g. the re-dating of midden material, Waddington et al. 2019) which will hopefully allow for more accurate chronological trends in burial practice to be recognised in the future. Nevertheless, some observations on general patterns can be made.

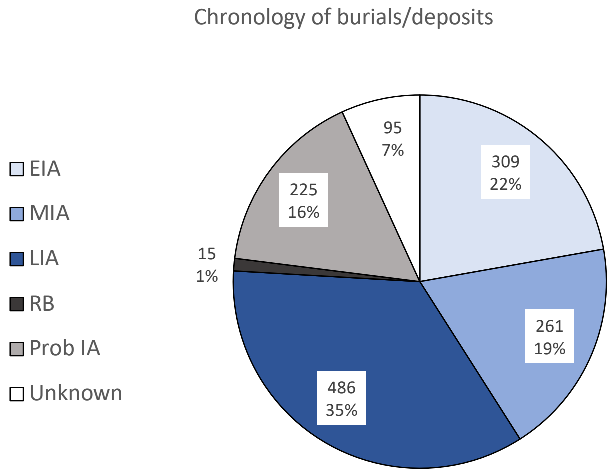


Figure 135. Chart showing the total percentages of chronological phases of burials and deposits recorded in this study. Source: author

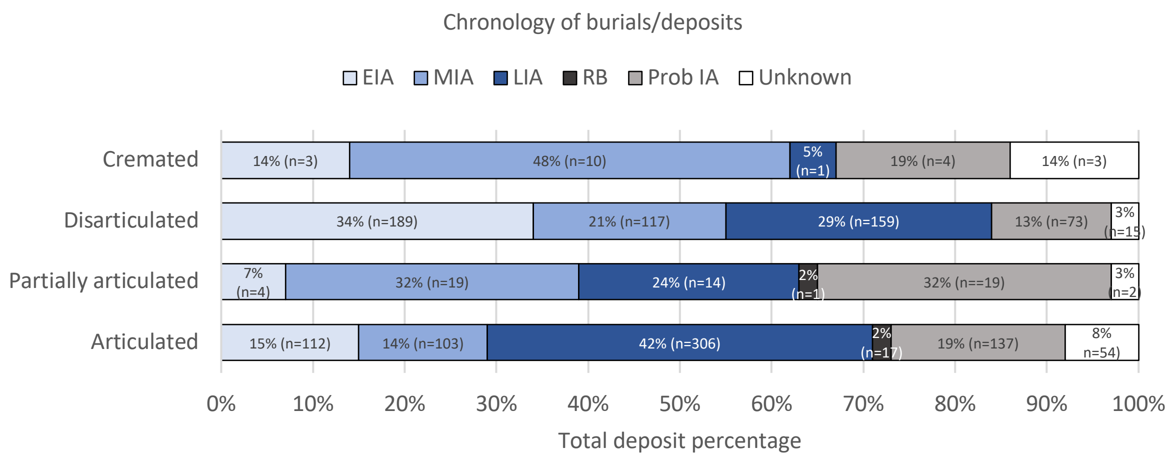


Figure 136. Chart showing the total percentages of chronological phases for each deposit type recorded in this study. Source: author

First, as shown in Figure 135, the largest portion of burial data dates (or probably dates) to the Late Iron Age with 486 burials (35%). This is because cemeteries of articulated burials become more common during this time and several large cemeteries have been excavated as shown in Figure 131. The Early Iron Age is the second most represented phase in this study with 309 deposits (22%). The bulk of Early Iron Age burial evidence are disarticulated deposits, most notably from middens, particularly Potterne in Wiltshire and Llanmaes in the Vale of Glamorgan. Twenty-nine percent of disarticulated remains in this study were assigned Late Iron Age dates, however a large portion of this data is from the 'massacre' deposit at Cadbury Castle and, as mentioned in Chapter 6, this does not necessarily represent Iron Age mortuary practice and the nature of the human remains deposits there is uncertain. With this in mind, disarticulation as part of a funerary process is likely less common in the Late Iron Age than what is represented in this data. The figures for the Middle Iron Age are inevitably skewed to some degree because radiocarbon dates often have a broad range that include earlier or later phases. Depending on the range of dates, some burials/deposits have here been rounded up or down (e.g. burials described as being EIA/MIA in site reports were rounded down to EIA due to the radiocarbon calibration curve that affects the EIA, see Section 1.3.1).

Partially articulated deposits are apparently rare in the Early Iron Age and increase in frequency during the Middle Iron Age before tapering off through the Late Iron age and Early Roman period. Similarly, cremations are known from the Early Iron Age, increasing in frequency during the Middle Iron Age (4of cremations) and taper off in the Late Iron Age (only one deposit of probable Late Iron Age date—the Marlborough Bucket in Wiltshire). Several radiocarbon dates have been produced from cremations and the implications of these dates related to Iron Age mortuary practice will be further described in (Section 7.6) and discussed in Chapter 8 (Section 8.6).

7.2.3. Overall deposit frequency

The frequency of deposit types per sub-region are broken down in Table 24 and illustrated in Figures 137 and 138. The total frequency and percentage of deposit types within each sub-region is illustrated in Figure 139. To summarise, articulated burials are the most frequent deposit type in the southwest with a total of 729 (52%) individuals represented (Figure 137). The second most frequent deposit type is disarticulated elements, fragments or small groups of bone, totalling 554 (40%). Less common are partially articulated deposits totalling 58 (4%) and 21 (2%) cremations. Deposit type could not be determined for 29 (2%) of deposits. Evidence for each deposit type is further described in the following sections dedicated to each respective type (articulated Section 7.3, partially articulated Section 7.4, disarticulated Section 7.5, cremated Section 7.6).

Table 24. Frequency of deposit types recorded from each subregion. Source: author

	South Wales	**Gloucs.**	**Somerset**	**Wiltshire**	**Dorset**	**Devon**	**Cornwall/ Scilly**	**Total**
Articulated	47	64	101	112	293	6	106	729
Partially articulated	11	7	12	9	11	0	8	58
Disarticulated	21	22	221	174	90	0	26	554
Cremation	6	0	10	2	0	2	1	21
Unknown	4	4	0	0	5	0	16	29
Total	89	97	344	297	399	8	157	**1391**

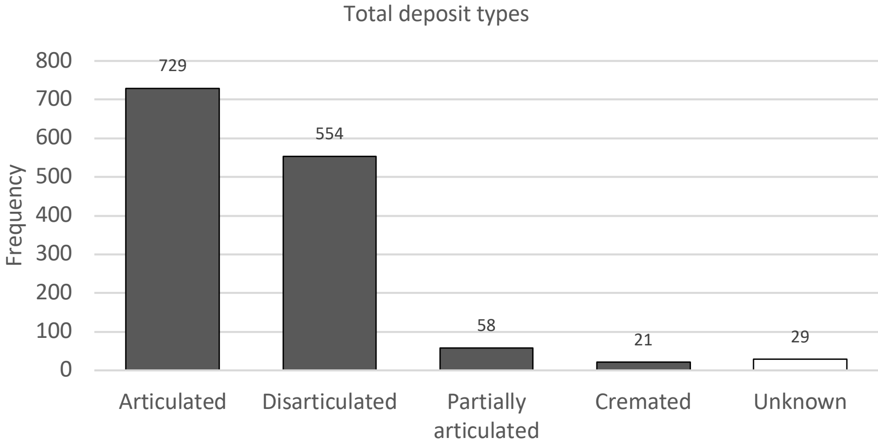


Figure 137. Graph showing the total frequency of deposit types recorded from this study region. Source: author

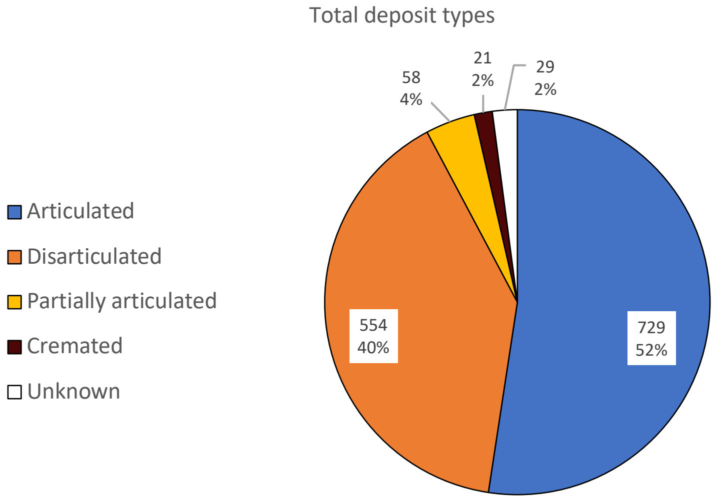


Figure 138. Chart showing the total percentages of deposit type for all recorded burials and deposits recorded from this study region. Source: author

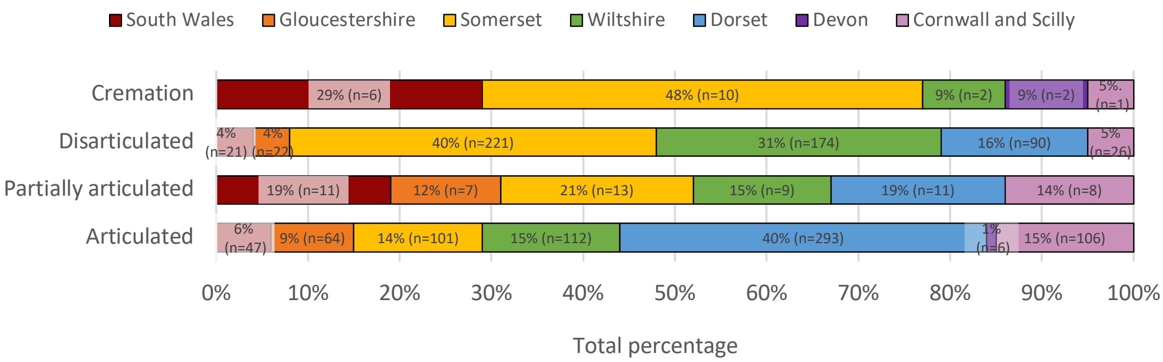


Figure 139. Graph showing the total percentage of deposit types recorded in each sub-region. Source: author

7.2.4. Overall feature type frequency

The total frequencies of features containing human remains are illustrated in Figure 140 and the percentages of the most frequent features within each sub-region are shown in Figures 141-145. As shown in Figure 140, pits are the most frequently occurring feature containing human remains represented in the present data with a total of 342 burials/deposits (25% of all features) represented in all sub-regions (Figure 141). Again, this is skewed because the numerous cemeteries excavated in the 19th and early 20th century could not be quantified, however the general frequency and spatial distribution of burial in pits does indicate that pits play a significant role in Iron Age mortuary practice in southwest Britain. Deposits from all states of articulation (articulated, partially articulated and disarticulated) have been recovered from pits, which will be described further in their respective sections (Section 7.3, 7.4, and 7.6). The second most frequent feature is graves, distinguished from pits by the shape and depth of the cut, which appear to have been created for the purpose of burial (as opposed to pits which were often used for storage). A total of 326 burials/deposits in graves were recorded (representing 23% of all features), mostly from Dorset where Durotrigian inhumation cemeteries are common, but graves are represented in all subregions except Devon (Figure 142). The third most common feature are boundaries (ditches and ramparts) surrounding settlements, with 142 deposits recorded (10% of features) from all sub-regions except Devon and Cornwall (Figure 143). This may indicate a difference in mortuary practice for the southwest peninsula where settlements are generally structured differently, or have yet to be uncovered through archaeological excavation.

The fourth most frequent feature are stone-lined cists with a total of 132 deposits (9% of all features). The majority of cists are from Cornwall and Scilly (Figure 144) with the large cist cemetery at Harlyn Bay accounting for nearly half of burials in cists (n=66). Cist burials are also well represented in the Isles of Scilly with a total of 18 recorded, ten of which are from one cemetery at Parson's Field, Porth Cressa, St Mary's Island (Ashbee 1954, 1979). Although much of the evidence from Scilly is not securely dated, the cists share characteristics with other Iron Age cists, including an unusual burial containing both a sword and a mirror at the site of Hillside Farm, Bryher, radiocarbon dated to the Late Middle-Late Iron Age (200-45 cal BC) (Johns 2006). Although concentrated most densely in Cornwall and Scilly, burials in cists are recorded from all sub-regions apart from Wiltshire, possibly indicating that cists were not part of the available suite of mortuary and burial practice.

Middens also account for 9% of features with a total of 128 deposits identified in this study. Most of the deposits have been recovered from middens in Wiltshire (Figure 145), particularly Potterne (n=77), All Cannings Cross (n=23) and five deposits within East Chisenbury midden. The midden at Llanmaes in South Wales included a deposit of 14 disarticulated bones with another deposit from South Wales at Greenala Camp reported to have been interred within a kitchen midden, although details on this deposit are unclear (Davis 2017: 25). The deposits within middens in Somerset (n=7) and Cornwall (n=1) are different than those from Potterne and Llanmaes, but were described by excavators as being within midden material: at Brean Down, Somerset, seven disarticulated remains were described as being recovered from a midden deposit associated with a Late Bronze Age/Early Iron Age field boundary (Bell 1990: 72). The remaining single deposit from Ballowall, Cornwall, is only described as being within a midden deposit, but no other details are known. The site at Ballowall is incorporated within a wider complex landscape of monuments and a barrow and/or cairn, however the excavation records dating to 1878 are brief and unreliable (Borlase 1878). The evidence for burial within midden material is indicative of a deliberate mortuary practice, likely symbolising the relationship between the Iron Age populations and domestic refuse, and in some cases the delineation of land and establishment of boundaries, which will be discussed in Chapter 8.

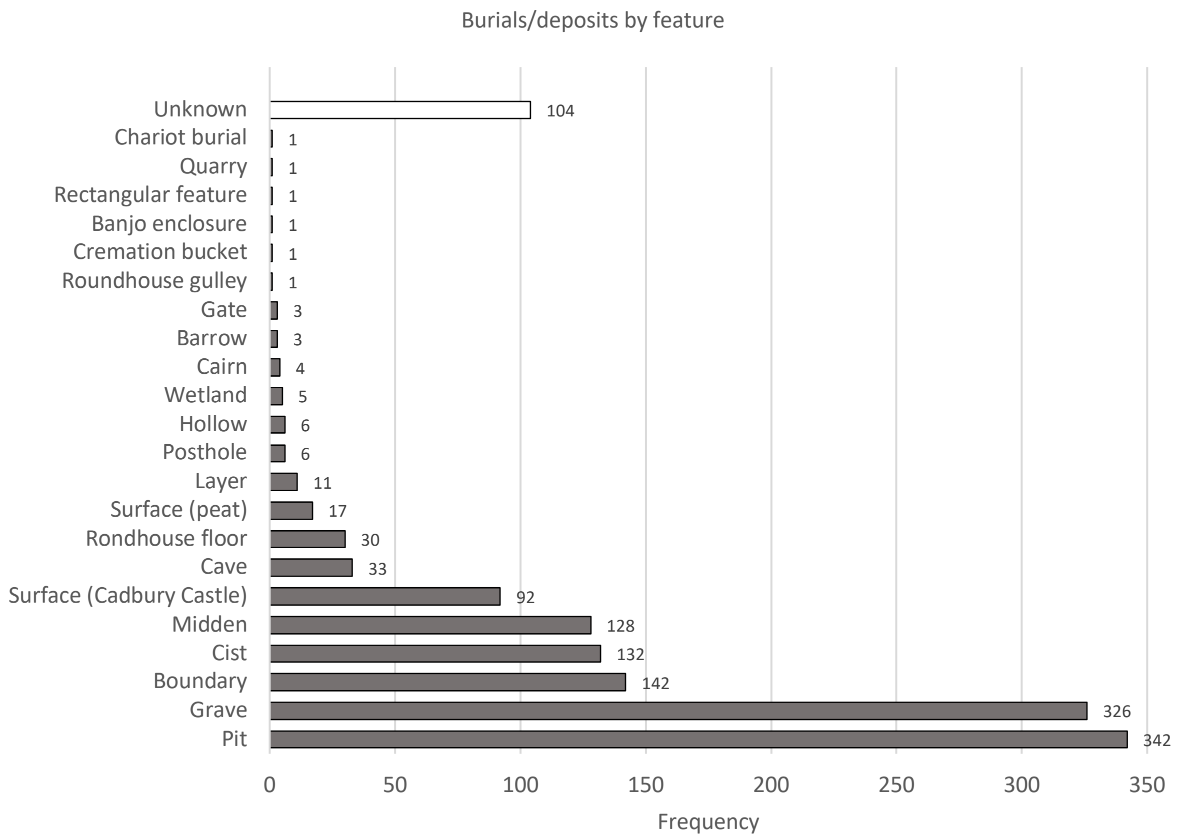


Figure 140. Graph showing the total frequency of burials/deposits by feature type. Source: author

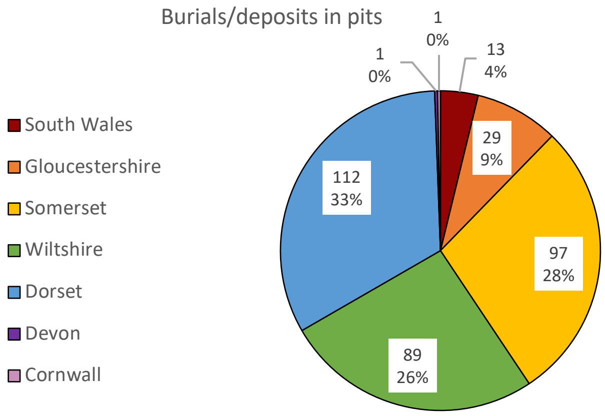


Figure 141. Chart showing the percentage of total burials/deposits in pits recorded from each sub-region. Source: author

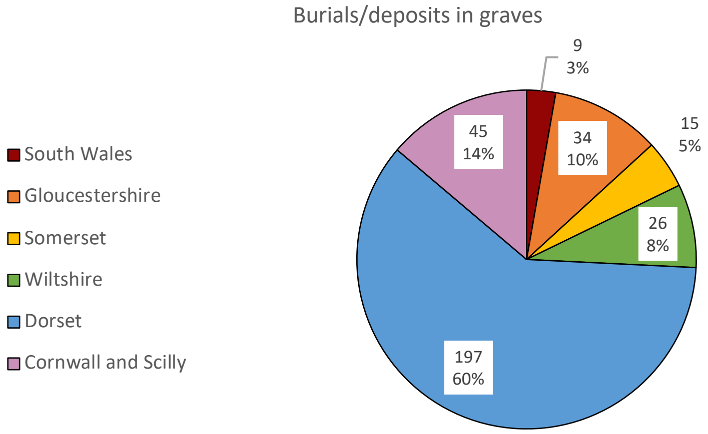


Figure 142. Chart showing percentage of total burials/deposits in graves recorded from each sub-region. Source: author

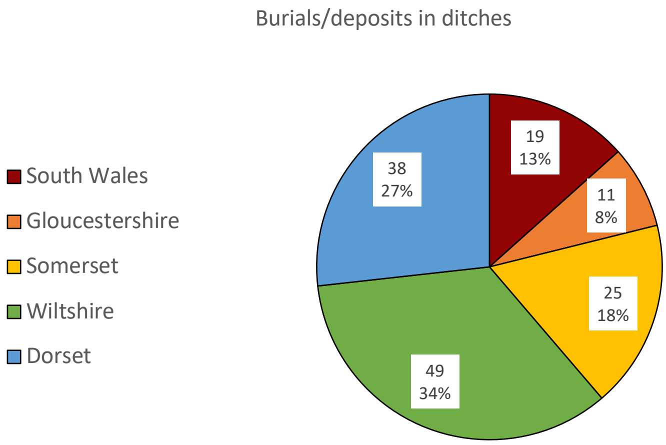


Figure 143. Chart showing percentage of total burials/deposits in ditches recorded from each sub-region. Source: author

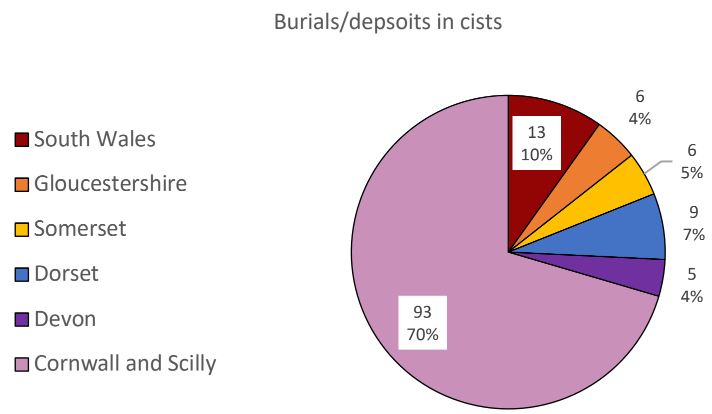


Figure 144. Chart showing percentage of burials/deposits in cists recorded from each sub-region. Source: author

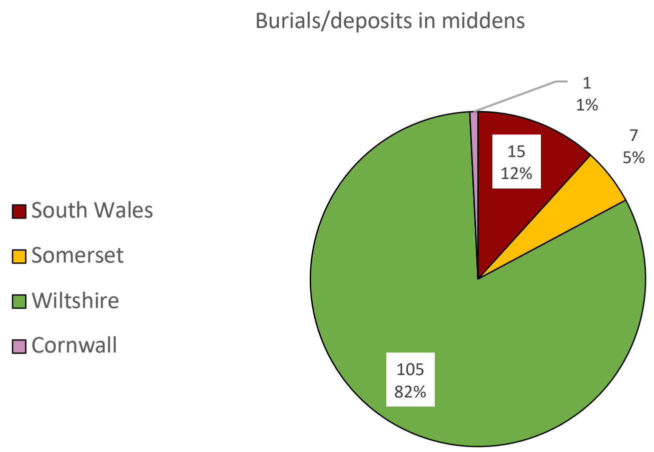


Figure 145. Chart showing percentage of burials/deposits in middens recorded from each sub-region. Source: author

The 'massacre' deposits at Cadbury Castle constitute 7% of the features (n=92). As previously mentioned, these deposits are ambiguous as the spatial relationships are unclear and interpreted as having been haphazardly or carelessly left on the surface following a massacre with evidence that some bodies had been burnt. However, as described in Chapter 6 (Section 6.7), most of the sampled elements showed poor histological preservation consistent with inhumation rather than exposure on the surface, and Wedl tunnels were present on several samples indicating deposition in a waterlogged or aqueous environment, so it is possible that the human remains at the site do not strictly represent 'massacre' deposits'—however, the features are unclear, and so they have been grouped separately in this study.

The remaining features contained few deposits, with six types including a single deposit each (Figure 140). These less frequent features may represent a mortuary practice where human remains, usually disarticulated, are deposited in special or 'liminal' places, for example wetlands (n=5) and barrows/cairns (n=7). The deposition of human remains within these locations will be further discussed in Chapter 8.

7.2.5. Overall frequency of age and sex (demographics)

The overall frequencies of age categories are illustrated in Figure 146 and the total percentages are shown in Figure 147. Most of the burials and deposits recorded from the southwest are adults with 835 burials comprising 73%. Adolescents are considerably underrepresented with only 37 burials (3%). Interestingly, a study of Late Bronze Age burials by Brück (1995) showed a similar pattern: adolescents were underrepresented, comprising only two of the 57 identified burials. This underrepresentation is likely due in part to the difficulties in differentiating between disarticulated adult and adolescent bone fragments, which make up a significant portion of this data (Figure 147). Similarly, poor osteological preservation can obscure diagnostic elements used to distinguish between adult and adolescent skeletons. Therefore, a number of adolescents are inevitably represented in the 'adult' data, although it is impossible to estimate how much.

Juveniles are also underrepresented, although more frequent than adolescents, with a total of 106 burials (9%). Infants/neonates/foetuses are more frequent than adolescents and juveniles combined with a total of 166 burials (15%). This is unsurprising as the mortality rate for infants would undoubtedly be substantially higher than juveniles and adolescents, however a disparity in mortuary practice afforded to the different age groups cannot be ruled out.

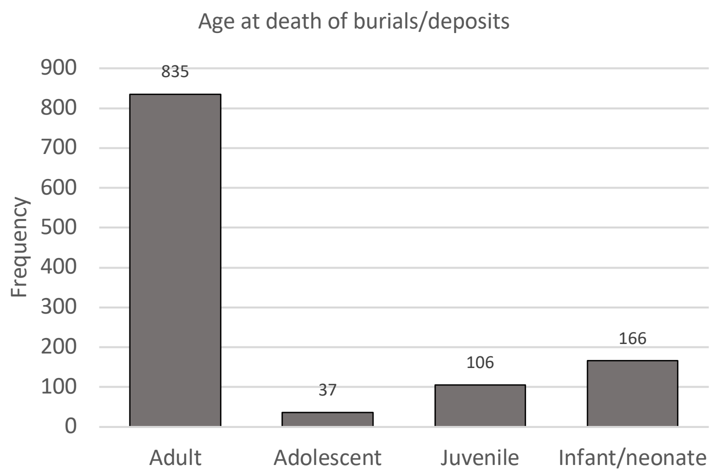


Figure 146. Graph showing the frequency of burials/deposits by age category. Source: author

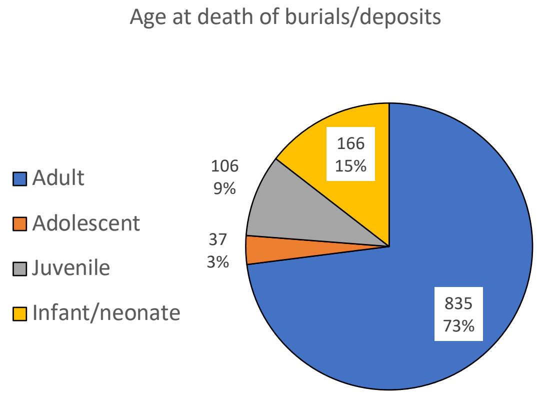


Figure 147. Chart showing percentage of burials/deposits recorded in this study by age category. Source: author

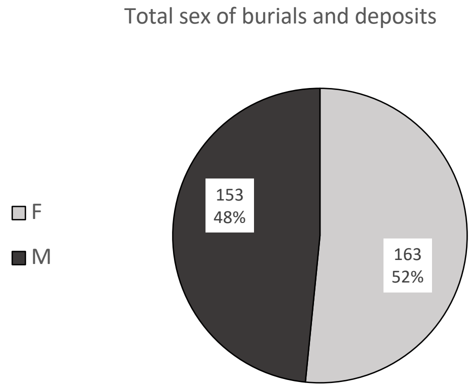


Figure 148. Chart showing the total percentage of male and female burials/deposits recorded in this study. Source: author

The sex of most burials and deposits could not be determined, but of those who could be identified or estimated, females were slightly more frequent than males as shown in Figure 148 (n=163 female deposits, n=153 male deposits). This may be due in part to the recognisability of grave goods, for example the inclusion of bronze decorated mirrors in graves with no surviving human remains is assumed to represent the burial of a female at Stamford Hill (n=3) and Holcombe (n=1). The frequency of male and female burials/deposits from each deposit type and any observations regarding possible differences in burial treatment will be described in the following sections.

7.3. Articulated inhumations

Although large 'formal' inhumation cemeteries are rare throughout most of the southwest, articulated burials are the most abundant deposit type represented in this study with 729 burials across the region, including all sub-regions (Figure 149). The highest number of articulated burials comes from Dorset with 293 burials (40%), many in the characteristic 'Durotrigian' tradition, followed by Wiltshire with 112 (15%), 106 from Cornwall (15%), 101 from Somerset (14%), 64 from Gloucestershire (9%), 47 from South Wales (6%) and six probable articulated deposits from Devon (1%). As mentioned in Section 7.2.4, a cist cemetery was discovered in the 1860s at Stamford Hill in Devon, but was poorly recorded and details on the size and characteristics of the cemetery is unknown, so only four cist inhumations containing fragments of bronze mirrors are represented from this site in this study.

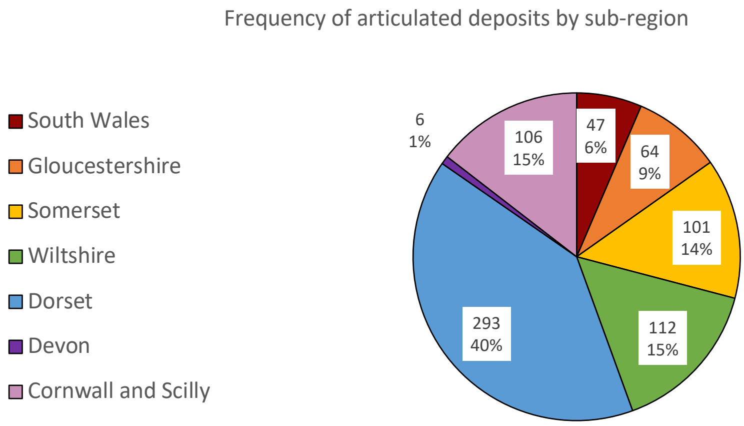


Figure 149. Chart showing the percentage of articulated deposits recorded from each sub-region. Source: author

7.3.1. Position and side

The position of articulated burials may provide evidence for various mortuary practices, for example a tightly crouched inhumation may represent a body that was bound or wrapped upon deposition as opposed to a body in a lightly flexed or crouched position. However, the positions of articulated burials are not often recorded in older literature. Moreover, the degradation of bone makes position difficult or impossible to determine beyond a rough estimation that the burial was probably articulated. This means that over half (51%, n=366) of the articulated burials recorded in this study do not have a known position, and therefore fall within an 'unknown' category. Additionally, some reports use different terminology to describe body positions—for example, 'tightly flexed' and 'crouched' are used by different sources to describe very similar positions. This study attempted to adhere to the terminologies used by reports, however some of the skeletal positions were determined by the author when photos or illustrations of burials were available. The ambiguity of positioning means some discretion is necessary when interpreting the frequency of positions, but some observations can be made.

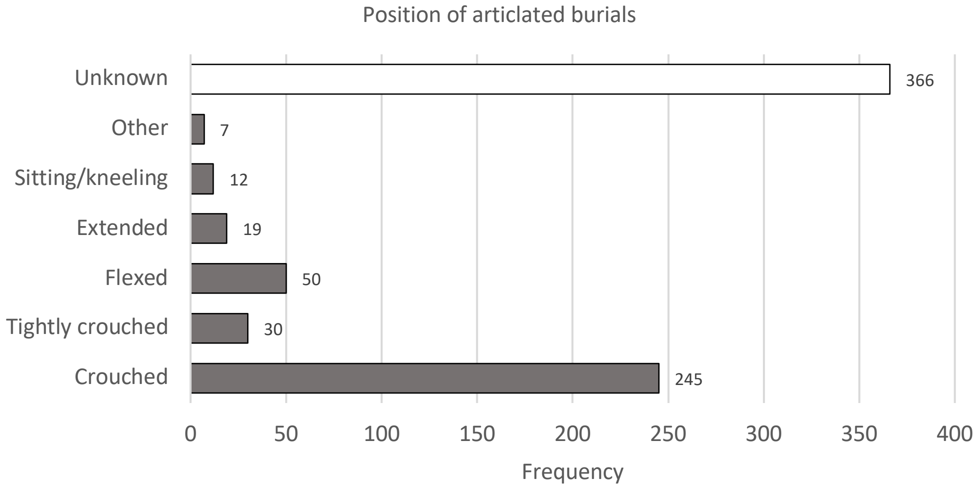


Figure 150. Graph showing the frequency of body positioning for articulated burials recorded in this study. Source: author

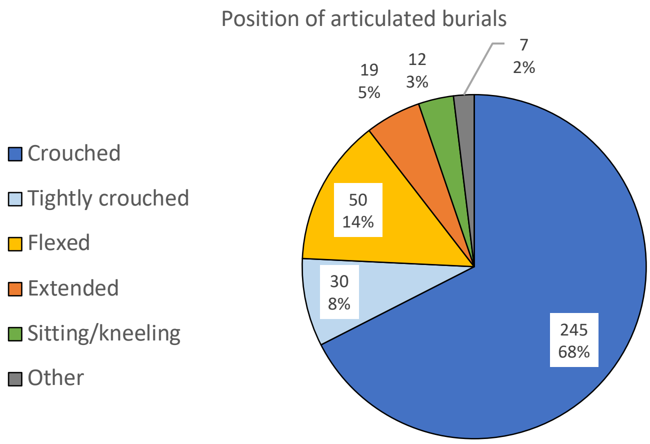


Figure 151. Chart showing the percentage of body positions of articulated burials. Source: author

The total frequency of position is shown in Figure 150 and the total percentage is illustrated in Figure 151. First, of those whose position could be determined or estimated, the most frequent by a large margin is crouched (n=245) comprising 68% of known or probable positions (Figure 151). Crouched burials are represented across all subregions in relative proportion to the frequency of articulated burials. Tightly crouched burials are fewer in number with a total of 30 (8%) recorded from Gloucestershire (n=5), Dorset (n=16), Wiltshire (n=8) and one from Cornwall. Flexed positions are the second most frequent position with 50 burials (14%) from all sub-regions except Devon: three from South Wales, four from Gloucestershire, five from Somerset, 20 from Dorset (eight of which are infants), 13 from Wiltshire and five from Cornwall). Extended burials are uncommon in the southwest with 19 total burials (5%) mostly from Dorset (n=12), eight of which were infants from Gussage All Saints; with two deposits each from South Wales and Gloucestershire and three from Wiltshire. A further 12 articulated deposits were described as being in a sitting/kneeling/squatting position—it could be argued these may have been considered crouched had they been recovered by modern excavators, however some descriptions are clear: Jackson (1871) mentions the burials from Grove Estate, Somerset, were found upright in a half-sitting position. One burial from Bagendon, Gloucestershire, was interpreted as having been carefully placed within the ditch in a kneeling position (Moore 2021: 124). One deposit from Llandough in South Wales was described as being in a sitting position, 45 degrees, with arms crossed over the pelvis (Holbrook and Thomas 2005). Another burial deposited under the gate at Hod Hill was described as sitting upright (Richmond 1967) and two inhumations described as squatting and facing one another in a pit at Coronation Road, Somerset. If these deposits were truly recovered from an upright position, this suggest that backfilling occurred shortly after the burial, otherwise the soft tissue would decay and the body would slump down into the floor of the feature. The remaining seven deposits in the 'other' category include an articulated skeleton described as being thrown 'headfirst' into the pit (Hackley Point C Connection, Foreman and McIntosh 2021: 16); two prone with no other details listed (Dibble Farm, Somerset and Winterbourne Kingston, Dorset); two supine with no other details (Bourton on Water and Frocester, Gloucestershire) and one described as lying on their side (Weymouth Southdown Ridge).

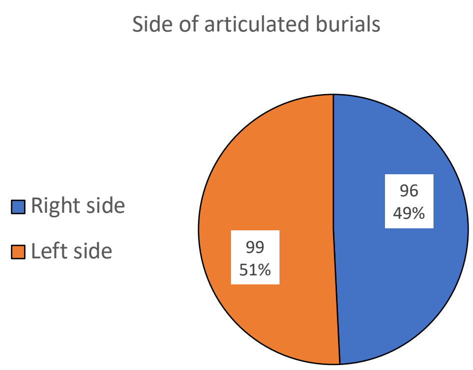


Figure 152. Chart showing the percentage of articulated burials on the left and right side. Source: author

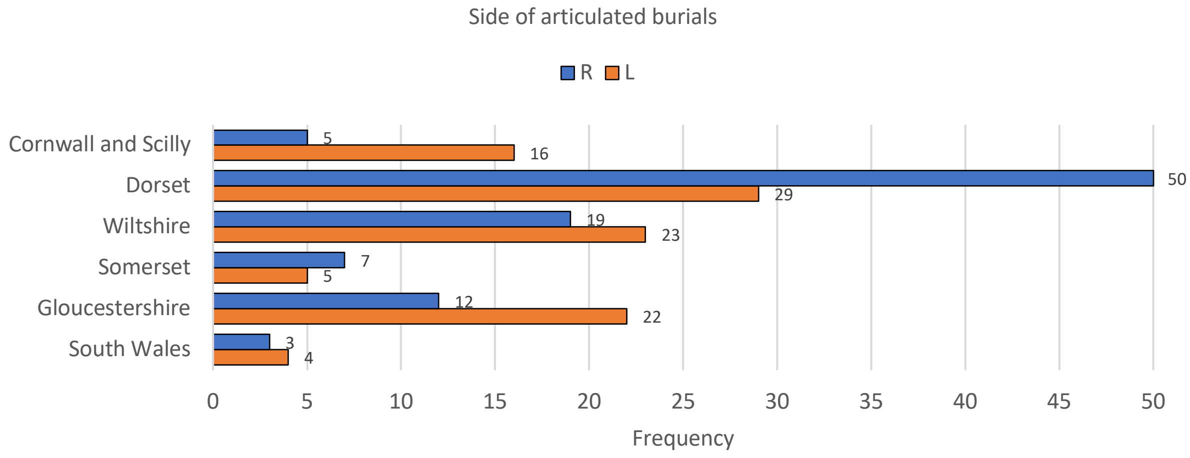


Figure 153. Graph showing the frequency of articulated burials on either the left or right side recorded from each sub-region. Source: author

Only 195 out of 729 articulated burials in this study were determined to have been placed on either their left or right side, so the results produced may not be accurate and should be considered with some caution. However, some possible preferences can be inferred. Of the total articulated burials where the side could be determined, skeletons are found on their left and right sides with nearly equal frequency (Figure 152). A clear preference for placing articulated corpses on their right side is shown from burials in Dorset (Figure 153) and seven of the 12 sided burials from Somerset are placed on their right side. Otherwise, the left side is more frequent across the sub-regions, particularly from articulated burials in Cornwall and Scilly and Gloucestershire. This may indicate a local or sub-regional preference for placing corpses on their left side in these areas.

7.3.2. Orientation

Orientation of inhumation burials was recorded when provided in site reports. Inconsistency was an issue as some reports only provide the direction of head placement (e.g. head to east); some included a full orientation of the body (e.g. east to west); some included orientation but specified a different direction of head placement (e.g. east to west, head to northeast); and others would only refer to the orientation of the grave cut and not the skeleton (e.g. grave orientated east west, but illustration of skeleton shows the head was placed to the west). Disentangling this would require a thorough trawl through original site plans and drawings to determine the true, full orientation, which was beyond the scope of this research. However, orientation of bodies may provide some insight into sub-regional preferences, so some general patterns are provided here. The following figures were created with regards to the direction of head placement only and some error is to be expected due to the inconsistencies listed above. Additionally, orientation was only recorded from 268 of the 729 inhumations, so any conclusions drawn from this data are done so with caution.

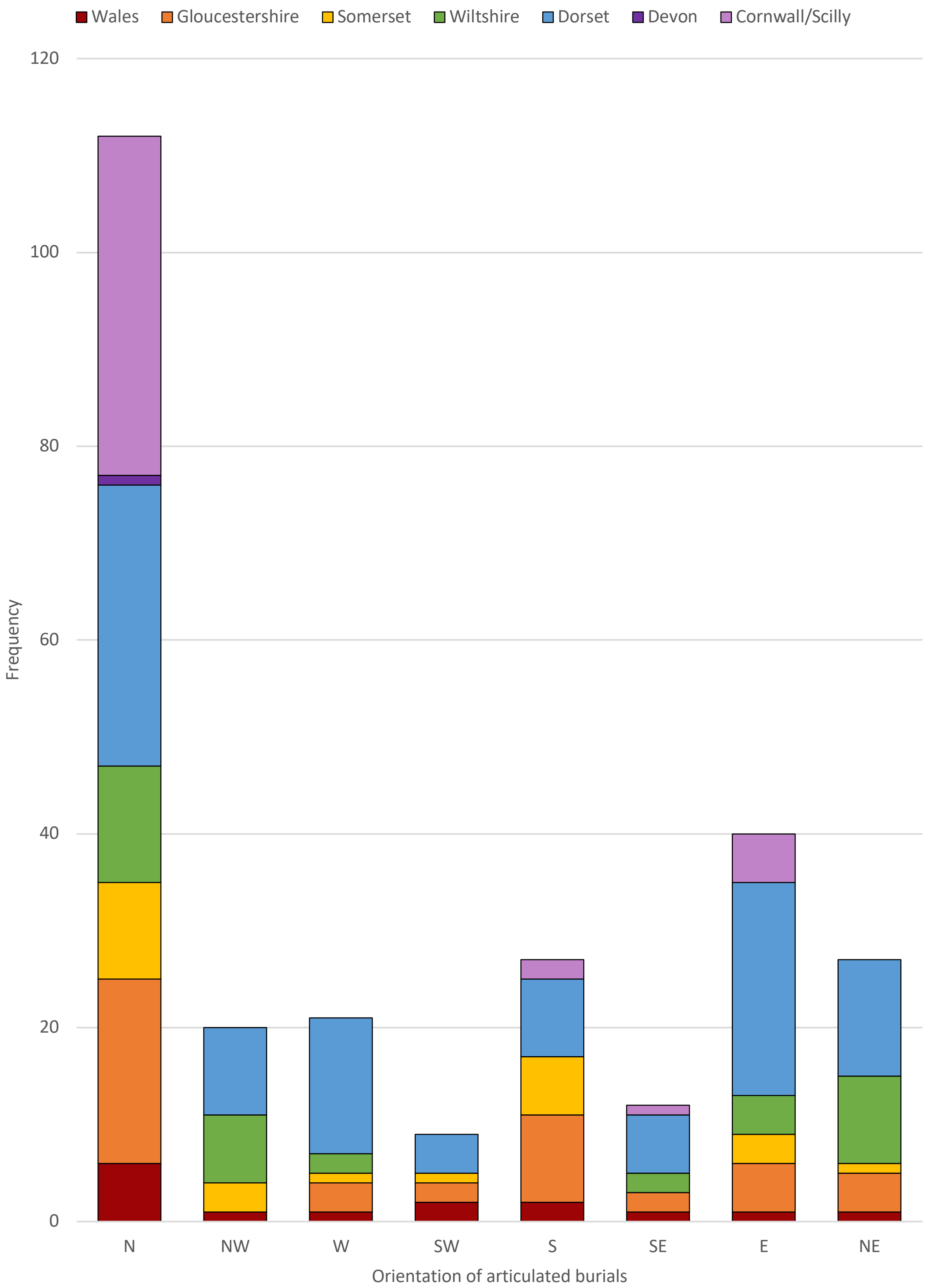


Figure 154. Graph showing the frequency of head orientation in articulated inhumation burials across the sub-regions. Source: author

As shown in Figure 154, the most common direction for head placement is north with a total of 112 burials across the region comprising 42% of identified orientations. North is the most frequent orientation in all sub-regions to varying degrees: the most extreme is Cornwall and Scilly, where 81% (n=35) of all inhumations where orientation could be determined had their heads to the north. The only known orientation from Devon is north, and the proportion is consistently high in the sub-regions that border the southwest coast: 40% (n=10) in Somerset; 40% (n=6) in south Wales; and 43% (n=19) in Gloucestershire. A north orientation is also the most common, although to a lesser degree, in Wiltshire (33%, n=12) and Dorset (28%, n=29). As shown in Figure 155, there is more variation in head placement in Dorset and Wiltshire than the other sub-regions, however, northern orientations in general (including northeast and northwest) make up a large majority of burials here. Figures showing the total breakdown of orientations for each subregion is provided in Appendix 5.

Bodies with heads placed to the east comes a distant second, represented by 15% (n=40) of all identified orientations. Over half (of these are from Dorset n=22) from ten different sites and all but four burials are LIA to RB in date (the phases for the remaining four could not be identified). It is interesting to note that none of the EIA-MIA burials in Dorset with recorded orientation are orientated east. This may indicate a shift in burial tradition during the LIA where bodies are orientated with heads placed to the east instead of north, although northern orientations are still common throughout the LIA in Dorset.

Overall, as shown in Figure 155, northern orientations (N, NE, NW) are far more common than southern orientations (S, SE, SW) in the study region. East and west orientations are rare in all subregions except Dorset.

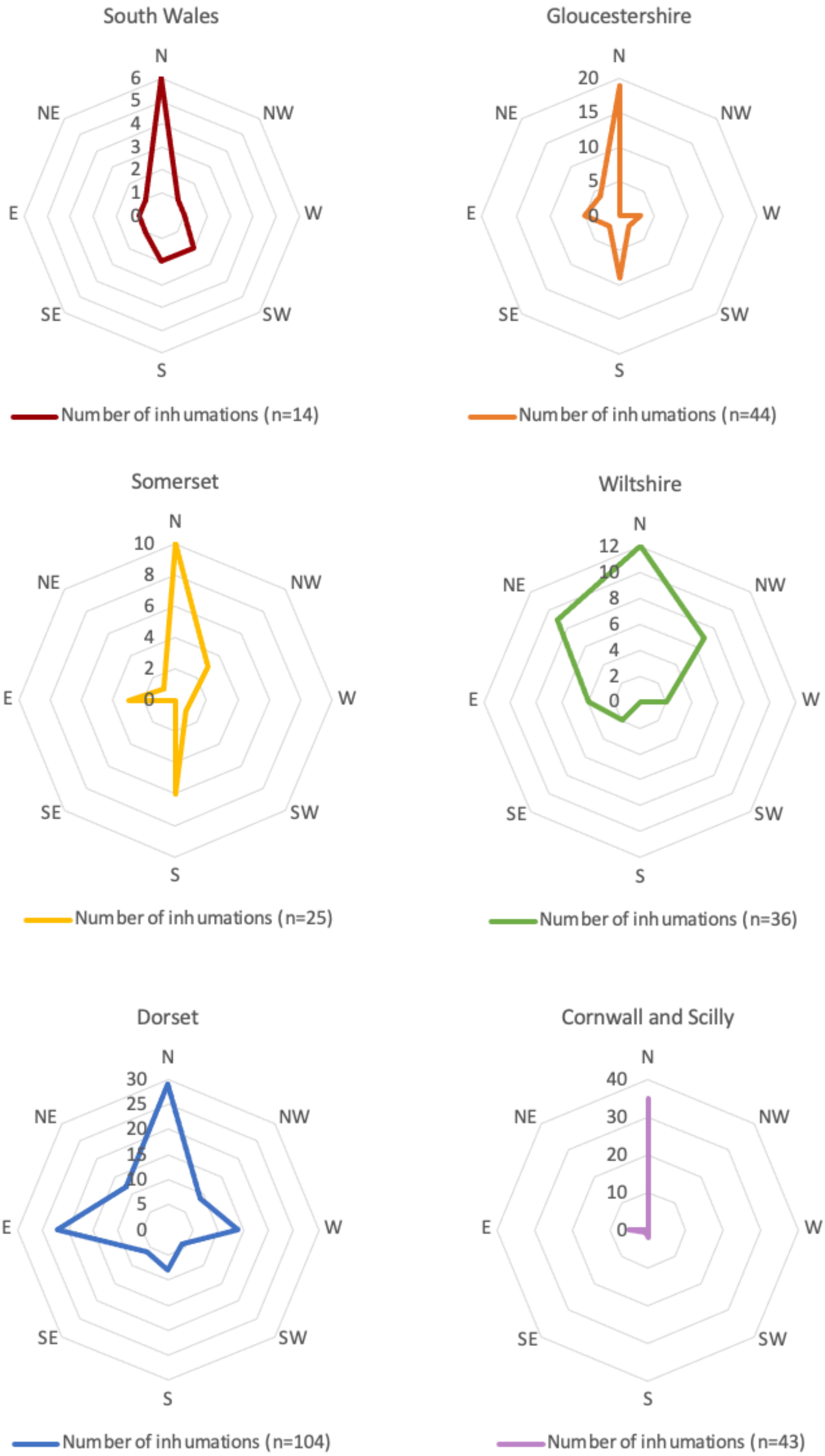


Figure 155. Charts showing the directions of head orientation in articulated inhumation burials from each sub-region. Source: author

7.3.3. Features

The frequency of articulated burials in various feature types are identified in Table 25 and Figure 156. As shown in Figure 156, most of the articulated Iron Age burials in southwest Britain have been recovered from graves (n=276) followed by pits (n=205). As previously mentioned, it is important to bear in mind that several of the large inhumation cemeteries mentioned in publications but not described and are not included in these figures, so the true number of articulated inhumations within graves likely outnumbers those from pits by a greater number. Graves are most frequent in Dorset with 176 individual inhumations in graves recorded. Inhumations in pits are concentrated in the subregions within the 'Wessex' area (n=72 from Dorset; n=54 from Somerset; n=51 from Wiltshire) and become less frequent in Gloucestershire (n=18) and Wales (n=9) (Figure 157). Pit burials are virtually absent in Cornwall and Scilly as large grain storage pits are not a significant feature of the archaeological record.

Table 25. Frequency of articulated burials recovered from different features. Source: author

Feature	**Frequency**
Grave	276
Pit	205
Cist	110
Boundary	77
Roundhouse floor	4
Roundhouse gulley	3
Gate	3
Barrow	3
Cairn	3
Surface (peat)	2
Cave	1
Midden	1
Unknown	41
Total	729

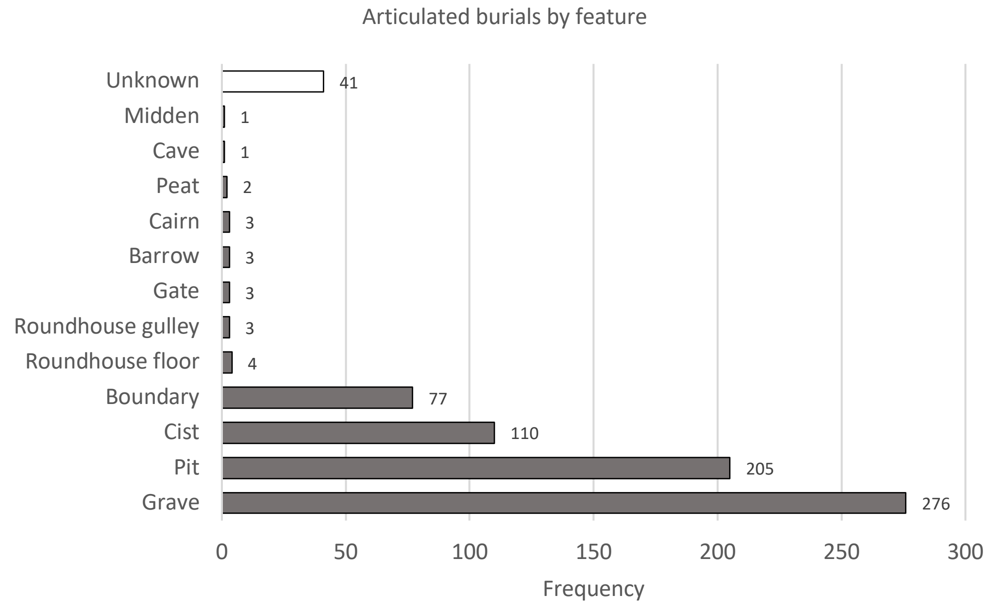


Figure 156. Graph showing the frequency of articulated burials by feature type. Source: author

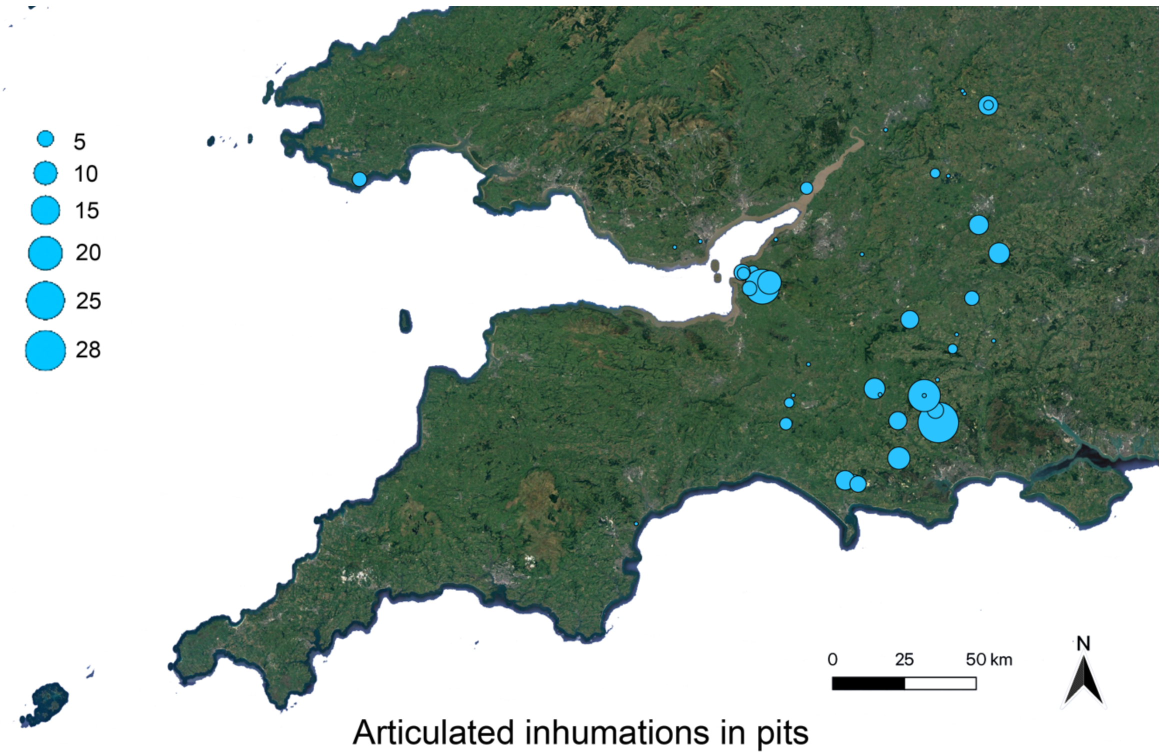


Figure 157. Map showing distribution and frequency of articulated inhumations in pits. Source: author

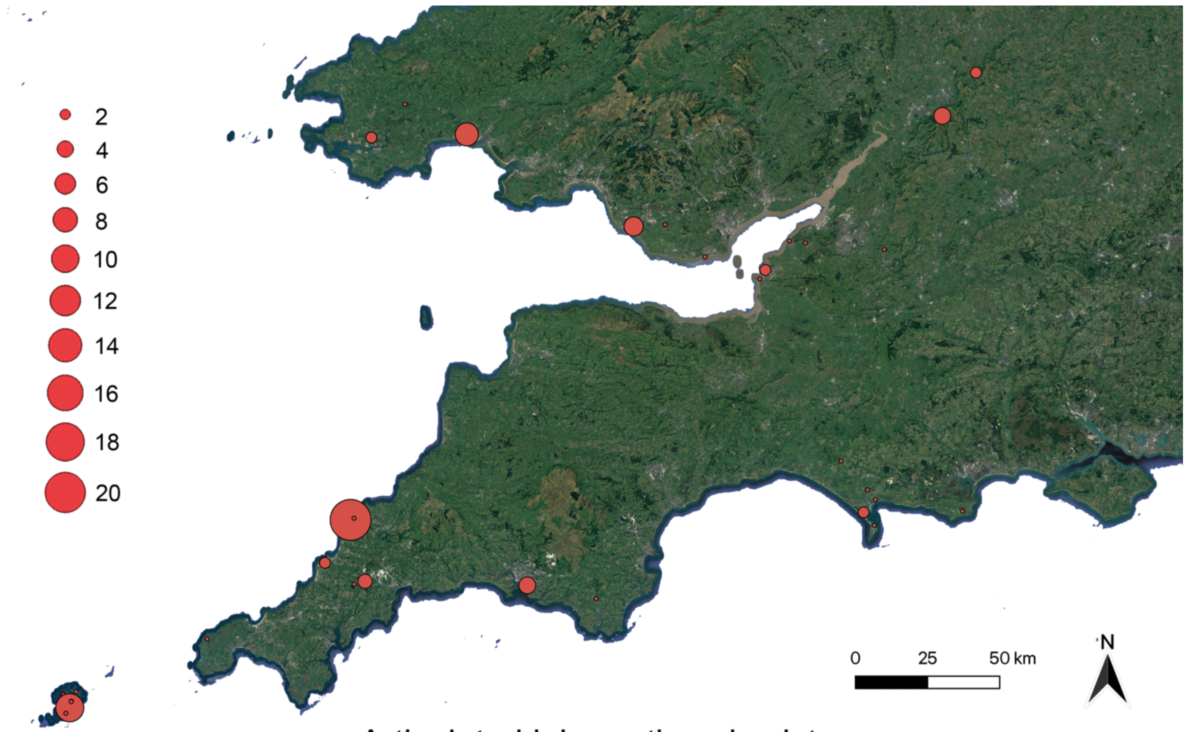


Figure 158 Map showing distribution and frequency of articulated inhumations in cists. Source: author

Cist graves are also well-represented with 110 graves recorded (again, this does not include large cemeteries only briefly mentioned in antiquarian sources). Cist graves are concentrated around the coastline (Figure 158) with the largest concentration in Cornwall and Scilly (n=74) following the 'southwest cist inhumation' tradition identified by previous scholarship (Whimster 1981). Most of the cist graves, especially in the southwest peninsula, are orientated north-south as discussed above. Only five cists were identified as having an east-west orientation from five sites: Scarcewater, Cornwall; one from Harlyn Bay, Cornwall; Hailes and Birdlip in Gloucestershire and a single cist from Weymouth, Wyke Reservoir Dorset. The distribution favouring the coastline may indicate a shared tradition amongst coastal communities, especially on the western coast, although more radiocarbon dating would be needed to determine this. It is interesting to note the difference in spatial distribution between cists and pits (compare Figures 157 and 157). Cists seem to be where pits are not, with the exception of western Somerset where both are relatively frequent.

Articulated inhumations in settlement boundaries (ditches, ramparts) are the fourth most frequent, but considerably less frequent than those in pits, with a total of 77 deposits recorded. Articulated skeletons have been recovered from other features in much fewer numbers (Figure 156) including roundhouses, gates/entrances, barrows, cairns, peat, a cave and a midden. The details of all deposits are provided in Appendix 2.

7.3.4. Age and sex

As shown in Figures 159 and 160, the majority of articulated burials represent adults (n=482, 74%). Adolescents and juveniles are underrepresented with only 22 and 35 recorded respectively. Infants/neonates/foetuses are represented by 118 articulated or probably articulated burials, many of which from Dorset (n=62) and Wiltshire (n=34). A surprising number of infants/neonates were recovered from pits (n=18) and to a lesser extent ditches (n=6) at Gussage All Saints, Dorset. The opposite pattern is seen in Wiltshire, with most of the infants from Wiltshire were recovered from boundary ditches: 22 from ditches (nine from Yarnbury Castle and 13 from Berwick St. John Rotherley) with 11 recovered from pits (one from Wroughton and 11 from Berwick St John Rotherley). This may indicate a preference for articulated infants in boundary ditches in the populations of modern Wiltshire, while those in Dorset were more often placed in pits.

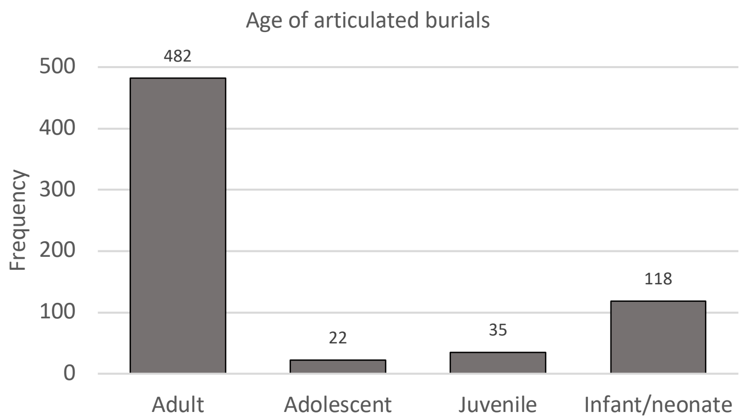


Figure 159. Graph showing the frequency of age categories from articulated burials recorded in this study. Source: author

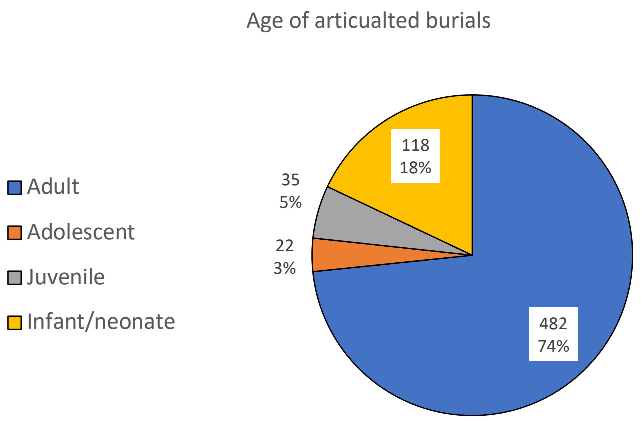


Figure 160. Chart showing the percentage of age categories from articulated burials recorded in this study. Source: author

A slightly higher percentage of articulated burials (which could be sexed or given an estimated sex) were female with 116 burials comprising 53% of the total (Figure 161). Males were represented by

103 burials totalling 47%. There were no considerable differences in the feature frequency between males and females (Figure 162), although slightly fewer males have been recovered from graves. The relatively equal distribution amongst features suggests that males and females afforded a burial rite that maintained the skeleton's natural anatomic position were treated similarly, or at least were not distinguished by deposition in certain features.

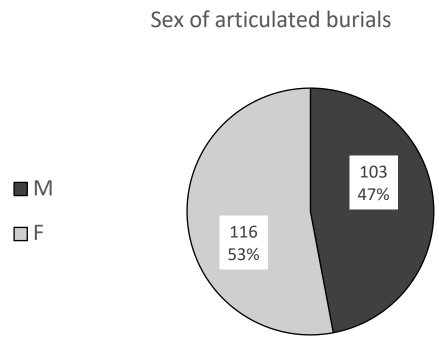


Figure 161. Chart showing the percentage of sex (male or female) of articulated burials recorded in this study. Source: author

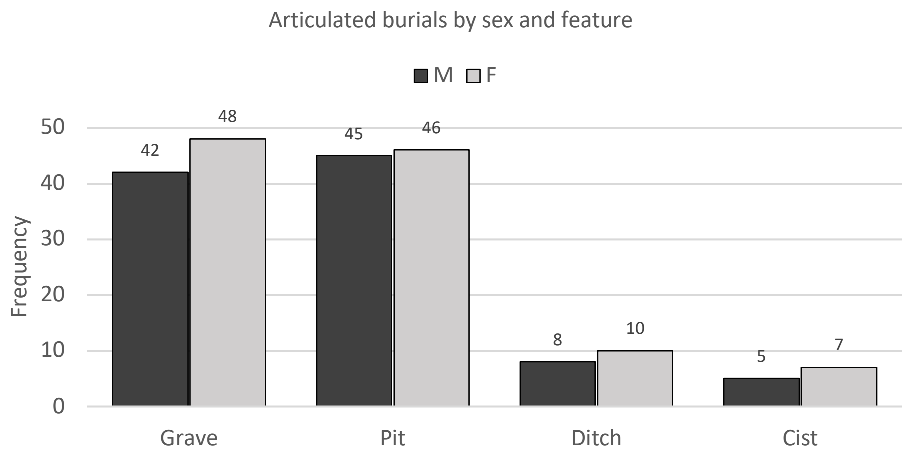


Figure 162. Graph showing the frequency of male and female articulated burials represented in the most common features. Source: author

7.3.5. Summary

To summarise, articulated inhumations are most frequent type of burial deposit in the southwest. These are most common during the LIA as inhumation cemeteries become more frequent, but inhumations are also recovered from EIA and MIA contexts at nearly equal frequency to each other. A crouched position is most common across the southwest and placed on their left or right side at near-equal frequency, however some subregions appear to prefer one side over the other (e.g. Cornwall and Scilly and Gloucestershire are most often on their left side, whilst burials in Dorset they are more often on the right side). A northern orientation is the most common by a wide margin with Dorset showing the most variety in the direction of head placement. Articulated inhumations are most often recovered from graves, followed by pits, cists, then boundaries. Adults are most represented, with females making up a slightly higher percentage than males.

7.4. Partially articulated deposits

Evidence from partially articulated deposits is described in more detail here because it is fundamental to understanding multi-phase mortuary practice and disarticulation. Although considerably less common than other deposit types, partially articulated evidence provides valuable insight into Iron Age mortuary practice: partially articulated deposits may represent the remnants of an inhumation that had been cleared from the feature, or a redeposited body part that had enough soft connective tissue to retain articulation. Insights into element selection and features used for exhumation can be gained from a thorough consideration of this deposit type.

It is important to note that it is often difficult to determine when a burial is partially articulated due to intentional, anthropogenic choice versus natural taphonomic processes or later disturbance, so the data shown here follows the descriptions and interpretations used by the excavators whenever possible. Overall, a total of 59 partially articulated deposits (including possible and probable partially articulated deposits) are recorded from the southwest. Partially articulated deposits are relatively evenly represented across the southwest region, occurring in all sub-regions except Devon (Figure 163), suggesting that mortuary practices which result in disarticulation occur throughout the southwest.

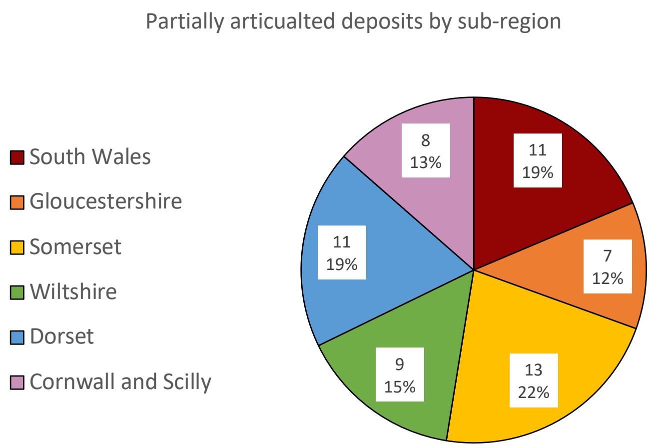


Figure 163. Chart showing the frequency of partially articulated deposits by sub-region. Source: author

7.4.1. Body sections

The sections of the body represented by the partially articulated deposits are of particular importance when examining Iron Age mortuary practice because they are very likely evidence of selective removal for redeposition. Figure 164 shows the breakdown of the different body categories in the present data: deposits belonging to the lower body were the most common (n=12) followed by upper body (n=8). Torsos and skulls with long bones—that is, a deposit where the skull and long bones are in roughly correct anatomical position relative to one another—are equally represented with four deposits each. The details of partially articulated deposits of the categorised body sections identified in Figure 1644 are provided in Appendix 2.

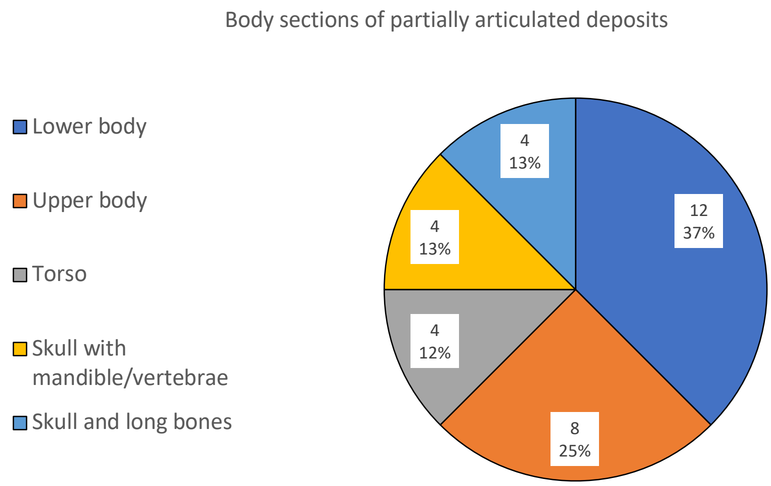


Figure 164. Chart showing the percentage of body sections represented by partially articulated deposits. Source: author

All of the lower body parts were recovered from pits and include adults and sub-adults. Two of the deposits were interred within pits with evidence for structured deposition and special animal deposits: one contained a pelvis and legs of adult from Tolpuddle Ball (60A) and included disarticulated elements from a dog skeleton, possibly comprising the entire dog, with evidence for butchery on the skull (Hearne and Birbeck 1999: 38). The partially articulated foot from Battlesbury Bowl (4273) was recovered from the same pit as the crouched skeleton of a juvenile (SK4571) as well as three articulated goat/sheep vertebrae, four mandibles of lamb/kid and other animal bones, sherds of pottery, worked and burnt flint, a polished Neolithic axe, and burnt stone which created the first layer. The subsequent fills included various domestic waste and animal bone, including an antler handle, and then partly recut later down to the point of the burial fill. This cut was backfilled with sterile chalk rubble and the skull of a foal was placed on top. It was noted that immature horse bones are rare in Iron Age sites in southern Britain (Harcourt 1979; Grant 1984a) and so the skull may have had significance attributed to its rarity (Ellis and Powell 2008: 37). These pits, with their special animal deposits, may be evidence for a mortuary practice where known burial features are cut into, with elements removed and replaced, then sealed with special backfill and/or animal bone deposits.

Partially articulated upper body parts are recovered from a wider range of features. Two such deposits, both juveniles, were recovered from the midden site at Llanmaes and one was radiocarbon dated to the late Middle-Late Iron Age (171 cal BC-cal AD 4; UB-7340). These were noted by excavators to be discretely deposited bone groups concentrated toward the north-eastern end of the excavated area (Gwilt et al. 2006; Gwilt and Lodwick 2008). Another partially articulated deposit comprising two arms including the left scapula were also deposited amongst domestic waste within a storage pit at the Perrott Hill School settlement site (Hollinrake and Hollinrake 1997).

Overall, direct evidence for beheading and deposition of fleshed heads is rare in the southwest. Only one partially articulated deposit includes such evidence: a skull with an atlas vertebra that had been severed by a clean stroke was recovered from a pit at Worlebury hillfort in Somerset (Dymond 1902). Another deposit of a skull and vertebrae from Worlebury had evidence for cut marks/sharp force trauma, but it is not specified if this trauma is consistent with a beheading. It could be argued that any skull with the mandible in generally correct anatomical position would indicate the head maintained connective soft tissue at the time of disposal. However, Iron Age peoples must have had an awareness for skeletal anatomy, as some animal bone deposits in pits were apparently reassembled long after the carcass had lost its flesh: examples from Winterbourne Kingston in Dorset include a composite animal created from cow and horse bone within a pit and a decapitated horse fitted with a cow skull (Russell et al. 2014: 219-220). With this in mind, a human skull with an articulated mandible does not necessarily represent a fleshed deposit, and interpretations following this assumption should be considered with some caution.

7.4.2. Features

Partially articulated deposits have been recovered from a range of features as shown in Figure 165. Nearly half of partially articulated deposits in the southwest are recovered from pits (n=27, 46%) (Figure 166). These are found in all sub-regions with partially articulated deposits except for Cornwall and Scilly, where pits in general are not as common. Boundary ditches are the next most frequent feature from which partially articulated remains have been recovered. These are represented by only one deposit per site: five from sites in south Wales, one from Dorset and two from Wiltshire. Other features contained partially articulated deposits: two from the midden at Llanmaes, two from peat outside of the Glastonbury Lake Village settlement; two from the surface 'massacre deposit' at

Cadbury Castle; and one from a layer of clay (possibly a paleochannel) underneath the Newport Ship in the Severn Estuary.

These results suggests that, for most of the southwest region, pits were the most frequently used feature for whatever mortuary process called for the removal of body parts still connected by soft tissue—whether the parts represent primary burial, or secondary deposits within pits. This is discussed in further detail in Chapter 8.

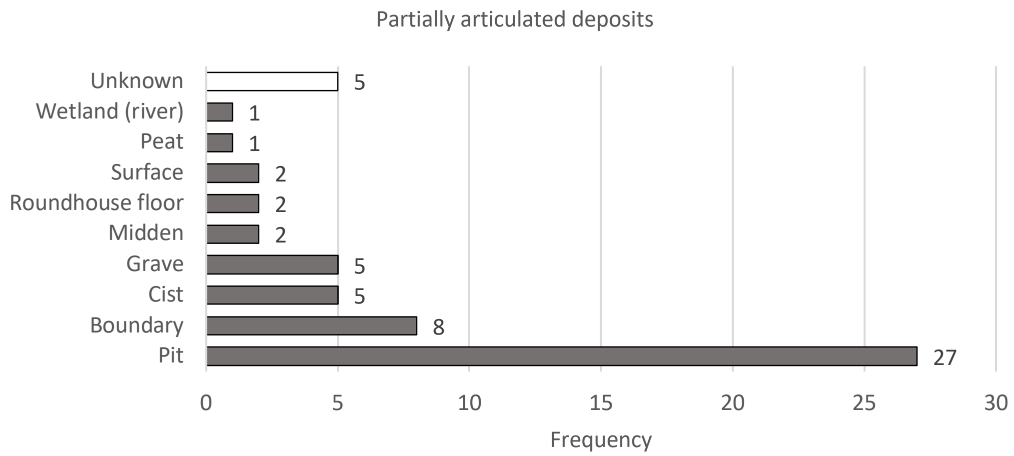


Figure 165. Graph showing the frequency of partially articulated deposits by feature type. Source: author

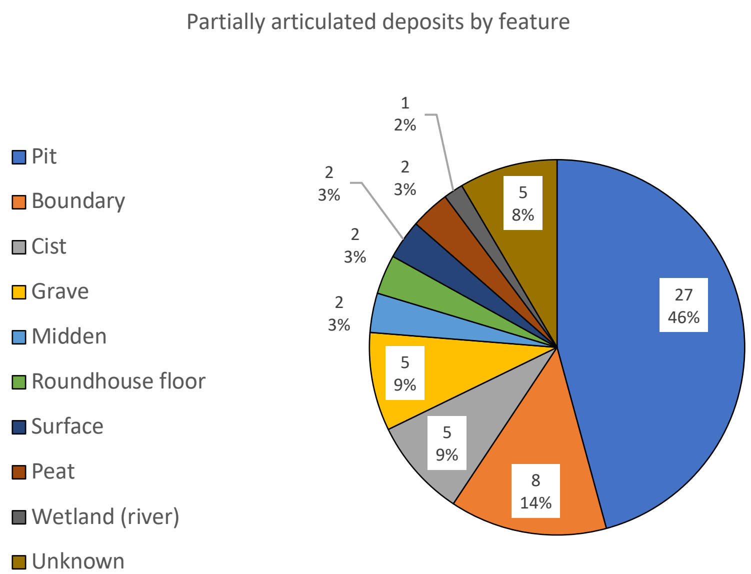


Figure 166. Chart showing percentages of partially articulated deposits by feature. Source: author

7.4.3. Age and sex

The majority of partially articulated deposits represent adults (Figure 167, 168). Adolescents are underrepresented with only one identified deposit of a 14–17-year-old male buried within a pit at Maiden Castle hillfort in Dorset. Juveniles are also underrepresented and include the two aforementioned deposits in Llanmaes midden in South Wales (Vale of Glamorgan), a pair of legs from a shallow pit at RAF St Athan, also in South Wales (Vale of Glamorgan); one from Glastonbury Lake Village and Meare Lake Village (both Somerset) respectively, both buried within a roundhouse floor. Infants/neonates are the second most frequent with a total of 10 deposits recorded in this dataset. It is interesting to note that three of these deposits are legs only, all of them from pits (Thornwell Farm and Wroughton); another from a ditch (Gussage All Saints) is missing legs.

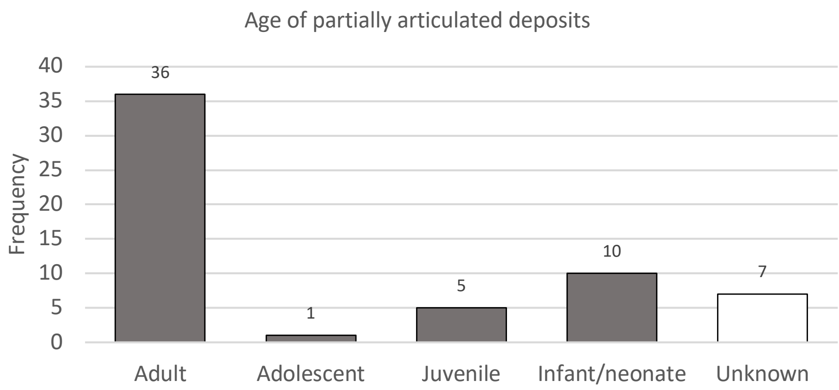


Figure 167. Graph showing the frequency of partially articulated deposits by age category. Source: author

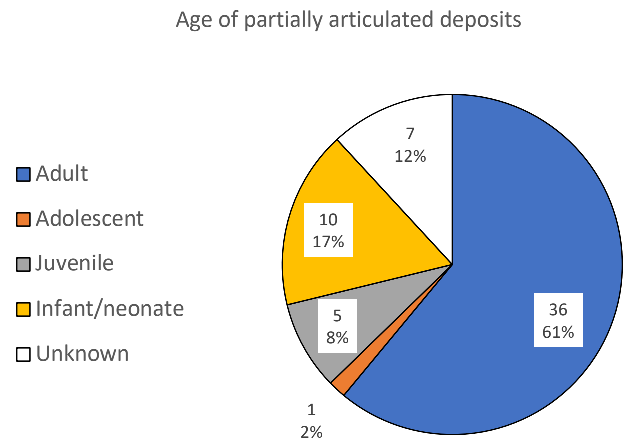


Figure 168. Chart showing the percentage of partially articulated deposits by age group. Source: author

Of the partially articulated deposits which could be sexed, males and females are nearly evenly represented with 10 females and 9 males (Figure 169). The female deposits were mostly recovered from pits (n=6), two from graves, one from peat surrounding Glastonbury Lake Village and one from an unknown feature. One of the female skeletons is mostly complete, missing only the head, from Frocester, Gloucestershire (Price 1983, 2000). The males show more variety in feature: three were recovered from ditches, 3 from pits, one from a cist, one from peat and one (Newport Ship burial) from a riverine environment. A male deposit from a ditch at Berwick St John, Rotherley, Wiltshire was articulated except the mandible was reported as missing (Hawkes 1947: 36-42; Pitt-Rivers 1888), presumably removed from the corpse before burial, or selected for removal and redeposition elsewhere. Another burial at Harlyn Bay was mostly articulated except the skull had been 'dissevered from the body and rest[ing] on its under surface and jaw" (Bullen 1912: 162). This indicates that skulls were selected for manipulation among both male and female corpses.

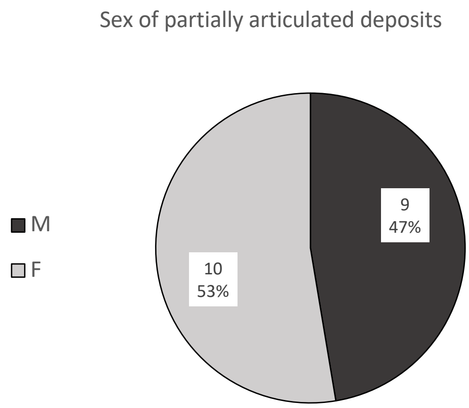


Figure 169. Chart showing the percentage of male and female partially articulated deposits recorded in this study. Source: author

7.4.4. Summary

To summarise, although fewer partially articulated deposits have been recovered than articulated or disarticulated deposits, they are important to understanding Iron Age mortuary practices that result in disarticulation. Partially articulated deposits have been recovered from all the sub-regions, except for Devon, at similar frequencies, indicating that mortuary practices resulting in the disarticulation of skeletons as practiced around the southwest. Most of the body parts represented come from the lower body, followed by the upper body. Skulls with articulated mandibles are rare across the southwest, suggesting that fully fleshed heads were not often deposited and left in situ. Partially articulated deposits are most often found in pits by a substantial margin, suggesting that these features were frequently used for mortuary processes involving disarticulation. This is true for all of the sub-regions except for Cornwall and Scilly, where cists were the preferred feature. Adults of both sexes are almost evenly represented, although sex could not be determined for most of the recorded deposits.

7.5. Disarticulated deposits of isolated bone, fragments, and groups of bone

Deposits of disarticulated human remains make up 40% of the burial data collected for this study (n=554) (Figure 170). Disarticulated material has been recovered from each sub-region at varying frequency, apart from Devon, with the highest concentration in Somerset (40%, n=221) and Wiltshire (31%, n=174). This data is skewed in favour of Somerset by the ambivalence of deposition at Cadbury Castle, where the 'massacre deposits' include, apparently, a large assemblage of disarticulated bone (n=90 in this dataset), but the spatial arrangement of these deposits in relation to each other is not clear and may represent more partially articulated and articulated deposits than what is suggested here. Conversely, the infrequency of disarticulated remains from South Wales and Gloucestershire may be partly attributed to the acidic soils and fewer large-scale excavations of sites where environmental conditions are favourable, although even in extensively excavated sites disarticulated bone is not as common. For example, only one human bone fragment has been recovered from Caerau hillfort which has been excavated annually by Cardiff University since 2013 (Davis and Sharples 2014; 2015; 2016) and only two deposits from Salmonsbury hillfort in Gloucestershire (Dunning 1976). This stands in contrast to the amount of disarticulated material from hillforts elsewhere in the southwest, particularly Ham Hill (n=31) and Worlebury (n=16) in Somerset and Battlesbury Bowl (n=27) in Wiltshire.

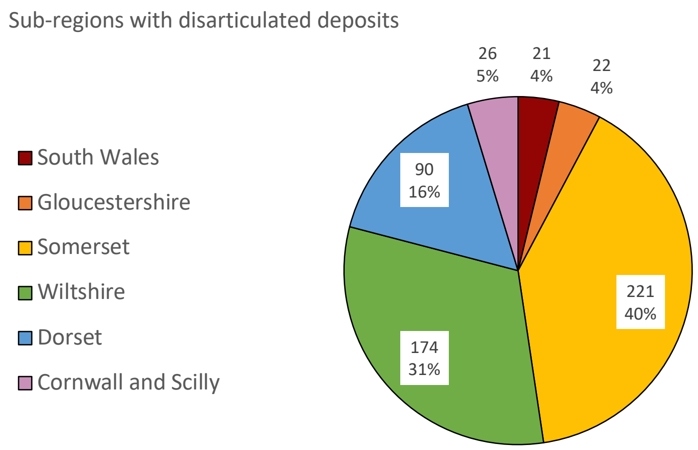


Figure 170. Chart showing the frequency of disarticulated deposits by sub-region. Source: author

7.5.1. Element type

As shown in Figures 171 and 172, disarticulated skulls and skull fragments are the most frequent with 212 identified deposits comprising over half (52%) of all identifiable elements. Long bones are also well represented with 123 (30%) identified deposits. Other elements are less represented, all together comprising 18% of identifiable elements. The total percentage of skulls and long bones are broken down by subregion in Figures 173 and 174 and maps Figures 175 and 176 illustrate their spatial distribution and frequency across the southwest.

As shown in Figure 177, skulls are the most common disarticulated element type amongst the corpus disarticulated bone from each sub-region. Long bones are underrepresented in South Wales and Cornwall, amounting to only 11% and 12% of the disarticulated deposits from the two sub-regions respectively. An exception is to this pattern is Dorset, where long bones are nearly equally represented to skulls/skull fragments (38% skulls, 36% long bones). Long bones are also well represented in Wiltshire, particularly within the midden at Potterne. This suggests that skulls/parts off skulls were selected for redeposition most frequently, and the selection of long bones may be specific to local traditions across the southwest. The preference for skulls has been well documented in Iron Age Britain and thought to indicate a culture which venerated the curation of heads either as 'war trophies' or ancestor reverence, as mentioned in Chapter 3 (see Armit 2012 for a detailed discussion of the importance of heads in the Iron Age). This pattern is further supported by the disarticulated evidence presented here, although the differences in the frequency of skulls compared to other elements (especially long bones) may indicate variations in mortuary practice across the southwest. The possibility of curated skulls and long bones is further discussed in Chapter 8 (Section 8.3.6). The percentages of skull deposits and long bone deposits recovered from different feature types are shown and described in the following section (Section 7.5.2).

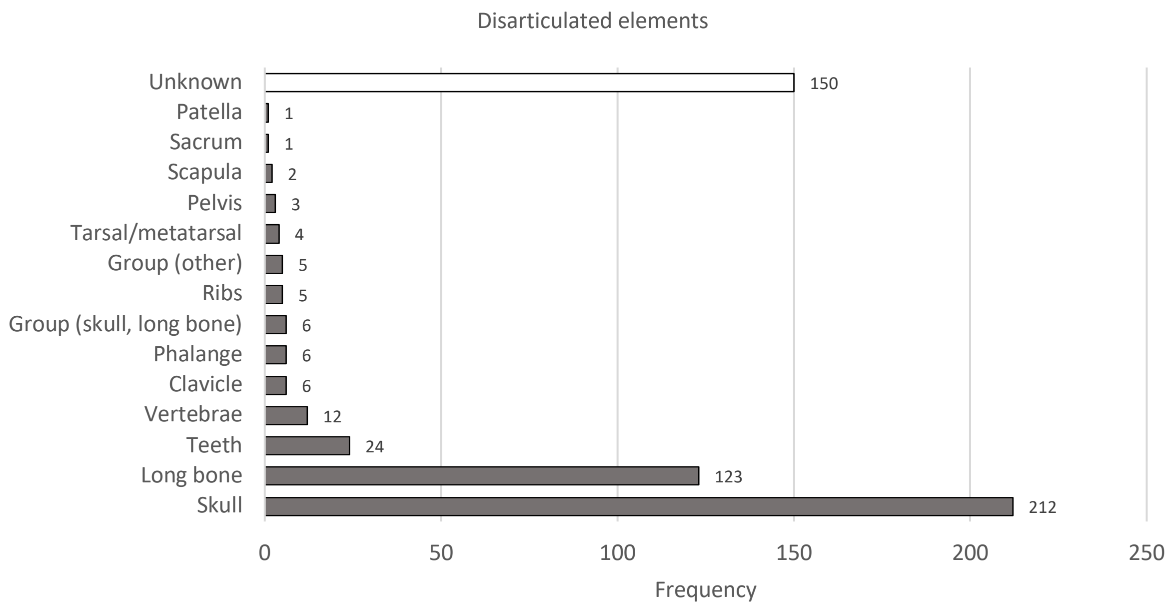


Figure 171. Graph showing the frequency of disarticulated deposits by element type. Source: author

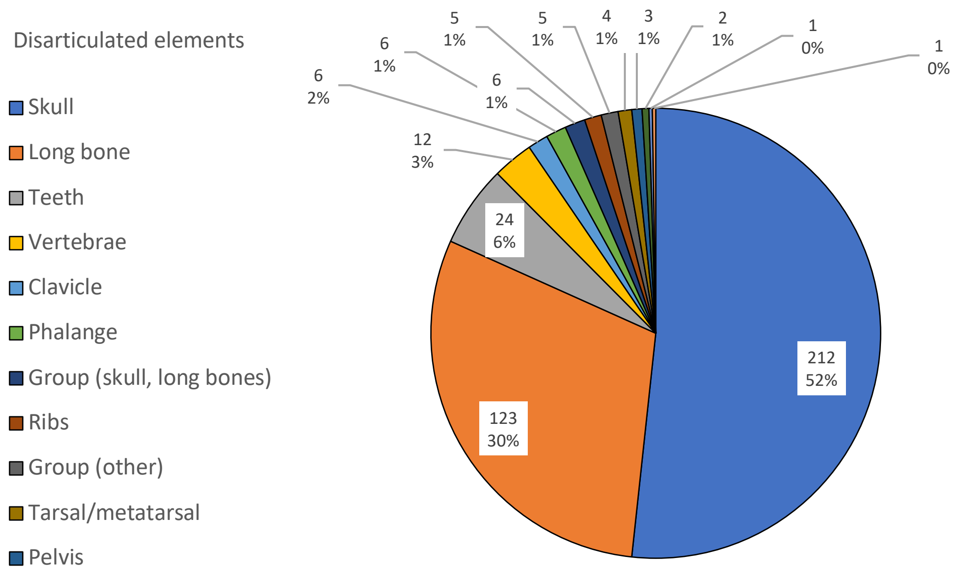


Figure 172. Graph showing the frequency of disarticulated deposits by identified element type. Source: author

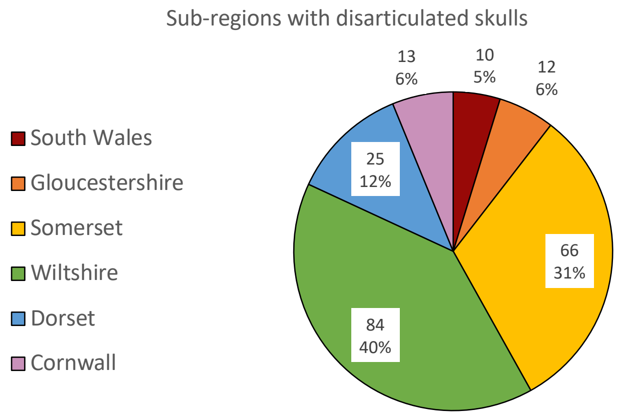


Figure 173. Chart showing the percentage of disarticulated skulls by sub-region. Source: author

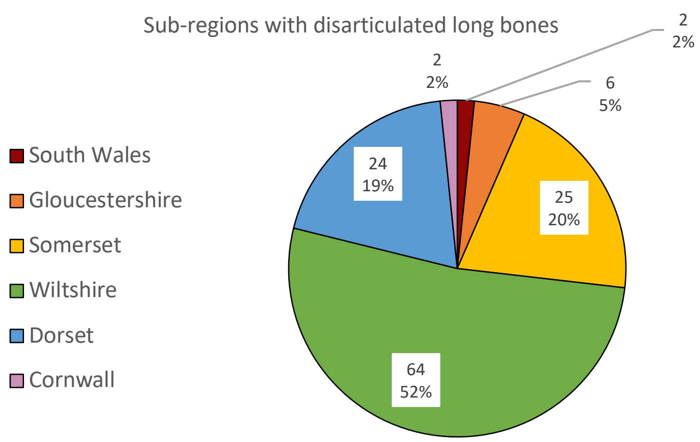


Figure 174. Chart showing the percentage of disarticulated long bones by sub-region. Source: author

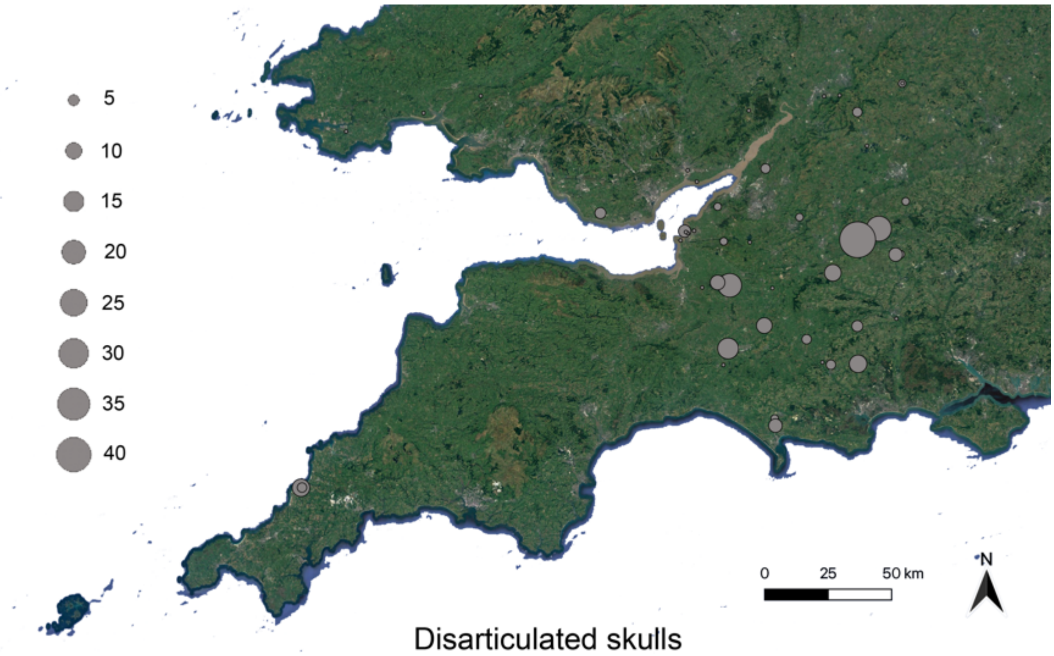


Figure 175. Map showing the frequency of disarticulated skulls and skull fragments. Source: author

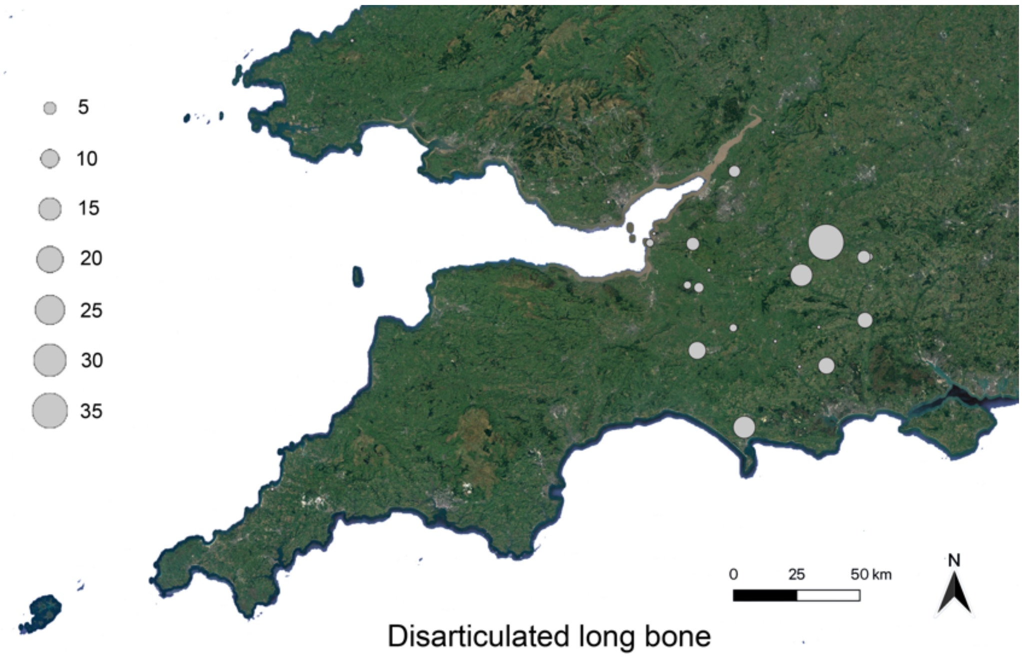


Figure 176. Map showing the frequency of disarticulated long bone and long bone fragments. Source: author

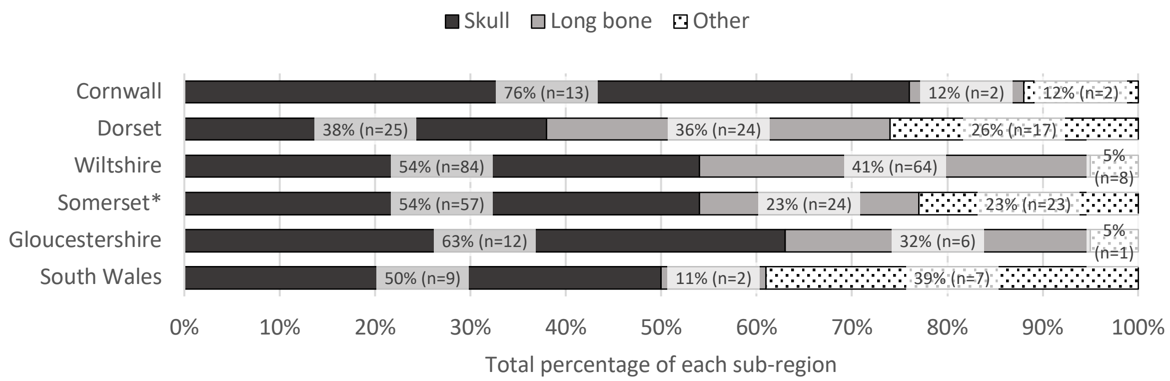


Figure 177. Percentage of disarticulated element types for each subregion. *Cadbury Castle has been removed from the data due to the uncertainty of the deposit types. Source: author

7.5.2. Features

Disarticulated deposits of single elements or groups of bone have been recovered from a variety of features as shown in Figures 178 and 177. The largest amount of disarticulated deposits included in this study have been recovered from middens, particularly Potterne (n=77, 27%) and All Cannings Cross (n=23) in Wiltshire, but are also present, albeit in fewer numbers, from sites in South Wales and Somerset. The evidence for varied mortuary practice suggested by the disarticulated human bone in Potterne is further described in Chapter 6 (Section 6.5.2) and discussed in Chapter 8 (Section 8.3.5).

The second most frequent feature for disarticulated deposits are storage pits (n=103, 22%) which, like middens, often contain domestic refuse. There is a distinct absence of disarticulated remains from pits in South Wales where deposition may favour boundary ditches (n=4) instead. The practice of interring disarticulated human bone in pits is most common in Somerset (n=35), Wiltshire (n=32) and Dorset (n=31), particularly from large and extensively excavated hillfort sites. The lack of pit burials from Cornwall, Devon and south Wales is not surprising as large grain storage pits are not common features in the archaeological record like they are in the 'Wessex' area. This may indicate a mortuary practice concentrated in the Wessex which is less frequently observed elsewhere where other features are used. Settlement boundaries (ditches and ramparts) are the third most represented feature among the disarticulated material with a total of 55 deposits (12%) from all sub-regions except Devon and Cornwall and Scilly.

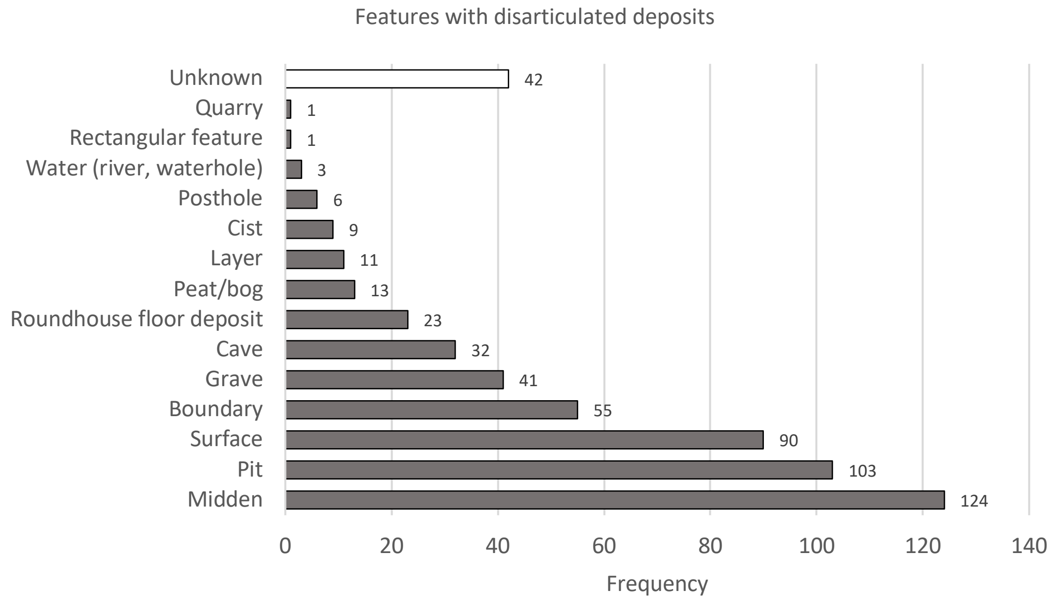


Figure 178. Graph showing the frequency of disarticulated deposits by feature type. Source: author

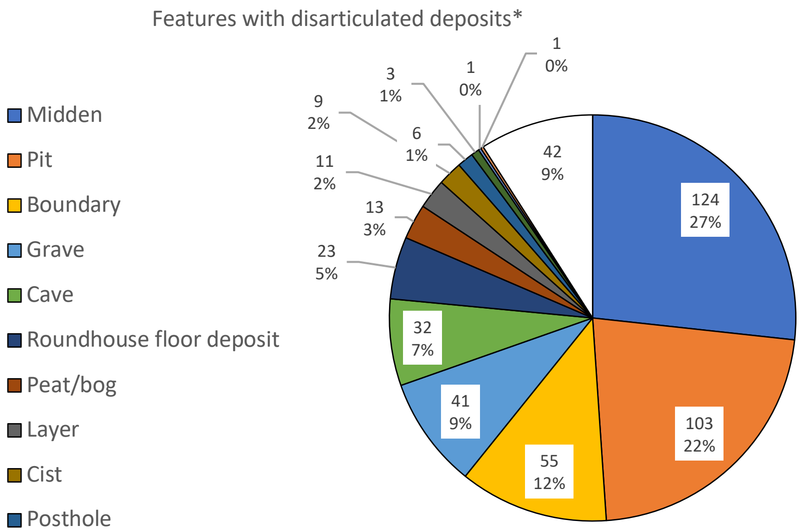


Figure 179. Chart showing the percentage of disarticulated deposits by feature *without Cadbury Castle. Source: author

The frequency of disarticulated bone in graves is somewhat surprising as graves are usually associated with articulated inhumations and undisturbed primary interments, but it is likely that this is not always the case. Most of the disarticulated bone from graves has been recovered from Dorset, particularly Weymouth (Southdown Ridge) where 19 elements or groups of elements were found within graves, especially grave fills. Similarly, 14 disarticulated deposits from graves at Trethellan Farm in Cornwall, the rest of the corpus comprising of a possible grave from Harlyn Bay, two deposits from graves at Poundbury, and one from Maiden Castle.

A total of thirty-two disarticulated bones from seven caves across South Wales, Gloucestershire, Somerset, and Wiltshire were recorded. However, this evidence should be approached with caution because, as previously discussed (Section 6.5.1), the open nature of caves often lends itself to disarticulation through natural means (flooding, animal scavenging) and so does not necessarily represent anthropogenic manipulation or intention.

Disarticulated deposits within roundhouses, particularly roundhouse floors, are uncommon across the southwest and are exclusive to Glastonbury Lake Village (n=7) and Meare Lake Village (n=15). A further deposit—a single adult mandible—was recovered from the packing of a hearth at Little Solsbury. The local concentration of this evidence likely suggests a distinct mortuary practice observed by the inhabitants of these sites in the Somerset levels, with the deposit from Little Solsbury as an outlier. Additionally, disarticulated remains from peat (n=13) were exclusive to Glastonbury Lake Village**.** It is also worth noting that the disarticulated skull from Goldcliff recovered from the Severn Estuary was described as being placed on a 'peat shelf' (Bell 2000: 64).

Less frequent features containing disarticulated human bone include cists (=9), all from Harlyn Bay; postholes (n=6) mostly from Battlesbury Bowl (n=4) and Easy Chisenbury (n=1) with one single deposit from Tregunnel Hill; three from aqueous environments at Goldcliff and Orb Works in Newport, South Wales and Shorncote, Gloucestershire; one from a 'rectangular feature' at Tregunnel Hill and a quarry at Little Solsbury. Forty-two disarticulated deposits could not be traced to a specific feature.

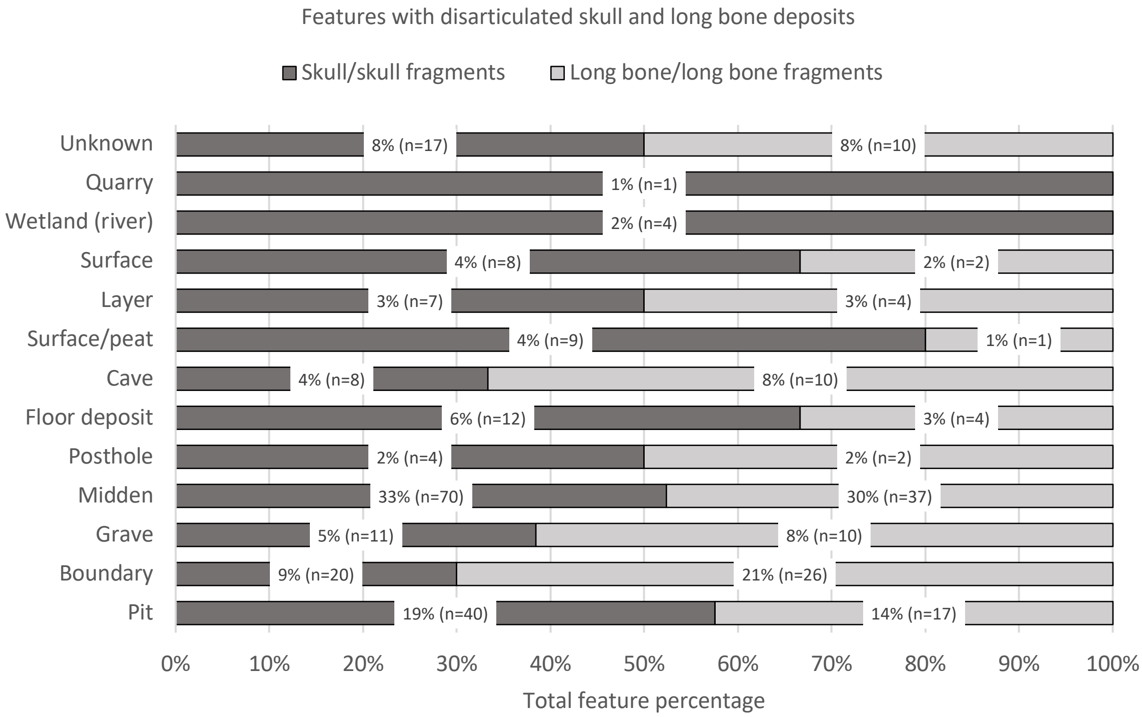


Figure 180. Graph showing the total percentages for disarticulated skull and long bone recovered from feature types. The percentage against the total disarticulated corpus and the total frequency (n) is included in annotation. Source: author

In order to explore possible variations in treatment between disarticulated skulls and long bones, it is necessary to determine if certain features show a bias towards either. Figure 180 shows the total percentage of disarticulated skulls/skull fragment and long bone/long bone fragments recovered from different features. A potentially noteworthy difference is that a higher percentage of long bone/long bone fragments have been recovered from settlement boundaries (ditches, ramparts) than skulls/skull fragments (21% of long bones vs. 9% of skulls) and the opposite is true for pits, albeit by a smaller margin (19% of skulls vs. 15% of long bones). This may indicate a preference of settlement boundaries for long bone deposition and pits for skulls/skull fragments. A higher percentage of long bone deposits also come from graves (8% of long bones vs 5% of skulls) and caves (8% of long bones vs 4% of skulls). A higher proportion of disarticulated skull/skull fragments are recovered from the peat surrounding Glastonbury Lake Village (4% of skulls vs 2% of long bones) and roundhouse floor deposits (6% of skulls vs 3% of long bones). The proportion of skulls and long bones from middens is nearly even with 33% of skulls and 30% of long bones. An even percentage of skulls and long bones are recovered from post holes (2% of each). Deposits of skulls and long bones are further described concerning differences in features between age categories in the following section.

7.5.3. Age and sex

The frequency of age categories represented by disarticulated deposits is shown in Figure 181 and the percentages of each age category in Figure 182. Overall, adults are the most frequent age category among the disarticulated deposits with a total of 306 (55%). Adolescents are markedly underrepresented with only 34 deposits totalling 6% of the data, however this is likely misrepresentative because disarticulated deposits are often fragmented and lacking the usual markers that allow for differentiation between adolescents and young adults (e.g. long bone fragments missing epiphyses). It is likely that many of the deposits represented here as 'adult' were adolescents, however this is often impossible to prove and a re-analysis of disarticulated material from across the southwest falls beyond the scope of this project. Juveniles are represented by 75 disarticulated deposits (14% of the total corpus) and 43 disarticulated remains from infants/neonates (8%). Age categories for 17% (n=95) of could not be identified.

The underrepresentation of subadults within the disarticulated corpus suggests that the mortuary practice, or practices, which result in disarticulation and redeposition was more frequently afforded to adults. This could mean subadults were less frequently disarticulated, or that the disarticulated elements were deposited in a way that does not preserve within the archaeological record, for example in dynamic bodies of water or the ground surface.

Adults are the most frequent age category from disarticulated skulls and long bones (Figure 183). The total percentage of adults and sub-adults is nearly equal with adults representing 71% of skulls (Figure 184) and 72% of disarticulated long bone (Figure 185). An interesting distinction between the two element categories shown in Figure 186 is that the proportion of long bones from infants/neonates (n=17, 15%) is considerably higher than skulls (n=5, 3%), which may indicate a preference for the deposit of neonate long bones in certain features, for example all of the identifiable bone from neonates/foetuses recovered from Potterne midden were long bones (n=6). Infant/neonate long bones are evenly represented in pits (n=3) and settlement boundaries (ditch, n=3) and a single upper limb fragment was found in a posthole (at Battlesbury Bowl). Only five skulls from this age category were recorded and are not limited to any feature type (features include a surface deposit from Cadbury Castle, a ditch and two unknown features from Gussage All Saints, and an unspecified 'layer' from Weymouth (Southdown Ridge).

Conversely, for juveniles, skulls/skull fragments (n=18, 12%) are more frequent than long bones (n=5, 5%). These are recovered from various features (n=3 middens, one from Llanmaes and two from Potterne; three pits from Ham Hill, Coronation Rd. and Worlebury; two surface deposits at Cadbury

Castle; a posthole from Battlesbury Bowl; a roundhouse floor from Meare Lake Village; a cave from Tickenham Rock; a grave from Trethellan Farm and a further unknown feature from Glastonbury Lake Village). For juvenile long bones, three were recovered from settlement boundaries (two from ramparts at Ham Hill, one from a ditch at East Chisenbury), one from a pit (Rowbarrow) and one from a surface deposit at Cadbury Castle. Most of the juvenile deposits come from Somerset, possibly indicating a variation of mortuary practice extended to children in this sub-region that is elsewhere limited to adults.

Disarticulated skulls/skull fragments (n=18, 12%) from adolescents were also more frequent than long bones (n=5, 5%). Skulls from adolescents were well represented in midden contexts with 20 deposits from Potterne, two from All Cannings Cross and one from Llanmaes. Three disarticulated adolescent skulls/fragments of skulls were recovered from pits (two from Battlesbury Bowl, one from Ham Hill), two from settlement boundaries (ditches) from Ham Hill, and one from a posthole at Battlesbury Bowl. Adolescent long bone was also recovered from Potterne midden, though less frequently (n=7), as well as a ditch and pit from Battlesbury Bowl.

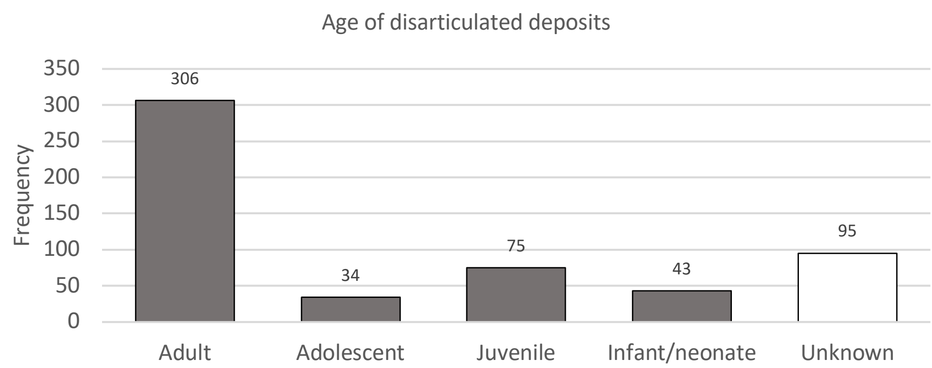


Figure 181. Graph showing the frequency of age categories from disarticulated bone recorded in this study. Source: author

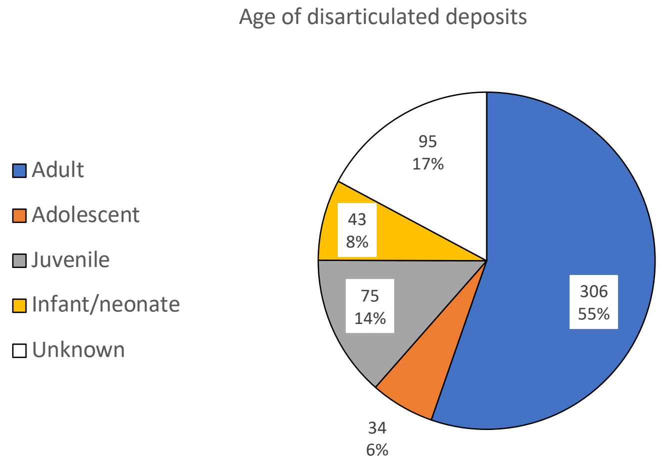


Figure 182. Chart showing the percentage of age categories in disarticulated deposits. Source: author

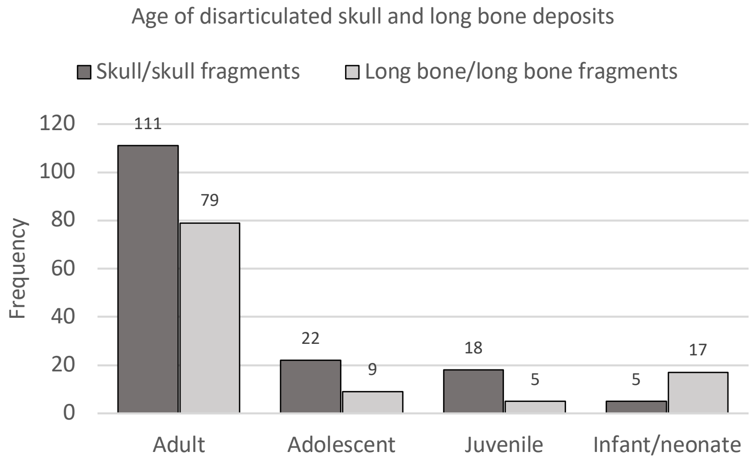


Figure 183. Graph showing the frequency of disarticulated skull and long bone by age category. Source: author

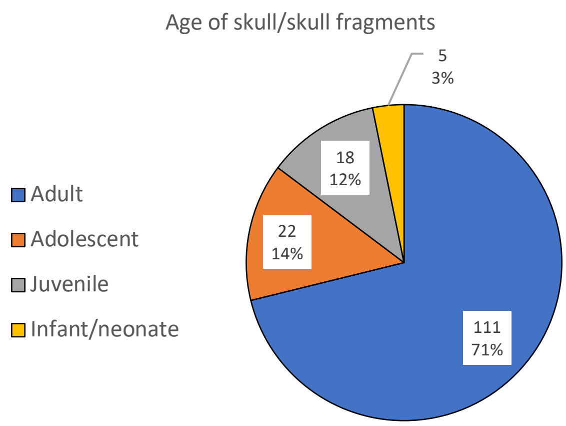


Figure 184. Chart showing the percentage of disarticulated skull/skull fragments by age category. Source: author

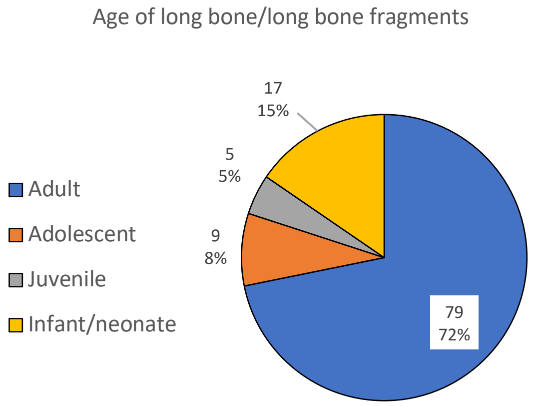


Figure 185. Chart showing the percentage of disarticulated long bone/long bone fragments by age category. Source: author

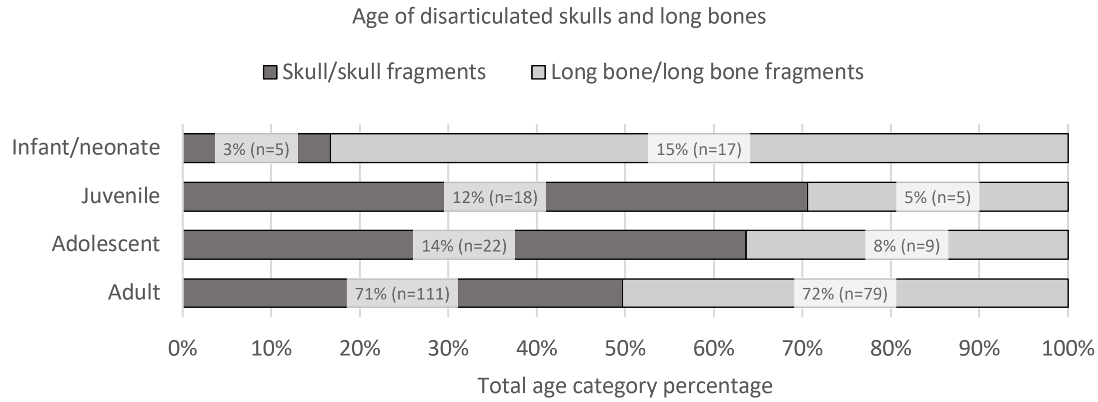


Figure 186. Graph showing the percentage of age categories from disarticulated skulls and long bones. The percentage against the total disarticulated corpus and the total frequency (n) is included in annotation. Source: author

Male and female individuals are almost evenly represented amongst the disarticulated material where sex could be determined or estimated with a total of 38 male and 34 female elements (Figure 187). As shown in Figure 188, there is no substantial difference in the frequency of either sex across the sub-regions (only one disarticulated bone from South Wales could be sexed) indicating that the mortuary practice of depositing disarticulated human bone is not controlled by biological sex.

There is no substantial difference in frequency between male and female disarticulated deposits from the various features, but there is some slight variations as shown in Figure 189 (and the proportions of males and females from various features is shown in Figure 190). A slightly higher percentage of disarticulated bone from females were recovered from pits (32%) and boundaries (12%) compared to males (24% and 8% respectively) and a slightly higher proportion of disarticulated male bone was deposited within middens (47%) compared to females (38%). The only two disarticulated deposits from a wetland context (a deposit in river clay from Orb Works and a waterhole at Shorncote) were from male individuals. This is not enough evidence to draw conclusions on mortuary practice, but it is interesting to note that the partially articulated torso from the beneath the Newport Ship and most of the disarticulated deposits in the peat around Glastonbury Lake Village were also male, so together this may indicate a preference for males within wetland environments, although of course this is too small a sample to draw any meaningful conclusions.

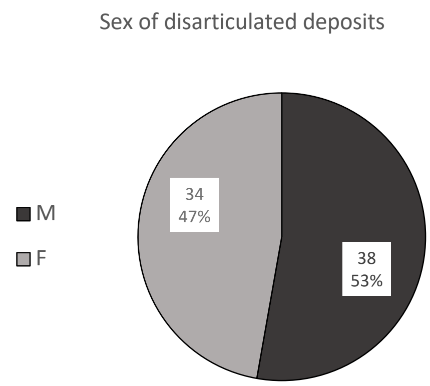


Figure 187. Chart showing the percentage of male and female disarticulated deposits. Source: author

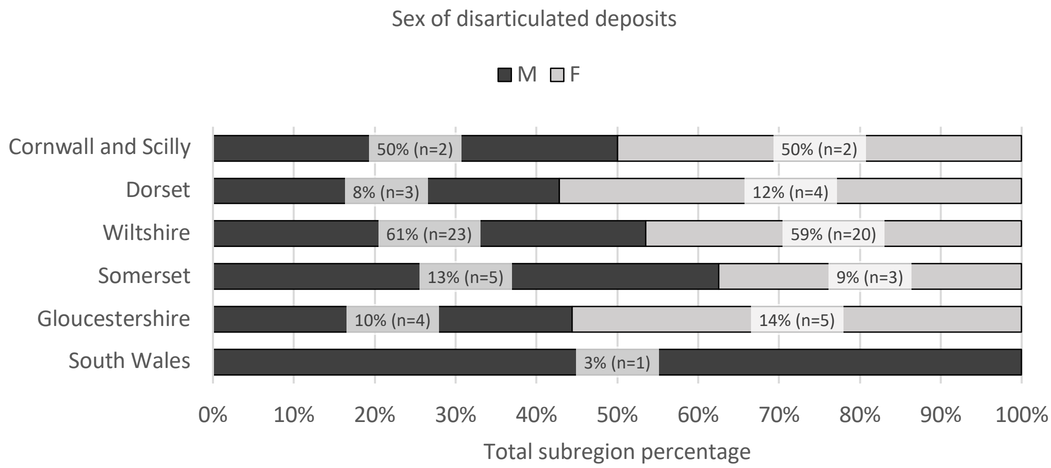


Figure 188. Graph showing the percentage of male and female disarticulated deposits from each sub-region. The percentage against the total disarticulated corpus and the total frequency (n) is included in annotation. Source: author

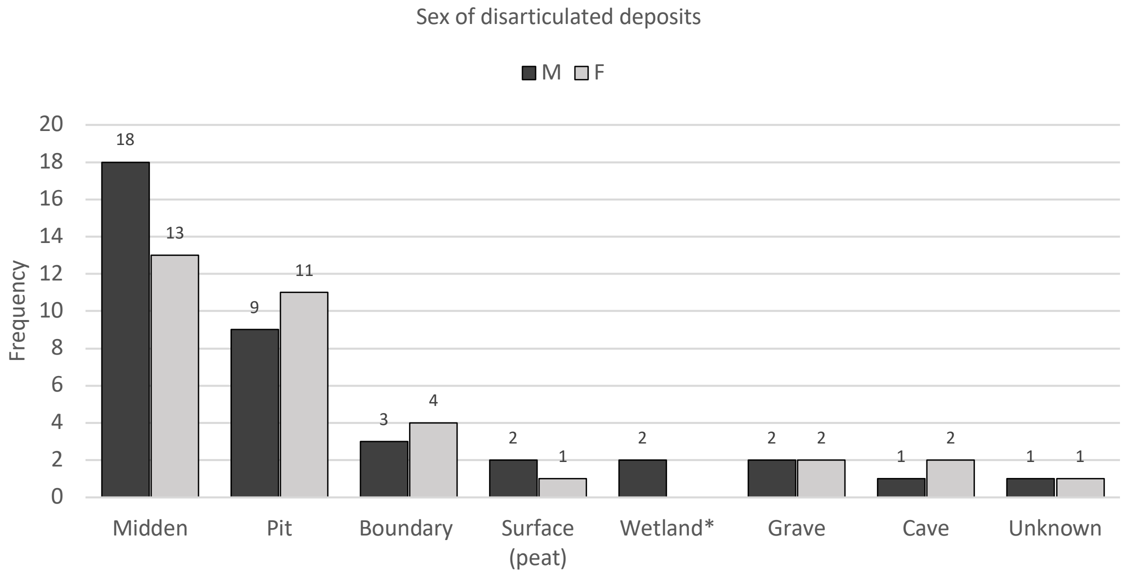


Figure 189. Graph showing the frequency of male and female disarticulated deposits by feature. *Wetland includes a river and a waterhole. Source: author

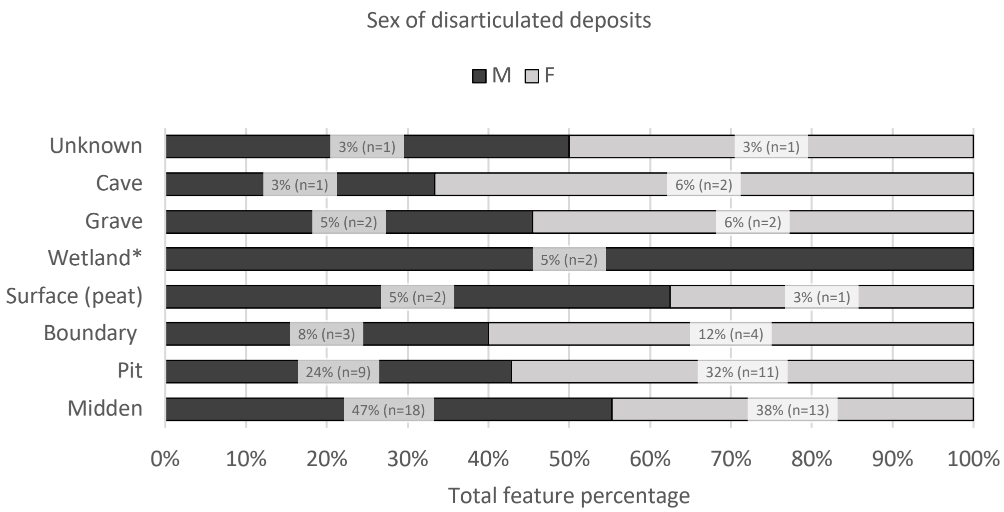


Figure 190. Graph showing the percentage of male and female disarticulated deposits by feature. *Wetland includes a river and a waterhole. Source: author

7.5.4. Summary

To summarise, disarticulated deposits are the second most frequent type of burial evidence in the southwest. Disarticulated bone has been recovered from all subregions except for Devon: the largest percentage has come from Somerset, followed closely by Wiltshire. This is likely due in large part to the favourable conditions for preservation in these areas compared to the more peripheral southwest. However, it is worth considering that this may indicate a regional preference for depositing disarticulated remains in features that survive in the archaeological record.

Skulls are the most frequent disarticulated element type across the southwest and within the corpuses from each sub-region, followed by long bones. Middens have produced the largest amount of human bone of all the features, followed closely by pits. Overall, pits contain more skull/skull fragments than long bone, and long bones are more frequent than skulls in boundaries. Some exceptions may indicate site-specific preference, for example Glastonbury Lake Village.

Of the deposits where age could be identified, adults were most frequent, distantly followed by juveniles, infants/neonates then adolescents. Skulls were more frequent in all age groups except for infant/neonates, potentially indicating a preference for the redeposition or exhumation of long bones over crania. Overall, males are slightly more frequent than females, although disarticulated elements are often too fragmentary to determine sex. However, of those where sex could be ascribed, there is some variation in feature: middens contain more males, pits more females.

7.6. Cremated and burnt deposits

Cremations are uncommon in the southwest with 21 total deposits of cremated and burnt human bone from 15 sites recorded in this study. Radiocarbon dates from six cremation deposits indicate cremation occurred throughout the Iron Age (Table 26). However, most cremation deposits are not securely dated and may represent earlier burials (e.g. cremations in urns from Weston Cemetery, Somerset). Additionally, it is not clear whether the three severely burnt deposits from Glastonbury Lake Village represent cremated or partially cremated deposits, or rather bones that had been burnt without the intention of cremation, for example exposure to a fire after decomposition had already occurred. Nevertheless, the available evidence for cremation represents a definite and discrete mortuary practice across the southwest with the highest concentration in Somerset (n=10 deposits) and South Wales (n=6) as shown in Figure 191.

Information regarding the elements represented within the cremation deposits is not provided for most of the sites. However, it was noted that skull fragments were underrepresented in cremation deposits from both of the hollows at Castle Bucket (Williams 1985: 15) and elements were apparently evenly represented at Twinyeo Quarry (Coles 2015: 247) and Tregunnel (Brindle 2019: 130). This could indicate skull fragments were selected from the features at Castle Bucket for redeposition elsewhere, a secondary mortuary practice which did not occur at Tregunnel or Twinyeo Quarry.

Table 26. Cremation deposits radiocarbon dated to the Iron Age in the southwest. Source: author

Site	County	Feature	Material	C14	Lab no.	Reference
Trostrey Castle	Monmouthshire	Pit	Human bone	510-170 cal BC	OxA-6205	Mein 1996
Castle Bucket	Pembrokeshire	Hollow	Charcoal	540-360 cal BC (68.2%), 730-210 cal BC (95.4%)	CAR-588	Williams 1985
Tickenham Court	Somerset	Cairn	Human bone	1210-410 cal BC	I-5734	Grinsell 1971: 120; Green 1973; Whimster 1981: 391
Glastonbury Lake Village	Somerset	Round-house floor	Horse/ox bone	541-366 cal BC	OxA-4745	Bulleid and Gray 1911, 1917; Coles and Minnitt 1995: 170-174
Twinyeo Quarry	Devon	Hollow	Human bone	398-351 cal BC (43.9%), 303-210 cal BC (51.5%)	SUERC-50909	Farnell 2015
Tregunnel Hill	Cornwall	Pit	Human bone	826-772 cal BC	SUERC-80109	Brindle 2019

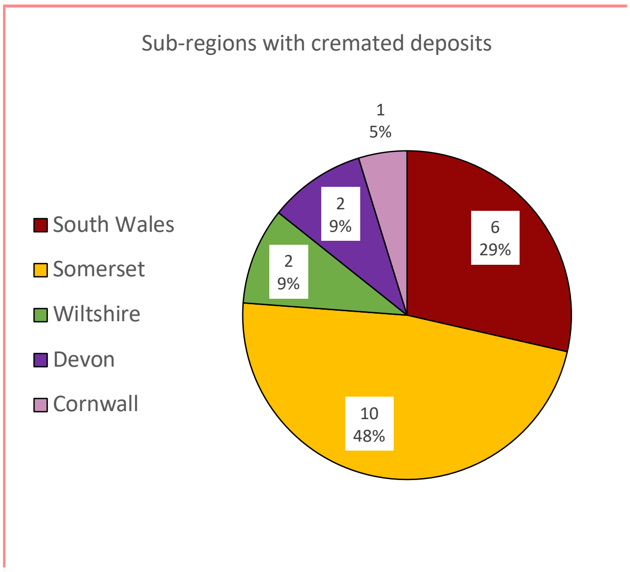


Figure 191. Chart showing the percentage of cremations by sub-region. Source: author

7.6.1. Feature

A total of six cremations were recovered from tree hollows: four from Castle Bucket in Pembrokeshire (South/west Wales) and two from Twinyeo Quarry in Devon with Middle Iron Age radiocarbon dates from both sites. Pits are the next most frequent feature for cremation deposits with a total of four (19%) from Trotstrey Castle in South Wales, Stoke-sub-Hamden (Ham Hill) and Bishop's Hull in Somerset, and Tregunnel Hill in Cornwall. Two possible cremation deposits were recovered from the peat surrounding Glastonbury Lake Village, but the extent of burning is unclear, and probably represents burnt but not cremated bone. The remaining deposits were recovered from various features totalling only one deposit each (Figure 192, 193). The variation suggest that cremation deposits were not specific to specific features, but the occasion of tree hollows at Castle Bucket and Twinyeo Quarry may indicate a preference for these natural holes as a location for pyres. These will be discussed in more detail in the Section 8.6.

It is interesting to note that the charcoal from the cremation deposits from both features at Tregunnel Hill (Challinor 2019: 147) and Twinyeo Quarry (Farnell 2015: 262) consisted entirely of mature oak. Considering the difference in radiocarbon date (Table 26), this may indicate that the cremations at Tregunnel Hill (826-772 cal BC, SUERC-80109) and later Twinyeo Quarry (303-210 cal BC, SUERC-50909), represent a continuation of an older tradition of mortuary practice where a single mature oak tree is selected and felled for pyre fuel (Thompson 1999; Straker 1988). This evidence will be further discussed in Chapter 8 (Section 8.6).

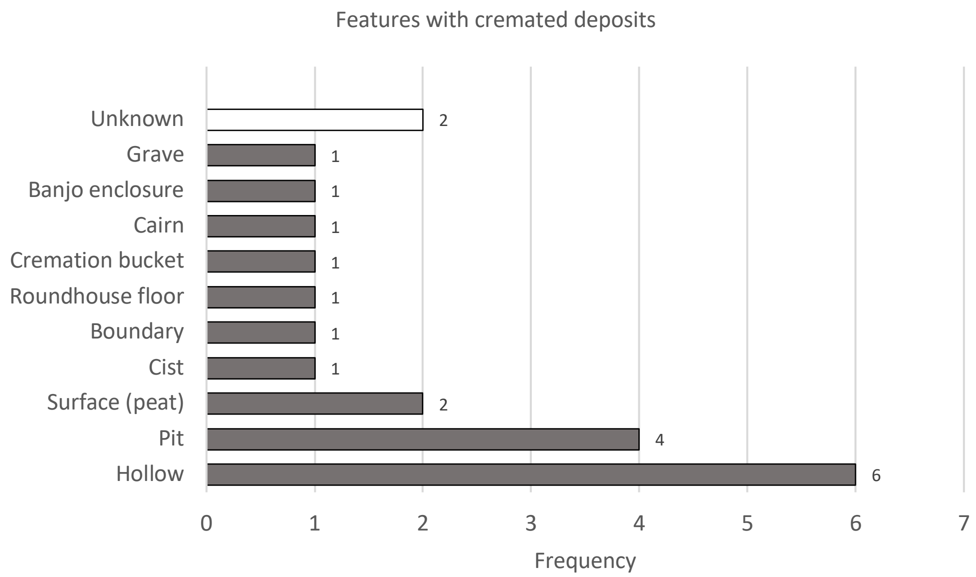


Figure 192. Graph showing the frequency of cremation deposits by feature type. Source: author

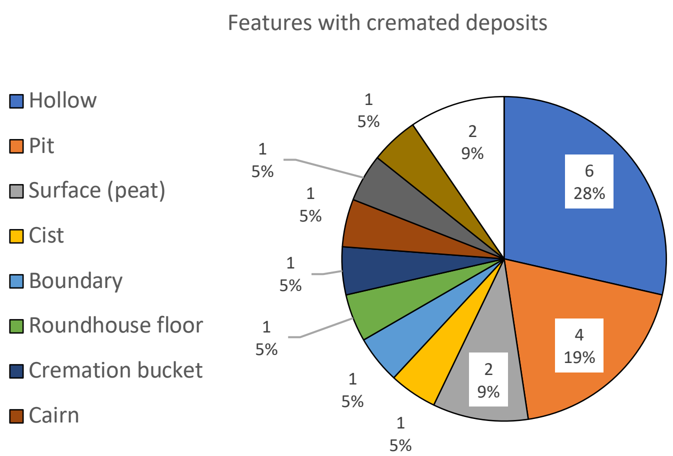


Figure 193. Chart showing the percentage of cremation deposits by feature type. Source: author

7.6.2. Age and sex

The majority of the cremation deposits, where age could be determined, were adults (n=10, 48%) (Figure 194). One of the two hollows (the northernmost hollow) at Castle Bucket contained evidence for two adults and one child (Williams 1985: 15). The single Early Iron Age cremation at Tickenham Court, Somerset, was that of a “teenage child” interred within a cairn containing a pre-existing grave of a 20–30-year-old male radiocarbon dated to the Late Bronze Age, 1375 +/- 100 B.C. (I-5735) whose arm had been severed (Green 1973: 35-37). Only two infants were represented in the current data: one possible cremation of an infant in the peat surrounding Glastonbury Lake Village described as being charred and found among a large burnt assemblage of animal and human bone, which may have come from the same individual (Coles and Minnitt 1995: 170-174). Another infant was recovered from the same deposit as an adult male at Twinyeo Quarry (Coles 2015: 247). This is potentially significant as it has been hypothesized that charcoal associated with Bronze Age cremation burials of adults and infants were dominated by a single taxon, particularly oak for males (Campbell 2007), which (as described above) was the exclusively taxon in the deposit (Farnell 2015: 262). This may indicate a specially prescribed burial rite where the infant and adult male were cremated in the same tree hollow, either together or separately, using the wood from a single oak tree.

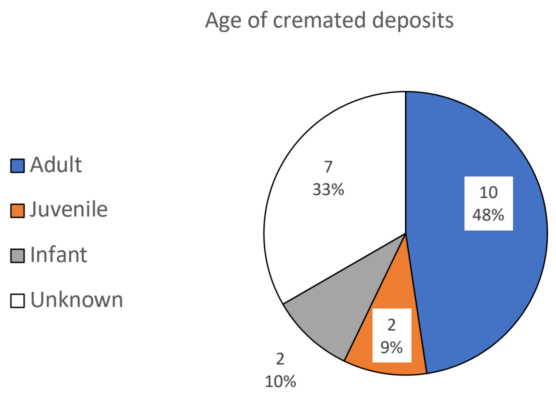


Figure 194. Chart showing the percentage of age categories in cremated deposits. Source: author

Of the deposits where sex could be identified, males and females are equally represented with three deposits each (Figure 195). These include a possible male and female from the northern hollow at Castle Bucket and a separate hollow from the same site containing the remains of a single adult, probable female (Williams 1985: 14); a male from a stone-lined ?cist feature at Drim Camp in Pembrokeshire (South/west Wales); a charred skull (possible cremation?) from Glastonbury Lake Village with an associated animal bone producing a radiocarbon date to the Middle Iron Age (541-366 cal BC, OxA-4745); and the abovementioned adult male from Twinyeo Quarry.

These results indicate that a mortuary practice involving cremating remains were afforded to both male and female individuals. There may be differences involving the cremation process and deposition, as suggested by the presence of oak in the Twinyeo Quarry tree hollow and the suggestion that the taxon of pyre material may have been specific to biological sex and/or age in the Bronze Age (Campbell 2007), however there is not enough evidence to be conclusive at this time.

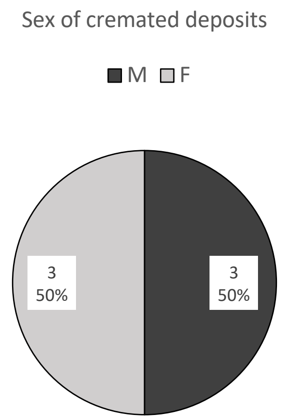


Figure 195. Percentage of male and female cremation deposits. Source: author

7.6.3. Summary

Overall, evidence for cremation has been recovered from across the southwest (except Gloucestershire and Dorset), particularly in Somerset and South Wales. Radiocarbon dates show that cremations occurred spanning the Iron Age from the LBA/EIA transition to the MIA, and the Marlborough Bucket indicates that cremations also occurred in the Late Iron Age. There is some variation in the features with the most frequent coming from hollows, followed by pits. There are similarities with Bronze Age traditions such as using a single felled oak tree for the pyre and interment of later cremations within Bronze Age barrows. Adults are most represented, but juveniles and infants are also recovered from cremation deposits. Males and females are equally represented.

7.7. Conclusions

To summarise key observations, articulated inhumations are the most frequent type of deposit in the southwest. These are most common during the LIA as inhumation cemeteries become more frequent, but inhumations are also recovered from EIA and MIA contexts. Articulated burials are most often found in pits, graves and cists with a strong preference for cist in the southwest peninsula. There is no major difference in the frequency of males and females within articulated burials.

Partially articulated deposits have been recovered from across the region (except Devon), with most deposits dated or likely dated to the Middle Iron Age, although partially articulated deposits are also relatively frequent in the Late Iron Age. Most of the deposits represent the lower body (pelvis, legs, feet). If partially articulated deposits represent inhumations that were later disturbed for element removal, the prevalence of lower body parts remaining in situ would be consistent with the prevalence of disarticulated skulls and parts of skulls. The upper body is the second most frequently represented, which may account for the frequency of long bones, although a more detailed analysis including specific elements would be needed to identify any potential correlation.

Disarticulated bone is widely represented across the southwest region. As mentioned, skulls and parts of skulls are the most frequent disarticulated element type, although long bones are also well-represented. Of all the features, middens have produced the most disarticulated deposits, followed closely by pits. The frequency of disarticulated and partially articulated human remains in pits suggests that these were features used for a mortuary practice involving intentional disarticulation and redistribution of skeletal elements. Skulls are more often found in pits, whereas long bones are more often found in ditches, which is surprising considering interpretations of skulls adorning settlement boundaries (e.g. Gardner and Savory 1964: 221). However, excavations often include only relatively small sections of the boundary ditches, so this figure may be falsely representative.

Finally, although cremation deposits are less frequent in the southwest compared to the well-established traditions of the southeast, this mortuary practice was afforded to individuals throughout the Iron Age. Radiocarbon dates on deposits from South Wales (Pembrokeshire and Monmouthshire), Somerset, Devon and Cornwall have confirmed Iron Age chronology centred on the EIA-MIA, although precision is hampered by the Hallstatt Plateau (see Section 1.3.1). The features containing cremations vary, but hollows and pits are the most common. Cremations in this region share similarities with Bronze Age cremation traditions which suggests a continuation of a much older practice enduring throughout the Iron Age in the southwest.

Overall, this chapter has provided a detailed overview of all instances of Iron Age burial/deposits in the southwest. Understanding the general burial landscape is necessary to facilitate a holistic discussion incorporating the characteristics of deposition with taphonomic and histological evidence provided in Chapter 8. 8.

8. Discussion

8.1. Introduction

To summarise the previous chapters, much is unknown about how the Iron Age peoples of Britain treated their dead. The overall rarity of evidence which characterises Iron Age burial in southern Britain has been attributed to the estimation that the majority of the population were afforded an 'invisible' burial rite and the evidence which is found represents as little as 6% of the population (Wait 1995). This research principally disentangles the visible and also provides insight on the invisible by employing histological analysis on 286 individual burials/deposits representing a variety of articulations, feature types, and taphonomic histories from across the southwest region.

The aim of this discussion is to bring together the histological evidence for early post-mortem treatments with the burial characteristics to allow for a more detailed and nuanced understanding of mortuary practice in the southwest. The discussion incorporates the histological results provided in Chapter 6, along with taphonomic evidence (also described in Chapter 6) and burial characteristics (described in Chapter 7) to suggest early post-mortem treatments and the 'archaeologically invisible' burial rites. Ethnographic examples are used throughout, not to imply direct parallel, but to demonstrate the variability and often multiplicity of mortuary practices afforded to people around the world. Long mortuary processes comprising of many stages may provide some insight into disarticulation and the complexity of Iron Age mortuary practice suggested by the evidence in southwest Britain provided in the previous chapters. Contemporaneous evidence from elsewhere in Britain and the Continent is occasionally included as well as earlier evidence from Neolithic and Bronze Age funerary contexts.

The discussion is structured first by major mortuary practice: primary inhumation; exhumation and curation; mummification and preservation; excarnation and exposure; cremation and burning. These sections are further broken down to discuss variations within the evidence that imply potential treatments, particularly with regards to how bones become disarticulated and redistributed. Established theories are tested, for example the prevalence of subaerial exposure and the importance of the head in the Iron Age. When possible, potential influences on mortuary practice (e.g. status, sex, origins, etc.) will be considered. Chronological patterns are considered wherever relevant and possible, although as discussed in earlier chapters, it is difficult to determine chronology in Iron Age sites without radiocarbon dating (see Section 1.3 for discussion on the issues with chronology).

8.1.1. Primary and secondary mortuary treatments

First, a brief discussion of primary and secondary mortuary treatments is necessary for a comprehensive consideration of multi-phase mortuary practices discussed in this chapter. Primary mortuary practices describe what happens to the corpse immediately after death. This is often burial within the ground then covered by backfill. Other primary mortuary practices include mummification, excarnation, and cremation. Sometimes the primary treatment is the only treatment—whether intentionally as a discrete practice, or unintentionally as part of an unfulfilled funerary ritual. In this chapter, evidence for the primary mortuary practice is discussed at the start of each section drawing on histological evidence and burial characteristics.

What happens after the initial (primary) treatment are secondary mortuary practices, including exhumation, curation, fragmentation, and redeposition. The frequency of fragmentation and disarticulation of the dead demonstrated by this study indicates that mortuary practice was often, but not always, comprised of multiple phases and processes. Such disarticulation may indicate a societal attitude towards individuality where, at least in death, a person is divisible, their parts broken down and used to represent a new 'whole' that intersects the individual person (Sharples 2011: 246). As discussed by previous scholarship, secondary funerary rites were likely at the centre of elaborate communal ceremonies, as has been demonstrated by ethnography (Huntington and Metcalf 1979; Parker Pearson 2003). Secondary mortuary practices are discussed throughout this discussion drawing on depositional and taphonomic evidence.

It has been suggested by Hill (1995) that archaeological deposits of human remains are never simply to do with the treatment of the dead. Arguably, 'never' is perhaps too strong a word to apply to the myriad of processes described in this chapter, however it is important to bear in mind that some treatments afforded to human remains may not necessarily be funerary in nature. The emphasis may have been placed on the living instead of the deceased: for example, disarticulated bones may be used in divination, or shaped into amulets, or used as tools. At present the difference cannot be distinguished (if such a distinction could ever be made), so the evidence is discussed here regarding mortuary practices, but with the caveat that some may not be purely mortuary in nature.

8.2. Primary inhumation burial

This section discusses the evidence for primary inhumation burials as a mortuary practice where the individual was interred within the ground and backfilled immediately or very shortly after death. The evidence for burial shortly after death is first described using histological evidence described in

Chapter 6 (Section 6.3). The possibility of using coverings within inhumations is discussed as well as the evidence from cists using Harlyn Bay as a case study. Finally, the pit burial tradition is discussed in light of the histological analysis.

As pointed out by Sharples (2010: 249-50), burials themselves can be complex as choices about the time and place of burial, preparation of remains, any accompanying objects or offerings, how they were to be contained, and whether or not they were to remain in the domestic sphere or become separated from it. As shown in Chapter 7 (see also Appendix 2), although inhumation cemeteries are few, representing only a fraction of the overall population of Iron Age Britain, and the majority date to the later Iron Age, they comprise a significant portion of burial evidence in the southwest particularly in Dorset and Cornwall. Smaller cemeteries, possibly representing families or a small community, are usually found a short distance from settlements where the interred may have lived. One example is the small cemetery at Rowbarrow in Wiltshire, which is in close proximity to Little Woodbury and Great Woodbury settlements. This cemetery is unusual, however, as the graves were arranged in a line of paired burials, further demonstrating variability even within small cemeteries. Individual, possibly isolated burials are also recorded and some of these may be more closely associated with natural features, for example quarries, caves, and wetlands.

There is considerable variation in the articulated inhumation burials across the southwest including body position, orientation, accompanying material, and feature structure as discussed in Chapter 7 (Section 7.3), indicating local/subregional preferences. Across the southwest, inhumation burials are most often crouched (68%) on either the left (51%) or right (49%) side. The most common orientation is north in all subregions (total 41%), especially in the subregions bordering the west coast, for example the inhumation cemetery at Henbury School, Gloucestershire suggests the same uniformity in a N-S orientation as the inhumation cemeteries in the southwest peninsula, for example Trethellan Farm (see Appendix 2 big one). This potentially indicates a common socially defined tradition that becomes less regimented moving toward the east, or may indicate different cultural influences where orientation is less uniform (see Section 7.2.2). Although the sample sizes for orientation are small compared to the number of inhumations, the frequency of other orientations in Dorset (and to a lesser extent Wiltshire) may indicate the presence or influence of cultural groups with different burial customs. Additionally, histological results (Section 6.3) have shown that articulated skeletons do not necessarily represent the same mortuary practice across all the sampled sites and variation is discussed throughout this chapter.

Most articulated inhumation burials sampled for histological analysis had poor microstructural preservation (Figure 196) suggesting the body was placed in the ground shortly after death and quickly backfilled. Therefore, the most common mortuary practice amongst the represented sites was long-term burial and the articulation indicates no subsequent manipulation or secondary rites (with possible exceptions as will be discussed). An interesting result of the histological study was that, overall, articulated inhumations from graves showed more variation in microstructural preservation than any other feature, including pits (Figure 197). This implies that even seemingly 'ordinary' burials were often more complicated in the Iron Age and inhumations often represent the final stage of a more protracted, but otherwise archaeologically invisible, rite.

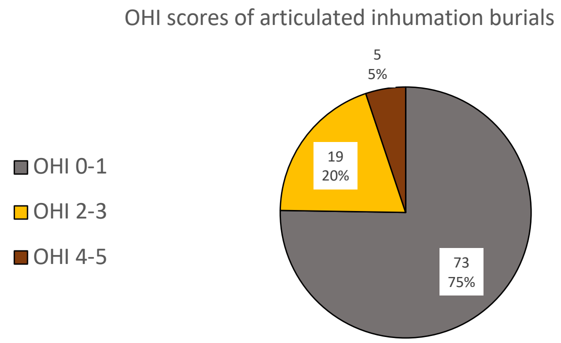


Figure 196. Chart showing the percentage of OHI scores from articulated inhumation burials. Source: author

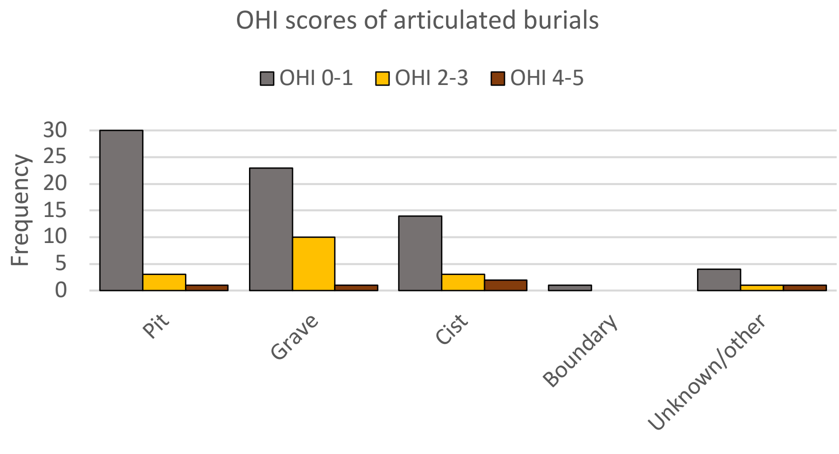


Figure 197. Graph showing the frequency of OHI scores from articulated inhumation burials by feature type. Source: author

One of the most well-established mortuary practices in this region is the Durotrigian burial tradition of southern Dorset. Following this tradition, bodies were placed in graves in a crouched position and accompanied by a pot or two as one of the few burial traditions that required material (or at least archaeologically visible) goods in this region. Although Durotrigian burials appear to be relatively regular and prescribed, histological evidence suggests some variation in the mortuary practice afforded to individuals buried in the Durotrigian style. The sampled specimens from LIA-RB Durotrigian burials at Whitcombe, for example, had differing histological preservation. Two individuals showed poor histological preservation consistent with long-term inhumation shortly after death (WHT01/ Skeleton 1 and WHT05/Skeleton 8), as expected from an articulated burial. These individuals (both female) were likely buried shortly after death, and quickly backfilled. However, three of the five sampled individuals showed middle-scoring microstructural preservation (WHT02/Skeleton 2, WHT04/Skeleton 4 and WHT03/Skeleton 5), possibly suggesting different pre-depositional treatment. Similar patterns are also seen at Weymouth (Dorset) and across the region including LIA burials at RAF St Athan (Vale of Glamorgan), EIA burials at Rowbarrow (Wiltshire), MIA burials at Trethellan Farm (Cornwall), and MIA/LIA burials at North Perrott (Somerset).

It is also possible that the divergent examples in the articulated inhumation sample represent natural variation linked to burial, rather than a result of treatment. In these instances, it is especially important to draw upon archaeological and taphonomic evidence before suggesting potential mortuary practices. For example, some of the graves had evidence for structures or coverings that may cause differing histological preservation compared to inhumations buried directly in the ground. This is further discussed below.

8.2.1. Burials with coverings/structures

Looking at the archaeological evidence alongside histology, it is possible that middle-ranging histological preservation seen in some of the articulated inhumations may indicate these bodies were covered or interred in a type of structure that created a small void around the corpse. The severity of bacterial bioerosion has been shown to be controlled by the efficacy of the coverings or wrappings in preventing or delaying invertebrate access, thus prolonging soft tissue decomposition (see Bell et al. 1996; Terrell-Nield and MacDonald 1997; Jans et al. 2004; Simmons et al. 2010; Kontopoulos et al. 2016). However, if a body was not wrapped but rather covered, a resulting void around the body may facilitate invertebrate access, therefore expediting decomposition. This is supported by skeletons in graves with large stones placed around the body showing less bacterial bioerosion than those without. For example, Skeleton 5 (WHT05) from the Durotrigian cemetery at Whitcombe had the best histological preservation from the site (see Section 6.3.2.1, 6.3.2.2). No stones were noted from the graves of the two low-scoring samples from Whitcombe, suggesting that a lack of soil matrix around the covered body of WHT03 may have facilitated more rapid decomposition and thus better histological preservation.

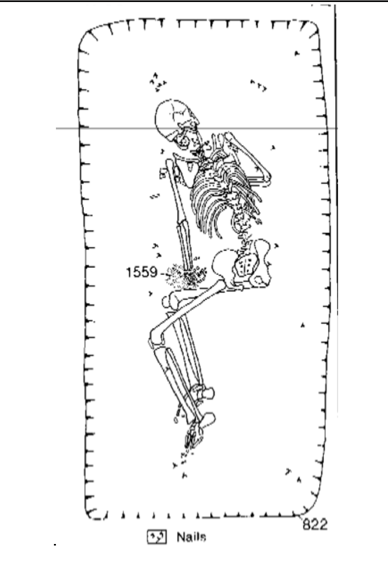
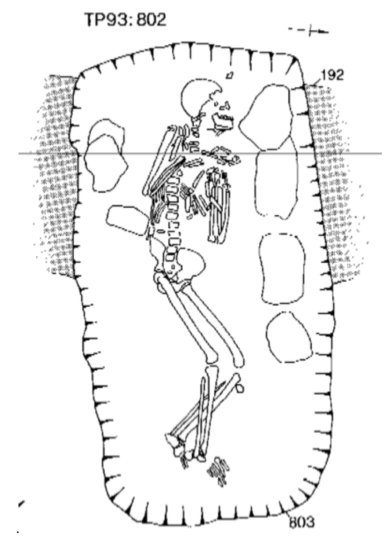
SK 908 (TPB05)	SK 802 (TPB03)
	

Figure 198. Illustrated plans of articulated inhumation burials with evidence for possible structure/covering around the body from Tolpuddle Ball, Dorset. Left: SK908, right: SK802. Adapted from Hearne and Birbeck 1999: fig.27)

The sampled inhumations in graves from Tolpuddle Ball showed similar histological variation with one possibly relating to a covering. Of the six sampled burials, three had middle-ranging microstructural preservation, two had small areas of preservation, and one was completely destroyed by bacterial attack. The burial represented by sample TPB05 included iron nails in the grave fill, possibly indicating a coffin, and TPB03 contained large lumps of chalk on either side of the body (both illustrated in Figure 198). The report suggests that the chalk lumps may represent some kind of internal structure, but that it is unlikely (Hearne and Birbeck 1999: 48). However, considering the histological similarities with TPB05, a structure or covering is indeed likely. The site report estimates that these burials from Tolpuddle Ball may date to the early Roman period, and the flexed posture is not characteristically Iron Age. However, the methodological implication is important because this informs on mortuary practice related to mid-ranging histological preservation and Wedl tunnels seen in disarticulated elements (Section 6.5). Moreover, stones around the body have been shown to be associated with pinning down coverings in other archaeological contexts (Leland 2014).

Although the case studies from Whitcombe and Tolpuddle Ball representing Durotrigian burials are small, the evidence for intra-site variation in early post-mortem treatments is compelling. Most were likely buried in the ground shortly after death and quickly backfilled, but others were likely covered, supported by samples with middle-ranging histological preservation (OHI scores centring on 2 and 3), and evidence within the grave (large stones, nails). Other burials elsewhere in the southwest include large stones or objects around the body which could be evidence for coverings:

- Salmonsbury hillfort, Gloucestershire – Large flat stones were placed at the feet and head of a Late Iron Age articulated pit burial (Pit B) (Dunning 1976).
- Whitegate Farm, Bleadon, Somerset – Two Late Iron Age burials in shallow pits contained large stones which also may indicate coverings: one (SK4001) included a brooch near the left shoulder and two large blocks of limestone rubble placed close to the head, and another (SK4000) had a large rim sherd from a jar between the feet and a large rectangular chunk of limestone placed on the chest, apparently deliberately, compacting the spine and ribcage (Young 2007).
- Wroughton, Wiltshire – An articulated skeleton was placed in a large storage pit, tightly folded, legs drawn up over the torso, and covered with structural daub followed by dump of large sarsen stones and chalky backfill (Cotswold Archaeology 2020).
- Hod Hill, Somerset – Pit 16b contained an inhumation of an adult female with a neonate between her knees, both covered in lumps of broken chalk (Whimster 1981(i): 207-8; Richmond 1967). The pit also contained an articulated foot with distal end of tibia was also within the pit, further discussed in Section 8.3.

In addition to lumps of chalk and sarsen stone, flint nodules of substantial size are also present in some burials identified in the present study, including:

- Gussage All Saints, Dorset – Pit 96 contained an infant at the base of the pit and covered with large flint nodules (Wainwright 1979: 32).
- Rowbarrow, Wiltshire – Large flint nodues were a recurring theme in the EIA cemetery, including SK4243 (RBW03), an adult female aged 25-35 with several large flint nodules placed around the skull (Wessex Archaeology 2013). Another individual (SK 4178, RBW05) was buried with a number of flint nodules overlying the skeleton and a small pile of human long bones and shafts representing c.5% of an individual (SK 4180) lying on top.
- Tollard Royal, Wiltshire – An LIA inhumation of an adult male in a shallow oval pit had large blocks of chalk and flint packed around the body and head and the head was noted as having been twisted 'awkwardly to face the south' (Wainwright 1968: 117-18). This unnatural positioning of the head is seen in other burials recorded in this study, for example an EIA burial from Rowbarrow (Grave 4636/RBW01, also see Section 6.3.2), with the backfill comprised of tightly packed flint nodules and no chalk (despite the grave itself being cut into chalk, indicating that this was a deliberate decision by the people burying the individual) (Wessex Archaeology 2013: 10-11).
- Berwick St John, Rotherley, Wiltshire – A further LIA inhumation of an adult male in the fill of a pit (Pit 59) had large flints below and over the body (Pitt-Rivers 1888: 99 and pls. CXXCI, fig.7

and CXXX; Hawkes 1947: 36-42). Another inhumation from the same site, also an adult male, was cut into a pit (Pit 38), lying 0.27m below the surface in a tightly crouched position with several large flints lying on the body (Pitt-Rivers 1888, 78 and pls. CXXV, fig. 5 and CXXXIII).

A total of seven inhumation burials containing deliberately associated stones or chalk blocks have been identified in southeast England (Legge 2021: 259-261). These include one EIA female with deliberately shaped chalk blocks/plaques from Puddlehill, Bedfordshire and Grime's Graves, Norfolk. Another burial from Garton Slack, Yorkshire included a chalk slab, interpreted as a figurine (Brewster 1980: 228), also known in other Arras burials (Stead 1988). Although none of the large stones associated with burials in this study were noted to display evidence for decoration, this potentially supports the importance of otherwise conspicuous lumps of stone to the represented mortuary practice.

Covers and containers of organic material have long been recognised in archaeological contexts, even by antiquarian excavators who were often hasty and imprecise in their methods including evidence for baskets, leather bags, coffins (Warne 1866; Greenwell 1877; Mortimer 1905). Recent work on coverings and the wrapping of bodies has shown that this mortuary practice was more widespread than previously thought (e.g. Stead 1991; Brück 2004, 2019; Gilchrist and Sloane 2005; Harding and Healy 2007; Melton et al. 2010; Giles 2012; Melton et al. 2010, 2013, 2016; Lelong 2014; Jones 2015 table 21.2). These studies demonstrate the range of coverings, linings and containers and the range of materials used, as well as the time and effort required to craft and the "active roles that enclosing and layering played, particularly in funerary contexts" (Cooper et al. 2019: 3). An example of two possible covering styles based on preserved fibres recovered from excavations at Langwell Farm, Strath Oykel, Highland is illustrated in Figure 199 (Lelong 2009; 2014: figs. 2, 17 and 29). The types and composition of coverings are varied and may include woven blankets or baskets made of grasses or wool, leather, hide, or stone (cists). In cases where the body itself is covered with layers of stone, or the backfill tightly packed with stone material, for example Grave 4636 from Rowbarrow, this may represent a different type of mortuary practice chosen for a different reason, such as social transgressors or individuals considered high risk for causing posthumous danger to the community.

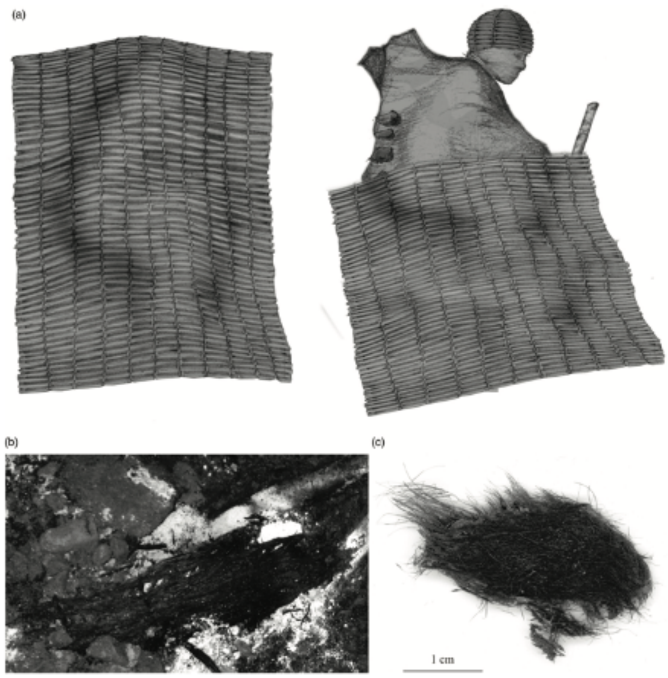


Figure 199. A) Reconstructions of an Early Bronze Age cist burial from Langwell Farm, Strath Oykel showing two different interpretations of the evidence, b) Woven material recovered from the leg area, c) preserved chunk of cattle hide. Source: Cooper et al. 2019, fig.1.

As noted in Giles (2012: 319), funerary coverings may be metaphorical. In Samoa, mats are key to life-cycle ceremonies: their age and wear may have symbolic connections with the ancestors, and their fragile matter and weave are drawn upon metaphorically to convey the vulnerability and transience of authority and social relations (Weiner 1989). Covering, binding, capping and pinning together of human remains and associated objects are known throughout later prehistoric Britain and the near Continent (Cooper et al. 2019).

To summarise, the inclusion of large stones in graves throughout southern Britain may indicate coverings, or at least suggests the placement of large stones around bodies was a deliberate component of an inhumation burial rite. The act of covering a body prior to backfilling may be for the conceived benefit of the deceased person, but it would also be useful in mortuary processes that include exhumation, manipulation/element removal (which will be further discussed in Section 8.5).

8.2.1.1. Other possible evidence for coverings

The fastenings used to secure coverings in burial contexts are less often discussed, but fittings of copper alloy, iron, bone are known (Sheridan et al. 2015: 69-71). The placement of brooches in positions that are unlikely to represent clothing, such as near the skull or lower body, may indicate a covering such as a textile bag or shroud (Dent 1984: 28; Giles 2012; Cooper et al. 2019). Examples of burials with such evidence from sites in the southwest include:

- SK7018 from Weymouth, Southdown Ridge (Brown et al. 2014): the adult female aged 25-35 years was placed in a tightly crouched position, orientated east-west in a grave cut into an enclosure ditch that appeared to have been immediately backfilled. The individual died in the Late Iron Age and a Nauheim Derivative brooch was recovered from just above the skull.
- A crouched burial of a child in a pit at Upavon, Casterley Camp, Wiltshire included a fragment of iron, possibly part of a ring or brooch found under the child's foot. (Cunnington and Cunnington 1913: 77-79; Whimster 1981(i): 224).
- A crouched inhumation of an adult male recovered from pit fill at Berwick St John, Rotherley included two early 1st century AD brooches: a copper alloy brooch located next to the skull and an iron brooch found by right hip resting against the femur head (Pitt-Rivers 1888: pl.C, fig.10, Pl.CI, Fig.4; Hawkes 1947: 41).
- An inhumation at Frocester was noted as being partly sitting with a fastening at the head (Moore 2006a: 259, Appendix 3; Price 2000), possibly suggesting it was placed in a bag or wrapped.
- At the inhumation cemetery at Trethellan Farm, Cornwall, several burials contained brooches or bronze rings in the northern end of graves from contexts 2358, 2145, 2142, 2184 and 2140 (Nowakowski 1991). Although few human remains preserved, the graves were orientated north-south, so it is likely that these were originally near the head. The human remains from context 2184 (TLF02) was included in the histological analysis and showed advanced levels of bacterial attack indicating that the adult male was probably inhumed as an articulated body and grave quickly backfilled. However all that remained was a fragmentary skull.

The placements of brooches near heads and feet of the burials listed above may indicate an organic covering or bag, secured by brooches at the ends of the body. The slight differences in histological preservation seen in some of the samples from articulated inhumations (Section 6.3) may be the result of natural variation, or related to the body being covered by a textile, or a slightly delayed burial facilitating slightly more rapid decomposition. Wrapping of bodies in clothing or textiles have been known to produce variable and contradictory results in experimental forensic studies (Goff 1991; Vass 2011; Campobasso et al. 2001; Ferreira and Cunha 2013). However, the difference is often so slight that it is probably just as likely to be influenced by environmental or depositional factors (e.g. seasonality, rainfall and temperature). Experimental work on coverings of different materials and in varying locations in relation to the body (e.g. leather and woven textiles of different materials and thickness, close wrapping or grave covering) would be useful to determine any relationship between histological preservation and covering.

8.2.1.2. Cists as coverings: interpreting evidence from Harlyn Bay

If a covering may be used to facilitate later removal of elements, then a burial within a stone-lined cist may operate in a similar fashion. Many of the cist graves represented in this study were poorly dated (e.g. Merthyr Mawr) or excavated in the late 19th/early 20th century and remains have been lost. The cist cemetery at Harlyn Bay is a relatively robust case study for the 'southwest cist tradition', although one must consider that this is a single site and may not represent cist burials elsewhere in the region—indeed, it has been suggested that it may have only been used on a temporary basis (Whimster 1981(ii): 74). Additionally, as explained in Chapter 6 (Section 6.3.1), interpretation of Harlyn Bay is limited by the lack of detail available in earlier excavation reports. Elements sampled for histological analysis could not be matched to individual burials or burial conditions with certainty. However, there is evidence that mortuary practice at Harlyn Bay was more complex than primary, undisturbed inhumation burial. Bullen (1930) described disarticulated elements within and around cists, skulls being placed in unnatural positions to the articulated body, and an 'ossuary' deposit which contained an assemblage of disarticulated human bone. He interpreted this disarticulated material as evidence for a deliberate mortuary rite, and the histological analysis presented in Chapter 6 provides further insight into the nature of this rite.

The results from histological analysis on 24 samples from Harlyn Bay showed that some variation in mortuary practice was highly likely and the full range of histological preservation is represented. The majority of samples (n=16) had poor histological preservation consistent with long-term primary inhumation shortly after death (OHI 0-1), as was the sword and mirror cist burial from Bryher (Mays et al. 2006: 19.1 and 19.2). This suggests that most articulated cist burials represent primary inhumations buried shortly after death and quickly backfilled. However, five samples from Harlyn Bay had middle-ranging preservation (OHI 2-3) and three samples were minimally affected by microbial bioerosion (OHI 4-5) (Figure 200).

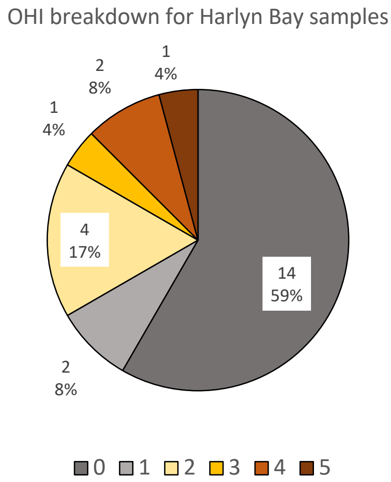


Figure 200. Chart showing OHI scores from Haryln Bay. Source: author

Wedl tunnelling was not extensive in the samples from Harlyn Bay, although two samples from skulls did show some fungal attack that is likely Wedl and/or cyanobacterial tunnelling (HLB22 Figure 35E, HLB24 Figure 37B, D). Some of the cist graves were described as being 'wet' and 'watery' by excavators, possibly indicating the burials were now under the water table or prone to flooding and water retention. It is also possible that the cists were left open, partially opened, or opened occasionally allowing fungal spores to gain access to the body. These scenarios may explain the waterborne microbial and/or fungal attack as well as middle-ranging histological preservation seen in some sample. Parallels can also be drawn between these examples from cists and the other potentially covered burials (TPB05, TPB03). However, equifinality is ever an issue and there may be other processes or environmental circumstances that lead to better histological preservation seen in some of the samples. Nevertheless, the range of OHI scores points to a variety of mortuary practice afforded to individuals within the cist cemetery: first, long-term primary inhumation is common, and it is likely that some of the disarticulated bone deposits observed by Bullen (1930) originated from disturbed inhumations. Exhumation of skeletal elements from articulated burials elsewhere in the southwest is discussed Section 8.3. Coverings of bodies or elements within the cist are possible: a cist burial from Langwell Farm, Strath Oykel in the Scottish Highlands showed the inhumed female was also wrapped in a cattle hide with further evidence of woven basket-like material around the head and lower legs (Figure 198; Lelong 2014: 94-96). Other mortuary practices at Harlyn Bay may include low-heat burning (further discussed with regards to mummification in Section 8.4.1) and excarnation (Section 8.5). However, considering the majority of poor histological preservation and the evidence for disarticulation noted by excavators, it seems likely that cists were re-opened and manipulated, possibly cleaned out and re-used for burial, over a longer period of time as part of a mortuary process.

Status is so rarely discernible in Iron Age burials that it can seldom be used to interrogate potential mortuary treatment. However, a number of Iron Age burials containing high-status artefacts were placed within cists, particularly bronze decorated mirrors: the example from Bryher, Scilly has already been mentioned; the two Birdlip burials in Gloucestershire included a female with a copper alloy bowl placed over her face, a bronze decorated mirror among other personal adornments; the male's face covered with a bucket and included a sword. In addition to the buckets being symbols of high status, the significance of the buckets inverted over the faces may be related to the Conceptual Metaphor Theory (Gibbs 2008, 2007; Kövecses 2010) which suggests, among other things, the concept of death being 'upside down'. The significance of inversion within Bronze Age burials is discussed in Wiseman et al. (2021). The inclusion of mirrors in burials may have similar implications and these also recovered from cist graves in Trelan Bahow, Cornwall; Holcombe and Stamford Hill, Devon; Bridpor, Portesham, Portland (The Verne) and Weymouth (Jordan Hill) in Dorset. Another cist from Clevedon, Somerset contained 18 glass beads placed near the head of individual (Gray 1942). These examples suggest that cists may be related to higher social status as opposed to uncisted earthen graves or other means of corpse disposal.

8.2.1.2.1. Comparing Harlyn Bay and Trethellan Farm

Apart from the extraordinary examples described above, the cist cemetery at Harlyn Bay has been suggested to represent higher-status burials compared to the unlined graves at nearby Trethellan Farm where individuals were thought to be interred in the ground with little accompanying material. It is then worth comparing the possible mortuary practices afforded to individuals interred within both cemeteries by considering the histological and excavated evidence to explore if status was a potential determinant for mortuary practice.

The overall condition of remains at Trethellan Farm was very poor, likely owing to the sandy environment and cycles of wetting and drying, so potential for macroscopic taphonomic observations was minimal, but no traces of burning or charcoal staining were evident on the sampled fragments, as was noted on bones from Harlyn Bay. However, the five sampled elements showed some interesting histological variation. A sampled cranium fragment had near-perfect histological preservation and high collagen birefringence despite a heavily eroded periosteum and endosteum (TLF05, Figure 44). The excavation report for Trethellan Farm indicates that the cranial fragments were all that remained in the grave, although there was evidence for a 'body stain' (Nowakowski 1991: fig.90). It is possible that this individual was afforded similar treatment to sample HLB24 from Harlyn Bay, for example mummification, with enough soft tissue remaining upon burial to leave a decomposition stain. Alternatively, since the grave contained no other skeletal remains, the cranium or cranial fragments may have been deposited separately, having been removed from another individual shortly after death. Other than sample TLF05, the remaining four samples from Trethellan Farm showed advanced levels of bacterial attack consistent with long-term primary inhumation, similar to most of the sampled elements from Harlyn Bay.

To summarise, although burials in cists are usually articulated, some individuals were likely afforded various pre- and post-depositional processes. Disarticulated elements in and around cists at Harlyn Bay suggests that cists were re-opened for selective removal and replacement of skeletal elements. Other potential mortuary practices afforded to some individuals include low-heat burning, covering or wrapping upon deposition demonstrated by some variation in histological preservation. It is not known what factors determine treatment—status is a possible factor, but without detailed excavation records and well-preserved skeletal remains available for taphonomic analysis, interpretation can only go as far as suggesting that various processes were occurring simultaneously, sometimes leading to disarticulation and redistribution elsewhere, but not always. A forthcoming publication on aDNA analysis of human remains from Harlyn Bay and Trethellan Farm may shed some light on this in the future.

8.2.2. Pit burials: live by the seed, die by the seed

Grain storage pits are frequent in parts of the southwest (particularly Somerset, Wiltshire and Dorset) and often contain human remains from all articulation stages including fully articulated bodies, partially articulated body parts and disarticulated elements. This suggests that pits used to store grain play significant roles in various stages of mortuary practice. Previous interpretations of 'pit burials' include, but are by no means limited to, victims of a sacrifice that occurred only rarely for the duration of the tradition (c.700-100 BC) (Cunliffe 1993a: 9-13). Further to this, it has been suggested that pit burials in Wessex represent social outcasts, for example individuals considered metaphysically 'dangerous' serving as scapegoats during times of communal stress, such as crop failure (Douglas 1982: 205-6; Sharples 2010: 299, 2014: 154).

On the other hand, the link between mortuary practice and grain storage are known in ethnographic examples that do not incorporate any element of sacrifice, for example an early nineteenth century burial of a young male in Mabyanamatshwaana, South Africa placed within a woven grass container used for grain storage (Pistorius 1995; Insoll 2015: 93-94). In northern Cameroon, the 'germination' of the corpse was the desired symbolic state, analogous to the germination of millet (Langlois and Bonnabel 2003: 42). The application of such symbolism to a mortuary context is interpreted by Insoll (2015: 94) as being linked practically to the storage of grain, and possibly symbolically related to ideas of fertility and germination. A number of metaphors could be proposed from this, for example immortality through various mechanisms analogous to the cyclical production of grain. In an Iron Age context, the storage of grain over winter may seem mundane but was likely 'an integral part of a dynamic sequence of ritual action and only one element in a multi-phase network of cult-behaviour, reflecting a complicated set of beliefs' (Green 1998: 178). It is likely, then, that the act of interring of human bodies within grain storage pits was more complex, or served both the living and the dead in multiple ways. Thus, investigating early post-mortem treatment may provide further insight into the practice of interring bodies within storage pits.

As described in Chapter 6, the majority of sampled articulated burials from pits had poor histological preservation (Section 6.3.3). This would suggest that, at least of the individuals sampled for this study, most burials in pits were immediately interred then quickly backfilled. The completion and articulation of the skeletons would support this and indicates that no disturbance followed. In these cases, the full mortuary practice comprised of burial shortly after death, quickly backfilled, and left alone until modern excavation. Alternatively, an articulated inhumation in a pit may represent an intermediary stage in mortuary practice that never reached the disarticulation stage. This result was surprising because it has been suggested that pit burials were sometimes left open for a time. For example, in their study, Booth and Madgwick (2016) sampled six articulated inhumations from pits and only one had poor histological preservation (OHI 0, n=1), the rest showing mixed preservation and arrested bacterial attack (OHI 2 n=4, OHI 3 n=1). The sample with no preserved microstructure was likely an immediate burial, but the rest were interpreted to represent primary deposition within open silting pits or pits covered with an organic material, thus preventing scavenging animals from accessing the decomposing body within. In the present study, only four of the 34 articulated burials from pits had any histological preservation (scoring above OHI 0-1) and these are discussed later in this chapter in Section 8.5.1. The remaining 30 samples from 11 sites across the southwest had histological preservation consistent with immediate burial.

The inhumations from pits at Tolpuddle Ball all showed poor histological preservation (OHI 0-1) which is interesting considering three articulated burials in graves scored had middle-ranging preservation (OHI 2-3). This may indicate varied mortuary practice afforded to individuals within the same site—some were buried in graves within coverings (TPB03, TPB05 as previously discussed, Figure 199), and some were not. As described in Section 6.3.3, all but one of the five articulated inhumations in pits sampled from Battlesbury Bowl also showed poor histological preservation (the outlier is discussed later in the chapter in Section 8.5.1), two were completely destroyed by microfocal tunnelling, and two had minor areas of preservation. The archaeological evidence of re-opening pits at Battlesbury Bowl, in addition to disarticulated and partially articulated material within the pits and pit fills, indicates that pits were used for multiple burials and cleared out over time. With this in mind, it is possible that articulated inhumations in pits represent individuals left in an intermediary stage of a more protracted mortuary rite that involved exhumation. This will be further discussed in Section 8.3. Alternatively, they may represent a mortuary practice where exhumation was never intended. Therefore, the fully articulated inhumations with poor histological preservation may represent individuals who were given a different mortuary rite that did not include exhumation.

It could be argued that the depth of the burial feature may have some influence on the severity of bacterial bioerosion as deeper burials may prevent invertebrates from accessing the body, thereby slowing the decomposition process (Terrell-Nield and MacDonald 1997; Jans et al. 2004; Simmons et al. 2010; Kontopoulos et al. 2016). However, the depths of the graves and pits were generally similar (see Appendix 2 for details on feature depth where possible). This suggests that the variation in microstructural preservation is related to mortuary practice, namely immediate burial in pits and covered burials in graves.

8.2.3. South Pembrokeshire chariot burial – remembering the Old Ways

Although no human bone remained for histological or taphonomic analysis, it is necessary to very briefly discuss the Iron Age chariot burial recently excavated in south Pembrokeshire as it represents a previously unknown type of Iron Age burial in southwest Britain (Gwilt et al. 2018; Gwilt et al. 2022). The Pembrokeshire chariot burial bears similarities to other chariot burials in Britain and the near Continent, but is later in date. Details of body placement and any accompanying organic materials have been long lost to acidic soils, however the presence of a body was confirmed through manganese analysis (Lewis 2020; Badreshany 2020). The chariot itself was wheeled into a sub-circular pit and covered by a mound which had been destroyed by more recent ploughing. The chariot was interred upright, similar to the 5th century BC chariot in Newbridge, Edinburgh (Carter et al. 2010), and a Middle Iron Age chariot in Pocklington, Yorkshire (Current Archaeology 2017).

Chariot burials in Britain represent a continuation of culture from the Continent (see Stead 1979: 20-9; Piggott 1983: 195-225; van Endert 1986, 1987; Schönfelder 2003: 300-305), but the differences in

British chariot burials suggests a hybridisation of Continental traditions into an insular identity (or identities). The differences in chariot burials throughout Britain represent localised adaptations of the wider practice as different communities make it their own. The later date of the Pembrokeshire chariot may represent a special mortuary practice, expensive in materials and labour, afforded to a person who was highly valued amongst their community. The later Iron Age date of an older burial tradition may hint at a reaction to the invasion of the Roman empire, however this is purely speculation and there may be a number of chariot burials in south/west Wales yet to be uncovered, representing a previously unknown burial tradition in the region.

8.2.4. Summary

To summarise, primary inhumation burial is the most frequent mortuary practice represented in this study. The histological preservation of most of the samples from articulated burials was poor, indicating most of the bodies were placed in features shortly after death and backfilled quickly after interment, and thus completes the mortuary rite. Evidence for this is present throughout the Iron Age, from the Early Iron Age to the Early Roman period.

Variation in early post-mortem treatment is evident among the primary inhumation burials, however. Some sampled individuals (n=19) showed middle-ranging histological preservation, potentially indicating different treatments such as covering the body or placing the body within a subterranean structure evidenced by large stones in the grave. The reason for potential covering in some burials is not clear, but covering may aid in the retrieval of human remains for redeposition at a later time (see Section 8.3). It is interesting to note that variation was more common in articulated burials within graves than those in pits, suggesting most of the complete bodies in pits were quickly backfilled, whereas different treatments may be afforded to those in graves.

It is important to note that variations identified throughout this research may not necessarily always indicate diversity in mortuary practice, but rather different stages of the same or similar rite. For example, disarticulated and partially articulated human bone from storage pits (6.4.3 and 6.5.4) were likely removed from skeletonised inhumations, possibly from within the same pit as the original inhumation. If pits and graves were re-used for burial over a longer period of time, then it is possible that the articulated inhumations found in pits represent an interim stage of mortuary practice. On the other hand, the necessity for re-use may have abated due to changing social circumstances (e.g. population decrease, dispersal, relocation) so the bodies were left in situ.

The only samples from, or possibly from, articulated inhumation burials with excellent histological preservation come from Harlyn Bay and Trethellan Farm. This may indicate a mortuary practice afforded to selected individuals specific to the locality, such as preserving the body (mummification). Alternatively, these may by misidentified as articulated due to the lack of detail in early excavation reports for Harlyn Bay (Bullen 1930) and the poor overall preservation of bones at Trethellan Farm (Nowakowski 1991).

8.3. Exhumation and curation

This section presents the evidence for mortuary practice(s) where human remains from primary inhumation contexts were exhumed and subsequently curated, manipulated and redistributed in the Iron Age of southwest Britain. Evidence from graves and pits are discussed, followed by evidence for multiple phases of mortuary practice at the monumental LBA/EIA midden at Potterne. The curation of disarticulated elements is discussed and the significance of the head explored.

The previous section discusses the evidence for primary inhumation burial suggested by articulated inhumations in the ground and within cists. However, as briefly mentioned, there is growing evidence to support a widespread mortuary practice across the southwest where graves were re-opened years after the initial burial followed by removal, recirculation, and redeposition of various elements within and outside of settlements. The frequency of poor histological preservation suggests that most disarticulated material originated from articulated inhumations that were disturbed after skeletonisation had occurred, likely years after initial burial. This result was expected for some of the sampled specimens (considering some partially articulated deposits may have lost skeletal elements through modern agricultural and natural taphonomic processes), but the overall proportion of disarticulated and partially articulated deposits with low levels of microstructural preservation was unexpectedly high. As shown in Chapter 6, 110 of the 162 disarticulated deposits totalling 68% of the sample corpus had poor histological preservation (OHI 0-1) and if Glastonbury Lake Village and Cadbury Castle are removed as outliers, this figure increases to 79%.

Of the partially articulated samples, 21 of the 27 sampled deposits had poor histological preservation totalling 78% of the sampled corpus (if Cadbury Castle is removed, the figure is still high at 71%). This suggests that the majority of non-articulated human deposits found across Iron Age sites in the southwest were removed from primary inhumation burials. This represents a major, empirically evidenced advancement to understanding of mortuary practice during this period.

Partially articulated deposits may represent two scenarios:

1) Leftover remains from an inhumation burial, the rest having been removed;
2) A redeposited or leftover body part with enough connective tissue remaining to maintain articulation.

As explained in Chapter 6 most of the partially articulated deposits included in this study had poor histological preservation consistent with primary inhumation burial (78%). This means that the majority of partially articulated deposits are the remnants of burials rather than deposited as fleshy body parts. Only three deposits had middle-ranging histological preservation from three sites, Rowbarrow (RBW07), Tolpuddle Ball (TPB02) and Ham Hill (HH02). RBW07 and TPB02 likely represent remains left over from inhumations that were placed in features that were covered, but not backfilled, facilitating more rapid decomposition than a standard inhumation burial. Sheltered exposure will be discussed later in this chapter (Section 8.5.1).

8.3.1. Re-use of burial features

Disarticulated evidence from within graves and grave fills suggests that graves were cleared out and used for subsequent burials well after the extant interments were skeletonised (Sharples 2010: 277, 280). Re-use of graves has been noted at sites across the southwest, for example Berwick St John Rotherley in Wiltshire where burials within graves were said to occur on 'more than one occasion' (Pitt-Rivers 1888; Hakes 1947: 36-42; Whimster 1981 v1: 218-221). This may be supported by disarticulated elements from graves with high levels of microbial attack suggesting the elements were once part of an inhumation.

As shown in Section 6.5.5, the two samples from disarticulated bone recovered from graves had poor histological preservation. These included adult long bone fragments from Weymouth Southdown Ridge, Dorset (WEY07), and Rowbarrow, Wiltshire (RBW06). These may not have been left long enough for the bacterial attack to reach, or they may have been wrapped or somehow covered, leaving trace microstructure intact (as discussed in the previous section). Further evidence for opening of graves from Weymouth includes Grave 7372 and 7294 (Gibson and Loe 2014: 252). Additionally, at Rowbarrow, disarticulated bones representing 5% of one individual (SK 4180) were placed over the body of a different, fully articulated individual (SK 4178) (Wessex Archaeology 2013: 35, Appendix 1). In this instance, it seems possible that the disarticulated remains (SK 4180) were the remains of the previous interment, with most of the elements removed and replaced with SK 4178.

As briefly discussed in Section 8.2.1.2.1, the Iron Age cemetery at Trethellan Farm, Cornwall includes evidence for disturbance of inhumation graves. It was interpreted that one had been disturbed shortly after the body had been buried, with the corpse 'thrown back into the grave leaving a fully articulated corpse slumped against the side of the grave (Nowakowski 1991: 228; 19.12). Several graves at Trethellan Farm were noted as being cut by later graves, which may explain the amount of disarticulated material here (and the frequency of low OHI scores described in Section 6.3.2).

Similarly to graves, there is evidence that storage pits were cleared out over time and re-used for burial. The presence of partially articulated deposits, for example foot and tibia fragments from Hod Hill, Dorset represented a skeleton that was 'largely removed during the burial of the secondary occupants' in pit 15b (Richmond 1967; Whimster 1981: 207-208). It is interesting that another foot with articulated distal ends of the tibia and fibula was found within pit 4332 at Battlesbury Bowl (Ellis and Powell 2008: 35). It is tempting to suggest that these were left behind intentionally. Alternatively, these may have been deposited within the pits whilst still held together by soft tissue—histological examination of the remaining long bone fragments would be useful to determine whether or not this was the case. Overall, these examples share a common occurrence of repeated use of the same burial context that likely caused disturbance and disarticulation.

The mortuary practice of exhumation for the purpose of making room for other burials may be strictly controlled, rather than accidental or coincidental, and thus the majority of histological preservation among leftover or redeposited material is consistently low. For example, it has been documented that the Rukuba people in Nigeria believed that souls could not reincarnate until dry bones were left and the 'cadaveric odour has disappeared,' and the graves were re-used only after decomposition had completed (Müller 1976: 261). The frequency of this material recovered from grain storage pits within settlements may suggest symbolic or metaphorical reasoning behind this mortuary practice.

In a similar vein, the significance of agriculture in daily life in Iron Age Britain has been discussed in previous literature (see Williams 2003). The repetition of daily activities enables reproduction of social relations, world views and belief systems (Brück 1995; Barrett 1989; Bourdieu 1977). The theme of death relating to agriculture, particularly fertility of the land, is also well-recognised (Bradley 1981; Humphreys 1981; Bloch and Parry 1982; Walker 1984; Brück 1995). During a time of intense emphasis on agricultural productivity, the agricultural cycle may apply to burial of human bodies placed in the soil in that, like grain, they must be removed and supplanted after a time. This may be necessary for the individual to be 'reborn' similarly to how stored grain will be used to grow the next crop, or possibly has a link to the fertility of the land itself. The potentially symbolic connection between mortuary practice and grain is also discussed above in Section 8.2.2.

8.3.2. Caves as burial features

Locations chosen for secondary deposition of exhumed remains may also carry symbolic, metaphorical (ritual) significance, for example the disposal or 'funerary caching' of human remains in specified natural locations (Bradbury et al. 2016: 3). Caves were selected as places for re-deposition of disarticulated bone in the southwest as shown in Chapter 7 (Section 7.5.2). The disarticulated nature of human remains in caves means that understanding the nature of deposition within these spaces is limited. Additionally, burial in caves is a mortuary practice which spans millennia—for example, a radiocarbon project on human remains from Priory Farm cave, Pembrokeshire produced a single Iron Age date along with Neolithic and Bronze Age dates (Schulting 2020). Several other caves have produced Iron Age dates in southwest Britain and, although ranges are broad, they are limited to the MIA and LIA (Appendix 2). A recent suite of radiocarbon dates from Fishmonger's Swallet, Gloucestershire (Bricking et al. 2022) mentioned in Section 6.5.1 indicates a very short period of use for the cave, possibly representing a single event.

Caves are widely described as liminal places that exist 'betwixt and between' worlds (Leach 1977) and the use of caves as ossuaries or places of communal burial are known around the world and elsewhere in Iron Age Britain. Recent investigations at Sculptor's Cave in Covesea, Moray revealed a disproportionately high number of children represented, interpreted to mean concern with those yet to enter adulthood (Armit 2012: 126). Children are not well-represented in caves in the southwest with only six of at least 33 deposits of Iron Age or presumed Iron Age date representing juveniles (see Appendix 2). Therefore, the individuals selected for deposition within caves in the southwest were chosen for different reasons which remain elusive. It is possible that the continued use of certain caves represents a continuation of older traditions where earlier disarticulated bone is recovered (e.g. Priory Farm cave), but others may represent a single event as a response to cultural duress or geological phenomenon (the flooding or collapse of the cave). In any case, as shown by the case study of Fishmonger's Swallet in Chapter 6 (Section 6.5.1), caves may be chosen as places for redeposition after varied mortuary practices including exhumation from primary inhumation burials (FSH04, FSH08, FSH10) and fracturing (FSH01).

8.3.3. Exhumation followed by fracturing

Fragmentation of elements which appear to have been exhumed from primary inhumation burials is an interesting theme in the disarticulated corpus of Iron Age remains identified in this study. Evidence for intentional breaking of exhumed bones includes disarticulated bone with poor histological preservation but with distinct fractures that would be difficult to achieve through natural means. Such evidence is particularly prolific at Battlesbury Bowl and Potterne, Wiltshire. Potterne is discussed separately in the following section; evidence from Battlesbury Bowl is discussed here. As shown in Chapter 6 (Section 6.5.3), all of the disarticulated bone from settlement boundaries at the site (n=7) had poor histological preservation and included both dry and fresh fractures. A clear example of a dry fracture is seen in sample BB03 (Figure 201). Interestingly, a tibia recovered from Danebury hillfort in Hampshire had a very similar fracture (Figure 201). Four of the fractured disarticulated remains from Battlesbury Bowl had a fresh appearance indicating that the elements were exhumed only a short time after skeletonisation so that there was sufficient collagen to result in a fresh fracture. This is particularly evident in BB15, which is a longitudinally spilt 'splinter' fracture (Figure 94J). Fresh fractures on bones from a primary inhumation may suggest that decomposition times were closely monitored or estimated so that elements could be extracted at the right time (just after skeletonisation), for the next stage(s) of mortuary practice.

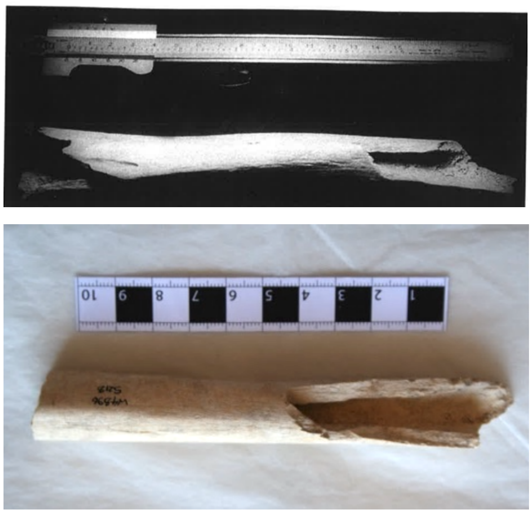


Figure 201. Images of dry fractures on a human tibia from Danebury, above (source: Craig et al. 2005 fig.3) and a similar fracture on a subadult femur (BB03) from Battlesbury Bowl, below (source: author).

It was observed that the disarticulated elements from pits at Battlesbury Bowl also showed fractures, although these had a drier appearance, suggesting fracture after a longer period than those in boundaries. The intentional fragmentation of bones at Battlesbury Bowl was noted by excavators, who suggested this evidence represents a 'deliberate act associated with assisting in the transformation process after death, accelerating process of bone decay' (Ellis and Powell 2008: 83). However, the histological results of the present study suggest that the bodies decayed slowly and fragmentation occurred sometime later.

8.3.4. Exhumation followed by gnawing

Gnawing was present on at least eight of the disarticulated specimens from Battlesbury Bowl with poor histological preservation suggesting the bone was available to animals, most likely canids, sometime after the elements were exhumed from primary burials. As suggested by Redfern (2008), bodies within shallow graves may be accessible to dogs, followed by various other processes including preferential element extraction. One of the most obviously gnawed elements is a parietal fragment (BB24). As shown in Figure 202, the punctures were made by vertical compression similar to examples of punctures made by carnivorous animals demonstrated by Fernández-Jalvo and Andrews (2015: 122-129). The element also exhibits dark score marks near the fractured end consistent with canid gnawing. Gnawing or possible gnawing was also noted on disarticulated elements with low OHI scores from Ham Hill, Somerset (n=2), Fishmonger's Swallet, Gloucestershire (n=1), Maiden Castle, Dorset (n=1), Weymouth, Dorset (n=1) and Potterne, Wiltshire (n=5). No canid gnawing was noted on sampled remains from Cornwall or Wales, potentially suggesting the secondary rite which exposes elements to dogs was not performed there, although the poor preservation of human bone in Wales makes it difficult to determine this.

Overall, nearly half (n=53) of the disarticulated remains with poor histological preservation had taphonomic markers that suggests secondary mortuary treatments had occurred after exhumation (fracturing, gnawing, weathering, burning, polishing). The remaining specimen with no notable taphonomy (n=57) may suggest re-deposition happened relatively quickly after exhumation, although some of the sampled remains were from fragments that were too small to make taphonomic observations.

Figure 202. Cranium fragment (BB24) with punctures, likely from gnawing. Source: author

8.3.5. Multiphase patterns of treatment at Potterne

The enormous midden at Potterne has produced a substantial corpus of disarticulated human remains representing a wide spectrum of mortuary treatments. McKinley (2000) proposed that the bones were likely re-deposited on the midden as disarticulated dry bone. Therefore, histological and taphonomic evidence together can help determine treatments afforded to bodies prior to deposition in the midden.

First, the low histological preservation seen in samples from Potterne indicates that the majority (n=14, 62%) of disarticulated bone within the midden originated from primary inhumation burials (Chapter 6 Section 6.5.2.1). All but four had taphonomic evidence for secondary treatments after exhumation (see Table 12). Fractures with a fresh or semi-fresh appearance were observed in six of the sampled elements including two longitudinally split long bones (PTN10 and PTN11) and a fractured frontal (PTN17) with possible perforation (see Figure 80). The fracture surface was undulating, suggesting the bone was not completely fresh upon fracturing. Figure 203 shows two further examples of elements with little to no histological preservation that had been fractured.

Figure 203. Fractured human remains from Potterne midden sampled for histological analysis. Left: PTN18. Right: PTN21. Source: author

Fracturing is common in disarticulated bone from Iron Age contexts. For example, at Salmonsbury, Gloucestershire (Whimster 1981: 183-184; Walker 1984: 455), excavators concluded that such breakage had been undertaken to facilitate marrow extraction, leading to an inevitable discussion of cannibalism (Dunning 1976: 116-7). However, a bone processed for cannibalism would be expected to have excellent microstructural preservation as it would be removed from the body soon after death with soft tissue intact, and only three samples from Potterne had high histological preservation, but none were perfect (see Section 8.5 for a discussion of the high-scoring samples). It is more likely, then, that fracturing occurred on exhumed bones as a secondary treatment that could occur at various stages of decomposition, but usually after skeletonisation. This provides further evidence for the diversity and complexity of mortuary rites, with multiple phases that can only be identified through this multi-scalar approach to taphonomic analysis.

Figure 204. Longitudinally fractured and gnawed human humerus from Potterne midden (PTN11). Source: author

Gnawing, particularly canid gnawing, was noted on half (n=7) of the samples with poor histological preservation (OHI 0-1), including both longitudinally split elements PTN10 (see Figure 81) and PTN11 (Figure 204, see also Figure 82). This suggests that the elements were available to animals after exhumation, possibly through exposure, however the frequency of gnawed bones suggests this may have been intentional. Gnawing was also noted at East Chisenbury (McOmish et al. 2010) so similar multi-phase mortuary practices may be represented in other middens in Wiltshire. It is interesting to note that there was a marked absence of animal gnawing on human remains recovered from an (albeit much smaller) midden at Brean Down, Somerset (Bell 1990), suggesting that the pre-depositional funerary rite(s) in larger Wiltshire middens was not practised at Brean Down.

The presence of fracturing and gnawing on the human remains from Potterne, as well as the varied preservation seen in the histological samples, suggests multiple phases of mortuary treatments were afforded to human remains prior to deposition at the site. The frequency of fracturing and gnawing is interesting and may indicate a version of 'ritual overkill' seen in other Iron Age burials like the Lindow Man in Cheshire (Stead et al. 1986) and other European bog bodies (Glob 1969: 93; Finlay et al. 1997: 7). The importance of the 'overkill factor' is discussed by Green (1998: 173) and may be related to the 'ritual killing' of powerful or dangerous things, similarly to how swords may be ritually broken or bent before deposition. Alternatively, or perhaps additionally, the concept of partible personhood may apply to the assemblage at Potterne as the human remains are comingled amid a mass of broken animal bone and domestic refuse, which may be conceptually similar as suggested by Hill (1995). The concept of partible personhood has been discussed by Brück (2006) who suggests that inanimate objects such as houses or pots had metaphorical relationship with the human body. She argues they 'provided ways of thinking about social relationships and of coping with such processes as biological and social ageing' (Brück 2006: 302). Deliberate fragmentation and burning of objects have an association with fertility and suggests these activities indicate 'that life and death were linked in an unending series of transformative cycles through the process of fragmentation and burning' (Brück 2006: 307). The broken and gnawed human remains interred within the midden, then, may have served a similar purpose.

Re-opening graves and subsequent removal of the skeleton or skeletal elements for deposition within a midden context is recorded from ethnographic sources. For example, the grave of a Latuka 'rain queen' in south Sudan was described by Madden (1940) as being re-opened, all of the bones removed, placed in a large pot and earth carefully sifted so none missed. The pot was then taken approximately 15km south-east to the sacred hill of Lourren, the final resting place. Afterwards, life-sized effigies e.g.

wooden puppets with clay faces wearing the clothes of the deceased would be displayed in the house of the deceased, paraded through the streets for a period of between three months and three years after the actual burial. Then the effigy was buried in a grave or a midden (Poynor 1987; Insoll 2015: 101). Poynor (1987: 62) suggests that some bronze heads from Ife might have been used for similar purposes. This example is just one of many to demonstrate the relationships between middens and complex, multi-phase mortuary practices.

8.3.5.1. The meaning of monumental midden matrix as a mortuary medium

It is important to stress that the disarticulated bones likely did not originate from the site the but were brought by living people to the midden at Potterne from elsewhere, as evidenced by the considerable variation in treatments demonstrated through taphonomy, especially curation. Furthermore, isotopic analyses on the faunal remains from Potterne suggest that animals were brought from households in the surrounding landscape, rather than raised by specialist producers in the vicinity (Madgwick et al. 2012), The chronological and social context of midden accumulation may then provide some insight into the significance of human remains deposition there. A recent study by Waddington et al. (2019) places the large-scale depositional activities within the Pewsey middens at slightly different times: midden accumulation at Potterne began in the ninth and tenth centuries cal. BC; those at East Chisenbury occurred two hundred years after Potterne; and All Cannings Cross was occupied into the later Early Iron Age. This indicates a continuous tradition of middening that started in the LBA/EIA transition and endured for centuries. The LBA/EIA transition has been described as time when the landscape, once structured around monuments of the dead (e.g. barrows and henges), was replaced by a landscape structured around agriculture (e.g. field boundaries) (Bradley 1984; Barrett and Bradley 1980). If the dead were used to establish territory through visible features on the landscape during the Bronze Age, then the interment of human remains within the midden may be, at least broadly, analogous to barrows. This practice, according to the results of the analyses on various middens by Waddington et al. (2019), continued into the end of the Early Iron Age (mid-to-late 5th century BC).

The midden as a monument on the landscape may symbolise community and relationships among the people that gathered to feast at the site (Madgwick and Mulville 2015). The addition of ancestral relics (disarticulated, often fractured and worked human bones), brought from the burial places of various groups, within the midden may reinforce the relationships once maintained through dedicated monuments. In Madagascar, ancestral remains may be incorporated into a multiple *razambe*, or 'great ancestor' (Larson 2001: 124-125), and so the monumental middens may serve a similar purpose of transitioning people into a collective 'ancestor'. Additionally, if the dead were conceptually used to increase magical potency of place boundaries as suggested by Sharples (2010: 294, 2014: 153; see also Douglas 1970: 103-104), then interment of human remains within the midden may also make the monument more powerful to those who behold it. Moreover, if the dead are used to mark boundaries and establish territory, then the interment of human bones within the midden would give the communities involved a claim to the site. It is possible that the different groups who gathered and deposited human remains in/on the midden had slightly different mortuary processes, thus explaining the variability in taphonomy and histological preservation seen in the sampled elements.

More broadly, the interment of human remains within midden material suggests a close relationship between refuse and mortuary practice. The disparity between modern (mostly western) and prehistoric attitudes towards rubbish has been pointed out by Brück (1999: 332) and Lelong (2008: 264-266), who suggest that middens likely served as symbols for community fecundity and status, as well as providing life-giving fertilizer for future crops. Similarly, human remains are often associated with fertility in ethnograpy (Bloch and Parry 1982: 7). The symbolic connection between mortuary practice and the agricultural cycle has been discussed previously within the context of pit burials in Section 8.2.2. It is not unreasonable to suggest that similar concepts influenced human remains deposition in middens and storage pits—considering the chronology of middens and the development of large hillforts, it is possible that deposition in LBA/EIA middens was something of a precursor for MIA pit burials.

In a North American context, deposits of animal bone within middens may serve as 'food for the dead' (Carlson 1999: 44). This concept of middens as places of 'the dead' extends to the theory that excarnation was performed at or within middens; the presence of disarticulated elements therein serving as evidence for this (Pollard 1999: 34; Meiklejohn et al. 2005: 16). However, no archaeological evidence for on-site excarnation has been found at Potterne and the histological evidence strongly suggests elements were exhumed.

To summarise, the deposition of human bone within monumental middens likely facilitated the transition of humans into ancestors as well as playing an important social role for the living groups whom the elements represent (see Brück and Booth 2022 for further discussion on the power of ancestral relics in later prehistory). There is a clear relationship between the dead and refuse: both are used to establish boundaries or liminal places; to literally and metaphorically support fertility of the land; both serve as powerful symbols of community. The variation in mortuary practice suggested by the taphonomic and histological characteristics support diverse mortuary practices prior to deposition, and although this study has shown that intra-site variation is common throughout the southwest, these may represent different groups of people who travelled to Potterne. An upcoming isotopic study by the author will identify diets of the individuals represented in the midden, shedding further light on the people chosen for interment and whether they likely represent disparate communities.

8.3.6. Curation of human remains

Whether redeposited disarticulated human bone had been curated prior to deposition is difficult to determine. A recent study by Booth and Brück (2020) included a large radiocarbon dating programme and histological analysis of Bronze Age and Iron Age human remains and suggests that, in general, duration of curation ranged from a few decades to 200 years at most. This is not to suggest that curated human remains were in circulation for the duration, but rather demonstrates the considerable length of time that may pass between the death of a person and the final deposition of their remains. This is consistent with the overall protractedness of mortuary practice suggested by the results of the present research—to quote the title of their paper, 'death is not the end' (Booth and Brück 2020).

In any case, the transportation of remains to places of secondary deposition means that the bones were 'curated', as in selected and held, at least for the time it took to travel to the place of deposition. Perhaps the most promising evidence for curation is a polished surface on disarticulated remains, which may suggest that the bone had spent considerable time in curation and/or circulation prior to deposition. Although uncommon, polishing was noted on some elements in the histological study from Potterne (PTN15, OHI 3), Battlesbury Bowl (BB16, OHI 1; BB23, OHI 1) and Ham Hill (HH03, OHI 5). This small sample includes two crania and two long bones with a particularly shiny/smooth surface. The possibility of disarticulated human bone in pits representing the remnants of a cleared-out inhumation has been discussed, however this is unlikely to be the case if the bone is polished as this suggests handling as seen in BB16 and BB23. However, these may have been redeposited within the same pit some time after the elements were exhumed if the memory of the burial endured.

The taphonomic markers seen on many of the disarticulated elements sampled in this study would suggest that the bones were subjected to (or afforded) various treatments including exposure and fracturing, as discussed in the previous section and Chapter 6. Other elements that may have been polished through handling include four cranial fragments from All Cannings Cross (Cunnington 1923: 40, pl.26 fig.9): all four had been cut into shape, but two were polished and rubbed down to small pieces. Bones that had been worked may also be considered a form of curation and worked bone is noted in the aforementioned skull fragments from All Cannings Cross; an ulna worked into a scoop shape from Lidbury Camp (Cunnington 1919) and a polished/smoothed skull fragment worked into a disc with a worked central perforation from Glastonbury Lake Village (Bulleid and Gray 673-675; Coles and Minnitt 1995: 170-174). A number of bones from Potterne may be worked, for example sample PTN21 (Figure 204) is similar to gouges or scoops typically seen in animal bone (examples illustrated in Cunnington 1923: pl.23). An interesting suggestion by Armit (2012: 6-7) is that some of the crania from Potterne may have been boiled, thus giving the elements a polished appearance, as part of a preparation for the display of human heads. Although no significant difference in the treatment of skulls and long bones from the site was noticed in the present study, it is possible that some elements were boiled prior to, or during, curation.

The presence of disarticulated skull and skull fragments within roundhouse contexts at Glastonbury Lake Village may also provide some evidence for skulls kept in the home, and some of these were considered to be worked for display (Bulleid and Gray 1917: 676-678). Additionally, skull fragments recovered from Battlesbury Bowl may have been intentionally worked into shape, including deposits from pits shown in Section 6.5.4.1 (Figure 99G, J) and a post hole (Figure 205). The element sampled for BB21 (Figure 205) may also represent intentional shaping into a small sub-rectangular shape, and depressions on both the ecto- and endocranial surfaces may reflect an attempt at perforation. Other potentially worked crania fragments include sample BB22 and BB23, both likely worked or partially worked into rectangular shapes (see Section 6.5.4.1). Worked and perforated crania are known from elsewhere in Britain, for example Harston Hill in Cambridgeshire (Phillips and O'Brien 2016: 65) and may reflect a tradition or superstition focused on the skull. Such objects have been interpreted as good luck charms or momentos, particularly due to the perceived importance of skulls (Cunliffe 1978: 316; O'Brien 2014: 29). Like sample PTN21, BB21 (SK5585) was likely exhumed from an older primary inhumation as no microstructure preserved in the histological sample (Figure 104). Although rare, these elements are evidence for curation either as a mortuary practice, or to be used by the living either practically (e.g. gouges) or metaphysically (e.g. good luck), or perhaps a combination of all three.

Figure 205. A crania fragment recovered from a posthole at Battlesbury Bowl, Wiltshire (SK5585/BB21). The small, rounded shape indicates it had been worked prior to deposition. Source: author

Although it is unlikely that all disarticulated human bones were curated, examining the frequency of bone type may shed light on preferences for element selection. As shown in Chapter 7 (Figures 171 and 172), long bones and crania are the most frequently recovered disarticulated elements by a substantial margin. Smaller bones are quicker to deteriorate, may be more easily misplaced, and/or not carry the same significance (nor hold as much power). Crania are more frequently represented than long bones, making up just over half of all identifiable disarticulated elements (compared to 30% for long bones). Crania are also more widely represented across all sub-regions, especially in South Wales and Cornwall, possibly indicating a preference for skull curation in these areas. However, skulls are also densely concentrated in the Wessex region as shown in Figure 175.

The importance of the head/skull in Iron Age societies has long been cited by classical authors and archaeologists alike (e.g. Polybius, Histories, 2.28.10; Diodorus Siculus, Bibliotheca Historia, 14.115.5; Livy, HIstory of Rome, 23:34; Boylston et al. 2000: 249-50; Brown 2009; Harding 2016; Armit et al. 2011; Armit 2006, 2010, 2012; Shapland and Armit 2012). There are continental Iron Age examples of conspicuous display of heads, for example at the site of Ribemont-sur-Ancre in northern France (Brunaux 1999). The prevalence of disarticulated skull or skull fragments shown in Chapter 7 (Section 7.5) may provide further support for the curation of human heads. Concentrations of disarticulated skulls are noted at individual sites throughout the southwest, for example the ossuary deposit at Harlyn Bay (Bullen 1930); the overrepresentation of skulls recovered from Glastonbury Lake Village (Bullied and Gray); Meare Lake Village (Gray and Bulleid 1953); the five disarticulated skull fragments with sharp force trauma at Worlebury (Dymond 1902); the 32 scattered and disarticulated skull fragments at All Cannings Cross (Cunnington 1923: 40). However, it is worth considering that these sites were excavated in the early 20th century, a time when osteoarchaeological methods left something to be desired, and a combination of confirmation bias and misidentification may have skewed the figures. At more recently excavated sites, the frequency of long bone and crania are more evenly distributed, for example Potterne and Battlesbury Bowl (see Appendix 2).

The long-held belief that the frequency of skulls and parts of skulls found at Iron Age sites represent vanquished enemies is summarised by Cunnington during her works at All Cannings Cross, where the 32 skull fragments were described as being scattered across the excavated area unrelated to one another, mixed 'promiscuously' with domestic rubbish (fragments of other bones, pottery, etc). In her words:

> "It hardly seems probable that the people of the village would have treated the remains of their own people with such scant decency that pieces of skulls should be found scattered about amongst their other rubbish, some even having been used for scraping or other purposes. Even supposing they had done so, where are the other bones?" (Cunnington 1923: 40)

In the 100 years since these words were written, the general understanding of Iron Age burial practice has improved, and histological analysis (among other methods) has shown that disarticulation is not necessarily evidence for careless disposal after a time of public display. In the present study, as discussed in Chapters 6 and 7, evidence for beheading and deposition of fleshed heads is rare in the southwest with only one skull with an articulated atlas vertebrae that had been severed recovered from a pit at Worlebury. Additionally, the majority of disarticulated skulls have little to no histological preservation, suggesting that most were exhumed from primary inhumation burials and were redeposited after a period of curation, rather than the severed heads of enemies. The answer to Maud Cunnington's question, however, remains elusive.

An alternative explanation for the preferential selection of crania may be that the skull retains the physical attributes of the deceased individual 'who can watch over, and communicate with, the living' (Tracey 2012: 372). This could mean that the dead could remain 'active' members of the living society (Parker Pearson 2003). Such beliefs may explain the presence of disarticulated frontal bones at Greystones Farm (GYF02), Battlesbury Bowl (BB22) and Potterne (PTN15, PTN17), with further evidence for working (and therefore curation) from the latter two sites. On the other hand, the separation of the cranium from the mandible may symbolise 'silencing' the dead (Tracey 2012: 372). The present research did not include a full taphonomic evaluation of all case study sites, but future studies on the frequency of specific elements and taphonomic modifications would be useful to determine treatments of frontal bones relative to other elements within disarticulated assemblages.

Routine exhumation for the purpose of such targeted element selection would require the living to know where the remains of the dead are located. This would be easy for burial monuments like barrows and cairns, however there is little surviving evidence to suggest graves were marked. Knowledge of the locations of graves may be passed down from person to person, or markers may not have been archaeologically visible, such as plants (an example of this is the Japanese tree burial, see Boret 2014), a rock, or a pile of wood. If graves are marked and deceased individuals are able to be identified, then it is possible that elements were replaced within graves after a period of removal and curation, if only short-term. The evidence for this is tenuous, but worth considering. An example may be Skeleton 1 from Whitcombe, Dorset (WHT01), as described in Section 6.3.2.1, which had a cervical vertebrae located by the pelvis instead of articulated with the skull (Figure 41A). The histological sample taken from the individual showed the highest level of bacterial attack and virtually no preserved microstructure, so was likely a primary articulated burial. The displacement of the cervical vertebra may indicate the head was removed at some point after skeletonisation had occurred and then later replaced. The oddly placed skull at Rowbarrow (RBW01, Section 6.3.2.2, Figure 43A) may be another such case, although there are many ways in which the head may have been turned at an unnatural angle. Heads were also noted to be twisted at unnatural angles at Tollard Royal (Wainwright et al. 1969) and the head placed at the feet of a skeleton and other skeletons noted to have heads that were apparently moved at Harlyn Bay (Bullen 1930: 64). These examples of skulls in unusual positions within otherwise articulated graves may suggest some form of intentional manipulation of skulls after soft tissue had decomposed.

Overall, the results of this research do not discredit interpretations of heads and skulls having special significance in the Iron Age, but curated skulls were more likely exhumed than decapitated. Moreover, the significance of long bones is also supported by the frequency of their deposition and evidence for manipulation. Such curation of exhumed human remains may relate to a conceptual distinction between a biological and social death. Examples of a social life extending past biological death are numerous in anthropology. One such example comes from the Famadihana ceremony observed in modern-day Madagascar (Bloch 1971; Graeber 1995; Parker Pearson 2003: 23, 2018). For this event, families exhume the bodies of dead relatives in order for the body, and therefore the person, to partake in festivities including dancing and feasting. What this demonstrates is a cultural attitude towards an individual after their biological death that does not separate them entirely from society. They are still brought around at a prescribed time to commune with the living. A similar idea may extend to disarticulated human remains that are curated and handled. This could account for the apparent curation, or preference, of skulls and long bones in settlement sites and middens.

8.3.7. Summary

To summarise, the results of the present research strongly suggests that disarticulation most often occurs via exhumation of old graves. This is perhaps the most important contribution to understanding Iron Age mortuary practice in this region as it identifies long-term inhumation as a mortuary rite that was likely more frequent than previously thought, and at the same time challenges the popularity of excarnation during the Iron Age. The poor histological preservation seen in disarticulated material from a range of features suggests that most of the disarticulated material recovered from settlements and within middens were removed from existing graves and intentionally redeposited. In some cases, but not all, exhumation was followed by various secondary treatments such as fragmentation, exposure to animals and curation prior to the final deposition. This indicates a deliberate, prescribed mortuary practice that is performed throughout the Iron Age in the southwest, but decreases in the Late Iron Age to the Roman period as inhumation cemeteries become more commonplace. This may relate to changing conceptions of identity from the E/MIA to LIA: a shift from the partibility of the individual and the distinction between a biological and social death with an emphasis on the group (e.g. interment within the midden at Potterne) to one where the emphasis is on the individual (articulated inhumations in individual graves within cemeteries) as suggested in previous research (Sharples 2014). This evidence stands in contrast to existing interpretations of excarnation as a common mortuary practice (e.g. Carr and Knüsel 1997; Harding 2016), at least in the southwest of Britain.

The frequency of disarticulated skulls compared to other element types, as well as the examples of fragments that had likely been worked and curated, supports the theory that heads/skulls were conceptually important in the Iron Age. However, the nature of curation is not consistent with 'headhunting' or the conspicuous display of skulls as a warning to any would-be enemies. Instead, skulls and skull fragments appear to have been exhumed from old burials individuals after skeletonisation had slowly and naturally occurred. Additionally, the substantial over-representation of disarticulated skulls compared to other elements described in Chapter 6 is likely falsely inflated due to the recognisability of human skulls amongst comingled deposits of animal bone. This is not to say that skulls were not preferentially selected, but long bones are also clearly well-represented in many sites with prolific amounts of disarticulated material (e.g. Potterne midden), so the predilection for skulls may be site-specific and reflect local preferences.

8.4. Mummification and preservation

Mummification is an established burial rite throughout prehistoric Britain, particularly in the Bronze Age (Parker Pearson et al. 2005; 2007; 2013; Booth et al. 2015). Methods of mummification and preservation can include natural processes (e.g. deposition in a waterlogged/anaerobic environment such as a bog) or artificial means (e.g. evisceration) (Micozzi 1991: 17; Aufderheide 2003: 41). Other means may include smoking, drying, freezing, and application of compounds such as quicklime. Mummified bodies have been shown to have low levels of bacterial bioerosion as the preservation techniques would have staunched putrefaction in the early post-mortem period (Weinstein et al. 1981; Thompson and Cowen 1984; Stout 1986; Brothwell and Bourke 1995; Garland 1995: 104-107; Annis et al. 1997; Hess et al. 1998; Monslave et al. 2008; Lelong 2011; Bianucci et al. 2012).

Potentially mummified burials are suggested by articulated or probably articulated inhumations and have low levels of bacterial bioerosion. Only five articulated inhumations sampled for this study had good histological preservation that would be consistent with potentially mummified individuals. The most compelling example is from Hunt's Grove, Gloucestershire (HGV02, SK192). As previously mentioned in Chapter 6 (Section 6.3.3.3), the overall preservation of human remains was poor, but the position of the surviving skull and long bones suggests a very tightly contracted position, probably bound or wrapped in a body bundle. The histological preservation of this individual was similar to that of a fresh cadaver with some small, localised areas of arrested bacterial attack which suggests the bones were minimally exposed to diagenetic bacteria (see Section 6.3.3 for more detail on the histology of this sample). The position and histological preservation of this individual is similar to some Bronze Age burials, for example tightly crouched Late Bronze Age inhumations from Cladh Hallan and Bradley Fen also showed low levels of bacterial bioerosion, likely owing to burial within peat (Parker Pearson et al. 2005; Booth et al. 2015). The individual represented by HGV02 was not radiocarbon dated, however it is thought to be Iron Age by the excavators (Allen and Teague forthcoming). Bodies that are so tightly crouched that they could not have been fully fleshed or recently dead upon interment may indicate mummification (McIntyre 2004). This was suggested as further evidence for mummification in the tightly crouched inhumations at Cladh Hallan (Pearson et al. 2005: 540), and so the tightly crouched posture coupled with the near-perfect histological preservation supports mummification of the individual represented by HGV02 at Hunt's Grove.

Although only two individuals were recovered from Hunt's Grove, the result of HGV02 is significant because the other assumed inhumation from the site had very poor histological preservation with the highest possible levels of bacterial bioerosion (Section 6.3.3.1). If these individuals are contemporary, they represent two very different mortuary practices where one was likely mummified (HGV02) and one was likely buried immediately after death (HGV01). Unfortunately, the surface preservation of the skeletons was too poor to make any meaningful taphonomic observations, but the representation of elements suggests that both were articulated bodies upon deposition. If these skeletons are contemporary as believed by excavators, then this presents an important case study for various mortuary practices afforded to individuals within the same site during the Iron Age. As explained in Chapter 2 (Section 2.3), the area covering modern Gloucestershire was likely a melting pot of different groups and identities facilitated by riverine trade during the Iron Age. Therefore, the burials at Hunt's Grove may represent individuals from disparate communities, each with their own preferences for mortuary practice, coexisting at an economic crossroads.

The example of two individuals from the same site with vastly different histological preservation is also seen at Basel-Gasfabrik in Switzerland (Brönnimann et al. 2018; Booth et al. 2022: 593-594). Two burials from within the same structure showed completely different histological preservation, leading the authors to conclude that mortuary practice at the site was complex and the two represented individuals were afforded different multi-stage treatments.

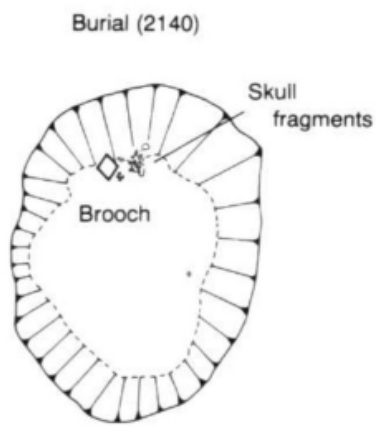


Figure 206. Illustration of Grave 2140 from Trethellan Farm, Cornwall. The placement of the brooch next to skull fragments may indicate a covering/body bag. Source: Nowakowski 1991 fig.80(H)

Returning again to mummification in the southwest, another potentially preserved individual from Trethellan Farm, Cornwall (TLF05, SK 2077/grave 2140) had very low levels of bacterial bioerosion. Only a few skull fragments remained and a brooch was recovered near the skull (Figure 206), perhaps indicating the body had been wrapped or covered as previously discussed in this chapter (Section 8.2.1.1). The absence of any other bodily elements in the grave means that redeposition of disarticulated elements cannot be ruled out, however poor osteological preservation is common across the site and excavators considered these crouched inhumations due to high levels of phosphorous detected in a number of the graves (Nowakowski 1991: 210-221). It is unclear why this individual would be afforded a different burial rite to the others from Trethellan Farm, but as demonstrated throughout this thesis, intra-site variation is common throughout the southwest.

Two samples from articulated burials in cists from Harlyn Bay had well preserved and perfectly preserved microstructure (see Section 6.3.1.3). The well-preserved sample (HLB24) had no taphonomic evidence for exposure or manipulation but saprophytic fungal tunnelling indicates exposure to a wet environment (probably within the cist). Alternatively, as previously mentioned, fungal tunnelling may be caused by exposure to an aerated environment (either within the cist, or elsewhere prior to deposition within the cist). The high birefringence in this sample suggests the bone was not subject to intense collagen hydrolysis. As previously explained, the context of the samples from Harlyn Bay is uncertain, but if this was an articulated individual, the high level of histological preservation would suggest they were likely mummified prior to interment within the cist.

Sample HLB21, however, showed no bacterial bioerosion, but birefringence was substantially reduced. The sampled radius fragment had obvious charcoal staining. It is possible that this individual was preserved through a process of low-intensity burning. There is some potential evidence for low-heat burning or exposure to heat in some of the human remains from Harlyn Bay: taphonomic evidence includes charcoal staining (but not charring) observed on some of the bone (Alexis Jordan pers. comm) and Bullen (1930: 34) mentions several of the cists containing 'the supply of the necessary materials for producing fire' and an abundance of charcoal found within the graves.

It is interesting that, of the four sampled elements with evidence for charcoal staining, at Harlyn Bay, two of them had poor histological preservation, one had arrested bacterial attack and one had perfect histological preservation but severely reduced collagen birefringence and microcracking (HLB21, Figure 37). A further sample showed possible carbon infiltration (HLB08, Figure 36). The variation in microstructure preservation among elements with charcoal staining may suggest that heat/charcoal was introduced to human remains at different stages of decomposition. An ethnographic example of cists used in mortuary practice including low-heat burning is recorded from Porcupine Cave in central Kenya: a tightly bound body was placed in a small stone cist within the cave and a small fire was set on top of the cist, thus baking the body in an apparent secondary funeral rite (Siiriäinen 1977: 168).

Although there is no mention of burning on the capstones at Harlyn Bay, the possibility of using the cist as a means to trap heat as part of a mortuary practice is interesting to consider.

8.4.1. Mummification through heat: drying/smoking

The use of low-heat burning to preserve bodies through desiccation is known in ethnographic examples, particularly as a precursor, alternative, or adjunct to burial (Insoll 2015: 97). For example, Akhan nobles from Ghana who had died away from their homes would be dried over a fire and their intestines removed (Rattray 1927: 149). Additionally, in Muhambwe, Tanzania, chiefs were dried on a platform with a fire lit underneath, and when the body was dry it was folded and sewn inside an ox skin, then taken to the place of deposition (Bagenal 1925). Central to the idea behind these practices is portability of the corpse, from a wet body to a dry one (Insoll 2015: 97-98). Thus, the act of mummification through drying or smoking may have practical as well as spiritual functions to facilitate transportation and transformation.

Evidence for low-heat burning as a means to mummify is also found elsewhere in Britain, for example an inhumation from a round barrow at Neat's Court, Isle of Sheppey (Schuster et al. 2009; Booth et al. 2015). The skeleton had discolouration at articular ends of long bones suggesting preservation by smoking. Unlike HLB21, the skeleton from Neat's Court showed some arrested bacterial attack (Booth et al. 2015: fig.7), possibly indicating the Neat's Court body was engaged in mummification at a later post-mortem stage than sample HLB21. An alternative explanation is that the body represented by sample HLB21 was subjected to a more intense treatment which prevented bacterial bioerosion more completely.

Low-heat burning is also recognised in Bronze Age burials and may indicate that the bodies were artificially preserved by smoking (Booth et al. 2015; Deter and Barrett 2009). In addition to the possible low-heat treatments at Harlyn Bay, the presumably articulated burial from Glastonbury Lake Village (GL50) had evidence for burning: the burnt deposit was described as comprising a skull, two femora, tibiae and fibulae surviving, but only the mandible remains in curation today. The histological sample taken from this individual was minimally affected by bacterial bioerosion with no collagen birefringence, which would be expected if the body was exposed to heat. However, since the other skeletal elements are lost, the intensity and extent of burning cannot be determined. Other human remains from Glastonbury Lake Village show macro- and microscopic evidence for burning (see Section 6.6), including carbon deposit infiltration, fragmentation and colour changes (Hanson and Cain 2007; Shipman et al. 1984). This suggests that bodies or skeletal elements may have been treated with or exposed to heat, such as smoking, as a post-mortem process, although environmental conditions cannot be entirely ruled out especially when context is uncertain.

Detailed analyses on temperature and whether the element may have been burnt whilst fleshed or defleshed, wet or dry, fell beyond the scope of this research but is worth considering in future studies. It is possible that the individuals with evidence for charcoal staining and burning were burnt after being mummified by some other process. However, the peat environment of the site may also contribute to some of the histological characteristics.

Deposition of bodies within peat bogs can naturally preserve the corpse (e.g. Glob 1969; Sheridan et al. 2015). A total of 22 deposits from wetlands were identified in this study, 17 of which were recovered from Glastonbury Lake Village. As described in Section 6.6, most of the sampled elements from peat around Glastonbury Lake Village had the highest levels of microstructural preservation. In addition, a possible bog body was found during the late 19th century at Llwynmawr , Carmarthenshire, South Wales (Anon. 1893), however no other details were noted and the location of the remains is unknown. It is possible that deposition of human bodies within bogs was more common, as it was in Ireland and parts of England, but have yet to be recovered in the southwest. The presence of fungal/cyanobacterial MFD on some samples described in Chapter 6 suggests that placement of human remains within wetlands or aqueous environments may have occurred but were later retrieved for redeposition elsewhere, for example, as shown in Section 6.7, several samples from Cadbury Castle in Somerset were affected by Wedl (types 1 and 2) tunnelling. However, Wedl tunnels may appear in a myriad of environments, including covered pits (Booth and Madgwick 2016). Deposition within wetland environments are further discussed in Section 8.7.1.

In addition to the mummification processes discussed above, partial or ephemeral mummification in Bronze Age Britain has been suggested to enable fragmentation, circulation and recombination of bodies and body parts (Booth et al. 2015: 1166). It is possible, then, that some of the crouched articulated inhumations with middle-ranging histological preservation (OHI scores of 2 and 3) were partially mummified, or that some of the disarticulated elements with middle ranging preservation were removed from partially mummified individuals. Detailed recording of the burial contexts are necessary to inform interpretations and unfortunately many burials in this research are not described in detail.

8.4.2. Summary

Overall, evidence for mummification is uncommon in the southwest, but there are several possible examples within the histological data. First, the tightly crouched inhumation from Hunt's Grove, Gloucestershire had near-perfect histological preservation in contrast to another possible inhumation from the same site that was completely destroyed. This may represent mummification such as that seen in the Bronze Age deposits at Cladh Hallan. Other forms of mummification may involve drying, smoking or otherwise treating a body with low heat, seen in an Iron Age example from the Isle of Sheppey. Although not enough taphonomic and contextual information survives, it is possible that such treatment was afforded to some individuals buried at Harlyn Bay and Trethellan Farm in Cornwall. A third possible method for preserving a body is deposition within a peat bog, and such treatments may have been afforded to individuals at Glastonbury Lake Village, however only one potentially articulated body was recovered from the site, the rest comprising disarticulated deposits. Mummification may result in disarticulation as suggested by Wilson (1981), however, as shown in Chapter 6, a minority of samples had well preserved histology. Therefore, it is likely that a minority of individuals were mummified in the Iron Age of southwest Britain, however there is not enough chronological data to suggest anything beyond a possibility.

8.5. Excarnation and exposure

Excarnation, as mentioned throughout this thesis, has been the favoured theory for the archaeologically invisible mortuary rite afforded to the majority of people in the Iron Age of southern Britain. Partially articulated and disarticulated remains have been suggested to indicate excarnation (Ellison and Drewett 1971; Carr and Knüsel 1997; Cunliffe et al. 2015). Previous studies have shown that taphonomic evidence for subaerial exposure (exposure on raised platforms) in the Iron Age in southern Britain is uncommon in disarticulated assemblages (Madgwick 2008, 2010). On the other hand, macroscopic evidence for exposure may not always occur quickly as shown by an experimental study using sheep carcasses in North Wales (Andrews and Fernández-Jalvo 2019). If elements are collected from the excarnation site quickly after skeletonisation, they may not be expected to have indicators such as weathering, abrasion, and trampling. Considering this, and without knowing the original contexts of redeposited human remains, evidence for excarnation and exposure in this study may include fully disarticulated elements with high levels of histological preservation (OHI 4 and 5). As demonstrated throughout Chapter 6, only a small minority of histological samples included in this study showed good microstructural preservation as would be expected if the elements originated from an excarnated body. Of the 162 disarticulated elements sampled, only 20% (n=25) had well-preserved microstructure (OHI 4-5), the majority of which were from Glastonbury Lake Village where excarnation was not well supported by taphonomic evidence. Instead, it appears that most of the elements with high histological preservation were burnt. If Glastonbury Lake Village is removed as an outlier (see Section 6.5) only 7% (n=7) of the disarticulated remains had good histological preservation comprising one sample from Harlyn Bay, three from Potterne (all OHI 4) and three from Ham Hill. The evidence for excarnation in these samples is discussed in turn below.

Equifinality is, of course, an issue here because it cannot be determined whether a disarticulated element with good histological preservation resulted from excarnation or another process like butchering, dismemberment or mummification. As discussed in Section 8.4 of this chapter, some of the sampled elements from Harlyn Bay (HLB03) showed well-preserved microstructure and may have been mummified. Samples from three skulls thought to be from the ossuary described by Bullen (1930) included only one with high histological preservation (OHI 4), the other two showed poor histological preservation. It is possible that the high scoring sample was from an excarnation, however no other taphonomic evidence was noted. Considering other probably articulated samples at Harlyn Bay also showed good histological preservation, it is more likely that the skulls in the ossuary deposit represent redeposited material from disturbed cist inhumations, some which were exhumed long after inhumation and others that had been afforded a different post-mortem treatment resulting in mummification/preservation as previously discussed. However, excarnation cannot be ruled out entirely.

The three elements with low levels of bacterial attack from Potterne represent the strongest evidence for excarnation because there was also taphonomic evidence for exposure and manipulation. Sample PTN02 was fractured on both ends with a semi-fresh appearance, suggesting the break happened at a point where the bone was not completely wet nor fully dry. It is unclear whether the break occurred by anthropogenic or natural means as there is no surviving point of impact, however it is not likely to have originated from an inhumation because the histological preservation was only minimally affected by microbial tunnelling (see Section 6.5.2). Additionally, since the epiphyses have been removed and gnawing is usually present on epiphyses (Haynes 1981: 88), it is unclear if this element was exposed to scavenging animals prior to fracturing, or before. In any case, this element represents one of the best potential cases of excarnation within the sampled assemblage.

Figure 207. Sampled human long bone fragment from Potterne (PTN08) score marks on the bone surface consistent with canid gnawing. Source: author

The remaining two samples from Potterne show taphonomic evidence for processing/intentional fracturing. The element represented by sample PTN08 is especially interesting because of the fresh break at the distal end of the midshaft and evidence for canid gnawing on the epiphysis and across the surviving midshaft (Figure 207). The element was likely struck and intentionally fractured, however there is no evidence for gnawing on the fracture surface. This suggests that the femur was available to animal gnawing, subsequently fractured, then deposited within the midden. The histological preservation of PTN08 is mostly good, but areas of arrested bacterial attack indicate some decomposition had occurred but advancement of the diagenetic bacteria was interrupted (see Chapter 6 Section 6.5.2, Figure 89). This suggests a mortuary practice that did not cause the body to skeletonise as quickly as an uncovered subaerial exposure, but could indicate exposure in a more sheltered location before being discovered by, or made accessible to, canines. Sample PTN24 represents a fragment comprising the head and neck of a femur with a distinct diagonal break that severed the proximal epiphysis just after the greater trochanter, separating the femoral head and neck from the rest of the element (see Chapter 6 Section 6.5.2.3, Figure 90). It is likely that this element was struck by a tool and the freshness of the fractures and the excellent histological preservation suggests the fracture happened shortly after death, potentially as part of a mortuary process related to excarnation. Samples PTN08 and PTN24 may have been intentionally broken prior to interment within the midden as part of a mortuary practice potentially symbolising transformation or 'ritual killing' of the object as discussed in Section 8.3.3 and 8.3.4. Alternatively, the fractures may have been inflicted during intentional processing of the corpse to facilitate quicker decomposition as seen in ethnographic examples, particularly the 'sky burial' still practiced in modern Tibet where the soft tissue is sliced open to aid the removal of the tissue by vultures (e.g. Martin 1996). Another interesting possibility is that middens were centres of excarnation: certain human remains may have been utilised by the community as a symbolically loaded resource for curation and secondary burial (Madgwick 2008). If this were the case, however, more elements would have shown high levels of histological preservation. On the other hand, only a small portion of the midden has been excavated, and the recovered material represents only a tiny fraction of what surely lies within the monumental midden. It is also possible that a myriad of mortuary practices are represented by human remains brought by various groups of people converging at the midden.

Canid gnawing is shown on several elements sampled for histological analysis in this study and noted by excavators of sites across the southwest (see Appendix 2). The presence of gnawing on Neolithic human remains has been interpreted as evidence for excarnation where the soft tissue is removed by dogs as part of a mortuary practice (Smith 2006). A similar practice may be represented by the elements at Potterne with good histological preservation and evidence for gnawing, however as previously discussed in Section 8.3, gnawing was also present in samples with poor histological preservation and therefore were not likely made available to animal gnawing until after exhumation.

So far, the evidence for excarnation has been discussed as secondary deposits brought from elsewhere. A question remains: if excarnations are occurring, where and how are they performed? It has been suggested that hillforts functioned as centres for exposure, and these mortuary practices sacred to the Iron Age peoples were interrupted by invading Roman forces (Harding 2016: 29-30, 272-4). However, only three of the 28 samples with good histological preservation included in the present study came from a hillfort (Ham Hill, Somerset). One of these (HH09) was from a femur with taphonomic evidence for exposure in the form of possible gnawing and a heavily weathered surface (Richard Madgwick pers comm.). Another sample from a young adult femur (HH03) was noted as having a polished, "fresh" condition and perfect histological preservation. It is highly likely that this element was removed from soft tissue shortly following death—possibly by means of excarnation—and curated, and handling the element over a long period of time polishing the bone surface. The feature from which these two samples from Ham Hill were recovered is unknown. The third and final sample from the hillfort potentially representing excarnation is sample HH47, sampled from a mature adult parietal bone. Like sample HH03, the histological preservation is free from bacterial bioerosion with histological preservation similar to a fresh cadaver. The skull fragment was recovered from the middle fill of a storage pit and no other taphonomic markers were noted. If excarnation did occur at hillforts as suggested by Harding (2016), the majority of skeletal elements were probably chosen for deposition elsewhere outside of the settlement, or else occurred at hillforts not included in this study.

Although the skeletal elements from Glastonbury Lake Village were not observed by the author as part of this study, some elements bear histological and taphonomic characteristics that could suggest excarnation occurred. Glastonbury Lake Village produced the largest corpus of well-preserved histological samples within this study—28 disarticulated elements had perfect or near-perfect microstructure preservation—and it is likely that a variety of mortuary practices are represented. Six of the sampled disarticulated elements with high OHI scores (GL44, GL45, GL46, GL54, GL55, GL59) had macroscopic evidence for gnawing, weathering and/or abrasion (see Chapter 6 Section 6.7, Table 21), which alone would indicate surface exposure at some point in the elements' post-mortem history. Considering the excellent histological preservation, it is likely that they were removed from soft tissue immediately following or shortly after death, so excarnation through surface or subaerial exposure is likely. As discussed earlier in this chapter, a number of the human remains from Glastonbury Lake Village also showed signs of burning, including three of the disarticulated elements which exhibited perfect to nearly perfect histological preservation. One of the burnt samples was also gnawed and weathered (GL54). It is possible that these were burnt after being removed of flesh, either shortly after or after a period of curation as discussed regarding exhumed remains earlier in the chapter (Section 8.3). However, deposition in a waterlogged environment could be responsible for good histological preservation, at least in some cases, although the perthotaxic modifications would indicate that excarnation may have been occurring.

The majority of the disarticulated elements with good histological preservation had no taphonomic evidence for exposure (n=15). As mentioned, this does not necessarily mean that they were not exposed (Andrews and Fernández-Jalvo 2019), as various methods of exposure may facilitate rapid decomposition whilst protecting the bones from animal scavenging and weathering. One possibility seen in ethnographic examples includes wrapping the body prior to exposure. An ancient mortuary practice in Japan known as a 'wind funeral' involved the corpse being wrapped in a mat and taken to a mountainside where it was left until skeletonisation, when bones were collected (Naumann 2000: 75). Exposure on platforms or structures is also known, for example the Mandan of modern-day North Dakota wrapped their dead tightly in buffalo skin and placed them in tree platforms. When the platforms collapsed, the bones were buried, and skulls placed in a circle with other skulls in a sacred place (Catlin 1842: 89-90). A similar mortuary practice of exposure on a raised platform has been extensively suggested for Iron Age Britain since Bersu's (1940) work on Little Woodbury. Although current interpretations of four-post structures within settlements are related to grain storage, these have also been interpreted as potential excarnation platforms (Ellison and Drewett 1971). For example, it was proposed by Bell (1990) to explain the disarticulated skull next to a preserved wooden structure of unknown function within the Severn estuary near Goldcliff, Newport (South Wales), though there is no direct evidence for this.

It is also necessary to consider that an 'exposed' mortuary practice may not explicitly result in rapid decomposition (and therefore excellent histological preservation). Bodies may be wrapped tightly, restricting invertebrate access and protecting the corpse from natural diagenetic factors. The Yanktonais of Mississippi, for example, would wrap their dead until the trappings were water-tight and then placed in wooden scaffolds of four timber posts c.7-8 feet high (Bushnell 1927) (Figure 208). This was done to keep the bodies safe from scavenging animals (Yarrow 1880: 66-71). It is impossible to know the histological signature of such a mortuary practice without extensive experimental studies, but if the method of wrapping prevented the escape of decomposition by-product, it is possible that bone microstructure would be completely destroyed by putrefactive bacteria. This may be supported by a recent experimental study where pig carcasses were wrapped in various materials and found that those wrapped in nylon had considerably worse histological preservation than those wrapped in cotton (Kontopolous et al. 2016).

Figure 208. Illustration of Yankton scaffold burials. Source: Ellison and Drewett 1971: fig. 2

8.5.1. Sheltered exposure

Other methods of exposure may include mortuary houses or subterranean shelters that would allow the body to decompose more quickly than a deep inhumation burial, but not as quickly as a subaerial exposure (Madgwick 2008). This may result in middle-ranging histological preservation. The degree of shelter required to promote considerable but incomplete levels of bacterial attack would be very context specific. One of the more convincing suggestions from previous research is protected exposure in pits (Booth and Madgwick 2016: 21). Burials in covered pits are known from around the world: for example, the Omaha of North America may bury their dead in shallow pits, the body itself tightly wrapped in cloth and secured with rawhide, then the whole pit is covered with a roof of timber and earth (O'Shea and Ludwickson 1992: 142; Morgan 1959: 88). In the Iron Age of southwest Britain, the occurrence of partially articulated remains may also indicate protected exposure with the intention of retrieval for secondary practices. As described in Section 7.4, nearly half of partially articulated deposits were recovered from pits which strongly suggests these features were used to facilitate secondary mortuary processes requiring the removal of skeletal elements.

Removal may occur many years after the pit had been backfilled as discussed in this chapter (Section 8.3)—alternatively, a cover over an open pit would allow for efficient retrieval of selected elements for redeposition and may explain some partially articulated remains recovered from across the southwest (see Chapter 7, Section 7.4). Evidence for this may include articulated, partially articulated or disarticulated elements features with middle-ranging histological preservation (OHI 2-3).

As shown in Chapter 6 Section 6.3.3, three of the 34 sampled articulated inhumations in pits had middle-ranging histological preservation. The pit containing the individual represented by sample BB06 (Figure 49) also contained a redeposited fragment of human long bone (BB10). The redeposited human bone in the pit may be evidence for a previously exhumed burial in the same pit and the covering may have facilitated easier recovery of skeletal elements. Other inhumations from pits had middle-ranging histological preservation from Dorset (GUS01, Figure 50) and Ham Hill (HH33), which also showed no taphonomic evidence for exposure or manipulation (Chapter 6 Section 6.3.3.2). These results are consistent with the results from sampled pit burials at Danebury and Suddern Farm in Hampshire (Booth and Madgwick 2016), suggesting that the mortuary practice of covered inhumations in pits was likely more popular in the Wessex area as such evidence is not present in the other represented sub-regions.

If Iron Age mortuary practices involved interment in covered pits to facilitate quicker decomposition and retrieval of selected elements, then partially articulated deposits with middle-ranging histological preservation may provide further support for this. However, only one of the four partially articulated deposits sampled from pits in this study meet these criteria, consisting of the legs and pelvis from one individual at Tolpuddle Ball in Dorset (TPB02, SK 60A/SF 165). As described in Section 6.4.3, the sample showed extensive but arrested bacterial attack with large areas of well-preserved microstructure suggesting decomposition occurred more slowly than an excarnation but more quickly than a backfilled inhumation. It is likely that this deposit represents the original interment in situ and the elements of the missing upper half were removed, probably after skeletonisation, and redeposited elsewhere. Of course, the sample size for partially articulated remains in pits is small, so conclusions are tentative, however the rarity of recovered partially articulated deposits with middle-ranging histological preservation seen in this study suggests two possible scenarios: first, protected exposure within pits may have been uncommon, with most disarticulation occurring after more 'standard' inhumations (explained in Section 8.3). Alternatively, the pits may be more thoroughly cleared of skeletal elements after decomposition, thus removing evidence for a regularly occurring mortuary practice.

Another possibility is that, in addition to grain storage pits that are more likely to be targeted for archaeological excavation, other features such as shallow pits and graves may serve a similar purpose for sheltered exposure. As previously mentioned in Section 8.3, one example from Rowbarrow (RBW07) includes a partially articulated body in a shallow grave with the head, lower legs and feet missing. The histological preservation suggests the soft tissue had decomposed more rapidly than would be expected for a typical inhumation burial, but less than an exposure. It is possible, then, that the body was placed in a shallow grave and covered by an organic sheet or structure (that would leave no archaeological trace), thereby facilitating quicker decomposition and easier removal of selected elements. The variation in histology and deposition type seen at Rowbarrow may suggest that similar mortuary practices were afforded to individuals deposited there, but with some differences in inhumation (e.g. uncovered vs. covered) or duration (e.g. elements removed at different stages of decomposition).

Exposure, whether the corpse was protected or unprotected, may facilitate transformation of the person and the body from one phase to another. For example, the journey from a 'wet' corpse to a 'dry' corpse could transform 'mortals' into 'immortals' by altering their physical state (Insoll 2015: 98). An ethnographic example can be seen in the mortuary practices of honoured Tiv elders in Nigeria: here, the corpse is placed in a wood coffin with holes bored into the base, and then laid on a trestle approximately 1 metre above ground and left until only the bones remained (Blackwood and Balfour 1948: 54). The skull was then removed and treated specially. In a similar mortuary practice, the Akhan kings from Ghana were transformed through exposure via "the place of drippings": for 80 days and nights, the corpse lies in a coffin suspended by wooden supports over an open pit. The decomposition fluids drip into the pit, and on the 80th day, the corpse is removed, the remaining soft tissue manually removed, the bones greased with buffalo fat, long bones re-articulated with gold wire and then taken some distance to a mausoleum at the centre of the royal ancestry cult where they become official ancestors (Rattray 1927: 117). These are just some examples of mortuary practices which include excarnation as an intentional, reverent, and transformational funerary process offered to honoured individuals. The multiplicity of mortuary practice in the Iron Age of the southwest is suggested throughout this thesis, particularly regarding the evidence from the monumental midden site at Potterne, which may represent similar ideas of transformation.

8.5.2. Summary

Overall, there is little evidence for excarnation by subaerial exposure identified in this study. A bone from an excarnated body would be expected to have near-perfect histological preservation as the soft tissue would be quickly removed by accelerated decomposition and scavenging animals. However, few histological samples taken from disarticulated bone had high microstructural preservation. Three elements from Potterne had good (but not perfect) histological preservation a well as taphonomic evidence for exposure and manipulation, so it is possible that these elements represent individuals interred within the midden after being excarnated sometime in the early post-mortem period, (but not directly after death). Additionally, it is possible that at least some of the elements from Glastonbury Lake Village were excarnated, however there is evidence for other treatments such as burning and deposition in the surrounding peat to consider.

Alternative means of excarnation include sheltered exposure, such as deposition in a covered pit as proposed by Booth and Madgwick (2016). However, there is little evidence for this among the sampled sites from southwest Britain with only few pit burials from Wiltshire, Dorset and Somerset showing any histological preservation. This may indicate a regional difference in mortuary treatment between Wessex and the peripheral southwest.

Another possibility is that the process of excarnation was not always followed by disposal in the ground, leaving the remains to be exposed on the surface for scavengers to carry off and natural elements to virtually erase them from the archaeological record. Thus, it can be inferred from the available evidence that excarnated remains were disposed of in a number of possible ways that may, or may not, have incorporated a burial at all.

8.6. Cremated and burnt

This section discusses the evidence for cremation and burning of bodies identified in previous chapters. Although likely less frequent than mortuary practices discussed in the previous sections, funerary rites involving cremation and burning were practised within the southwest region spanning the Iron Age (see Section 7.6, table 26).

The histological analysis described in previous chapters did not target cremated bone because cremation usually obliterates microstructure (and therefore bacterial bioerosion), so this section will discuss the secondary burial evidence exclusively. Cremations are common in the southeast during the Late Iron Age (see Fitzpatrick 2007), but notably rarer in the southwest. The few examples have been interpreted as a regional conservativism in burial custom, rather than a re-introduction from the continent (Murphy 1992b: 28). However, unlike the Bronze Age traditions which include cremations in larger community cemeteries, for example Simon's Ground in Dorset which contained 50 cremation deposits (White 1982), the Iron Age cremations in the southwest are isolated or in small groups. As described in Section 7.6, radiocarbon dates on deposits from six sites show that cremations were practiced throughout the Iron Age and have similarities with Bronze Age cremations, therefore suggesting a continuation of older traditions. For example, cremations in barrows are known in the Bronze Age (McKinley 1997b: 142) so the deposit of cremated remains in the Bronze Age cairn at Tickenham Court is likely harkening back to Bronze Age mortuary traditions. This was also noted in cremations from Wales identified by Murphy (1992b).

The location of cremations from Castle Bucket and Twinyeo Quarry within hollows interpreted as tree throws is particularly interesting and may have symbolic significance. The connection between life, death and regeneration are often represented as arboreal metaphors in cosmology such as the 'tree of life' (e.g. Rival 1998; Porteous 2002; Hageneder 2005, Wohlleben 2016). It is unsurprising, then, that trees are often central to ritual practices, including funerary rites (e.g. Aldhouse-Green 2000; Andrén 2004; Skoglund 2012a; Fahlander 2018). For example, the early Bronze Age 'Seahenge' in Norfolk includes an inverted tree buried in the centre with its roots facing upward and outwards. The function of Seahenge is uncertain, but theories include an excarnation platform or mortuary table that "carried the soul of the departed down to a netherworld of the ancestors, transferring life from this world to a below-ground universe" (Pryor 2002: 271; Hooke 2014: 228). Upturned trees are also associated with links between 'our' world and the underworld in Hindu texts and traditions (Bradley 2000; Hooke 2014: 228). It is possible that the choice of location for the cremations within tree hollows had similar symbolism serving as a liminal space between the world of the living and the dead, or this life and the afterlife (Bradley 2000; Hooke 2014: 228). A hollow at the cemetery at Trethellan Farm included burnt deposits and midden material, and although it did not contain cremated human remains, it was interpreted as a 'ritual hollow' by excavators (Nowakowski 1991: 87).

Additionally, evidence of certain trees being selected for the construction of the pyre and cremation fuel is present in some of the Iron Age cremations in the southwest. The charcoal from the cremation deposits at Tregunnel Hill (Challinor 2019: 147) and Twinyeo Quarry (Farnell 2015: 262) were entirely made of mature oak, each probably from a single tree. It has been suggested that Bronze Age cremation practices may have included the felling and burning of a single tree as part of the mortuary rite (Thompson 1999; Straker 1988) and oak is the most common taxa in these earlier cremations, for example the cremations recovered from the excavations at the Bord Gáis Éireann Gas Pipeline in County Dublin (Lynch and O'Donnell 2007: 113). The choice of oak may have ritual significance as previously mentioned in Section 7.6: it has been suggested that oak is possibly associated with cremations of adult males and infants (Campbell 2007). Oak timber would also facilitate high temperature and sustained burning required for the cremation of a human body (McKinley 1997a; 1997b). It is also possible that some of the cremations were placed in containers of wood or other organic structures that have since been lost to time. For example, Bronze Age cremations were placed in woven baskets at Whitehorse Hill, Dartmoor (Jones 2015: 241; see Banck-Burgess 2014; Harris 2014). It is possible that the Iron Age cremation at Tregunnel Hill was also placed in such a basket as microfossils within the Iron Age cremation deposit indicated the presence of grain, emmer/spelt wheat, glume base and grass stem (Cobain 2014), however these may have been accidental inclusions from the environment or pyre material.

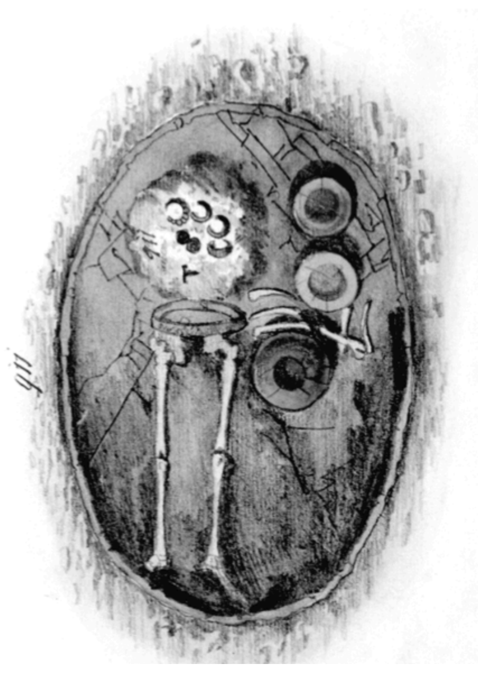


Figure 209. Watercolour painting of a partial cremation from Hallstatt. Painting by Isidor Engel, retrieved from Rebay-Salisbury 2010a: fig.7.1

Cremations require three main components: time, temperature and oxygen (McKinley 2000: 403). If any of these are imbalanced it will result in a poorly cremated corpse (Lynch and O'Donnell 2008: 107).

A potentially significant observation made during data collection for the present study was that some of the cremations were not as complete as is typical in later prehistory: the poorly cremated or partly cremated deposit from Tregunnel Hill, for example, was distinctly different than the more completely cremated remains dating to the Bronze Age at the site (Brindle 2019: 46-47). The partial cremation may be the result of an unintentional technical failure (such as inclement weather conditions), or an intentional variation of an older cremation practice. On the other hand, it may be that it simply wasn't as important to achieve a full, complete cremation in the Iron Age as it was in preceding times by inhabitants of the site. Further evidence of this may be the 'partial cremation' at Bradford-on-Avon (see Appendix 2). It is interesting to note that the cremation at Tregunnel Hill, with an earlier radiocarbon date was less completely cremated than the deposit at Twinyeo Quarry, which had reached a temperature of at least 940 degrees (Shipman et al. 1984; Farnell 2015: 249). The presence of a La Tène brooch in the cremation at Twinyeo Quarry was suggested to indicate a person with high status (Farnell 2015: 262), and the completeness of the cremation may support this considering the cost of performing and maintaining a cremation. However, partial cremations are known in ethnographic examples (Wahl 1982) and have been considered a third mode of mortuary practice (in addition to inhumation burial and full cremation) in later prehistoric Hallstatt (Figure 209) (Morton 1995: 46). Rebay-Salisbury (2010a: 66) argues that partial cremation did not likely happen at Hallstatt and instead the 'partial cremations' were likely a misinterpretation of complex evidence by 19th century archaeologists. Such may be the case for the partial cremations at Bradford-on-Avon recovered in the earlier half of the 20th century (see Wainwright 1970: 153; Whimster 1981: 251). However, it cannot explain the recently excavated and poorly cremated deposit at Tregunnel Hill.

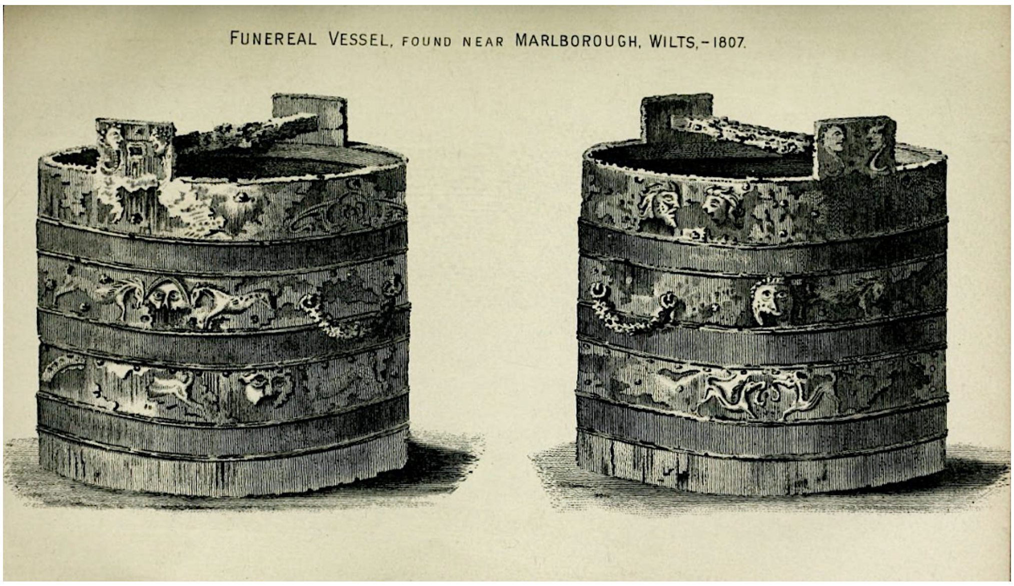


Figure 210. Late Iron Age cremation buckets. Top: Illustration of the Marlborough Bucket (source: Cunnington 1887); bottom left: Decoration on the Marlborough Bucket (source: Wiltshire Museum); bottom right: Decorated bronze bucket bindings found within a hoard deposit in Lenham, Kent (source: Wyatt 2019).

What could be considered a definitive high-status cremation burial is represented in this study by the Marlborough Bucket from Wiltshire (Cunnington 1887). The bucket was found in 1807 and bunt human remains were said to have been found inside the bucket, but have since been lost, along with any other contextual information that would allow for a comparison with other Iron Age cremation deposits in the southwest. However, the metalwork suggests that the bucket was likely manufactured in northern Gaul out of yew staves and bound by iron hoops and highly decorative sheet bronze depicting zoomorphic and anthropomorphic figures consistent with a Late Iron Age date (Figure 210). Although missing key interpretive elements, some general observations on potential mortuary practice can be made: the placement of cremated remains within buckets may symbolise rebirth as well as being objects of luxury associated with feasting and drinking, as displayed in the Wiltshire Museum. The association with cremations and feasting has been discussed in detail in previous literature (see Fitzpatrick 2007), but to summarise, the inclusion of equipment typically associated with conspicuous consumption may indicate the individual used to host feasts in life, or perhaps symbolised the funeral feast. Overall, the Marlborough Bucket cremation diverges from the earlier deposits and is more akin to burial traditions in the east of Britain, particularly Kent, for example those from Aylesford (Stead 1971) and the recently discovered example from Lenham shown in Figure 210 (Wyatt 2019). Considering this, the Marlborough Bucket likely indicates a regional connection to as opposed to a continuation of Bronze Age tradition for the more westerly deposits described above.

It has been suggested that cremations may have occurred after the body had been excarnated (Cunliffe 1995: 108-11). This may account for the rarity of cremation evidence and the paucity of burial evidence in general. Further to this, Harding (2016: 29-30, 272-4) has suggested that hillforts were primarily monuments to facilitate cremations and exposure, and (like most of the burial evidence in this study) most of the cremations are associated with settlements:

- The cremations at Castle Bucket were located directly outside the settlement;
- Similarly, the deposits at Drim Camp were located near the settlement;
- a cremation deposit was recovered from within the rampart at Budbury;
- and near a banjo enclosure at Riverton Road, Somerset.

However, none of the excavations of hillforts included in this study contained evidence for cremation pyres. There is also the practice of gathering some elements from the pyre site for secondary mortuary practices and redeposition elsewhere (Carr 2007). However, of the cremations identified in this study, there was a good representation of skeletal elements suggesting whole bodies were cremated *in situ*. A possible exception includes the cremations from Castle Bucket, where long bone fragments predominated and skull fragments were underrepresented (Williams 1985). The hollows were heavily disturbed by modern ploughing, however it is possible that skull fragments were selectively removed from the pyre for secondary mortuary rites and redeposition elsewhere.

Although disarticulated/isolated cremated bone is not well represented in this study, a significant number of bones were burnt. First, the so-called charred inhumation at Glastonbury Lake Village is represented only by a surviving mandible, so it is unclear how severely the elements were burnt or if they were fleshed versus defleshed. However, evidence for burning was observed on a number of disarticulated elements from Glastonbury Lake Village including some elements sampled for histological analysis in the present study (see Section 6.6). Without observing the bones in person, it is difficult to say whether these were likely burnt whilst fleshed or defleshed. Burning was observed on elements from Cadbury Castle to varying degrees (Barrett et al. 2000: 117-121). However, the elements sampled for histological analysis did not appear burnt at the microstructural level. It is possible that some skeletal elements were incidentally exposed to fire or were intentionally cast into fire as part of a ritual or funerary rite.

Cremations are often discussed as transformative processes that enable the body to transition from one state to another in a way that is controlled, planned and quick (Rebay-Salisbury 2010a: 64). The bones are not completely destroyed, but rather chemically transmuted—they become shrunken, broken, and deformed (Rebay-Salisbury 2010a: 65). The bones may then be left in situ, as seen in the deposits at Twinyeo Quarry and Tregunnel Hill (also see Section 7.6) or they may be collected from the pyre and distributed among mourners, or scattered across the landscape (Chapman and Gaydarska 2007). This disbursement of cremation material may account for the paucity of cremation evidence in the Iron Age and partially explain the paucity of Iron Age burial evidence in the southwest in general.

8.6.1. Summary

To summarise, cremations did occur in southwest Britain during the Iron Age, although much fewer have been recovered compared to the southeast. The evidence for cremation in the southwest is varied and deposits span the temporal bounds of the Iron Age with EIA cremations in Tregunnel Hill and Tickenham Court, MIA cremations from Castle Bucket, Trostrey Castle and Twinyeo Quarry, and the LIA cremation within the Marlborough Bucket. The EIA and MIA deposits likely represent a continuation of earlier Bronze Age burial practices as suggested by previous studies (Murphy 1992b). Spatial relationships between Iron Age burials and Bronze Age monuments in southern Britain has been noted by Whimster (1981: 91) which may further support this. On the other hand, the Marlborough Bucket is more similar to the cremation traditions in eastern England believed to be influenced by continental Europe (Stead 1971: 274-5, 278-80). It is possible that cremations were more widely practiced and have been incorrectly phased, yet to be recovered by excavations, or were treated in a way that has rendered them 'archaeologically invisible' (e.g. scattered on the ground, deposited into bodies of water). It is also possible that cremations were not as strictly controlled to ensure a complete cremation; a partial cremation may be necessary for element removal and redistribution. In these instances, the emphasis may be on flesh removal rather than complete destruction of the corpse.

8.7. Other possible mortuary practices

This section discusses other potential mortuary practices afforded to people in the Iron Age of southwest Britain that were not included in the histological analysis, but may represent a discrete rite or part of a wider funerary process. These practices may help to further explain the paucity of human remains evidence in this region.

8.7.1. Deposition in aquatic environments

The first possible mortuary practice is deposition within aqueous environments such as rivers or the Severn estuary. Three deposits recovered from the Severn estuary around Newport, South Wales: a disarticulated skull from Goldcliff deposited in a peat shelf radiocarbon dated to the EIA 820-560 cal BC (Bell et al. 2000); another disarticulated skull from a palaeochannel at the Orb Works radiocarbon dated to the LIA-RB 40 cal BC-cal AD 210 (Bell et al. 2000); and a partially articulated upper torso recovered from beneath the Newport Ship radiocarbon dated to the MIA 360-350 cal BC (Goodall

2006). This suggests that the practice of depositing human remains in the estuary was not restricted temporally, at least not in South Wales.

Mortuary practices involving riverine environments is known from elsewhere in southern Britain, for example the midden settlement at Godwin Ridge on the River Ouse in Cambridgeshire (Evans 2013). The significant quantities of human remains had been manipulated and modified in ways not dissimilar to sites in the southwest (particularly Potterne and Glastonbury Lake Village) including canid gnawing and fracturing. Mortuary activity at the site was concentrated during the MIA/LIA with radiocarbon dates on human bones falling within the range of 362 cal BC-AD cal 130 (Evans 2013: 67). The human remains were deposited into the water from a 'ritual platform' in addition to large broken pottery, antler combs, brooches and animal bone including 'special' animal deposits of dismembered horses, dogs, and at least fifteen different wild bird species (Evans 2013: 63). It is possible that this was a more common and widespread practice for depositing disarticulated remains and that similar sites existed along rivers and around the Severn estuary, now concealed by sedimentation and rising water levels.

Deposition in riverine or marine environments may be underrepresented due to the infrequency of recovery and radiocarbon dating of human remains that wash ashore. Interpretation of these deposits is limited as it is impossible to determine whether these represent bodies that entered the water in an articulated or disarticulated state. Future research including histological examination of these elements would be beneficial to understanding the nature of deposition within the estuary: for example, if the disarticulated skulls were likely redeposited from inhumations, then it may help explain the paucity of human remains evidence in Wales as suggested by Whimster (1981: 167). This may also apply to other subregions where burial evidence is scarce (e.g. Gloucestershire, Devon, and Cornwall). The possibility of widespread deposition of human remains in bodies of water has been suggested to explain the avoidance of fish noted at some Iron Age sites (Bradley 2000; Rainsford and Roberts 2013: 37-38), however fish avoidance may be attributed to other, more practical reasons, for example a thriving pastoralist economy that renders fishing unnecessary or conceptually repulsive (Simoons 1994: 295). The possible taboo surrounding the consumption of fish in Iron Age Britain is discussed in detail in Rainsford and Roberts (2013).

The idea that human remains were deposited in aquatic environments was further suggested by Madgwick (2008, 2011) who proposed that the majority of the population may have been excarnated and then deposited in an aquatic environment.

Depositing the dead within aquatic environments may relate to concepts of sacredness, cleanliness or uncleanliness, or convenience. For example, Aldhouse-Green (1992: 2) suggests that water sources were seen as supernatural beings, with streams, wells, bogs, seas and rivers being venerated and propitiated. The sacredness of water in the Iron Age of Britain has been raised by previous scholarship to explain the perceived taboo on the consumption of fish (e.g. Hill 1995; Dobney and Ervynck 2007). The perception of water as a physical and liminal boundary between worlds may also explain the occurrence of Bronze Age hoard deposits placed within bodies of water, for example the LBA/EIA Llyn Fawr hoard from a lake in Powys (Fox and Hyde 1939) and a substantial amount of Bronze Age and Iron Age metalwork has been recovered from the Thames (Fitzpatrick 1984; Barrett and Needham 1988) which supports the idea that rivers were places of ritual significance in conceptually 'clean' waters, that is where the water is clear and/or relatively safe to drink, deposition of the dead may be an acceptable or even a desirable mortuary rite, or the human remains are offered to the 'otherworld' in a similar way to hoards of valuable objects.

However, water may also be conceptually (and literally) unclean. Deposition within bogs, for example, may have been considered an insult to the deceased. Bog bodies often show evidence for 'ritual overkill' as previously mentioned in Section 8.3 (see also Hill 2004, Giles 2014, Aldhouse-Green 2015), and have been interpreted as criminals that were sentenced to capital punishment (van der Sanden 1996: 51) or ritually murdered deposed kings (Kelly 2006). On the other hand, bodies of brackish water, salt marshes and bogs are places of enormous ecological richness, a quality that may have been revered by Iron Age folk, so much so that they endeavoured to build Glastonbury Lake Village (which happens to be one of the most interesting case study sites for mortuary practice in the present research on account of its unusualness).

To summarise, there are only three confirmed deposits of Iron Age human remains recovered from the Severn estuary. However, aquatic deposition is likely underrepresented due to the lack of radiocarbon dating of recovered elements and rising sea levels. Additionally, the strong tides may have quickly lost the deposited elements to the open sea—perhaps that was the desired outcome.

8.7.2. Cannibalism

Fragmented remains in Iron Age contexts have often been considered evidence for cannibalism. In addition to the example from Salmonsbury previously mentioned, it was suggested that the predominance of fragmented limbs at Castle Bucket in Pembrokeshire, South Wales may have been from cannibalism (Williams 1985). Additionally, the fragmented human remains from Fishmonger's

Swallet in Gloucestershire was interpreted as evidence for cannibalism (Mark Horton pers. comm.), using a single split longitudinally split fractured femur to argue for marrow extraction. Other long bones with similar split fractures have been identified in this research, three of which were included in the histological analysis (PTN10, PTN11, and BB15 (see Figures 81, 82 and 94). However, all of the histological samples from these elements were extensively affected by bacterial attack, so cannibalism is unlikely. Instead, it is more likely that fragmentation of human bone was performed as a post-mortem mortuary practice, for example breaking as a transformation process after death as proposed by Hill (1995).

Cannibalism was closely linked to predominance of skulls, or "cults of skulls" by early 20th century scholars after excavations at Steinhem, Germany, Monte Circeo, Italy and Zhoukoudian, China (Fernández-Jalvo et al. 1999: 592). It was theorised that skulls missing the cranial base recovered from these sites meant that the brains were being eaten during ritual feasts, however, this type of fracturing was later realised to be common because the skull is fragile. The observations made by antiquarian excavators inspired similar conclusions of headhunting cults and cannibalism, however fragmentation of human remains in Iron Age contexts is now recognised as common and, as suggested by the results of the present study, often occurred on exhumed bones long after skeletonisation. This does not unequivocally mean that cannibalism never occurred in the Iron Age of southwest Britain, but the evidence must be more carefully scrutinised.

A cannibalised element would be expected to show evidence for butchery (e.g. cut marks consistent with filleting, chop marks), gnawing, or other types of processing (e.g. marrow extraction), disarticulated, and have almost perfect histological preservation. The heavily fragmented nature of disarticulated deposits means that evidence for butchery will not always be visible. Nevertheless, it would be necessary to determine whether or not a bone was processed for consumption. Only one element from Glastonbury Lake Village potentially meets this criterion (although it was not examined by the author): GL59, a right adult femur with a fresh percussion fracture, gnawing, and perfect microstructural preservation. However, as discussed in previous sections, potential mortuary practices such as excarnation or preservation (whether intentional mummification or an unintentional effect of the burial environment) and subsequent fracturing.

To summarise, there is no conclusive evidence for cannibalism in the present study. Fragmentation, even that which is commonly seen in butchered animal bone, does not mean the elements were exploited for human consumption. Direct evidence for butchering is rare, and so it is likely that cannibalism was rare, although closer examination of taphonomy evidence (including SEM imaging of potential cut marks) would be needed to determine the potential frequency.

8.7.3. Summary

This section covered two additional mortuary practices that are less frequently represented in the present data, but may have formed part of the colourful tapestry of Iron Age mortuary practice in southwest Britain. First, deposition within riverine/marine environments was discussed using the three deposits recovered from the Severn estuary in Newport, South Wales as evidence. Whilst these deposits are few in number, they provide valuable insight into a mortuary practice which often left no trace or is otherwise lost to rising sea levels. The deposits represent each phase of the Iron Age: LBA/EIA (Goldcliff), MIA (Newport Ship) and LIA/RB (Orb Works) indicating that human remains were deposited in the estuary throughout the Iron Age.

Cannibalism is also discussed as it has been previously used to explain disarticulation and fracturing at Iron Age sites. It is difficult to determine whether an element was processed for consumption or for some other reason such as fragmentation as a transformative mortuary practice. However, the lack of conclusive evidence does not mean it did not occur, and it is worth considering when undertaking taphonomic analyses.

9. Conclusion

9.1. Introduction

This chapter summarises the findings of the present research on Iron Age mortuary practice in southwest Britain. Summaries of the main mortuary practices identified in the data collected and interpretations of what these mean for life and death in the Iron Age are provided. Regional and chronological patterns are identified and potential explanations for other 'archaeologically invisible' mortuary practices are considered.

9.2. Summary of Iron Age mortuary practices in southwest Britain

The results of both histological and large-scale analysis of burial characteristics show that primary inhumation burial, rather than excarnation, was the most frequent mortuary practice throughout the Iron Age in the southwest. Specifically, most bodies were probably placed in the ground and covered with soil or chalk rubble shortly after death, the body was then allowed to gradually decompose *in situ*. This is significant as it challenges previous theories on widely practiced excarnation in the Iron Age.

Some variation is suggested by histological and archaeological detail: a minority of inhumations appear to have been in a voided space caused by a covering or a construction. The void created allowed for easier invertebrate access and movement, which meant the soft tissue decomposed more quickly than an uncovered inhumation, or possibly allowed the body to dry out in the absence of moist soil. Evidence for potential coverings are seen in Early, Middle, and Late Iron Age burials, although this variation appears in only some burials and there is no uniformity within sites.

One of the most significant findings of this project was that a substantial majority of partially articulated and disarticulated remains were likely from inhumations. Again, this challenges the assumption that excarnation was widely practiced as a mortuary rite in Iron Age Britain. Instead, the most widely represented mode of disarticulation in this study is exhumation of skeletal elements from articulated burials. This means that mortuary practice in the Iron Age was more protracted than previously thought. More specifically, evidence for excarnation—whether by subaerial exposure or any other means—is rare in the present study.

Some variation seen in the histological preservation of partially articulated and disarticulated elements may represent different early post-mortem treatments (e.g. mummification vs.

excarnation), variations in the same mortuary practice (e.g. primary inhumation with a covering vs. without), or the same funerary process at different stages or implemented at different times (e.g. exhumation before fully decomposed). This issue of equifinality means that it is not always possible to disentangle the possibilities, especially when it is clear that skeletal elements are being moved from context to context. Taphonomic markers on some disarticulated bone indicate intentional manipulation prior to deposition (especially within the monumental midden at Potterne, Wiltshire). This manipulation occurs on elements with varying degrees of histological preservation, indicating similarities in the final stages of the funerary process even when the early post-mortem treatments may have differed. Although far less common, some disarticulated elements may have been removed from excarnated remains, mummified or preserved bodies, and bodies that that were protected but had an exposed corpse (e.g. covered pit).

Looking at the analysis of burial characteristics across the southwest (Chapter 7), articulated inhumations are most frequent during the Late Iron Age (42%) when large inhumation cemeteries become more commonplace, especially in Dorset. Articulated inhumations are almost equally represented in the Early (15%) and Middle Iron Age (14%). This implies a shift in mortuary practice as a response to a change in societal views on personhood and death: in the EIA/MIA, a body is partible and subjected to protracted mortuary practices during which a person may transform from flesh to bone, from a corpse to an ancestor. The low frequency of 'formal' cemeteries in during this time cemeteries found may reflect smaller social groups that develop into larger groups in the LIA, or the consolidation of a mortuary practice in the LIA when graves are no longer re-used as often as they were in the EIA/MIA.

Although inhumations are recovered from across the entire southwest, the frequency is varied, suggesting regional distinctions. The Wessex area includes more 'formal' cemeteries (especially Dorset) and pit burials; Cornwall is characterised by cist and earthen (uncisted) cemeteries, although only few have been recovered; and in Gloucestershire and South Wales inhumations are more typically found in small groups or isolated burials near settlement sites. This potentially reflects social structures that are smaller in the peripheral west and larger towards south-central Britain, a pattern which may be supported by the massive community effort required to construct the enormous multivallate hillforts and monumental middens that characterise the Wessex area.

Exhumation following primary inhumation was likely most common during the EIA/MIA as shown by the chronological distribution of disarticulated and partially articulated remains recorded from the southwest (see Section 7.1.2). This tradition continued into the LIA, but likely tapered off as formal cemeteries because more commonplace.

As for the frequency and distribution of non-articulated deposits, as shown in Chapter 7 (Section 7.3 and 7.4), disarticulated and partially articulated remains are recovered from all of the subregions across the southwest. When this is considered alongside the results of the histological analysis, it is likely that the majority were exhumed from primary burials in all subregions. However, whilst partially articulated remains are nearly equally represented across the subregions, a large proportion of disarticulated remains has been recovered from Somerset. This perhaps suggests a sub-regional emphasis on the deposition of disarticulated bone in places where they can be recovered archaeologically as opposed to, for example, rivers or the sea. This may help to explain (in addition to the unfavourable geological conditions) the lack of burial evidence from Devon, Cornwall and South Wales.

It is worth noting that mortuary practices may be local or even site-specific, for example Glastonbury Lake Village. In stark contrast to the other sampled sites, almost all of the samples from Glastonbury Lake Village had perfect or near-perfect histological preservation. This may represent a unique mortuary practice local to the site, itself likely considered special. If bodies were excarnated here, then it is likely that excarnation was specific to the site, rather than a more widely practice mortuary rite. However, the high water table of the Somerset Levels may contribute to the good microstructural preservation seen in the Glastonbury Lake Village samples (if inhumation in the peat was occurring) and more experimental work is needed to clarify this.

Additionally, human remains sampled from the monumental midden at Potterne showed an interesting variety in early post-mortem and pre-depositional mortuary treatments, so it is likely that individuals interred within the midden underwent mortuary practices that may not have been necessarily typical.

Although less frequently recovered, cremations are represented across the southwest with most dating to the EIA-MIA. The similarities with Bronze Age cremation practices suggest a continuation of long-established mortuary practices. Additionally, deposition within aqueous environments is suggested by the few but securely dated deposits recovered from the Severn estuary. It is likely that these mortuary practices were more common and the evidence has not survived into modern times and therefore contributes to the paucity of evidence for Iron Age burial in southwest Britain.

9.3. Theoretical themes

It is beyond the remit of this research to interrogate the nature of Iron Age mortuary practice in the context of mortuary theory. However, it is worth considering the potential themes that this more refined understanding of practices could feed into. For example, theoretical concepts on the partible body and personhood in the Iron Age can be informed by the enhanced understanding of partially articulated and disarticulated deposits (e.g. see Rebay-Salisbury 2010b; Sharples 2010). This new data can also be applied to further develop understanding of ideology and religion, particularly with regard to established theories on pit burials (e.g. see Cunliffe 1992; Hill 1995). The use of human remains to establish boundaries and group identity can also be explored in light of this new research (e.g. see Brück 2000; Sharples 2007; Løveschal 2014) as well as the relationships between human remains and domestic spaces (e.g. see Brück 1999; Bütser 2012). Additionally, the new insight on the early post-mortem histories of disarticulated and fragmented bone can be applied to studies of enigmatic but prolific sites such as hillforts (e.g. see Sharples 1991) and monumental middens (see Lawson 2000). The sampled crania in this study can be applied to more thoroughly interrogate the long-held beliefs on 'headhunting cults', preferential selection of skulls and the potential significance of skull curation (e.g. see Parker Pearson 2003; Armit 2012). Finally, and obviously, this research can directly inform on attitudes towards death and dead people in Iron Age Britain (e.g. see Bristow 2001; Roth 2016; Harding 2016).

This provides just some ideas of future directions in terms of theoretical underpinning but is by no means exhaustive. The suggestion of long mortuary practices involving inhumation followed by exhumation and a plethora of potential secondary treatments, as well as the locations chosen for redeposition, can be applied to many theoretical frameworks that underpin our current understanding of the Iron Age in Britain.

9.4. Methodological contribution

This study comprises one of, if not the largest single-period regional histological study to date. The variety of human remains sampled has substantial methodological implications: first, this corpus allows comparison within the same or similar burial environments. For example, two samples from Hunt's Grove, Gloucestershire had dramatically different histological preservation despite being deposited within the same site and within similar features at similar depths. This may help future methodological studies into microbial bioerosion as well as the obvious interpretive contribution.

Similarly, a foetus in utero and the pregnant individual were sampled which may add to the body of evidence identified by previous studies (White and Booth 2014; Booth et al. 2016; Booth 2020) to further understand the effects of bacteria associated with soft tissue decomposition on pre-, peri- and neo-natal skeletons.

A substantial repository comprising over one thousand micrographs at x5, x10 and x20 magnification were taken from 286 human remains samples. The samples were taken from bones from a diverse array of features and from a variety of geological zones. Therefore, this new repository of high-resolution images provides opportunities to explore any potential relationship between deposition environment and histological preservation; further comparisons with histological studies on archaeological bone; and provide insight into potential osteopthological disease amongst the sampled population.

In addition to the histological contributions, this study has created a comprehensive and accessible inventory of Iron Age burial evidence in southwest Britain. This database will be useful for future research and act as a reference that can be added onto as more evidence is discovered, therefore allowing for more precise interpretations of burial evidence in the southwest and beyond.

9.5. Limitations and recommendations for future research

As highlighted throughout this thesis, the paucity of burial evidence from Iron Age contexts is due in part to unfavourable environmental conditions for bone preservation, resulting in an inevitable bias towards certain geographical areas. Despite this, as shown by Appendix 2, a substantial corpus of data has been amassed. Unfortunately, much of the archaeological material was excavated before osteological analyses were routine, resulting in an incomplete and imbalanced dataset biased towards more recently excavated sites.

Moreover, although this project endeavoured to compile all burial evidence from (or likely from), Iron Age contexts, some data may have been missed. On the other hand, the issues with dating Iron Age material described in Section 3.1.1 means that some burials and deposits included in this study may have been inaccurately phased. Care was taken to omit the most tenuously dated sites, such as cave deposits with evidence for multi-period use without any accompanying radiocarbon dates; however, due to the often-tangled nature of disarticulated deposits, some of the evidence recorded in this study may not be Iron Age.

The broad chronological range and geographical remits meant that incorporation of certain details in both the histological and secondary analysis of burial characteristics fell beyond the scope of this study. Incorporation of these details would further identify patterns in pre- and post-depositional mortuary treatments. To address some of the remaining gaps, suggestions for future research are provided below.

9.5.1. Histology

The present research has shown that large-scale analyses including histological analysis can transform understanding of mortuary practices by informing on early post-mortem treatments. Further histological analysis on human remains from other parts of Britain (and beyond) would greatly improve the understanding of Iron Age mortuary practice and contextualise the findings of the present research.

Additionally, a large-scale histological analysis of both human and animal bone recovered from the same sites and contexts would be a significant methodological contribution. A comparison of early post-mortem treatments afforded to humans and animals would further understanding on human-animal relationships and the 'ritual' nature of special animal deposits. More specifically, an analysis of animal bone from Potterne would substantially enhance the interpretation of the site as a place of ritual activity. A single misidentified animal bone was sampled as part of the present study and therefore removed from the sample, however the element showed perfect histological preservation. None of the human remains had such well-preserved microstructure, therefore hinting at some differences in treatment between humans and animals deposited in the midden. However, this can only be determined by a larger sample size.

An upcoming MSc dissertation by Bethany Revell (Cardiff University) examines animal bone from Battlesbury Bowl, Wiltshire, including material associated with some of the sampled human remains included in the present study. A comparison of the animal and human data will enhance our understanding on the treatment of human and animals at the site. Additionally, PhD research is currently being undertaken by Ellen Green (Reading University) includes histological analysis of human and animal bone in 'ritual' contexts from an Early Roman site in southern Britain which will identify any chronological changes in this period compared to the present dataset.

9.5.1.1. Experimental work

The uncertainties regarding the origin and behaviour of diagenetic microorganisms has been explained in Chapter 5. Although a number of experiments using animal corpses and disarticulated bone have been completed, the most obvious lacuna is a lack of experimental studies on human corpses. This is hampered by the difficulties in obtaining donations of suitable human cadavers within a timely fashion to meet the criteria necessary to perform an actualistic experiment. An upcoming study on donated cadavers exposed to varied burial conditions at the Forensic Anthropology Research Facility in Austin, Texas includes archaeothanatological and histological analyses to further understand skeletal disarticulation and histological diagenesis seen in archaeological samples. This study is a collaboration between Clara Alfsdotter (Linnaeus University), Sofia Vougiokalou (Texas State University), the author and Richard Madgwick (Cardiff University).

As more studies of this kind are undertaken, the understanding of bone microbiology will improve, and the application of histological analysis to determine early post-mortem treatments in archaeological samples will undoubtedly include adjustments for variables like climate, depth, seasonality, thanatology. In the future, studies including statistics on all variables which dictate bioerosion would benefit the precision of histological analysis on archaeological human remains.

9.5.2. Biomolecular analyses

The present research has made a significant contribution to understanding disarticulated human bones and the means by which elements become disarticulated, however there is much that remains unknown. First, radiocarbon dating programmes focussing on disarticulated elements would greatly advance the chronological narrative around disarticulation as a mortuary practice.

Additionally, isotopic and DNA studies would provide much-needed insight into who was chosen for this mortuary practice: the biological sex of the persons represented; whether these represent individuals originating from the immediate area of deposition or further afield; and whether they had any familial relationship to other individuals represented at their respective sites. This data would help determine potential criteria for various mortuary practices, for example origins or familial ties, that are presently left to conjecture.

9.5.3. Osteological analyses and archaeothanatology

As explained throughout this thesis, much of the burial record was excavated before osteological analysis was routinely performed on human remains. One example is Harlyn Bay, Cornwall. Although this site is significant in understanding Iron Age mortuary practice in the southwest, interpretations of the evidence is limited by the lack of a reliable record and elements from complete skeletons were not kept together. Alexis Jordan's (University of Wisconsin, Milwaukee) upcoming PhD will provide an updated osteological report on human remains from the southwest peninsula, including the reunion of skeletons that are then compared to descriptions in the Harlyn Bay archive to determine the original burial contexts of some skeletons. This work will greatly improve the interpretive potential of the site and enhance the current understanding of mortuary practice in an otherwise underrepresented region.

Additionally, archaeothanatological studies use the relative sequence of joint disarticulation of the human skeleton to distinguish the action of natural processes from those relating to the placement of the corpse as part of a mortuary treatment (Knüsel 2014: 30). Studies employing thanatology to archaeological contexts have grown in popularity in recent years with studies such as Mickelburgh and Wescott (2018) improving our understanding for disarticulation within various burial environments, particularly within storage pits. These studies will provide more insight into mortuary treatments including positioning within the features, potential wrapping, and more broadly how the decomposition process affects the archaeological record.

9.5.4. Further statistical analyses of the burial record

Statistical analysis/distribution of burial evidence including other characteristics such as site type (e.g. hillfort vs non-hillfort), trauma, pathologies, grave goods and associated material including animal bone would be a significant contribution building on the foundations laid by the present study. Including as many variables as possible to statistical analysis (including chi-squared analyses used in Roth 2016) will fine-tune the precision of identified patterns and allow for a larger, higher resolution picture of mortuary practice in Iron Age Britain.

9.6. Final summary

This research is the result of a large-scale holistic study into elusive mortuary practices afforded to individuals during the Iron Age in southwest Britain. The novel combination of microscopic, macroscopic and secondary analysis of burial/deposition characteristics has allowed for a more comprehensive understanding of mortuary practice by providing insight into early post-mortem treatment, secondary processes, and final deposition. As a result, this study has identified regional and chronological patterns and shown that mortuary practice in the Iron Age in southwest Britain was more varied, complex, and protracted than previously considered. Most notably, it is here proposed that disarticulation of skeletal elements most often occurred via exhumation, challenging previous notions on the prevalence of excarnation.

What happened after exhumation, however, varied considerably: sometimes—but not always—elements were broken, snapped, exposed, chewed by dogs, handled, curated, worked, and burnt. They may be re-deposited in any number of features, both in and out of settlements, as an intentional act to transform the dead and empower the living: pieces of the dead may be used to establish a sense of belonging or to promote community fecundity through the manipulation and interment of selected elements. In this regard, death was not necessarily the end of 'life' in the Iron Age, a belief which may have been influenced by the cyclical worldview of increasingly agrarian societies.

Overall, this research has provided much-needed insight into complex, multi-phase mortuary practices in a region that has been largely neglected and in doing so has created a better understanding of death, and life, in the Iron Age.

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Appendix 1 – Site list

Note: coordinates are taken from site reports or translated from National Grid References whenever possible. If coordinates/NGR was not provided or could not be found, the coordinates were generated by the author using maps. In instances here a location could not be found, the coordinates reflect the nearest village/town.

South Wales	Easting	Northing	References
Biglis	314200	169400	Parkhouse 1988
Caerau	313363	175010	Davis and Sharples 2014, 2015, 2016
Castell Bucket	194920	231040	Williams 1985
Castell Henllys	211720	239050	Mytum 1981
Castle Ditches	305900	170000	Hogg 1979
Coed y Cwmdda	313295	173972	Owen-John 1988
Coygan Camp	228429	209140	Wainwright 1967
Crocksydam Camp	193600	194300	Laws 1908
Devil's Quoit, Stackpole Warren	198000	195000	Benson et al. 1990
Drim Camp	206680	219330	Mytum 1981; Williams and Mytum 1988
Dunraven	288671	172740	Sell 1980; Bell et al. 2000
East of Coygan Camp	284050	209140	Curtis 1880
Five Mile Lane	307887	171270	Oliver Davis pers. comm.
Friar's Point	310770	166440	OS Record Card; Davis 2017
Goldcliff	336200	182010	Bell et al. 2000
Greenala Camp	200670	196570	RCAHMW 1925
Llandough	316800	173300	Holbrook and Thomas 2005
Llangan	296970	177660	Grimes 1932
Llanmaes	298180	169620	Gwilt et al. 2006; Gwilt et al. 2016; Gwilt and Lodwick 2008
Llanmelin Camp	346100	192570	Nash-Williams 1932; Green and Howell 2004
Llanwnda	290000	230000	Boon 1980
Llwynmawr	251000	215900	Anon. 1893
Merthyr Mawr	286000	177000	Savory
Mynnyd Bychan	296287	175600	Savory 1954, 1955; Murphy and Williams 1992
Mynydd Twmpathy-ddaer	284050	180370	RCAHMW 1976
Nash Point	291500	168500	Savory 1950
Newport Ship	332600	186500	Goodall 2006
Ogmore	290460	175430	Wheeler 1925; Toft 1998, 2000
Orb Works	332600	186500	Bell et al. 2000

Plashyatt	228110	208900	RCAHMW 1917; Wainwright 1967
Priory Farm Cave	197892	201832	Schulting and Richards 2002; Schulting 2020
RAF St Athan	300450	168960	Barber et al. 2006
South Pembrokeshire	195026	207814	Gwilt et al. 2018; Murphy 2019; Gwilt et al. 2022
Sudbrook	350545	187311	Nash-Williams 1939
Thornwell Farm	353900	191900	Hughes 1996
Trostrey Castle	335950	204350	Mein 1996
West side of Friar's Point	310860	166380	OS Record Card; Davis 2017
Whitmore Bay	311400	166300	Grimes 1951
Gloucestershire			
Aston Mill	394012	235288	Moore 2006: 257
Bagendon	401800	206200	Rees 1932; Trow 1982; Clifford 1961; Moore 2006, 2021
Beckford	386396	215724	Moore 2006
Birdlip	402100	205000	Bellows 1881; Green 1949; Staelens 1982
Blaise Castle	355800	178400	Rahtz and Clavedon-Brown 1959; Rahtz and Greenfield 1977
Bourton-on-the-Water	416700	221000	Piper and Catchpole 1996; Barber and Leah 1998; Nichols 1999, 2001, 2004
Bredon Hill	395746	240310	Whimster 1981: 180 and 251
Brockworth	390200	216000	Bateman and Leah 1999; Thomas et al. 2003
Coleford?	N/A	N/A	Moore 2006, table 14
Crickley Hill	392500	216100	Dixon 1973, 1976, 1994
Ditches	399500	209500	RCHME 1976; Trow 1988
Fishmonger's Swallet	363313	187202	Cox 2001; Bricking et al.2022; Bricking et al. 2022; Bricking et al. forthcoming; Cox and Loe 2022; Mark Horton pers. comm.
Frocester	378600	202700	Price 1983, 2000
Greystones Farm (Salmonsbury)	417200	220800	Barclay et al. 2019
Guiting Power	408900	224900	Gascoigne 1973: 204-7; Saville 1979; Webster 1989, 1990; Walters 1992; Vallender 2005
Hailes	404800	230300	Whimster 1981 Appendix A.2.15; Moore 2006 Appendix 3
Henbury School	356200	179100	Watts 2006
High Nash, Coleford	356700	210100	Webster 1989, 1990; Walters 1992
Hucclecote	387500	217300	Thomas et al. 2003
Hunt's Grove	381455	212239	Allen and Teague forthcoming
Kemble	398700	197100	King et al. 1996
Lynches Trackway	402100	205000	Mudd et al. 2000: 76
Norbury-Northleach	412600	215600	Saville 1983

Roughground Farm	421600	200800	Darvill et al. 1986; Allen et al. 1993; Boyle et al. 1998
Salmonsbury	417200	220800	Dunning 1976
Shipton Oliffe	403800	218600	Timby 1998
Shorncote	403300	196170	Hearne and Heaton 1994; Hearne and Adam 1999; Hey 2000
St George's Church, King Stanley	381800	204000	Heighway 1989
The Park	408250	225850	Marshall 1990
Uley Bury	378300	198900	Hampton and Palmer 1977; Saville 1983
Somerset			
Bishop's Hull	321224	125102	Mason and Hawtin 2009
Bradley Hill	321224	125102	Leech et al. 1981
Brean Down	329790	158850	Knight 1902; ApSimon et al. 1961; Bell and Straker 1984; Bell 1986, 1990, 1991; Levitan 1990: 238; ApSimon 2000
Cadbury Castle	362800	125200	Alcock 1967a, 1967b, 1968a, 1968b, 1969, 1970, 1971, 1972, 1980, 1982, 1994, 1995; Barrett et al. 2000
Charterhouse Warren Farm Swallet	349359	154586	Levitan et al. 1988; Branigan and Dearne 1991; Levitan and Smart 1991
Clevedon	340000	172000	Gray 1942
Coronation Rd.	335120	162670	Davies 1905; Dobson 1931a, 1931b; LaTrobe-Bateman 1999
Dibble Farm	338400	157500	Clarke 1970; Morris 1988
Field Farm	362500	142500	Leach 2002
Furdge Plantation	371674	118509	Steel 1928
Glastonbury Lake Village	349200	141100	Bulleid and Gray 1911, 1917; Coles and Minnitt 1995
Golf Links, Wells	356605	145695	Balch 1924; Lane 2016
Grove Estate	331890	162130	Jackson 1871; Davies 1929; LaTrobe Bateman 1999
Ham Hill	347800	117000	Brittain et al. 2014
Hendford Hill	355077	115205	Taylor and Collingwood 1926
Herriots Bridge	357100	158100	Rahtz and Greenfield 1977
Hinkley Point C Connection	340939	159002	Foreman and McIntosh 2021
Keinton Mandeville	354528	130410	Arthur Hollinrake pers. comm. (Hollinrake forthcoming)
Lansdown, Charlcombe	373200	168800	Whimster 1981: 198; Monument number 203817
Little Down Field, Charlcombe	373000	169000	Holley 2018
Little Solsbury	376700	168000	Falconer and Adams Bryan 1935; Dowden 1958
Meare Lake Village	344660	142110	Gray and Bulleid 1953; Gray 1966

Middle Chinnock	347227	113219	Gray 1930; Leech 1977
Montpelier, Milton	332540	161720	Jackson 1871; Davies 1929; LaTrobe Bateman 1999
Park Place	331550	161980	Tomkins 1877; LaTrobe Bateman 1999; Somerset HER 41384-MNS3816;41385 - MNS3817; 41386 - MNS3818
Peasedown	370540	156710	Weldlake 1958
Perrott Hill School	346680	109650	Hollinrake and Hollinrake 1997
Polden Villages	338312	140228	Hollinrake and Hollinrake1996
Read's (Keltic) Cavern	346820	158440	Palmer 1919, 1920a, 1920b, 1921; Langford, 1922, 1923; Tratman 1924, 1931; Corcoran 1954; Branigan and Dearne 1991; Marucci and Kerns 2011
Riverton Road, Puriton	331730	141700	McElligot 2014; Orellana 2018
Royal Crescent	331700	161920	Tomkins 1877; Knight 1902; LaTrobe-Bateman 1999
Scot Elm Drive	337550	162100	Ducker 2002
Small Down Camp, Evercreech	366000	140000	Gray 1904
Solsbury Hill	376800	167900	Collins and Cantrill 1909: 419; Dobson 1931a: 101; Hawkes and Dunning 1935: 421
St Cuthbert's Swallet	354280	150500	Balch 1911, 1914; O'Connell 2015; Lane 2016
Stafford Place	332380	161820	Palmer 1965; Whimster 1979: Appendix 285; LaTrobe Bateman 1999; Somerset HER record MNS134
Tickenham Court	345590	171330	
Tickenham Rock			Savory 1924; Balch 1948; Pullan 1981; Keith and Martin 1992; Branigan and Dearne 1991
Walton Down	343150	173940	Moore 2006: 263 Appendix 3
Weston Cemetery	332750	162000	Somerset HER record HNS 132.
Whitegate Farm	333960	156868	Erskine 1999; Moore 2006: 240; Young 2008
Wookey Hole	353201	148017	Balch 1911, 1914, 1947; Boon 1978; Lane 2016
Worlebury	331400	162500	Dymond and Tomkins 1886; Dymond 1902
Wiltshire			
All Cannings Cross	408000	163470	Cunnington 1923; Barrett and McOmish 2000
Alton, Knap Hill	412100	163700	Cunnington 1912
Battlesbury Bowl	389836	146031	Ellis and Powell 2008
Berwick St John, Rotherley	394900	119500	Pitt-Rivers 1888; Hawkes 1947
Berwick St John, Rushmore	395700	118900	Pitt-Rivers 1888: 243-244 and Pl.LXXI
Bradford-on-Avon	382260	161070	Anon. 1945; Wainwright 1970: 153
Cockey Down	416500	131700	McKinley 1997; Lovell et al. 1999
Coombe Down South	418585	174240	Unknown

East Chisenbury	414600	153230	McOmish 1996; Barrett and McOmish 2000; McOmish et al. 2010
Eddesbourne Wakes, Fifield Bavant	399500	125000	Clay 1924
Guy's Rift	384500	173700	Hewer 1926, 1927; Buxton 1926, 1927
Highfield	413340	130740	Stevens 1934
Horse Down	402089	148306	Ellis and Powell 2008: 184-191
Idmiston, Bolcombe Down	419100	138600	Richardson 1952: 131; Anon 1957
Lidbury Camp	416640	153350	Cunnington 1917, 1934, Wilson 1981
Little Woodbury	414900	127900	Powell 2015
Marlborough, St Margaret's	419400	168900	Colt-Hoare 1821; Cunnington 1887
Mildenhall	421000	169200	Anon 1957; Whimster 1981: 240
Potterne	399600	159100	Gingell and Lawson 1983, 1984; Lawson 2000; Bayliss et al. 2012: 226-227; Booth and Brück 2020
Rowbarrow	415070	128170	Wessex Archaeology 2013; Powell 2015
Shorncote, Asht on Keynes	403300	196170	Hey 2000
Steeple Langford, Groveley	404800	135800	Anon 1957: 107 and 269; Whimster 1981: 250
Steeple Langford, Yarnbury	403500	140300	Cunnington 1933
Swallowcliffe	396780	125430	Clay 1925-7; Foulds et al. 2014
Tollard Royal	394416	117739	Wainwright 1969
Totney Hill	381300	167800	Shaw-Mellor 1929: 169-176; Hawkes and Hawkes 1935; Anon 157: 161
Upavon, Casterley Camp	411500	153500	Cunnington and Cunnington 1913
West Overton, Boreham Down	414000	166800	Whimster 1981: 252; Anon 19577: 120
Winterborne Stone, Scotland Farm	406200	140800	Newall 1926, 1961
Wroughton	413900	179100	Hart 2020
Dorset			
Allard's Quarry, Marnull	379500	119800	Williams 1951
Bradford Peverell	366900	091900	Piggot 1950: 28
Broadmayne	372600	086600	Peers and Clarke 1966; Young 1974
Burton Bradstock	348600	089500	Farrar 1965: 114-115
Chettle	395236	113439	Joy 2012
Corfe Castle, Blashenwell Tufa Pit	395100	080400	RCHME Dorset 1970: 52-100
Dorchester, Allington Avenue/Wareham Road	370200	370200	Fox 1952: 82; RCHME Dorset 1970: 576 and figs. 8-11, 11-13
Dorchester, Carne View	370600	189800	RCHME Dorset 1970: 578
Dorchester, Max Gate	370400	089900	RCHME Dorset 1970: 577
Dorchester, The Grove	368800	091000	RCHME Dorset 1970: 585 and 579, fig.44

Dorchester, Victoria Park			RCHME Dorset 1970: 581-582
Dorchester, Wareham House	370200	090000	RCHME Dorset 1970: 575-576, fig.15
Dorchester, Weymouth Ave	369000	090000	RCHME Dorset 1970: 579-581, figs. 35-38.
East Lulworth, Flower's Barrow	386400	080500	RCHME Dorset 1970: 489
Flagstones	370439	089791	Smith et al. 1997
Fordington Bottom	366641	090768	Smith et al. 1997
Gussage All Saints	399800	110100	Wainwright 1979; Redfern 2008
Handley, Woodcutts	39800	114400	Pitt-Rivers 1887; Hawkes 1947; Whimster 1981: 205-206
Hod Hill	385700	110700	Richmond 1967
Langton Herring	361332	082575	Russel et al. 2019
Langton Matravers, Pultake Farm	400100	078300	Anon 1959a; RCHME Dorset 1970: 602; Whimster 1981: 256-257
Litton Cheney, Pins Knoll	354100	090500	Bailey 1959: 124-126, 1967: 147-159
Maiden Castle	366900	088500	Wheeler 1943; Sharples 1991; Redfern 2008
Maiden Castle Road	368358	089592	Smith et al. 1997
Middle Farm	377571	121909	Woodward and Smith 1987
Osmington, Ringstead	374700	082100	RCHME Dorset 1970: 603; Whimster 1981: 257
Pimperne	389088	109744	Harding and Blake 1963; Reynolds 1982; Reynolds 1995
Portesham	360241	085768	Fitzpatrick 1996
Portland, The Grove			Smith 1909
Portland, The Verne	369295	073669	Fox 1949; RCHM Dorset 1970: 605; Whimster 1981: 258
Portland, Verne Common			RCHME Dorset 1970: 605; Whimster 1981: 258
Poundbury	368300	091200	Green 1971, 1987; Farwell and Molleson 1993
Rope Lake Hole	392887	077579	Sunter and Woodward 1987; Green 1992
Tolpuddle Ball	367300	089900	Hearne and Birbeck 1999
Tyneham	388181	80339	Beavis 1974
West Bay, Bridport	345600	090600	Farrar 1954: 90-94
West Stafford	372400	089000	Fox 1952: 83; Brailsford 1958: 118; RCHME Dorset 1970: 608
Weymouth (Southdown Ridge)	367200	085700	Brown et al. 2014
Weymouth, Jordan Hill	369900	082300	Warne 1872: 225-235; Fox 1952; Brailsford 1958: 116-119; RCHME Dorset 1970: 617; Joy 2012
Weymouth, Sutton Poyntz	370600	083900	Anon 1964; RCHME Dorset 1970: 618-618; Whimster 1981: 260

Weymouth, Wyke Regis	365800	077900	RCHME Dorset 1970: 615-616; Whimster 1981: 259
Weymouth, Wyke Reservoir	365800	077900	Anon 1859b; Anon 1859c; RCHME Dorset 1970: 615; Whimster 1981: 259
Whitcombe	371800	088600	Aitken and Aitken 19990
Winterborne Kingston	386051	097643	Russel et al. 2014, 2015, 2016, 2017; 2018
Wool, Bovington Army Camp	383200	089100	Anon 1965; Whimster 1981: 271
Wynford Eagle	358000	095700	Anon. 1827; Brailsford 1958: 119; Whimster 1981: 272
Devon			
Holcombe	294459	074753	Fox 1972; Fox and Pollard 1973
Plymstock, Stamford Hill	249100	052600	Spence-Bate 1866; Cunliffe 1988: 90-97
Twinyeo Quarry	284610	076140	Farnell 2015
Woodleigh	273000	048000	Woodforde 1961; Whimster 1981: 285
Cornwall and Scilly			
Atlantic Road	180381	061613	Sherppard and Woolf 1982; HER record no. 4660 - MCO23091
Ballowall	135600	031300	Sharpe 1990
Crantock	178900	060400	Turk 1969; Olson 1982
Green Bay	088164	014683	Thomas 1977
Halangy Porth, St Mary's	090886	012461	Mackenzie 1967; Ashbee 1974: 218-220, 1986: 207; Thomas 1985: 161; Ratcliffe 1999a
Harlyn Bay	187790	075290	Beddoe 1902; Bullen 1930; Whimster 1977b; Jones et al. 2011
Hayle, Phillack			Thomas 1961; Whimster 1981: 273
Hillside Farm, Bryher	087808	015125	Ratcliffe 1999b; Johns 2006
Kerris Vean	144310	026320	Edmonds 1848; Borlase 1872; Hirst 1936; Russell 1971
Ladock, Little Trendeal	189000	053000	Flint 1883-5
Landewednack, Penmenner	171014	012582	Thomas 1955
Padstow, Trevone	188980	075860	Kent 1849; Trollope 1860; Dudley 1954; Dudley and Jope 1965
Par Beach, St Martin's	092565	015771	Ashbee 1974
Parson's Field, Porth Cressa	090337	010205	Ashbee 1979
Scarcewater, Pennance	192800	054000	Jones and Taylor 2013
Shipman Head	087738	015597	Ratcliffe and Johns 2003
St Just, Carlatha	138000	034000	Cornish 1884; Hencken 1932
St Keverne?	178932	021159	Jope-Rogers 1873; Spratling 1970; Joy 2010, 2012
St Martin's (SV923157)	092300	015700	Lewis 1949; Ashbee 1974
St Martin's (SV935154)	093500	015400	Crawford 1928; Ashbee 1954: 25, 1974: 146 and 312

St Keverne, Trelan Bahow	174700	019800	Jope-Rogers 1873; Dowson 1970
Stoptide	194140	075910	
Toll's Porth, St Mary’s	090854	012304	Ashbee 1979: 74-76
Tregunnel Hill	180500	061250	Brindle 2019
Tresco, Old Man Island	088996	008250	Tebutt 1934; Ashbee 1974
Trethellan Farm	180097	061166	Nellist 1989; Payne 1989; Nowakowski 1991

Appendix 2 – Burial database

This database is too large to fit into a document, so a digital file is submitted separately.

Appendix 3 – Histological samples

Lab no.	Site	County	Skel no.	Feature	Deposit	Element	Age	Sex	Phase	Taphonomy	OHI	Bire.	Notes
Wales													
CAE01	Caerau	Vale of Glamorgan	CH13 3121	Ditch	Disarticulated	Long bone	Adult	-	MIA 350-115 cal BC	Heavily eroded	0	None	
RAF01	RAF St Athan	Vale of Glamorgan	14H/8.2	Ditch	Disarticulated	Humerus	Adult	-	LIA 160 cal BC-cal AD 60	Fragmented	1	Low	
RAF02	RAF St Athan	Vale of Glamorgan	14H/5.4	Pit	Articulated	Long bone	Adult	?F	MIA 390-200 cal BC	-	1	Low/ med	
RAF03	RAF St Athan	Vale of Glamorgan	14H/9.3	Pit	Disarticulated	Femur	Subadult	-	LIA 170 cal BC -cal AD 60	-	1	Low	
RAF04	RAF St Athan	Vale of Glamorgan	14H/7.2	Grave	Articulated	Long bone	Adult	-	LIA 160 cal BC-cal AD 60	-	0	None	
RAF05	RAF St Athan	Vale of Glamorgan	14H/4.1	Pit	Articulated	Long bone	Adult	?F	MIA 400-200 cal BC	-	1	Low/ med	
FML01	Five Mile Lane	Vale of Glamorgan	-	Pit	Articulated	Femur	Adult	F	MIA-LIA 395-95 cal.BC	-	1	Low/ med	
DIN01	Dinorben	Denbighshire	58.535 3 N ditch	Ditch	Articulated	Femur?	Adult	-	MIA-LIA 353-93 cal BC	-	0	None	
DIN02	Dinorben	Denbighshire	58.535 (Box X)	Rampart	Articulated	Femur	Adult	-	MIA-LIA 353-93 cal BC	-	0	None	
DIN05	Dinorben	Denbighshire	58.167/4 0	Round-house floor	Disarticulated	Crania	Adult	-	LMIA-LIA 169-47 cal BC	-	0	Low	
CAE01	Caerau	Vale of Glamorgan	CH13 3121	Ditch	Disarticulated	Long bone	Adult	-	MIA 350-115 cal BC	Heavily eroded	0	None	
RAF01	RAF St Athan	Vale of Glamorgan	14H/8.2	Ditch	Disarticulated	Humerus	Adult	-	LIA 160 cal BC-cal AD 60	Fragmented	1	Low	
RAF02	RAF St Athan	Vale of Glamorgan	14H/5.4	Pit	Articulated	Long bone	Adult	?F	MIA 390-200 cal BC	-	1	Low/ med	

RAF03	RAF St Athan	Vale of Glamorgan	14H/9.3	Pit	Disarticulated	Femur	Subadult	-	LIA 170 cal BC-cal AD 60	-	1	Low	
Gloucestershire													
HGV01	Hunt's Grove	Gloucestershire	SK170	Pit	Articulated	Femur	Adult	-	-	-	0	Low/ med	
HGV02	Hunt's Grove	Gloucestershire	SK192	Pit	Articulated?	Humerus?	Adult	-	-	-	4	High	
GYF01	Greystones Farm	Gloucestershire	SK259	Pit	Articulated	Femur	Adult	F?	-	Root etching	0	None	
GYF02	Greystones Farm	Gloucestershire	SK231	Pit	Disarticulated	Crania	Adult	M?	-	Staining on left half	0	Low	
GYF03	Greystones Farm	Gloucestershire	SK285	Pit	Articulated	Tibia	Subadult	-	-	Root etching	0	V. low	
FSH01	Fishmonger's Swallet	Gloucestershire	Split fracture	Cave	Disarticulated	Femur	Adult	-	LIA 154 cal BC-cal AD cal 26	Split fracture	2	Med	
FSH02	Fishmonger's Swallet	Gloucestershire	A40	Cave	Disarticulated	Femur	Adult	-	LIA 107 cal BC- AD cal 62	Weird dents - percussion marks?	2	Med	Robust
FSH03	Fishmonger's Swallet	Gloucestershire	A320	Cave	Disarticulated	Mandible	Adult	-	LIA 156 cal BC - AD cal 23	-	3	High	
FSH04	Fishmonger's Swallet	Gloucestershire	A402	Cave	Disarticulated	Mandible	Adult	-	LIA 162 cal BC-AD cal 10	-	1	Low	
FSH07	Fishmonger's Swallet	Gloucestershire	-	Cave	Disarticulated	Long bone	Adult	-	-	-	2	Med	
FSH08	Fishmonger's Swallet	Gloucestershire	-	Cave	Disarticulated	Femur	Adult	-	-	?Percussion marks, black staining,, poss gnawing, weird scraping	0	Med/ low	Robust
FSH10	Fishmonger's Swallet	Gloucestershire	-	Cave	Disarticulated	Crania	Adult	-	-	-	0	V low	
Somerset													
WB01	Worlebury	Somerset	-	Pit	Articulated?	Humerus midshaft	Adult	M	-	Weathering (1)	1	Low	Double burial in pit - one lower, one upper, in 'apparent struggle'
WB02	Worlebury	Somerset	-	Unknown	Disarticulated	Humerus	Adult	M?	-	Weathering (1)	0	None	
WB03	Worlebury	Somerset	-	Unknown	Disarticulated	Parietal	Adult	-	-	-	0	None	
WB04	Worlebury	Somerset	-	Unknown	Disarticulated	Mandible	Adult	-	-	-	0	None /low	
WB05	Worlebury	Somerset	-	Unknown	Disarticulated	Ulna	Adult	M?	-	Weathering (1)	0	None	Muscular male
WB06	Worlebury	Somerset	-	Unknown	Disarticulated	Femur	Adult	-	-	-	0	None	
WB07	Worlebury	Somerset	-	Unknown	Disarticulated	Mandible	Adult	F	-	-	0	None	

WB08	Worlebury	Somerset	-	Unknown	Disarticulated	Parietal	Adult	M	-	-	0	None	
WB09	Worlebury	Somerset	-	Unknown	Disarticulated	Femur	Adult	M	-	-	0	None	
WB10	Worlebury	Somerset	-	Unknown	Disarticulated	Femur	Adult	M?	-	Excellent surface preservation	2	Low/ med	Slender and light femur
WB11	Worlebury	Somerset	-	Unknown	Disarticulated	Humerus	Adult	M	-	weathering (1)	0	None	
WB12	Worlebury	Somerset	-	Unknown	Disarticulated	Frontal	Adult	-	-	-	2	Low/ med	
WB13	Worlebury	Somerset	-	Pit?	Disarticulated	Parietal	Adult	M	-	-	2	Med	
WB14	Worlebury	Somerset	-	Pit?	Disarticulated	Frontal	Adult	M?	-	-	3	Med	
WB15	Worlebury	Somerset	-	Unknown	Disarticulated	Radius	Adult	-	-	-	0	None	
WB16	Worlebury	Somerset	-	Unknown	Disarticulated	Mandible	Adult	M	-	Weathering (1)	0	None	
WB17	Worlebury	Somerset	-	Unknown	Disarticulated	Frontal	Adult	F	-	-	0	Low	
WB18	Worlebury	Somerset	-	Unknown	Disarticulated	Femur	Adult	M?	-	Weathering (1)	1	Low/ none	Outer proximal femur displays axe cut wound
WB19	Worlebury	Somerset	-	Unknown	Disarticulated	Parietal	Adult	F	-	-	0	None	
WB20	Worlebury	Somerset	-	Pit	Disarticulated	Skull	Adult	M?	-	-	1	Low	
WB21	Worlebury	Somerset	-	Pit	Partially Articulated	Occipital	Adult	M	-	-	0	None	Extensive double sword cut through skull, damage to femoral bone
WB23	Worlebury	Somerset	-	Unknown	Disarticulated	Humerus	Adult	-	-	Probable burning on distal epiph	0	None	
WB24	Worlebury	Somerset	-	Unknown	Disarticulated	Mandible	Adult	F	-	-	3	Med	
WB25	Worlebury	Somerset	-	Unknown	Disarticulated	Skull	Adult	M?	-	-	1	Low	
WB26	Worlebury	Somerset	-	Pit	Articulated?	Long bone	Adult	M	-	Spiral fracture on humerus	0	None	Double sword cut 'coward's blow' to skull, damage to femoral bone
WB27	Worlebury	Somerset	-	Unknown	Disarticulated	Skull	Adult	M	-	Weathering (1)	0	None	
WB28	Worlebury	Somerset	-	Unknown	Disarticulated	Parietal	Adult	-	-	Black staining	0	None	
WB29	Worlebury	Somerset	-	Unknown	Disarticulated	Parietal	Adult	-	-	-	1	Low	
GL40	Glastonbury Lake Village	Somerset	M15	Peat	Disarticulated	Occipital	Adult	M	LMIA	-	5	V. high	Cut mark to the posterior of the left zygomatic arch. No evidence of healing. Small circular lump (20mm) 2/3 of the way down the saggital suture.
GL41	Glastonbury Lake Village	Somerset	M19 (1339)	Peat	Disarticulated	Mandible	Adult	F	-	-	5	V. high	Healed past lesion to the left of the midline of the frontal bone. Cut mark (90mm long) to the left parietal resulting in a 172mm long fracture curving around to the right parietal.
GL42	Glastonbury Lake Village	Somerset	M6	Peat	Disarticulated	Mandible	Adult	M	-	-	5	V. high	4 cut marks to the skull. Largest cut (116mm) from right frontal to right parietal. 81mm

													cut at the back of the skull. Further cut to the back of the skull and the 4th cut on the right occipital. No evidence of healing.
GL43	Glastonbury Lake Village	Somerset	M27 (1338)	Peat	Disarticulated	Skull	Adult	-	-	-	4	High	Cut mark to the posterior of the left zygomatic arch. No evidence of healing. Small circular lump (20mm) 2/3 of the way down the saggital suture.
GL44	Glastonbury Lake Village	Somerset	M12	Floor deposit (clay spread)	Disarticulated	Tibia	-	-	MIA?	Gnawing, abrasion	4	High	Dawkins in original report states evidence of canid gnawing but Coles and Minnitt saw no evidence for this.
GL45	Glastonbury Lake Village	Somerset	Unknown	-	Disarticulated	Humerus	-		-	Gnawing, weathering	5	Med	Sharp force trauma - posterior midshaft
GL46	Glastonbury Lake Village	Somerset	Unknown	-	Disarticulated	Femur	-		-	Weathering (2)	5	Med	
GL47	Glastonbury Lake Village	Somerset	M7	Peat	Disarticulated	Skull	Adult	-	-	-	5	V. high	
GL48	Glastonbury Lake Village	Somerset	M29	Substructure (timber)	Disarticulated	Mandible	Adult	-	-	-	5	V. high	
GL49	Glastonbury Lake Village	Somerset	M40	Substructure (under clay)	Disarticulated	Parietal	Adult	-	-	-	0	Low	
GL50	Glastonbury Lake Village	Somerset	M26	in brush-wood'	Articulated?	Skull	Adult	-	LMIA	Burnt	4	None	
GL51	Glastonbury Lake Village	Somerset	M30	Unknown	Disarticulated	Skull	-	-	-	-	4	High/ med	
GL52	Glastonbury Lake Village	Somerset	M5	Unknown	Disarticulated	Mandible	Adult	-	-	-	4	High?	
GL53	Glastonbury Lake Village	Somerset	M9	Peat?	Disarticulated	Skull	-	-	-	-	3	Med/ high	
GL54	Glastonbury Lake Village	Somerset	M2	Unknown	Disarticulated	Humerus	-	-	-	gnawing, weathering, burning	4	Med /low	
GL55	Glastonbury Lake Village	Somerset	M20	Peat	Disarticulated	Clavicle	-	-	-	gnawing at both ends, abrasion	5	High	
GL56	Glastonbury Lake Village	Somerset	M35	Floor deposit?	Disarticulated	Skull	-	-	-	-	4	High/ med	
GL57	Glastonbury Lake Village	Somerset	M23	Peat	Disarticulated	Skull	Adult?	F	-	-	5	High	
GL58	Glastonbury Lake Village	Somerset	M1	Peat?	Disarticulated	Skull	-	-	-	-	0	None	

GL59	Glastonbury Lake Village	Somerset	-	Unknown	Disarticulated	Femur	-	-	-	gnawing, fresh fracture (percussion)	5	High	
GL60	Glastonbury Lake Village	Somerset	-	Unknown	Disarticulated	Tibia	-	-	-	Weathering	3	None	
GL61	Glastonbury Lake Village	Somerset	-	Unknown	Disarticulated	Femur	-	-	-	-	4	High?	
GL62	Glastonbury Lake Village	Somerset	-	Unknown	Disarticulated	Skull	-	-	-	-	4	V high	Sharp force trauma
GL63	Glastonbury Lake Village	Somerset	-	Unknown	Disarticulated	Skull	-	-	-	Burning	4	Low/ med	
GL64	Glastonbury Lake Village	Somerset	-	Unknown	Disarticulated	Skull	-	-	-	-	5	High	Sharp force trauma
GL65	Glastonbury Lake Village	Somerset	-	Unknown	Disarticulated	Skull	-	-	-	Burning	5	High?	
HH01	Ham Hill	Somerset	-	Unknown	Disarticulated	Femur	Adult	-	-	-	3	High	
HH02	Ham Hill	Somerset	-	Unknown	Partially Articulated	Ulna	Juvenile	-	-	-	1	Low	
HH03	Ham Hill	Somerset	-	Unknown	Disarticulated	Femur	Adult	-	-	Polished, 'fresh' condition with yellow surface	5	V. high	
HH04	Ham Hill	Somerset	-	Ditch?	Disarticulated	Humerus	Adolesc/ Young adult	-	-	Encrusted with indurated sand	0	None	Blunt force trauma to upper left temple
HH05	Ham Hill	Somerset	1183?	Ditch	Partially Articulated	Parietal	Adult	M?	-	Weathering 1 & 3	0	None	Skull with possible (healed?) cut trauma to r.orbit in the inner arch
HH06	Ham Hill	Somerset	-	Rampart	Partially Articulated	Parietal	Adult	M?	-	Weathering 4 & 5	0	None/ low	Skull with possible penetrative trauma on the left side, rectangular with tapering sides and radiating breaks. (with post mortem fracture at rear of l.petrous.
HH07	Ham Hill	Somerset	-	Ditch?	Partially Articulated	Occipital	Adult	M	-	-	0	None	Sharp blade cut/chop to the left fibula, cutting this cleanly through and partially into the tibia.
HH08	Ham Hill	Somerset	-	Unknown	Articulated	Femur	Adult	M	-	Weathering 1	0	None	Blunt force trauma to upper left temple
HH09	Ham Hill	Somerset	-	Unknown	Disarticulated	Femur	Adult	-		Possible gnawing on distal end, weathered (rough and drab) 4 & 5	4	High	
HH10	Ham Hill	Somerset	-	Unknown	Partially Articulated	Frontal	Adult	M	-	-	0	None	Smooth, clean cut across cranial fragments

HH39	Ham Hill	Somerset	914/1296	Ditch	Partially articulated	Parietal	Adult	F?	LIA	Erosion grade 1	0	None	Trauma to skull - penatrating wound and blunt force trauma
HH40	Ham Hill	Somerset	919	Ditch	Disarticulated	Femur	Subadult	-	LIA	erosion grade 0-1	0	None	
HH41	Ham Hill	Somerset	716	Ditch	Disarticulated	Femur	Adult	-	LIA	Erosion grade 1-2	0	None	
HH45	Ham Hill	Somerset	808/1557	Shallow pit	Partially Articulated	Occipital	Adult?	F?	-	-	0	None	
HH46	Ham Hill	Somerset	1862/878	Pit fill	Partially Articulated	Parietal	Adult		-	-	0	None	
HH47	Ham Hill	Somerset	1969	Pit fill (middle)	Disarticulated	Parietal	Adult	-	-	-	5	High	
HH49	Ham Hill	Somerset	1691	Pit fill (upper)	Disarticulated	Frontal	Child	-	-	Weathering 3 & 4	0	None	
HH50	Ham Hill	Somerset	1691	Pit	Disarticulated	Parietal	Adult	-	-	-	0	Low	
HH51	Ham Hill	Somerset	1509	Pit?	Disarticulated	Parietal	Subadult / adult	-	-	-	0	Low	
HH52	Ham Hill	Somerset	1871	Pit fill	Disarticulated	Frontal	Adult	M?	-	-	0	None	
HH53	Ham Hill	Somerset	1970	Ditch	Disarticulated	Parietal	Subadult / adult	-	LIA	-	0	Low	
HH55	Ham Hill	Somerset	1760	Rampart	Partially Articulated	Femur	Adult	M?		Weathering 0 - 1	1	Low	
HH56	Ham Hill	Somerset	1775	Ditch	Disarticulated	Tibia	Adult	-	LIA	Erosion grade 1 and 3	0	None	
HH57	Ham Hill	Somerset	1758	Rampart	Disarticulated	Femur	Adult	-	LIA	Erosion grade 1-4	1	Low	
HH59	Ham Hill	Somerset	1763	Rampart	Disarticulated	Clavicle	Subadult / adult	-	LIA/RB	Animal gnawing on lateral end, erosion grade 1 & 2	0	None	
HH60	Ham Hill	Somerset	-	Ditch	Disarticulated	Tibia	Adult	-	M-LIA	-	0	None	
HH61	Ham Hill	Somerset	1531	Ditch?	Partially Articulated	Frontal	Adult	-	-	-	0	None	
HH63	Ham Hill	Somerset	3713	Rampart	Disarticulated ?	Humerus	Adult	-	-	Weathering, gnawing	0	None	Penetrating injury
HH64	Ham Hill	Somerset	3721	Ditch	Disarticulated	Tibia	Adult	-	M-LIA	Split axially	0	None	
HH65	Ham Hill	Somerset	191	Rampart	Disarticulated	Humerus	Adult?	F?	LIA-RB	Erosion grade 0	0	None	Knife marks on humerus
HH66	Ham Hill	Somerset	833 (5517?)	Ditch	Disarticulated	Parietal	Adult	-	LIA	Erosion grade 1	0	Low	Potential blunt force trauma, possible penetrating injury
HH31	Ham Hill	Somerset	-	Unknown	Articulated	Femur	?	-	-		0		
HH32	Ham Hill	Somerset	-	Pit	Articulated	Mandible	Adult	F?	-	Weathering 4 & 5	0	none	Blunt force trauma
HH33	Ham Hill	Somerset	-	Pit	Articulated	Femur	Adult	F?	-	-	2	Med	
HH34	Ham Hill	Somerset	-	Pit	Articulated	Femur	Adult	M?	-	-	0	low	
HH35	Ham Hill	Somerset	1184	Ditch	Partially Articulated	Parietal	Adult	F?	-	Black staining, weathering 1	0	None	
HH38	Ham Hill	Somerset	917	Ditch	Disarticulated	Rib	Adult?	-	-	Weathering 1 & 2	0	Low	
NP66	North Perrott	Somerset	SK1/215	Pit	Articulated	Femur	Adult	-	-	-	0	None	
NP67	North Perrott	Somerset	SK2/236	Grave	Articulated	Femur	Adult	-	-	-	2	Low	

NP68	North Perrott	Somerset	SK3/514	Grave	Articulated	Femur	Adult	-	-	-	0	-	
NP69	North Perrott	Somerset	SK318	Unknown	Articulated?	Femur	Adult	-	-	-	0	None	
CS11	South Cadbury	Somerset	3557	Sealing rubble; lower and middle passageway	Disarticulated (assemblage)	Parietal	Adult	F	-	Green staining on hand phalanx, bones from assemblage have burning to varying degrees	0	None	Trauma to femur
CS12	South Cadbury	Somerset	4096	Upper passageway	Partially Articulated?	Femur	Adult	F?	-	Burning, gnawing	0	None	
CS13	South Cadbury	Somerset	4096	Upper passageway	Partially Articulated?	Femur	Adult	M	-	Burning, gnawing	0	None	Femoral trauma
CS14	South Cadbury	Somerset	3864	Upper passageway	Partially Articulated?	Femur	Adult	M	-	Burning, gnawing	0	None	
CS15	South Cadbury	Somerset	3763	Outside threshold	Partially Articulated?	Humerus	Adult	-	-	Burning, weathering	0	None	
CS16	South Cadbury	Somerset	3723 (bone) or 3889 (bag	Sealing rubble; lower and middle passageway	Partially Articulated?	Femur	Adult	M?	-	Burning, fracture	2	Low	
CS17	South Cadbury	Somerset	3571	Sealing rubble; lower and middle passageway	Partially Articulated?	Femur	Adult	M	-	Burning, fracture	0	Low	
CS18	South Cadbury	Somerset	3573	Sealing rubble; lower and middle passageway	Partially Articulated?	Femur	Juvenile	-	-	-	1	Low	
CS19	South Cadbury	Somerset	3571	Sealing rubble; lower and middle passageway	Partially Articulated?	Tibia	Adult	M	-	burning, fracture	2	Low	
CS20	South Cadbury	Somerset	3571	Sealing rubble; lower and middle passageway	Partially Articulate ?	Humerus	Adult	-	-	-	1	Low	
CS21	South Cadbury	Somerset	3617	Upper passageway	Disarticulated (?)	Humerus	Adult	-	-	Burning, weathering	1	Low	
CS22	South Cadbury	Somerset	3607	Upper passageway	Disarticulated (?)	Parietal	Adult	-	-	Burning	1	Low	
CS23	South Cadbury	Somerset	3749 (a)	Outside threshold	Partially Articulated?	Radius	Adult	-	-	-	0	None	
CS24	South Cadbury	Somerset	3749 (b)	Outside threshold	Partially Articulated?	Radius	Adult	-	-	-	2	Med	

CS25	South Cadbury	Somerset	3764	Outside threshold	Disarticulated (?)	Humerus	Subadult	-	-	Weathering	0	None	
CS26	South Cadbury	Somerset	3715	Middle passageway	Disarticulated (?)	Humerus	Subadult / adult	-	-	Burning	0	Low	
CS27	South Cadbury	Somerset	3788	Outside threshold	Disarticulated (?)	Parietal	Subadult / adult	-	-	-	2	Med?	
CS28	South Cadbury	Somerset	3544	Sealing rubble; lower and middle passageway	Disarticulated (?)	Occipital	Adult	M?	-	Burning	1	Low	
CS29	South Cadbury	Somerset	3715	Middle passageway	Partially Articulated?	Ulna	Adult	-	-	-	0	None	
CS30	South Cadbury	Somerset	4139	Middle passageway	Disarticulated (?)	Tibia	Subadult	-	-	-	0	Low	
CS31	South Cadbury	Somerset	4139	Middle passageway	Partially Articulated?	Ulna	Adult	-	-	Burning, gnawing, weathering	2	Low	
SC71	South Cadbury	Somerset	76.AA.16 5/4108	Upper passageway	Disarticulated (?)	Frontal	Adult	-	-	Abrade heavily	0	None	Intentional blows to the skull
SC72	South Cadbury	Somerset	76.AA.16 5/3625	Middle passageway	Disarticulated (?)	Ulna	-	-	-	Weathering	0	None	
SC73	South Cadbury	Somerset	76.AA.16 5/3990	Middle passageway	Disarticulated (?)	Ulna	Adult	-	-	Burning	1	None /low	
SC74	South Cadbury	Somerset	76.AA.16 5/3662	Middle passageway	Disarticulated (assemblage)	Ulna	Adult	-	-	Burning	3	Med/ low	
SC75	South Cadbury	Somerset	76.AA.16 5/3776	Outside threshold	Disarticulated (?)	Clavicle	Adult	M	-	Burning, abrade	0	None	
SC76	South Cadbury	Somerset	76.AA.16 5/3836	-	Disarticulated (?)	Calvarium	Adult	-	-	-	3	Med/ low	
SC77	South Cadbury	Somerset	76.AA.16 5/3887	Unknown	Articulated	Femur	Adult	M?	-	-	3	Med/ high	Violent blow to femur
SC78	South Cadbury	Somerset	A.45	Unknown	Disarticulated (?)	Mandible	Adult	F?	-	-	0	None	
Wiltshire													
PTN01	Potterne	Wiltshire	W35 2776	Midden	Disarticulated	Femur	Adult	-	EIA/MIA	Spiral fracture	1	None?	
PTN02	Potterne	Wiltshire	W35 2786	Midden	Disarticulated	Radius?	Adult	-	EIA/MIA	Fresh fractures?	2	Low/ med	
PTN03	Potterne	Wiltshire	W35 1409	Midden	Disarticulated	Humerus	Adult	-	EIA/MIA	black markings, orange colour, dry/recent breaks	4	High	
PTN04	Potterne	Wiltshire	W35 1623	Midden	Disarticulated	Ulna	Adult	-	EIA/MIA	dry/recent break	0	Low	
PTN05	Potterne	Wiltshire	W35 2526	Midden	Disarticulated	Femur	Adult	F?	EIA/MIA	possible animal gnawing ends? Orangey colour.	0	None	

										Some surface weathering. Head of femur, greater and lesser trochanter missing.			
PTN06	Potterne	Wiltshire	W35 2526	Midden	Disarticulated	Femur	Subadult	-	EIA/MIA	equidistant ?cut marks (or tooth scoring?) on proximal end of posterior shaft, epiphyses missing, ?canid gnawing (tooth scoring on epiphyses)	0	None	
PTN07	Potterne	Wiltshire	W35 2409	Midden	Disarticulated	Femur	Adult	-	EIA/MIA	Both epiphyses missing; possible trampling? Root etching, orangey colour with some yellowish, black staining, dark colouration at epiphyeal ends gnawing (canine tooth scores) on proximal epiphysis, lots of surface cracking (weathering?), possible fresh fracture on distal end but the rest of the fracture surface is recent, less gnawing on distal end	0	None	
PTN08	Potterne	Wiltshire	W35 208	Midden	Disarticulated	Femur	Adult	-	EIA/MIA	Missing both epiphyses, spiral fracture looks fresh, possible gnawing on proximal	0	None	

										epiphyseal end, but not distal?			
PTN09	Potterne	Wiltshire	W35 1662	Midden	Disarticulated	Femur	Adult	-	EIA/MIA	missing both epiphyses, canid gnawing, surface cracks/weatherin g? Orangey colour	3	High?	
PTN10	Potterne	Wiltshire	W35 2424	Midden	Disarticulated	Femur	Adult	-	EIA/MIA	longitudinal splinter, poss trampling? (fresh fracture), orangey colour especially in endosteum, black adherance on perio, gouges on perio surface (anterior?) possibly gnawed?	1	Low	
PTN11	Potterne	Wiltshire	W35 2908	Midden	Disarticulated	Humerus	Adult	-	EIA/MIA	orangey colour, black staining/adheranc e, longitudinal splinter (fresh fracture), possibly lightly gnawed?	0	None	
PTN12	Potterne	Wiltshire	W35 4083	Midden	Disarticulated	Tibia	Adult		EIA/MIA	fresh fractures on each end of both, poss cut marks? Scratching on one fractured surface	0	None	
PTN13	Potterne	Wiltshire	W35 3352	Midden	Disarticulated	Femur	Subadult ?		EIA/MIA	Both epiphyses missng, orange colour, canid gnawing on both epiphyses, fresh fracture on distal end	0	None	
PTN14	Potterne	Wiltshire	W35 ?960 (no. unclear)	Midden	Disarticulated	Parietal?	Adult	F	EIA/MIA	Dry fracture? Root etching, medium brown colour	1	Low	
PTN15	Potterne	Wiltshire	2747	Midden	Disarticulated	Frontal bone	Adult	F	EIA/MIA	Complete frontal, brown colour, shiny/polished, orangey staining	0	None	

										on endo surface, yellow on the posterior side of the frontal			
PTN16	Potterne	Wiltshire	W35 2747	Midden	Disarticulated	Parietal?	Adult	-	EIA/MIA	small fragment, yellow colour, orangey in meningeal grooves	0	Low	
PTN17	Potterne	Wiltshire	W35 1987.237 .1	Midden	Disarticulated		Adult	?F?	EIA/MIA	very smooth surface, reddish orange colour in patches especially on perio, some black staining/mottled appearance especially in endo surface, hole ???drilled?	0	None	
PTN18	Potterne	Wiltshire	W35 2912	Midden	Disarticulated	Femur	Adult	M?	EIA/MIA	Robust proximal epiphysis of femur (includes head/neck/lesser trochanter), possible fresh fractures on proximal end, yellow stain, can't tell if gnawed	1	None	
PTN19	Potterne	Wiltshire	W35 2912	Midden	Disarticulated ?	? Parietal	Adult	?M	EIA/MIA	refitted cranial vault, v dry, orange colour all over, pale yellow inside, darker yellowy orange/brown outside. Breaks look recent.	1	None/ low	
PTN20	Potterne	Wiltshire	W35 261	Midden	Disarticulated	Femur	Adult	?M	EIA/MIA	fresh fractures on both ends, 'wedge flake' (described by Johnson 1985: fig.5.5 p.177), brown colour;	1	Low	very thick, robust

										shiny smooth appearance, distal fracture surface is undulating – dry break?			
PTN21	Potterne	Wiltshire	W35 54	Midden	Disarticulated	humerus	Adult	-	EIA/MIA	fresh fracture?	0	Low	
PTN23	Potterne	Wiltshire	W35 143	Midden	Disarticulated	? Fibula?	Adult	-	EIA/MIA	yellow in colour, different to other elements. Fresh fractures on both ends	0	Low	
PTN24	Potterne	Wiltshire	W35 95	Midden	Disarticulated	Femur	Adult	-	EIA/MIA	possible fresh fractures on proximal end	0	Low	
BB01	Battlesbury Bowl	Wiltshire	5142	Ditch	Disarticulated	Femur	Subadult /adult	-	LBA/EIA	Fresh fracture prox, definite canid gnawing distal, root etching, abraded	0	None/ low	
BB02	Battlesbury Bowl	Wiltshire	4292	Ditch	Disarticulated	Tibia?	Adult	-	LBA/EIA	Heavily eroded, black staining, fresh and dry breaks (old)	0	Low	
BB03	Battlesbury Bowl	Wiltshire	5218	Pit	Disarticulated	Femur?	Subadult /adult	-		Fracture - fresh but undulated surface? Similar fracture to BB17. Pale colour. Poss gnawing	0	None	
BB04	Battlesbury Bowl	Wiltshire	4863	Pit	Disarticulated	Femur	Adult	M?		-	1	Low	Robust
BB05	Battlesbury Bowl	Wiltshire	5735	Pit	Disarticulated	Humerus?	-	-		-	1	Low	
BB06	Battlesbury Bowl	Wiltshire	W4896 4322	Pit	Articulated	Femur	Adult	M	M-LIA (360 cal BC–cal AD 60)	Dry, no other notes	1	Low	
BB07	Battlesbury Bowl	Wiltshire	W4896 4345	Pit	Articulated	Femur	Adult	-		Root etching	1	Low	
BB08	Battlesbury Bowl	Wiltshire	W4896 4251	Pit	Articulated	Femur?	Adult	F		-	2	Med	
BB09	Battlesbury Bowl	Wiltshire	4112	Ditch	Disarticulated	Femur	Adult	-	LBA/EIA	Canid gnawing on epiphyses, root etching, abrasion	1	Low/ Med	

BB10	Battlesbury Bowl	Wiltshire	4321	Pit	Disarticulated	Femur	Adult	F?		Gnawing, root etching, pale colour	3	Med/ high	
BB11	Battlesbury Bowl	Wiltshire	W4896 4346	Pit	Articulated	Femur	Adult	F		-	0	None	
BB12	Battlesbury Bowl	Wiltshire	W4896 4347	Pit	Articulated	Femur	Adult	M	M/LIA (300 cal BC - cal AD 20)	-	1	Med	
BB13	Battlesbury Bowl	Wiltshire	4273	Pit fill	Disarticulated	-	-	-		Small white patch - burnt? Chalk? Pale colour	1	Med/ low	
BB14	Battlesbury Bowl	Wiltshire	4249 (ON 3050)	Ditch	Disarticulated	humerus	Adult	F?	LBA/EIA	Canid gnawing, trampled (root etching (1); abraded (2-3); blackish discolouration	2	Med	
BB15	Battlesbury Bowl	Wiltshire	4111	Ditch	Disarticulated	Femur	Adult	-	LBA/EIA	Split fracture, orange colour	1	None	
BB16	Battlesbury Bowl	Wiltshire	4124	Ditch	Disarticulated	Femur	Adult	-	LBA/EIA	Fresh fractures on prox end, gnawing on distal, slightly polished, orange colour	0	None	
BB17	Battlesbury Bowl	Wiltshire	4016	Ditch	Disarticulated	Tibia	Adult	M?	LBA/EIA	Canid gnawing, angular breaks, root etching, orange color	0	Low	
BB18	Battlesbury Bowl	Wiltshire	W4896 4159	Post hole	Disarticulated	Crania	Subadult ? 3-12?	-		-	1	Low	
BB19	Battlesbury Bowl	Wiltshire	W4896 5769	Pit fill (middle)	Disarticulated	skull	Adult?	-		-	2	Med	
BB20	Battlesbury Bowl	Wiltshire	5359	Pit	Disarticulated	Skull	Subadult /adult	-		-	1	None	
BB21	Battlesbury Bowl	Wiltshire	W4896 5585	Post hole	Disarticulated	Crania	adult >18	-		-	1	None?	
BB22	Battlesbury Bowl	Wiltshire	4385	Pit	Disarticulated	Frontal	Adult	F?		Root etching, black discolouration, very square shape - worked?, pale	2	Low/ med	
BB23	Battlesbury Bowl	Wiltshire	5044	Pit	Disarticulated	Crania	Adult	-		Fractured - rectangular shape, worked? Black	4	High	

										discolouration, root etching, pale			
BB24	Battlesbury Bowl	Wiltshire	4994	Pit	Disarticulated	Crania	Subadult /adult	-		Puncture - canid; ?fresh fracture, polished outside	0	Low	
WRO01	Wroughton	Wiltshire	SK8071	Pit	Articulated	Femur	Subadult			heavy root etching	0	None	
WRO02	Wroughton	Wiltshire	SK10005	Pit	Articulated	Femur or tibia	Adult	?		root etching	0	None	
WRO03	Wroughton	Wiltshire	SK1845	Pit	Articulated	Fibula	Adult	?F?		-	0	None	
RBW01	Rowbarrow	Wiltshire	4651	Grave	Articulated	Femur	Mature adult	?F	EIA (790-530 cal BC)	-	0	None	
RBW02	Rowbarrow	Wiltshire	4653	Grave	Articulated	Femur	Adult	?F	EIA (770-410 cal BC)	-	3	High?	
RBW03	Rowbarrow	Wiltshire	4243	Grave	Articulated	Femur	Adult	F	EIA (770-410 cal BC)	-	1	Low	
RBW04	Rowbarrow	Wiltshire	4268	Grave	Articulated	Femur	Foetus	-	EIA (770-410 cal BC)	-	0	None	Foetus in utero of RBW03
RBW05	Rowbarrow	Wiltshire	4178	Grave	Articulated	Femur	Adult	M	EIA (760-530 cal BC)	-	0	None	
RBW06	Rowbarrow	Wiltshire	4180	Grave	Disarticulated	U. Long bone	Adult	-	IA?	-	0	None	
RBW07	Rowbarrow	Wiltshire	4105/3476	Grave	Partially Articulated	Femur	Adult	F?	EIA (780-410 cal BC)	2-4 surface erosion, root etching, heavy fragmentation	1	Low	missing skull and lower legs/feet (Powell 2015: 53)
RBW08	Rowbarrow	Wiltshire	4513a	Grave	Articulated	Femur	Adolescent	M	EIA (520–380 cal BC)	-	0	None	
RBW09	Rowbarrow	Wiltshire	4638	Pit	Disarticulated	Femur	Adult	?F	EIA?	Black stain on distal end, severe root etching, pale colour	0	Low	
RBW10	Rowbarrow	Wiltshire	4467b	Pit	Disarticulated	Long bone	Adult	-	EIA?	Heavy erosion, root etching, pale buff	0	None	
RBW11	Rowbarrow	Wiltshire	4486b	Pit	Disarticulated	Humerus	Adult	-	EIA?	Possible fresh fracture flake, heavy erosion, root etching, pale buff	1	None	
RBW12	Rowbarrow	Wiltshire	4506	Pit	Disarticulated	?Radius	Adult	F	EIA?	Root etching	1	None/ low	
RBW13	Rowbarrow	Wiltshire	4182	Ditch	Disarticulated	Humerus	Adult	-	EIA?	3-4; root etched; some heavy	1	Low	

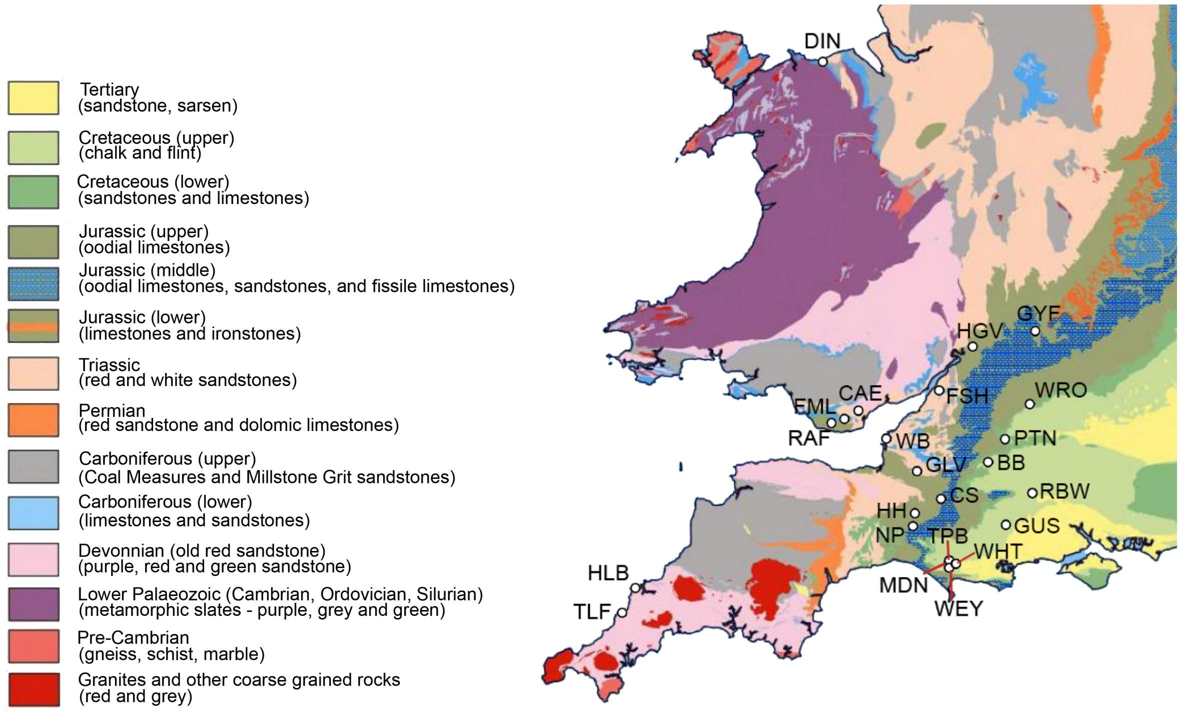
										fragmentation; dry breaks			
Dorset													
GUS01	Gussage All Saints	Dorset	31(6)	Pit	Articulated	Femur	Adolescent?	F?	-	-	3	High	
GUS02	Gussage All Saints	Dorset	204(8)	Pit	Articulated	Femur	Adult	F	-	-	1	None	
GUS03	Gussage All Saints	Dorset	285(3)	Pit	Articulated	Femur	Adult	M	-	-	0	None	sharp force trauma according to reports
GUS04	Gussage All Saints	Dorset	387(6)	Pit	Articulated	Femur	Adult	M	-	-	0	Low	
GUS05	Gussage All Saints	Dorset	205(5)	Pit	Articulated	Femur	Adult?	F	-	-	0	Low	
GUS06	Gussage All Saints	Dorset	139(3)	Pit	Articulated	Femur	Adult	F	-	-	0	None	
GUS07	Gussage All Saints	Dorset	62(7)	Pit	Articulated	Femur	Adult	F	-	-	0	None	
GUS08	Gussage All Saints	Dorset	359(4)	Pit	Articulated	Femur	Adult	M	-	-	0	Low	
GUS09	Gussage All Saints	Dorset	410(6)	Pit	Articulated	Femur	Adult?	F	-	-	0	None	
GUS10	Gussage All Saints	Dorset	435(5)	Pit	Articulated	Femur	Adolescent	F	-	-	0	None	
GUS11	Gussage All Saints	Dorset	310G	Ditch	Disarticulated	Femur	Adult	-	LIA	Weathering, root etching, fractures on both ends - semi-wet, but undulating fracture surface might mean it was more dry?	0	None	
GUS12	Gussage All Saints	Dorset	1M(5)	Ditch	Disarticulated	Crania	Adult	F	MIA	-	0	None	Possible trauma to crania?
TPB01	Tolpuddle Ball	Dorset	826	Grave	Articulated	Femur	Adult	F	-	-	1	Low	
TPB02	Tolpuddle Ball	Dorset	60A (SF 165)	Pit	Partially Articulated	Tibia	Adult	-	-	-	3	Low	
TPB03	Tolpuddle Ball	Dorset	802	Grave	Articulated	Femur	Adult	M	-	-	2	Med	
TPB04	Tolpuddle Ball	Dorset	2313	Pit	Articulated	Femur	Adolescent	-	-	root etching	0	None/ low	
TPB05	Tolpuddle Ball	Dorset	908	Grave	Articulated	Femur	Adult	-	-	-	2	Med	

TPB06	Tolpuddle Ball	Dorset	49	Grave	Articulated	Femur	Adullt	-	-	-	0	Low	
TPB07	Tolpuddle Ball	Dorset	1403	Pit	Articulated	Femur	Neonate	-	-	-	0	None	
TPB08	Tolpuddle Ball	Dorset	54	Unknown - 'structure'	Articulated?	L. long bone	Adult	-	-	-	0	None	
TPB09	Tolpuddle Ball	Dorset	48	Grave	Articulated	L. long bone	Adult	F	-	-	2	Med	
TPB10	Tolpuddle Ball	Dorset	1348	Grave	Articulated	Femur	Adult	F	-	-	1	Low	
TPB11	Tolpuddle Ball	Dorset	60	Pit	Articulated?	L. long bone	Adult	-	MIA-RB (400 BC-AD 100)	-	1	Med/ low	
MDN0 1	Maiden Castle	Dorset	unnumbe red - bag within bag 69	?	Disarticulated	Femur?	Adult	-	-	-	0	None	
MDN0 2	Maiden Castle	Dorset	unnumbe red - bag within bag 70	?	Disarticulated	Crania	Adult	-	-	-	0	None	
MDN0 3	Maiden Castle	Dorset	43	?	Disarticulated	Femur?	Adult	-	-	Fresh fractures?	1	Low	
MDN0 4	Maiden Castle	Dorset	38	?	Disarticulated	Femur?	Adult	-	-	Dry fractures?	0	None	
MDN0 5	Maiden Castle	Dorset	39	?	Disarticulated	Parietal	Adult	-	-	-	0	None	
MDN0 6	Maiden Castle	Dorset	51	?	Disarticulated	Tibia	Adult	-	-	Fresh fractures, gnawing	2	Med	
MDN0 7	Maiden Castle	Dorset	57	?	Disarticulated	Humerus?	Adult?	-		Fresh fracture? Gnawing	0	None	
WEY01	Weymouth	Dorset	7125	Grave	Articulated	Femur	Adult	-	LIA	-	0	None	
WEY02	Weymouth	Dorset	7003	Grave	Articulated	Femur	Adult	M	LIA	-	1	Low	
WEY03	Weymouth	Dorset	7004	Grave	Articulated	Femur	Adult	F	LIA	-	1	Low	
WEY04	Weymouth	Dorset	7757	Grave	Articulated	Femur	Adult	M	LIA	-	1	Low	
WEY05	Weymouth	Dorset	7235	Grave	Articulated	Femur	Adult	M	LIA	-	1	Low	
WEY06	Weymouth	Dorset	7384	Grave	Articulated	Femur	Adult	M	LIA	-	0	Low/ none	
WEY07	Weymouth	Dorset	7373	Grave fill	Disarticulated	Long bone	Adult	-	-	-	1	Low	
WEY08	Weymouth	Dorset	7887	?	Disarticulated ?	Femur?	Adult	-	-	Black staining, fractured, gnawing	1	Low	
WEY09	Weymouth	Dorset	7708	EIA layer	Disarticulated	Parietal	Adult	-	-	-	2	Med	

WEY10	Weymouth	Dorset	7371	Grave	Articulated	Tibia?	Adolescent?	-	LIA	-	1	Low	
WEY11	Weymouth	Dorset	7262	Grave	Articulated	Femur	Adult	-	LIA	-	2	Med	
WEY12	Weymouth	Dorset	7081	?	Disarticulated ?	Femur	Adult	-	-	-	0	None	
WEY13 .1	Weymouth	Dorset	7111	Grave	Articulated		Adult	F	LIA	-	0	None	
WHT01	Whitcombe	Dorset	Skel 1	Grave	Articulated	Femur	Adult	F	-	-	0	None	
WHT02	Whitcombe	Dorset	Skel 2	Grave	Articulated	Tibia	Adult	M	-	-	2	Med	
WHT03	Whitcombe	Dorset	Skel 5	Grave	Articulated	Femur	Adult	M	-	-	3	Med	
WHT04	Whitcombe	Dorset	Skel 4	Grave	Articulated	Tibia	Adult	-	-	-	2	Med	
WHT05	Whitcombe	Dorset	Skel 8	Grave	Articulated	Tibia	Adolescent	F	-	-	0	None	
Cornwall													
HLB 01	Harlyn Bay	Cornwall	Origin bag 7.1	Possible ossuary	Disarticulated	Temporal	-	-	EIA?	-	0	None	
HLB 02	Harlyn Bay	Cornwall	Bag 2.6	Possible ossuary	Disarticulated	Cranial	-	-	EIA	-	0	Low	
HLB 03	Harlyn Bay	Cornwall	Bag 4.2	Possible ossuary	Disarticulated	Temporal	Adult	F?	EIA	-	1	Low	
HLB 04	Harlyn Bay	Cornwall	5.1	Cist	Articulated	Radius	Adult	-	EIA	CU alloy stain	1	Low/ med	
HLB 05	Harlyn Bay	Cornwall	5.3	Cist	Articulated	Tibia	Adult	-	EIA	CU alloy stain	4	V. high	
HLB 06	Harlyn Bay	Cornwall	5.5	Cist	Articulated	Femur	Adult	-	EIA	-	0	None	
HLB 07	Harlyn Bay	Cornwall	5.5	Cist	Articulated	Femur	Adult	-	EIA	-	0	None	
HLB 08	Harlyn Bay	Cornwall	5.5	Cist	Articulated	Femur	Adult	-	EIA	-	4	V. high	
HLB 09	Harlyn Bay	Cornwall	8.2	Cist	Articulated	Humerus	Adult	-	EIA	Charcoal staining	0	None	
HLB 10	Harlyn Bay	Cornwall	8.3	Cist	Articulated	Ulna		-	EIA	-	0	None	
HLB 11	Harlyn Bay	Cornwall	8.4	Cist	Articulated	Ulna		-	EIA	-	0	None	
HLB 12	Harlyn Bay	Cornwall	8.6	Cist	Articulated	Fibula		-	EIA	-	0	None	
HLB 13	Harlyn Bay	Cornwall	8.9	Cist	Articulated	Tibia		-	EIA	-	0	None	
HLB 14	Harlyn Bay	Cornwall	8.1	Cist	Articulated	Humerus		-	EIA	-	0	None/ low	
HLB 15	Harlyn Bay	Cornwall	8.10	Cist	Articulated	Tibia		-		-	0	None	
HLB 16	Harlyn Bay	Cornwall	8.11	Cist	Articulated	Femur		-		-	0	None/ low	
HLB 17	Harlyn Bay	Cornwall	8.12	Cist	Articulated	Femur		-		-	0	None	
HLB 18	Harlyn Bay	Cornwall	13.2	Cist	Articulated	Radius		-		Charcoal staining	0	Low	
HLB 19	Harlyn Bay	Cornwall	15.3	Cist	Articulated	Parietal		-		-	0	Low	
HLB 20	Harlyn Bay	Cornwall	9.1	Cist	Articulated	Femur	Adult	-	EIA	-	0	Low	
HLB 21	Harlyn Bay	Cornwall	49.5	Cist	Articulated	Radius	Adult	-	EIA	Charcoal on humerus	1	Low	
HLB 22	Harlyn Bay	Cornwall	10.3	Cist	Articulated	Parietal		-	EIA		1	Low	

HLB 23	Harlyn Bay	Cornwall	8	Cist	Articulated	Parietal	Adolescent/ young adult?	-		Charcoal staining on nasal bones	2	Med?	
HLB 24	Harlyn Bay	Cornwall	9	Cist	Articulated	Occipital	Adult	-		-	2	Med	Vascular impressions
TLF 01	Trethellan Farm	Cornwall	2118	Grave	Articulated	Frontal	Adult	-		-	2	Med	
TLF 02	Trethellan Farm	Cornwall	2184	Grave	Articulated	Long bone	Adult	-		-	2	Med	
TLF 03	Trethellan Farm	Cornwall	2080	Grave	Articulated	Parietal	Adult	-		-	3	Med	

Appendix 4 – Geology of case study sites



Map showing the histological case study sites and underlying geology. Source: author (base map from British Geological Survey)

Site	County	NGR	Geology
Harlyn Bay (HLB)	Cornwall	SW 87790 75290	Slate and Siltstone
Trethellan Farm (TLF)	Cornwall	SW 80097 61166	Mudstone, Siltstone and Sandstone
Dinorben (DIN)	Denbighshire	SH 96870 75685	Huddersfield White Rock – Sandstone
Tolpuddle Ball (TPB)	Dorset	SY 67300 89900	Portsdown Chalk
Weymouth (Southdown Ridge) (WEY)	Dorset	SY 67200 85700	Seaford Chalk, Newhaven Chalk
Whitcombe (WHT)	Dorset	SY 71100 88000	Portsdown Chalk
Gussage All Saints (GUS)	Dorset	ST 99800 10100	Spetisbury Chalk
Maiden Castle (MDN)	Dorset	SY 66900 88500	Seaford Chalk Formation and Newhaven Chalk Formation
Greystones Farm (GYF)	Gloucestershire	SP 17300 20880	Charmouth Mudstone
Hunt's Grove (HGV)	Gloucestershire	SO 81455 12239	Blue Lias Formation and Charmouth Mudstone Formation
Fishmonger's Swallet (FSH)	Gloucestershire	ST 63313 87202	Penarth Group - Mudstone
Perrott Hill School (NP)	Somerset	ST 46680 09650	Bridport Sand - Sandstone

Ham Hill (HH)	Somerset	ST 47800 17000	Ham Hill Limestone
Cadbury Castle (CS/SC)	Somerset	ST 62835 25131	Trendrean Mudstone Formation
Glastonbury Lake Village (GLV)	Somerset	ST 49200 41100	Blue Lias Formation and Charmouth Mudstone Formation, Mudstone and Limestone, interbedded
Worlebury (WB)	Somerset	ST 31400 62500	Dinantian Rocks – Limestone with Subordinate Sandstone and Argillaceous Rocks
Battlesbury Bowl (BB)	Wiltshire	ST 89836 46031	Holywell Nodular Chalk
Rowbarrow (RBW)	Wiltshire	SU 15070 28170	White Chalk
Potterne (PTN)	Wiltshire	ST 99600 59100	Gault Formation and Upper Greensand Formation – Mudstone, Sandstone and Limestone
Wroughton (WRO)	Wiltshire	SU 13900 79100	Grey Chalk Subgroup
Caerau (CAE)	Vale of Glamorgan	ST 13363 75010	Blue Anchor Formation -Mudstone
Five Mile Lane (FML)	Vale of Glamorgan	ST 07887 71270	Limestone and Mudstone
RAF St Athan (RAF)	Vale of Glamorgan	ST 00450 68960	Limestone and Mudstone

Appendix 5 – Figures for sub-regional burial data

South Wales

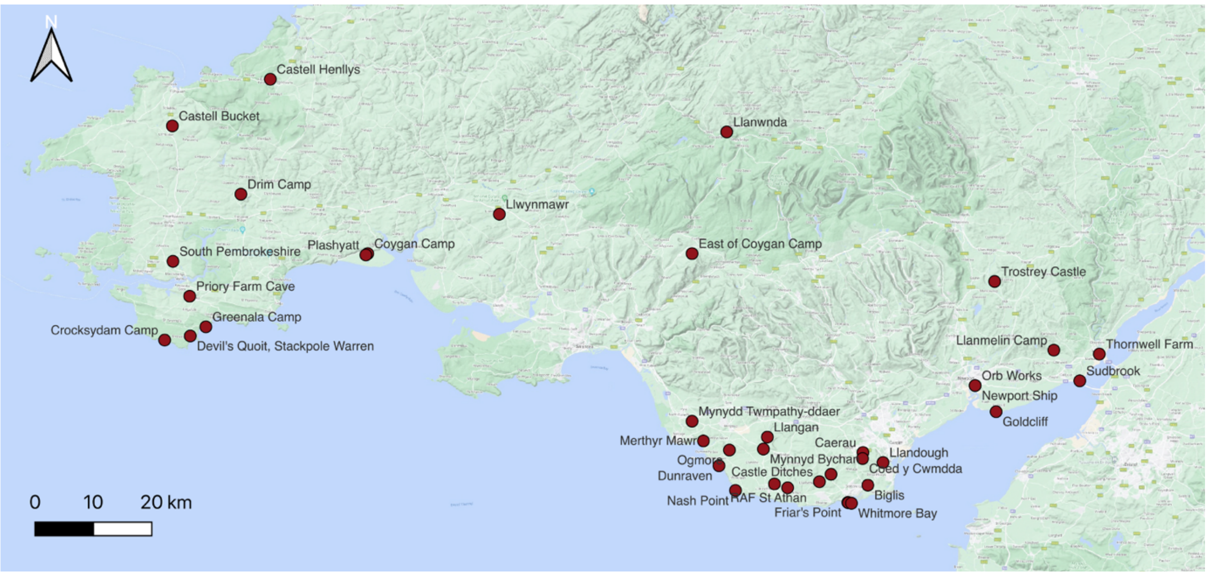


Figure 211. Map of sites with burial evidence from South Wales. Source: author

Deposit

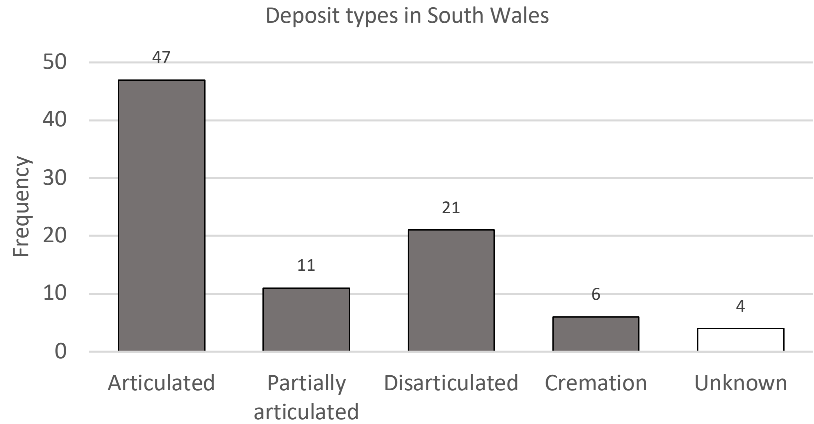


Figure 212. Graph showing the total frequency of deposit types in South Wales. Source: author

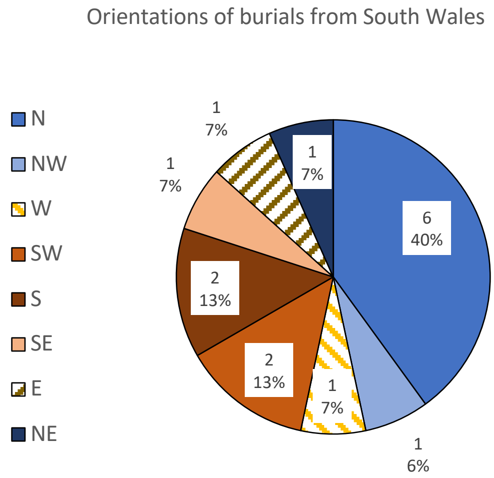


Figure 213. Chart showing the total percentage of head orientations in articulated inhumation burials from South Wales. Source: author

Chronology

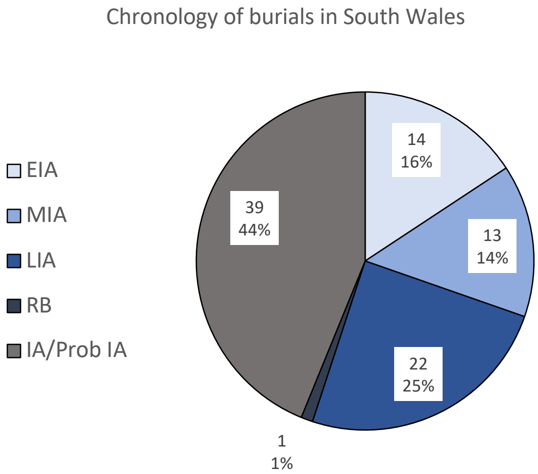


Figure 214. Chart showing the total percentage of chronological phases in burials from South Wales. Source: author

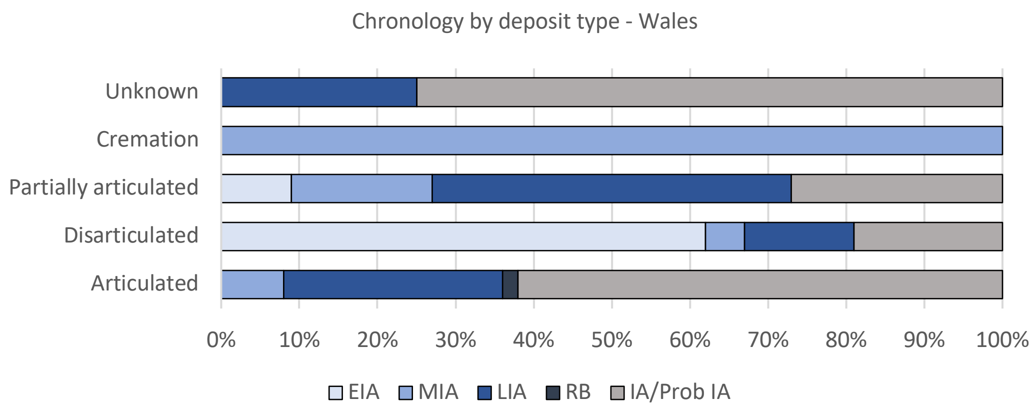


Figure 215. Graph showing the total percentages of chronological phases for each deposit type in South Wales. Source: author

Features

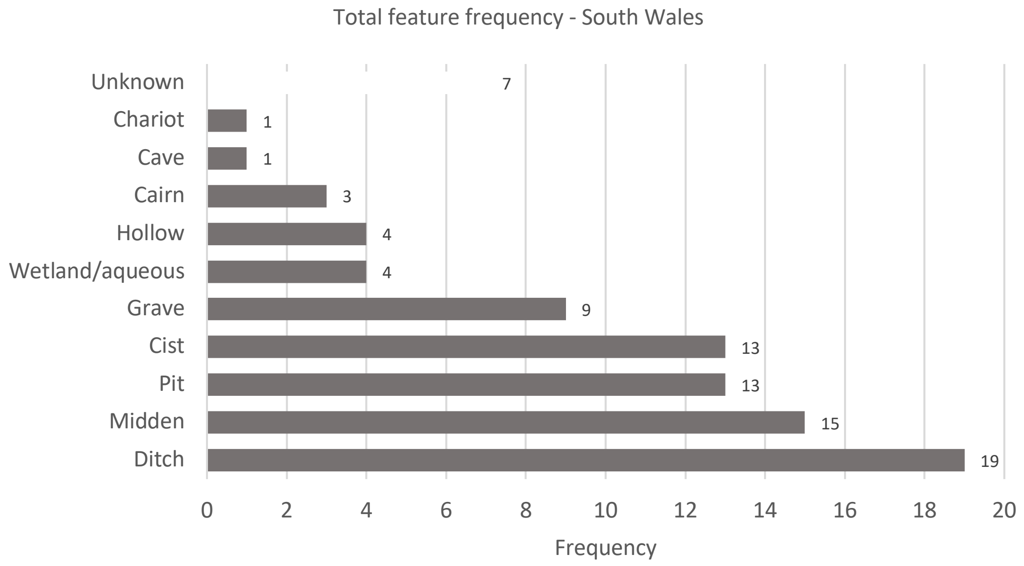


Figure 216. Graph showing the total frequency of burials/deposits in features from South Wales. Source: author

Articulated

Table 27. Frequency of articulated burials in South Wales by feature. Source: author

	Cist	Grave	Pit	Ditch	Midden	Cairn	Unknown	Total
Frequency	11	9	9	9	1	3	5	49

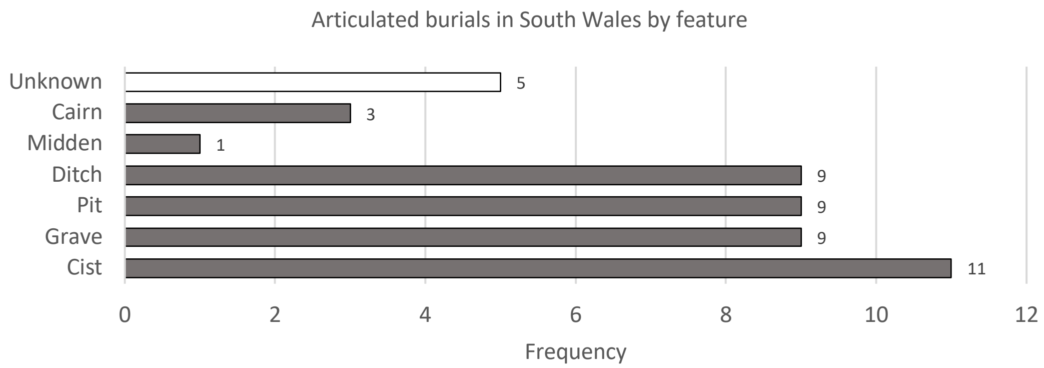


Figure 217. Graph showing the frequency of articulated burials in South Wales by feature. Source: author

Partially articulated

Table 28. Frequency of partially articulated burials in South Wales by feature. Source: author

	Midden	Wetland/aqueous	Pit	Ditch	Total
Frequency	2	1	3	5	11

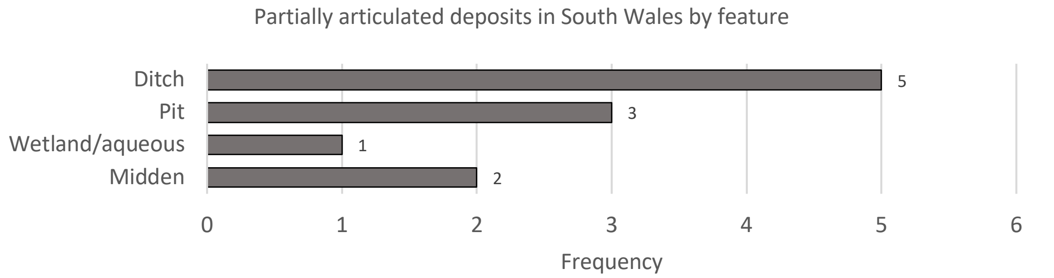


Figure 218. Graph showing the frequency of partially articulated deposits in South Wales by feature. Source: author

Disarticulated

Table 29. Frequency of disarticulated deposits in South Wales by feature. Source: author

	Midden	Wetland/aqueous	Cave	Ditch	Other	Total
Frequency	12	3	1	4	1	21

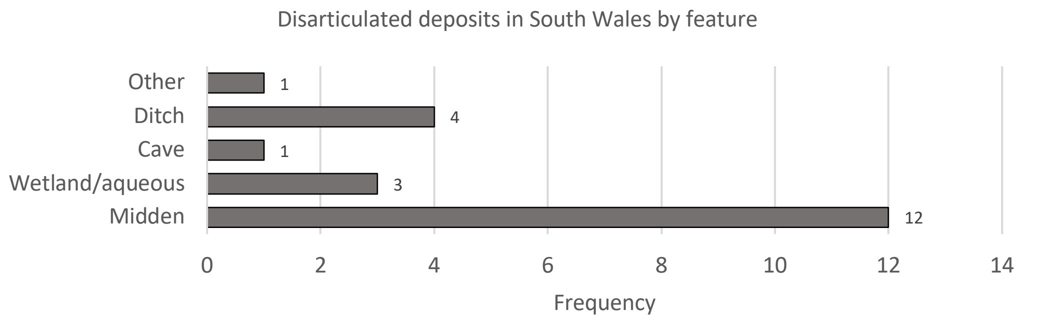


Figure 219. Graph showing the frequency of disarticulated deposits in features from South Wales. Source: author

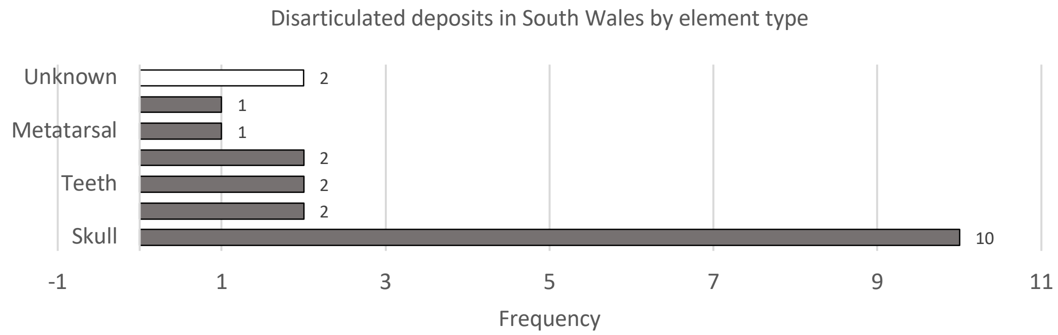


Figure 220. Graph showing the frequency of disarticulated deposits in South Wales by element type. Source: author

Cremation

Table 30. Frequency of disarticulated deposits in South Wales by feature. Source: author

	Chariot burial	Cist	Ditch	Unknown	Total
Frequency	1	1	1	1	6

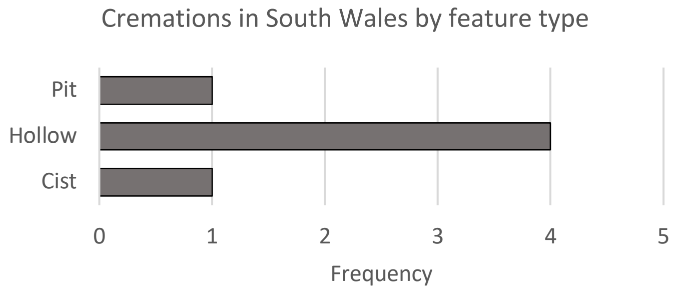


Figure 221. Graph showing the frequency of cremations in South Wales by feature type. Source: author

Unknown

Table 31. Frequency of unknown deposits by feature. Source: author

	Cist	Hollow	Pit	Total
Frequency	1	4	1	6

Age and sex

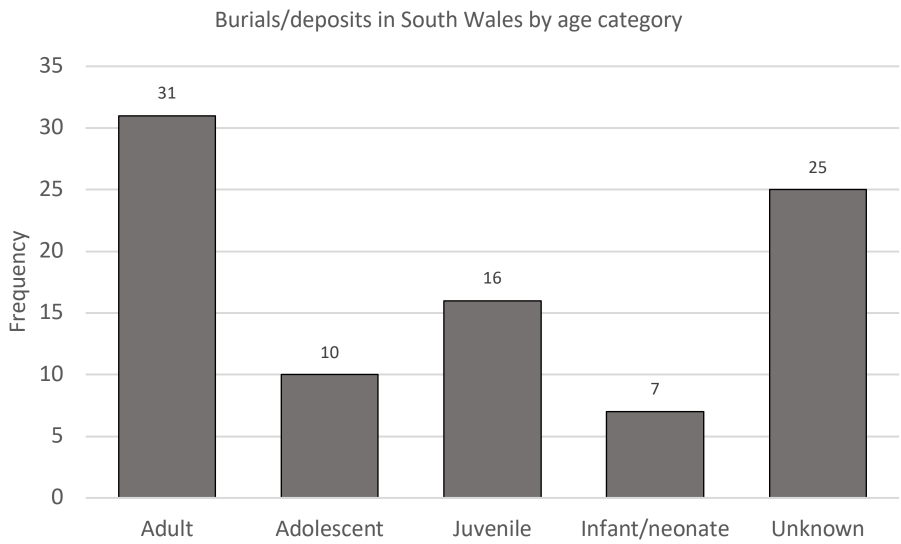


Figure 222. Frequency of burials/deposits in South Wales by age category. Source: author

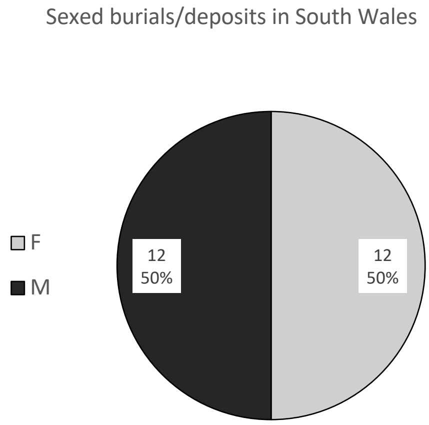


Figure 223. Chart showing the percentage of male and female burials/deposits in South Wales. Source: author

Table 32. Frequency of male and female burials/deposits in Wales by feature. Source: author

	Boundaries	Grave	Pit	Cist	Wetland (aqueous)	Hollow	Unknown	Total
Male	4	1	1	1	2	1	2	24
Female	3	3	2	1	0	2	1	24

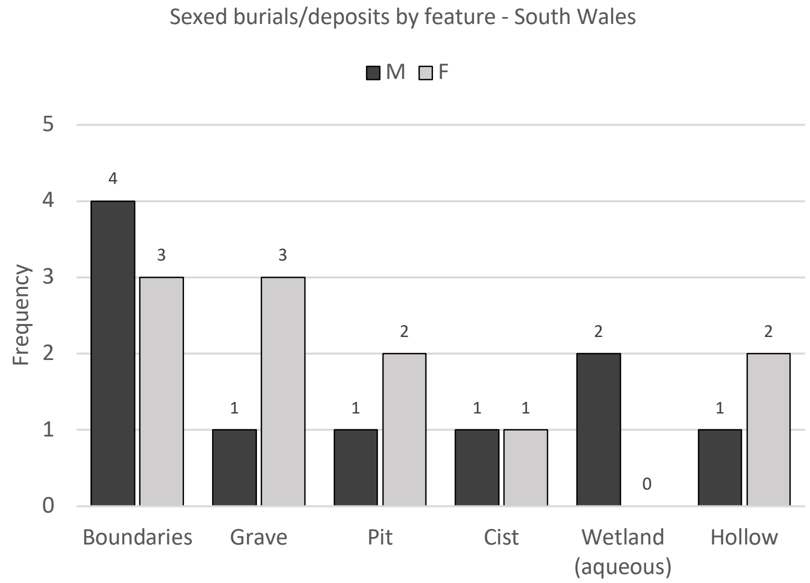


Figure 224. Graph showing the total frequencies of male and female burials in South Wales by feature types. Source: author

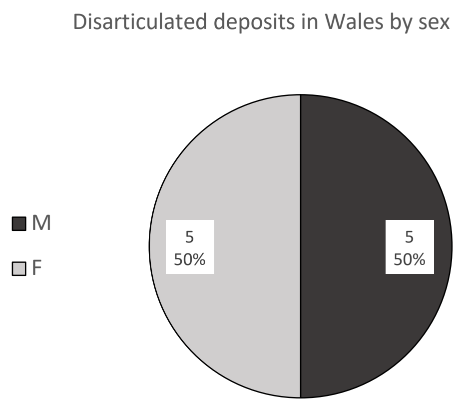


Figure 225. Chart showing the percentage of male and female disarticulated deposits in South Wales. Source: author

Gloucestershire

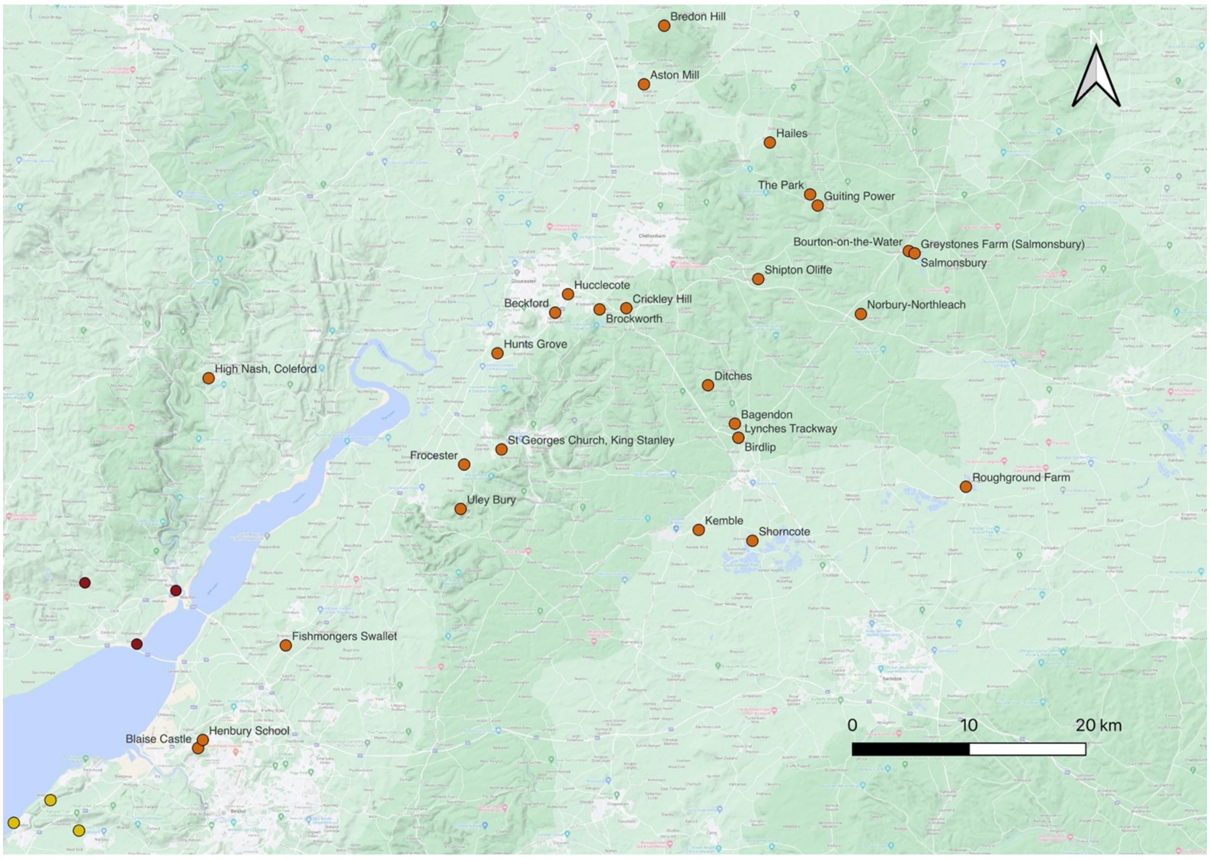


Figure 226. Map of sites with burial evidence from Gloucestershire. Source: author

Deposit

Table 33. Frequency of burials/deposits in Gloucestershire by articulation. Source: author

	Articulated	Partially articulated	Disarticulated	Unknown	Total
Frequency	64	7	22	4	97

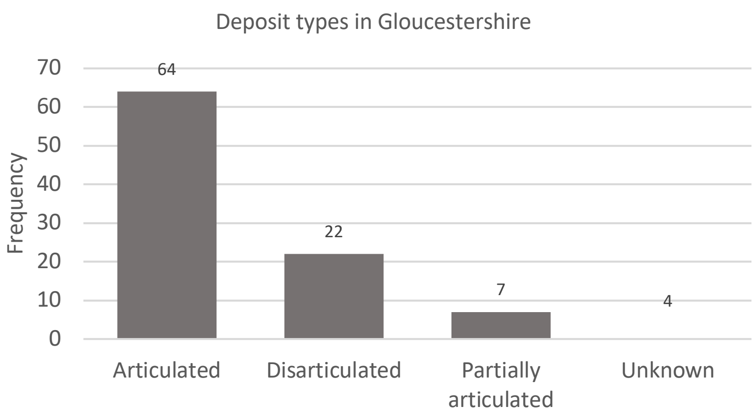


Figure 227. Graph showing the total frequency of deposit type in Gloucestershire. Source: author

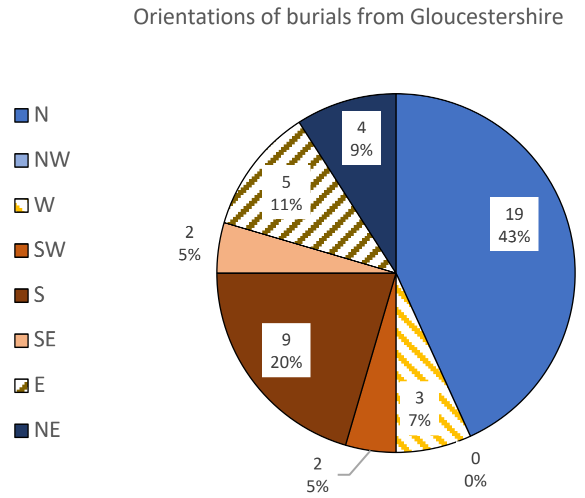


Figure 228. Chart showing the total percentage of head orientations in articulated inhumation burials from Gloucestershire. Source: author

Chronology

Table 34. Chronology of burials/deposits from Gloucestershire. Source: author

	EIA	MIA	LIA	IA/Prob UA	Unknown	Total
Frequency	7	22	33	31	4	97

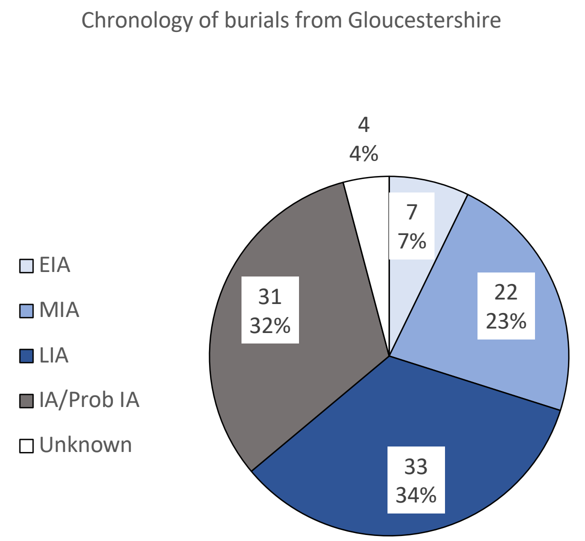


Figure 229. Chart showing the total percentage of chronological phases in burials from Gloucestershire. Source: author

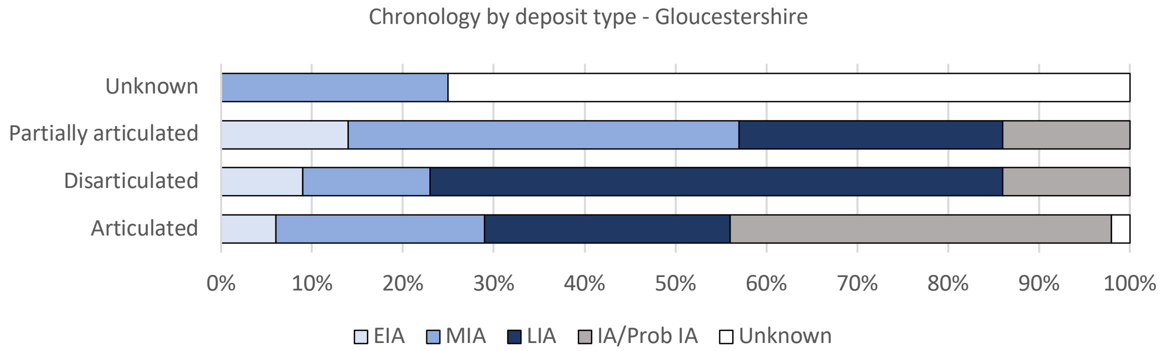


Figure 230. Graph showing the total percentages of chronological phases for each deposit type in Gloucestershire. Source: author

Features

Table 35. Frequency burials/deposits in Gloucestershire by feature. Source: author

	Grave	Pit	Boundary	Cave	Cist	Roundhouse gulley	Wetland	Unknown	Total
Frequency	34	29	11	7	1	6	1	6	97

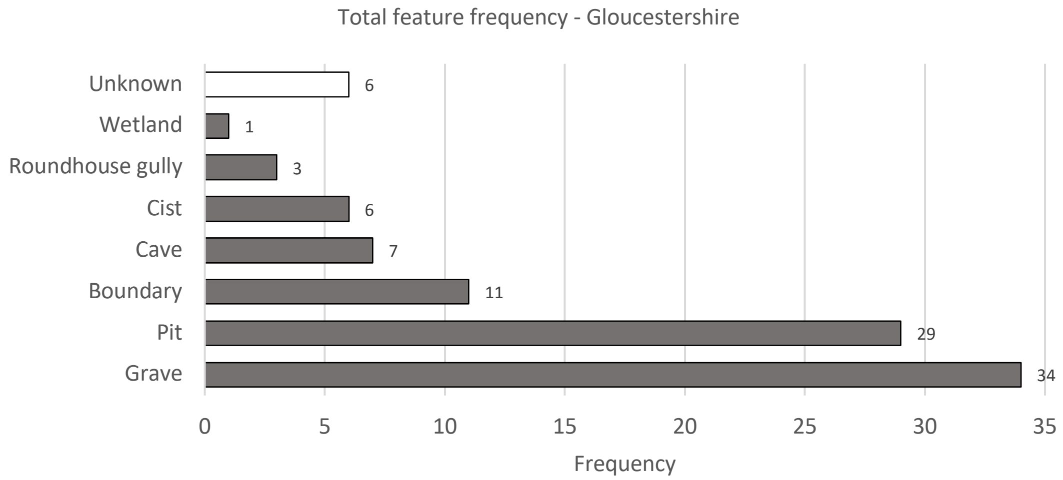


Figure 231. Graph showing the total frequency of burials/deposits in features from Gloucestershire. Source: author

Articulated

Table 36. Frequency of articulated burials in Gloucestershire by feature. Source: author

	Grave	Pit	Cist	Boundary	Roundhouse gulley	Unknown	Total
Frequency	34	18	6	4	3	1	64

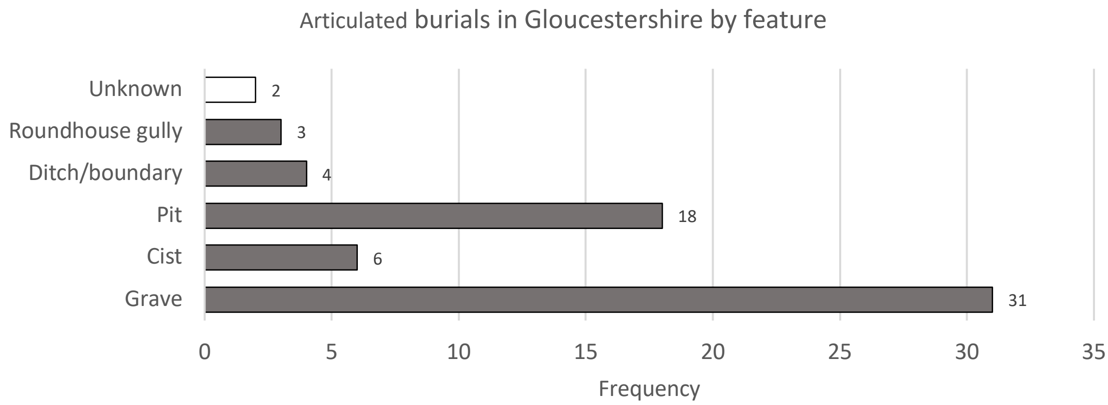


Figure 232. Graph showing the frequency of articulated burials in features from Gloucestershire. Source: author

Partially articulated

Table 37. Frequency of partially articulated burials in Gloucestershire by feature. Source: author

	Grave	Pit	Unknown	Total
Frequency	1	5	1	7

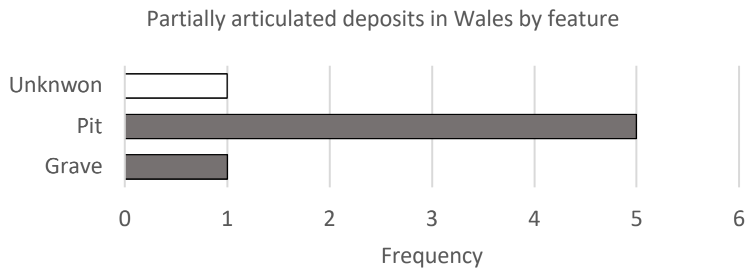


Figure 233. Graph showing the frequency of articulated burials in features from South Wales. Source: author

Disarticulated

Table 38. Frequency of disarticulated burials in Gloucestershire by feature. Source: author

	Pit	Ditch	Cave	Wetland/ aqueous	Unknown	Total
Frequency	5	7	7	1	2	22

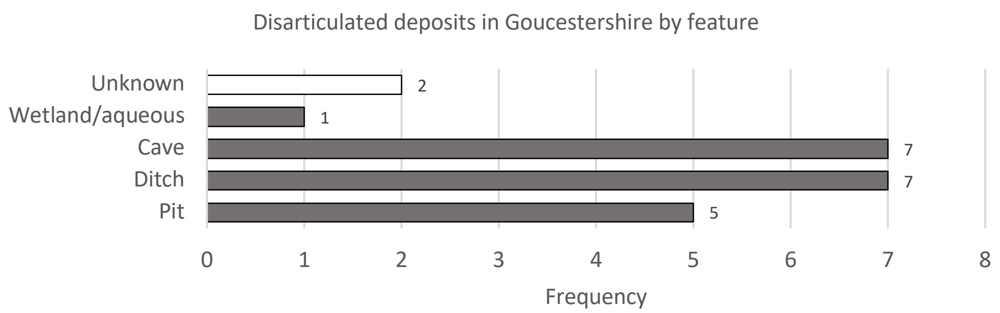


Figure 234. Graph showing the frequency of disarticulated deposits in features from Gloucestershire. Source: author

Unknown

Table 39. Frequency of deposits from unknown articulation in Gloucestershire by feature. Source: author

	Grave	Pit	Unknown	Total
Frequency	1	1	1	4

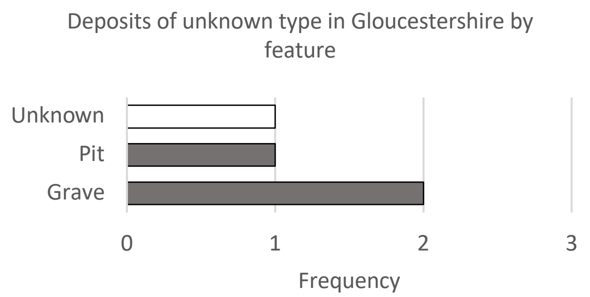


Figure 235. Graph showing the frequency of unknown deposits in features from Gloucestershire. Source: author

Age and sex

Table 40. Frequency of age categories from burials in Gloucestershire. Source: author

	Adult	Subadult	Infant/neonate	Unknown	Total
Frequency	62	5	8	22	97

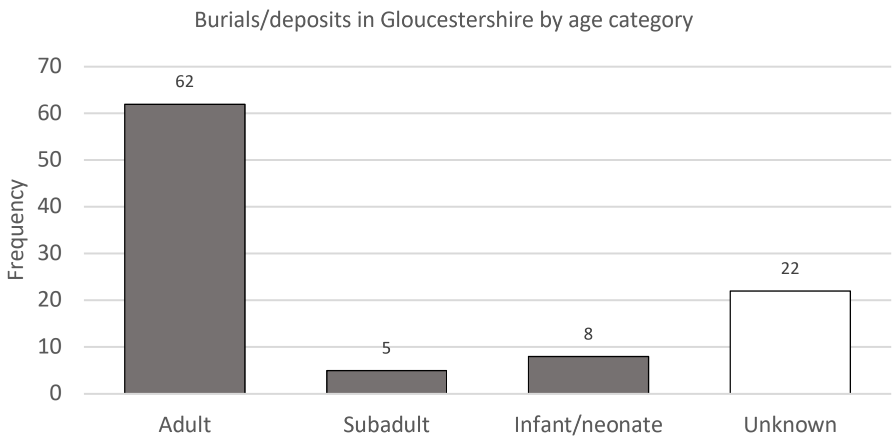


Figure 236. Graph showing the frequency of total burials/deposits in Gloucestershire by age category. Source: author

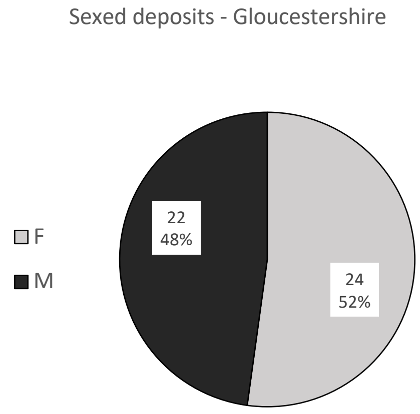


Figure 237. Chart showing the total percentage of male and female burials/deposits in Gloucestershire. Source: author

Table 41. Frequency of burials/deposits in Gloucestershire by sex and feature. Source: author

	Grave	Pits	Boundaries	Cist	Cave	Waterhole	Unknown	Total
Male	8	7	2	4	0	1	0	22
Female	7	7	4	2	2	0	2	24

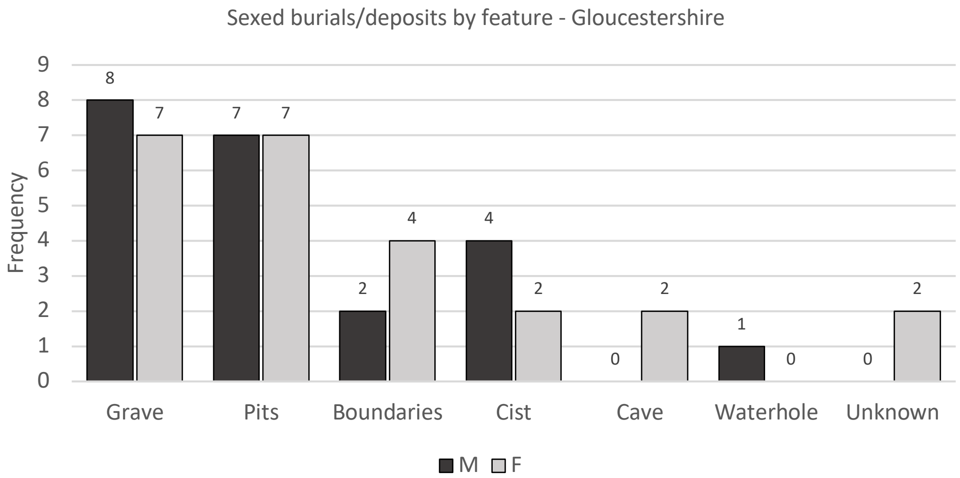


Figure 238. Graph showing the frequency of male and female deposits in features from Gloucestershire. Source: author

Somerset

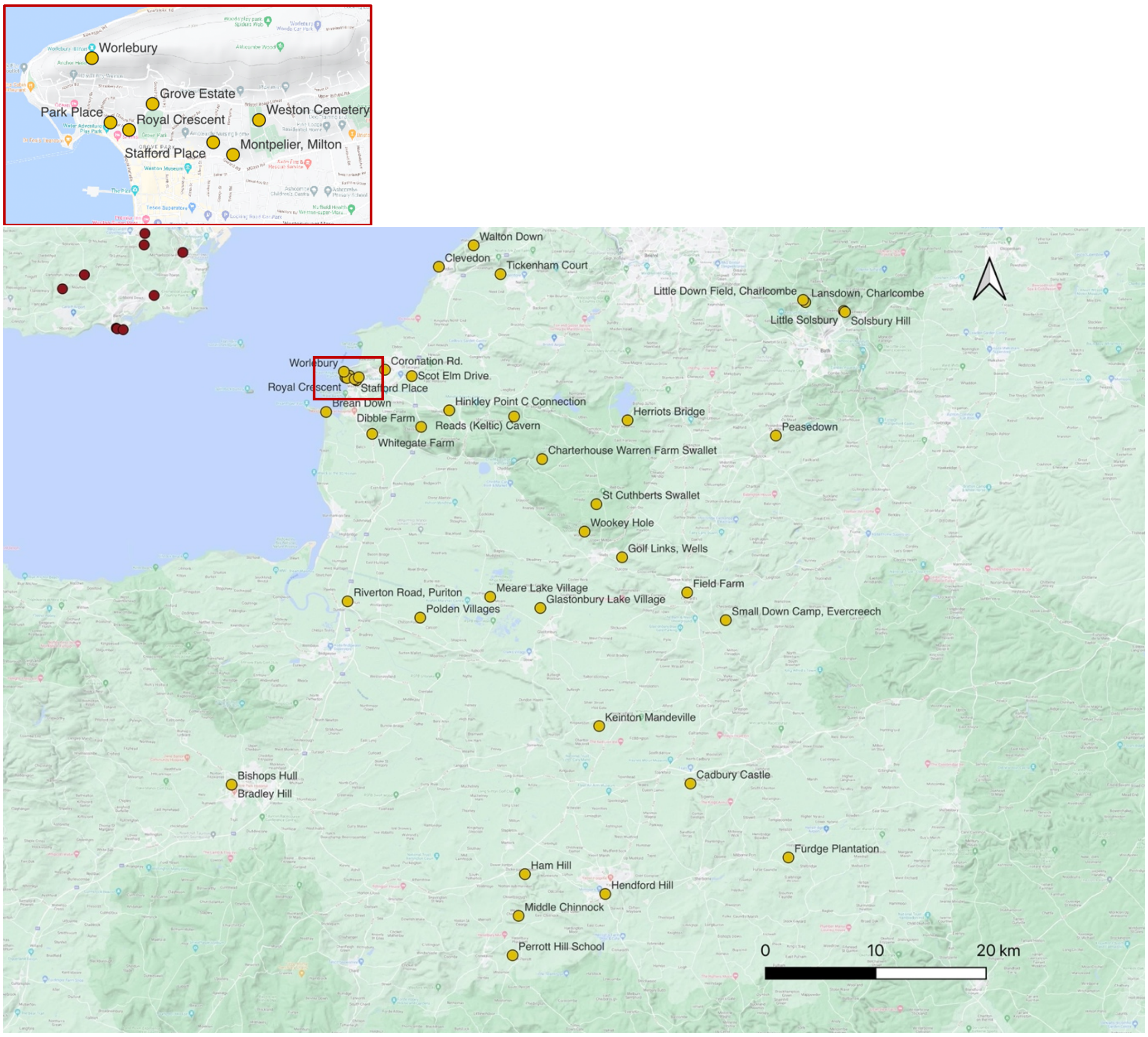


Figure 239. Map of sites with burial evidence from Somerset. Source: author

Deposit

Table 42. Frequency of deposit types in Somerset. Source: author

	Articulated	Partially articulated	Disarticulated	Cremations	Total
Frequency	101	12	221	10	344

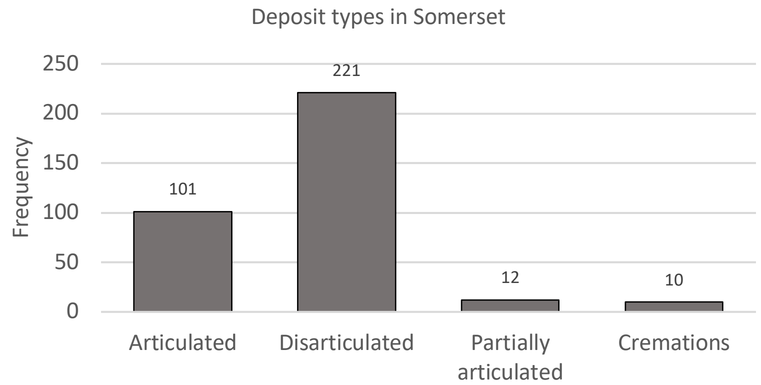


Figure 240. Graph showing the total frequency of deposit types in Somerset. Source: author

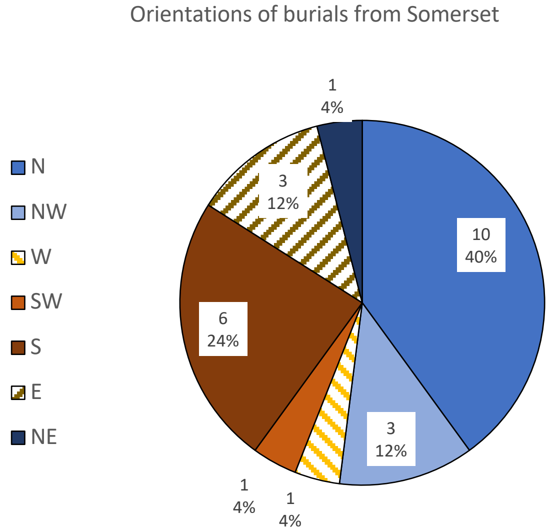


Figure 241. Chart showing the percentage of orientation in burials from Somerset. Source: author

Table 43. Frequency of disarticulated deposits in Somerset by element type. Source: author

	Skull	Long bone	Teeth	Vert.	Scapulae	Phalanges	Tarsals/ meta tarsals	Clavicle	Pelvis	Sacrum	Rib	Unknown	Total
Freq.	67	25	18	4	2	2	2	1	1	1	1	97	221

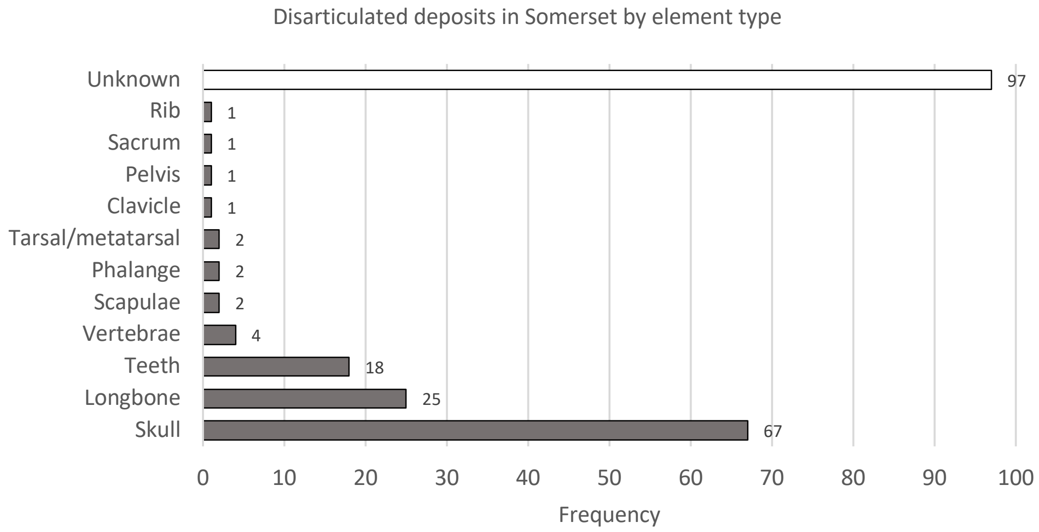


Figure 242. Graph showing the frequency of disarticulated element types in Somerset. Source: author

Chronology

Table 44. Chronology of burials/deposits from Somerset. Source: author

	EIA	MIA	LIA	IA/Prob IA	Unknown	Total
Frequency	37	103	106	85	14	344

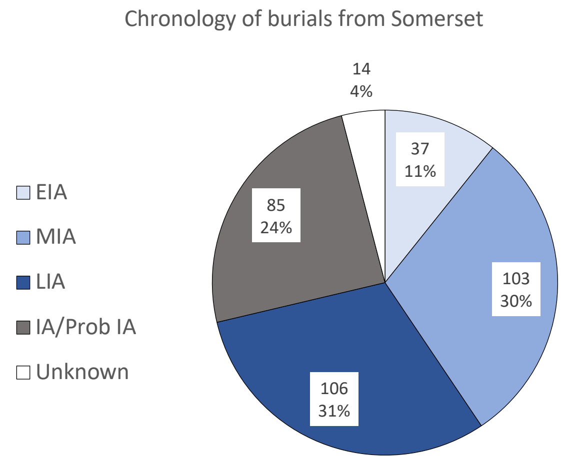


Figure 243. Chart showing the total percentage of chronological phases of burials from Somerset. Source: author

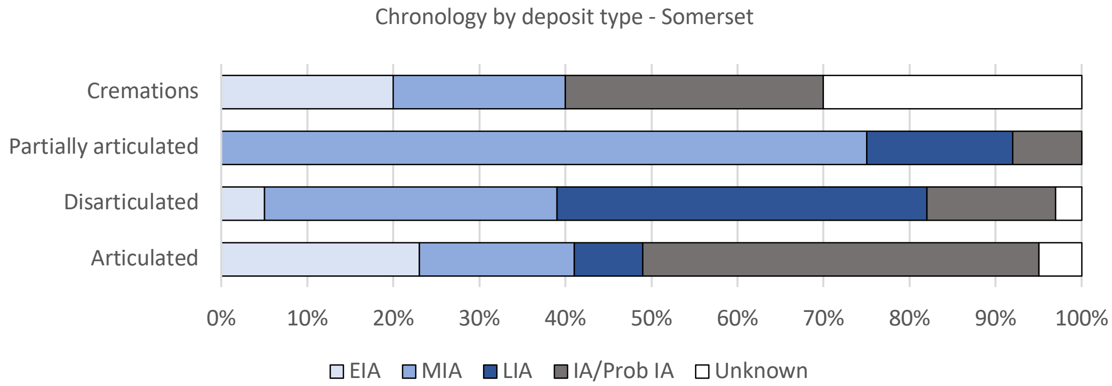


Figure 244. Graph showing the percentages of chronological phases for each deposit type in Somerset. Source: author

Features

Table 45. Frequency of burials/deposits in Somerset by feature. Source: author

	Pit	Surface	Roundhouse floor	Cave	Surface/ peat	Grave	Cist	Quarry	Cairn	Midden	Unknown	Total
Freq.	97	92	30	25	18	17	15	6	1	1	7	344

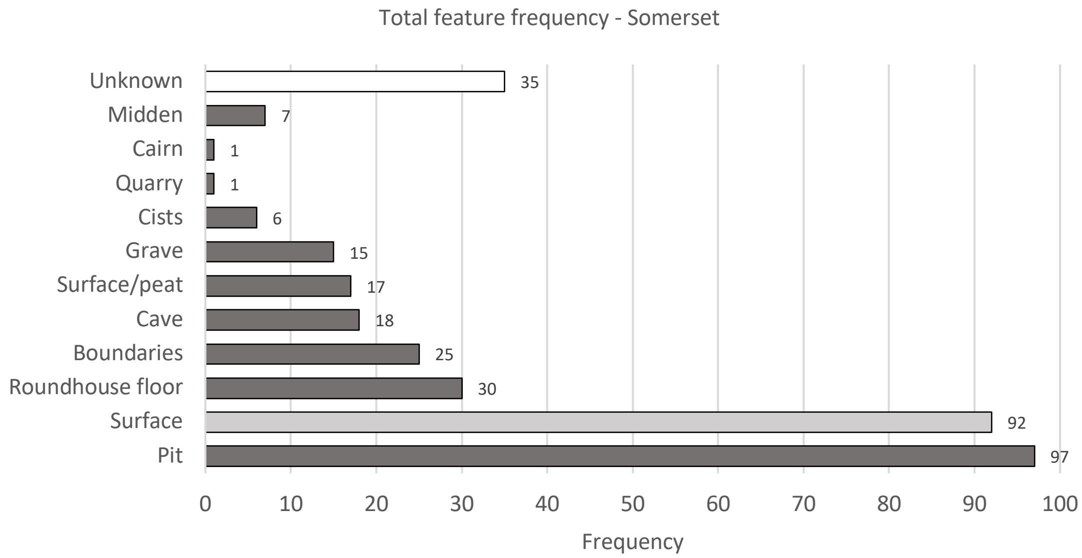


Figure 245. Graph showing the total frequency of burials/deposits in features from Somerset. Source: author

Articulated

Table 46. Frequency of articulated burials in Somerset by feature. Source: author

	Grave	Cist	Pit	Boundaries	Roundhouse floor	Surface/peat	Cave	Unknown	Total
Feature	14	6	54	5	4	2	1	1	101

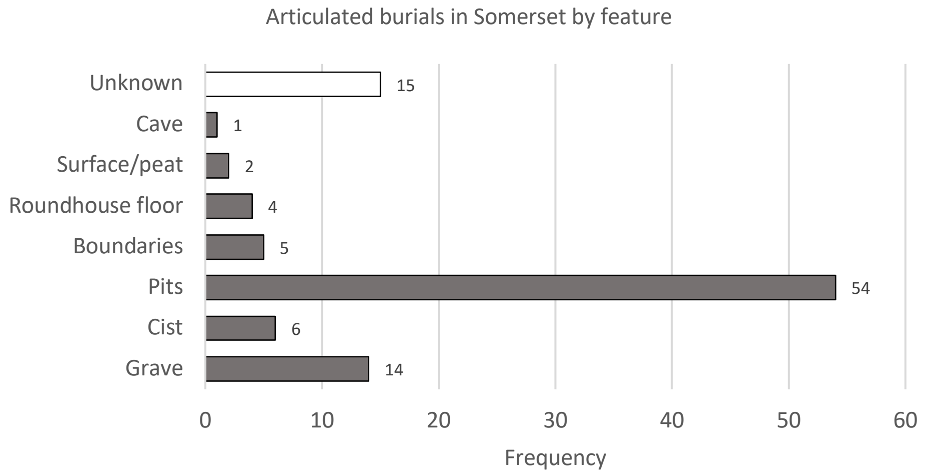


Figure 246. Graph showing the frequency of articulated burials in Somerset by feature. Source: author

Partially articulated

Table 47. Frequency of partially articulated deposits in Somerset by feature. Source: author

	Pit	Roundhouse floor	Surface	Surface/peat	Unknown	Total
Frequency	6	2	2	1	1	12

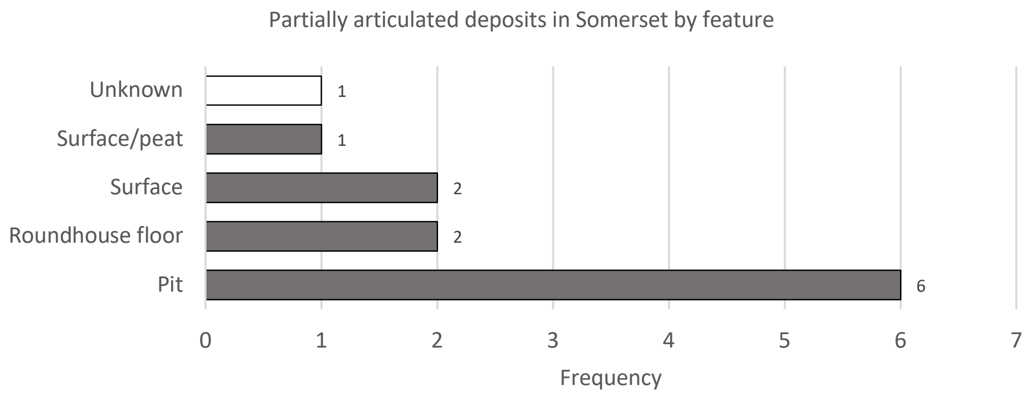


Figure 247. Graph showing the frequency of partially articulated deposits in Somerset by feature. Source: author

Disarticulated

Table 48. Frequency of disarticulated deposits in Somerset by feature. Source: author

	Boundary	PIt	Cave	Roundhouse floor	Surface/peat	Quarry	Midden	Surface	Unknown
Frequency	20	35	17	23	12	1	7	90	221

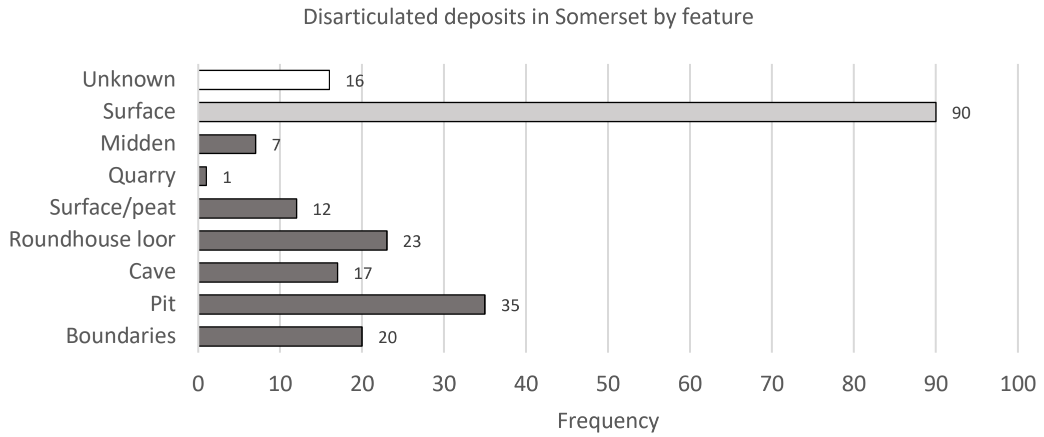


Figure 248. Graph showing the frequency of disarticulated deposits in Somerset by feature. Source: author

Cremations

Table 49. Frequency of cremations in Somerset by feature . Source: author

	Pit	Cairn	Roundhouse floor	Grave	Surface/peat	Unknown	Total
Frequency	1	1	1	1	2	3	10

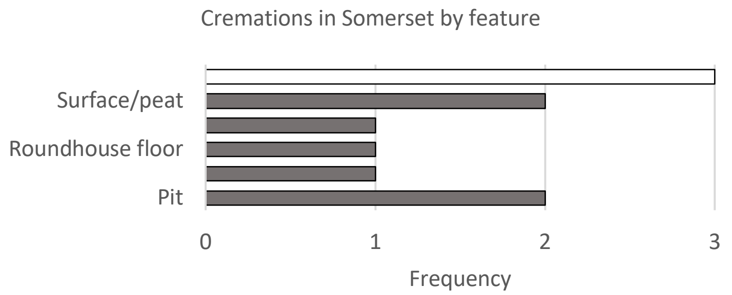


Figure 249. Graph showing the frequency of cremation deposits in Somerset by feature. Source: author

Table 50. Frequency of disarticulated deposits in Somerset by element type. Source: author

	Skull	Long bone	Teeth	Vertebrae	Scapulae	Phalanges	Tarsals/ meta tarsals	Clavicle	Pelvis	Sacrum	Rib	Unknown	Total
Freq.	67	25	18	4	2	2	2	1	1	1	1	97	221

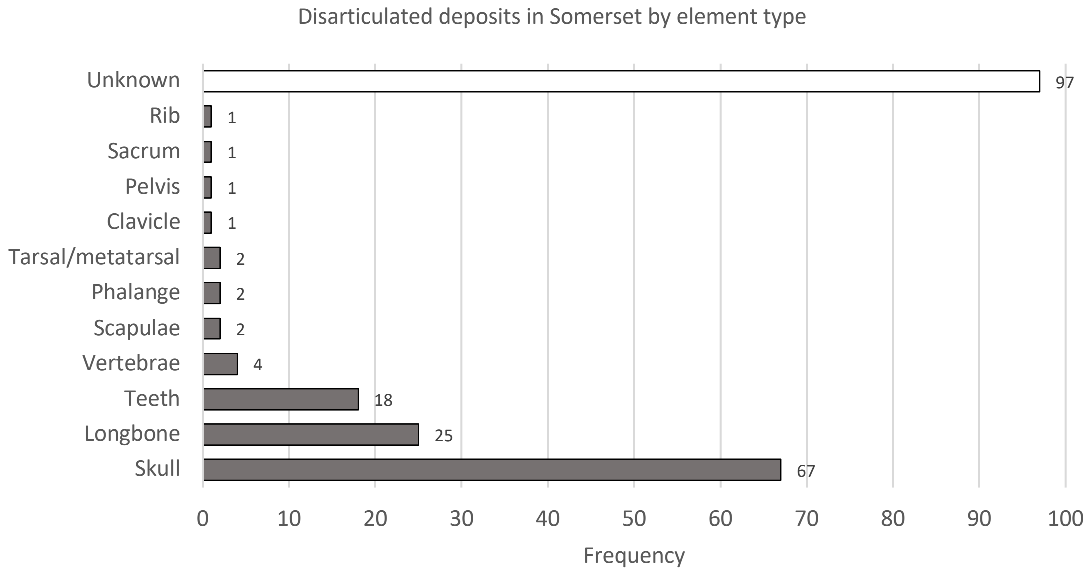


Figure 250. Graph showing the frequency of disarticulated element types in Somerset. Source: author

Age and sex

Table 51. Frequency of burials/deposits in Somerset by age category. Source: author

	Adult	Adolescent	Juvenile	Infant/neonate	Unknown	Total
Frequency	218	9	57	14	46	344

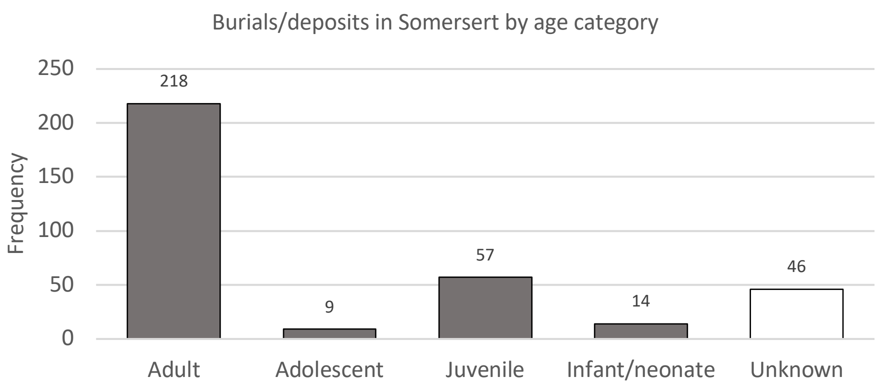


Figure 251. Graph showing the total frequency of burials/deposits in Somerset by age category. Source: author

Table 52. Frequency of male and female burials/deposits in Somerset by feature. Source: author

	Pit	Grave	Roundhouse floor	Surface/peat	Total
Male	15	9	1	3	20
Female	9	4	1	2	16

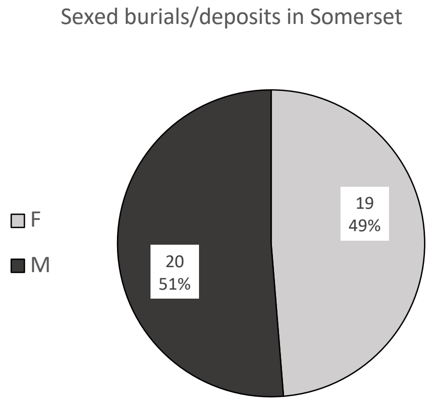


Figure 252. Chart showing the total percentage of male and female burials/deposits in Somerset. Source: author

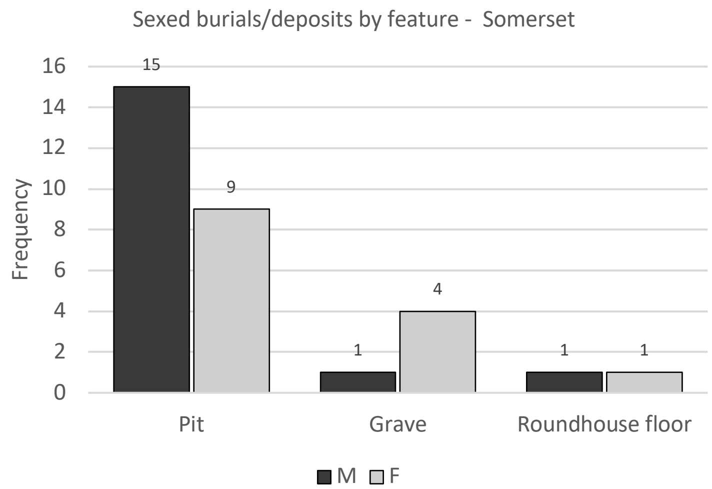


Figure 253. Graph showing the frequency of male and female burials/deposits in Somerset by feature. Source: author

Wiltshire

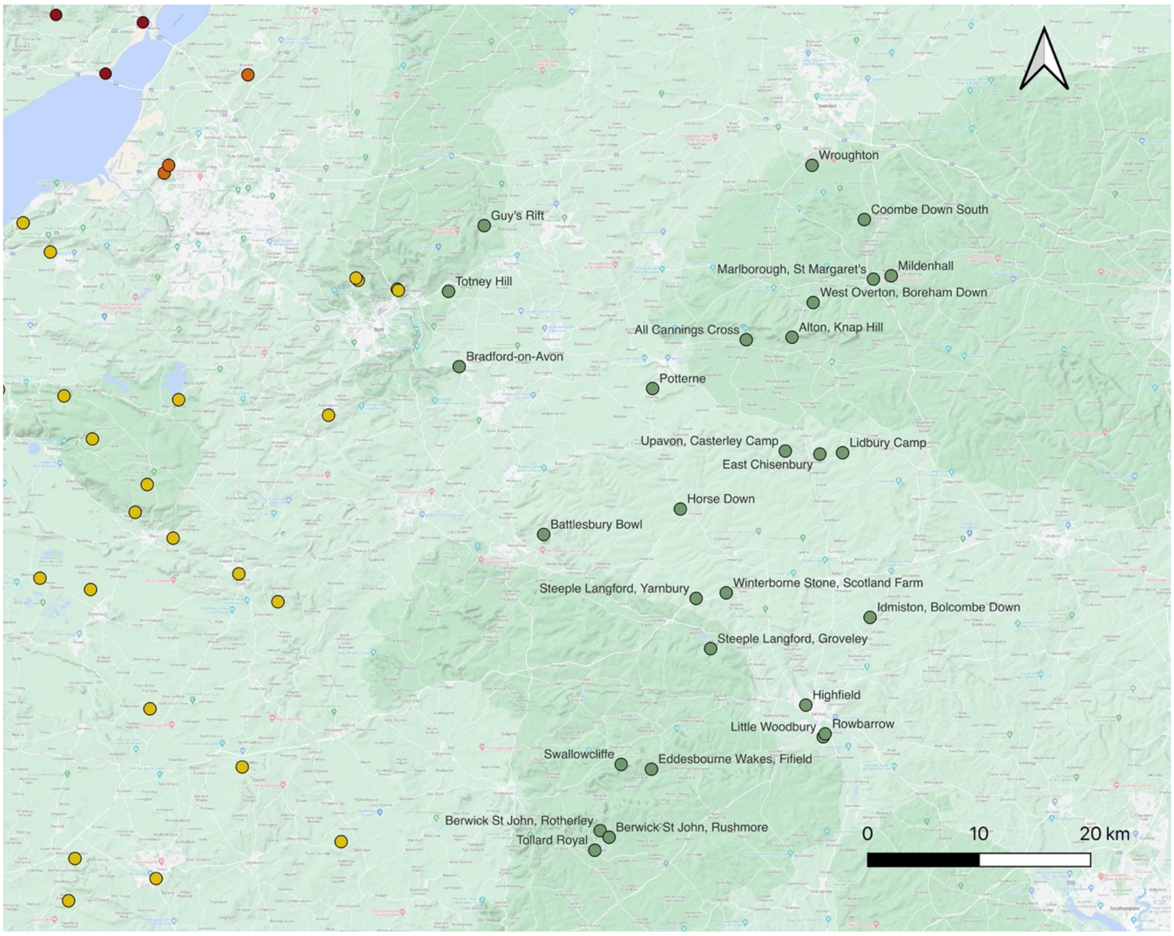


Figure 254. Map of sites with burial evidence in Wiltshire. Source: author

Deposit

Table 53. Frequency burials/deposits in Wiltshire by feature. Source: author

	Articulated	Partially articulated	Disarticulated	Cremation	Total
Frequency	112	9	174	2	297

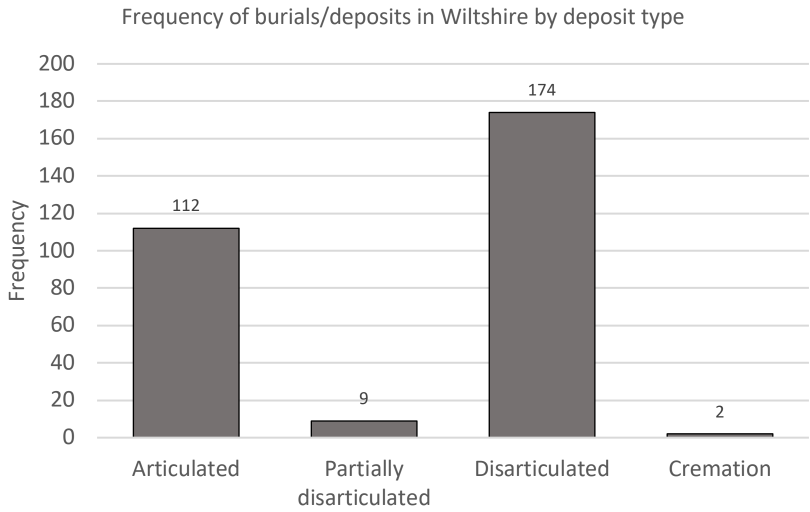


Figure 255. Graph showing the total frequency of deposit types in Wiltshire. Source: author

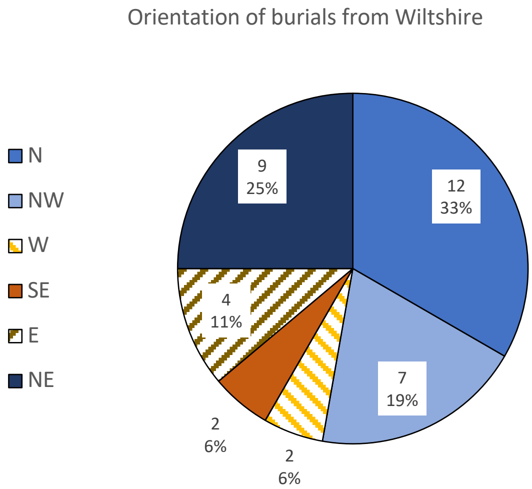


Figure 256. Chart showing the percentage of orientations in burials from Wiltshire. Source: author

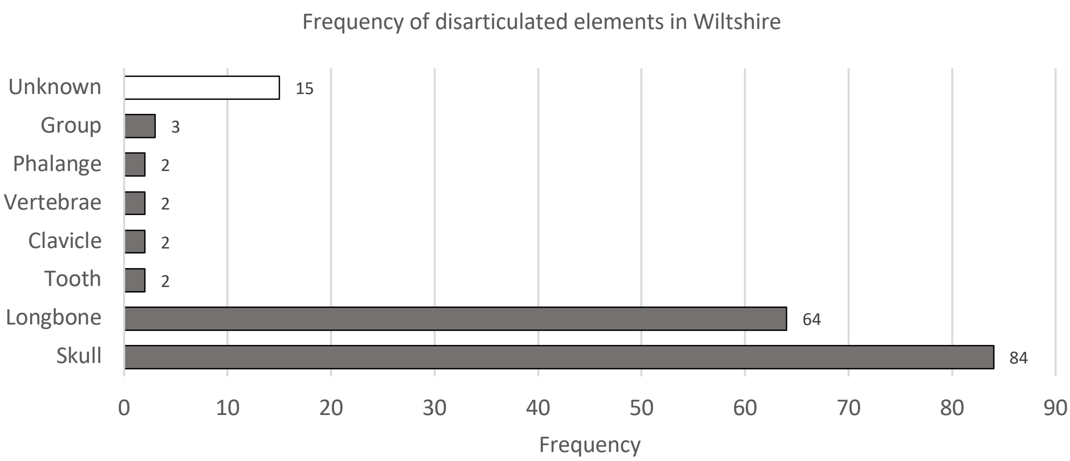


Figure 257. Graph showing the frequency of disarticulated element types in Wiltshire. Source: author

Chronology

Table 54. Chronology of burials/deposits from Wiltshire. Source: author

	EIA	MIA	LIA	RB	IA/Prob IA	Unknown	Total
Frequency	170	14	39	5	59	10	297

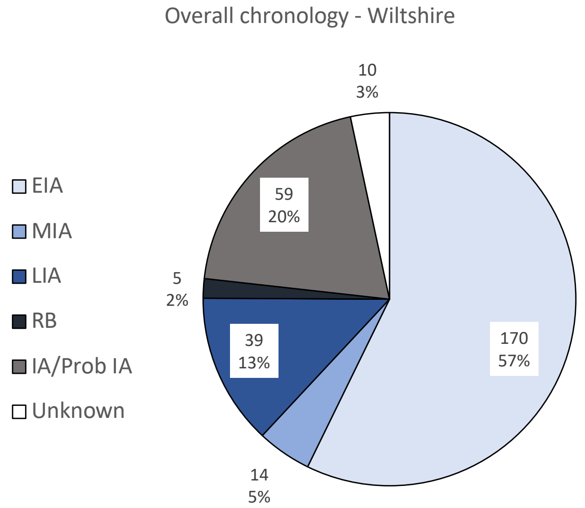


Figure 258. Chart showing the total percentage of chronological phases of Wiltshire burials. Source: author

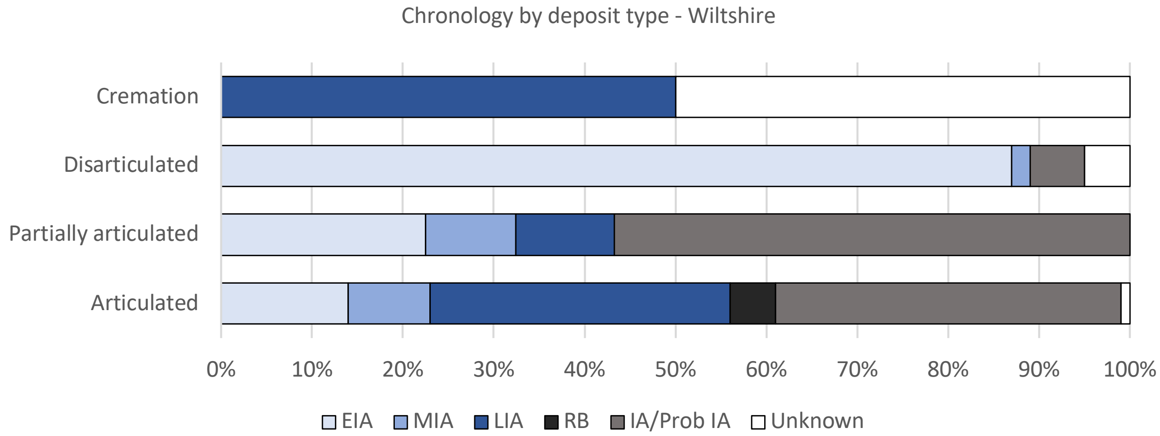


Figure 259. Graph showing the total percentages of chronological phases for each deposit type in Wiltshire. Source: author

Features

Table 55. Frequency of burials/deposits in Wiltshire by feature. Source: author

	Midden	Pit	Boundary	Grave	Cave	Posthole	Layer	Barrow	Cremation bucket	Unknown	Total
Freq.	105	89	49	26	7	5	3	1	1	11	297

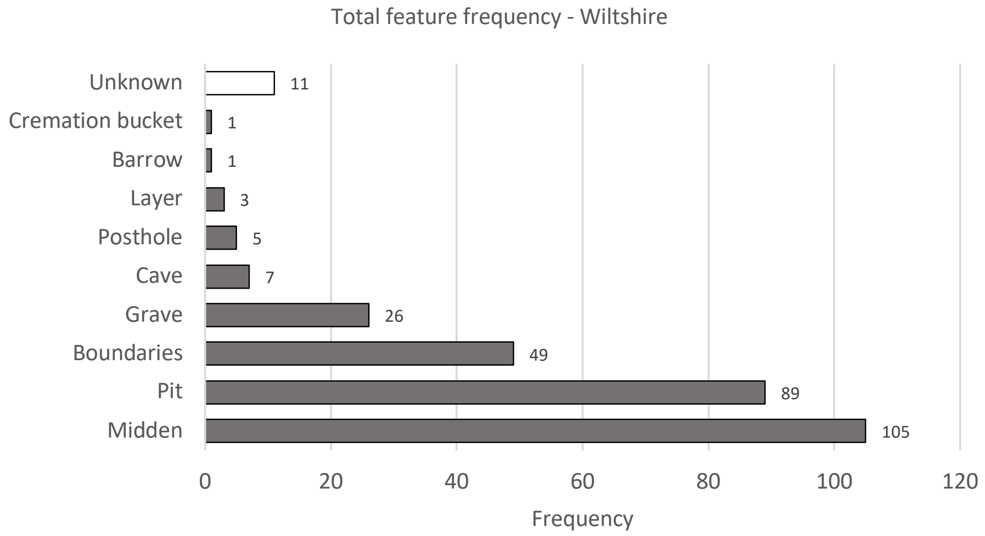


Figure 260. Graph showing the total frequency of burials/deposits in features from Wiltshire. Source: author

Articulated

Table 56. Frequency of articulated burials in Wiltshire by feature. Source: author

	Pit	Boundary	Grave	Barrow	Unknown	Total
Frequency	51	33	21	1	6	112

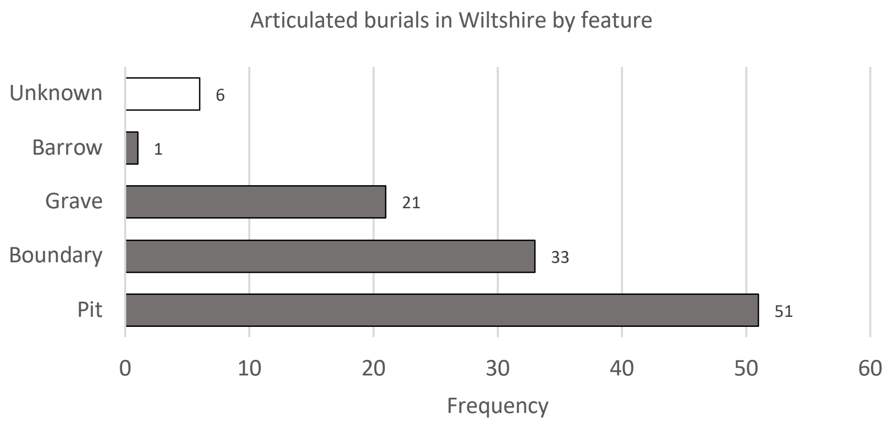


Figure 261. Graph showing the frequency of articulated burials in Wiltshire by feature. Source: author

Partially articulated

Table 57. Frequency of partially articulated deposits in Wiltshire by feature. Source: author

	Pit	Ditch	Grave	Total
Frequency	6	2	1	9

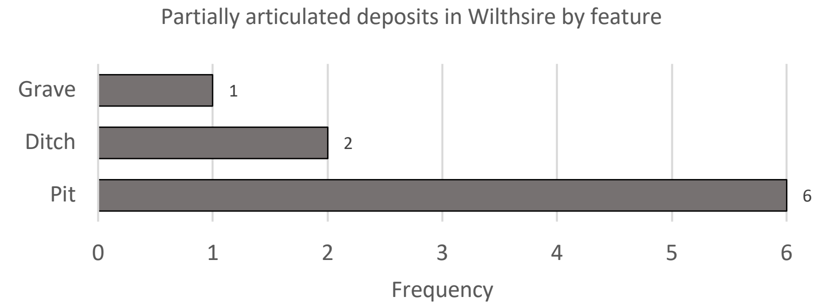


Figure 262. Graph showing the frequency of partially articulated deposits in Wiltshire by feature. Source: author

Disarticulated

Table 58. Frequency of disarticulated deposits in Wiltshire by feature. Source: author

	Midden	Pit	Boundary	Cave	Posthole	Grave	Layer	Unknown	Total
Frequency	105	32	13	7	5	4	3	5	174

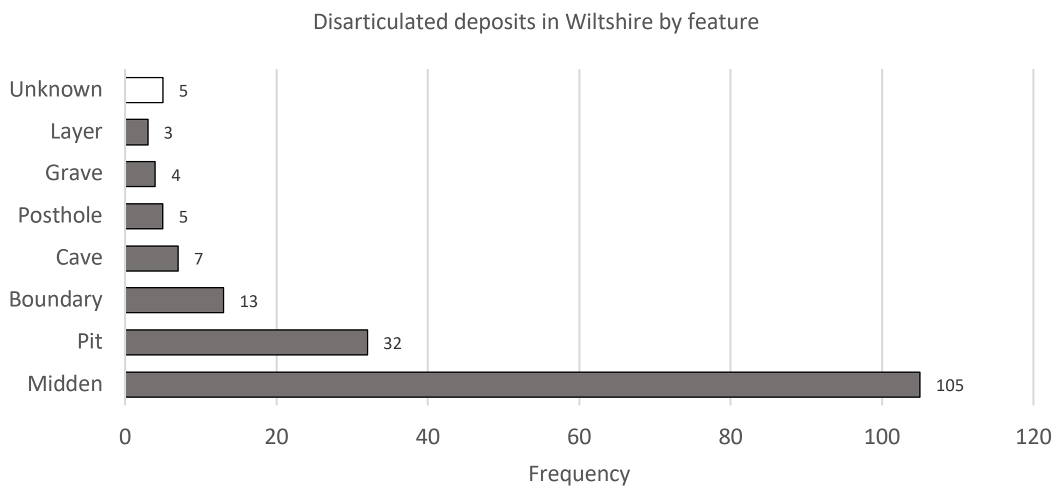


Figure 263. Graph showing the frequency of disarticulated deposits in Wiltshire by feature. Source: author

Cremation

Only two cremations that may date to the Iron Age are currently known in Wiltshire. The first, at Bradford-on-Avon,, is described as “several partial cremations” interred within a rampart (Whimster 1981: 251). The other deposit was found in Marlborough and a date of 150 BC-AD 50 was estimated based on the design of the wooden bucket that contained the cremation (Whimster 1981: 390; Stead 1971: 279; Cunnington 1887: 222-228; Colt-Hoare 1821: 35 and pl.V). Ornately decorated bronze plates encircled the bucket, suggesting the individual was highly regarded by those who buried them. No other details regarding the cremation deposits are known.

Age and sex

Table 59. Frequency of burials/deposits in Wiltshire by age category. Source: author

	Adult	Adolescent	Juvenile	Infant/neonate	Total
Frequency	166	34	15	44	259

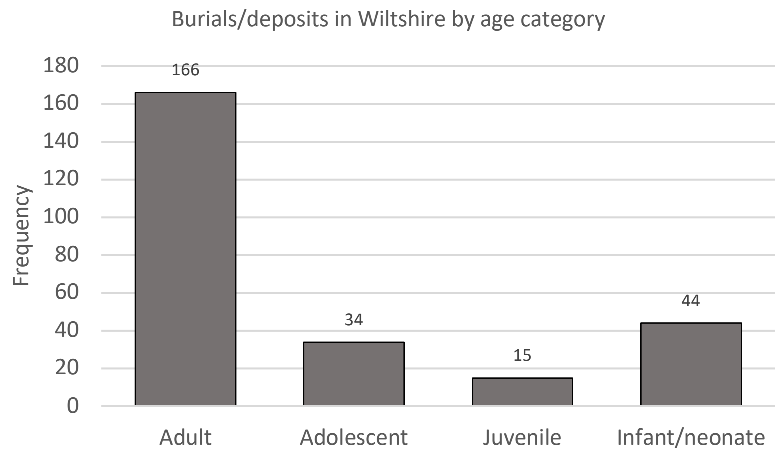


Figure 264. Graph showing the frequency of burials/deposits in Wiltshire by age category. Source: author

Table 60. Frequency of male and female burials/deposits in Wiltshire by feature. Source: author

	Pit	Midden	Grave	Boundaries	Cave	Unknown	Total
Male	21	18	6	5	1	0	51
Female	18	13	11	2	0	1	45

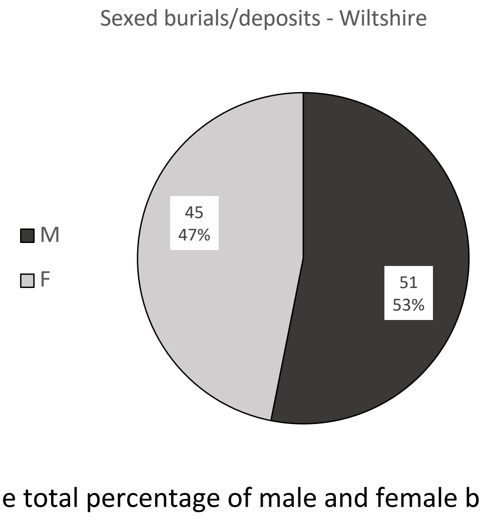


Figure 265. Chart showing the total percentage of male and female burials/deposits in Wiltshire. Source: author

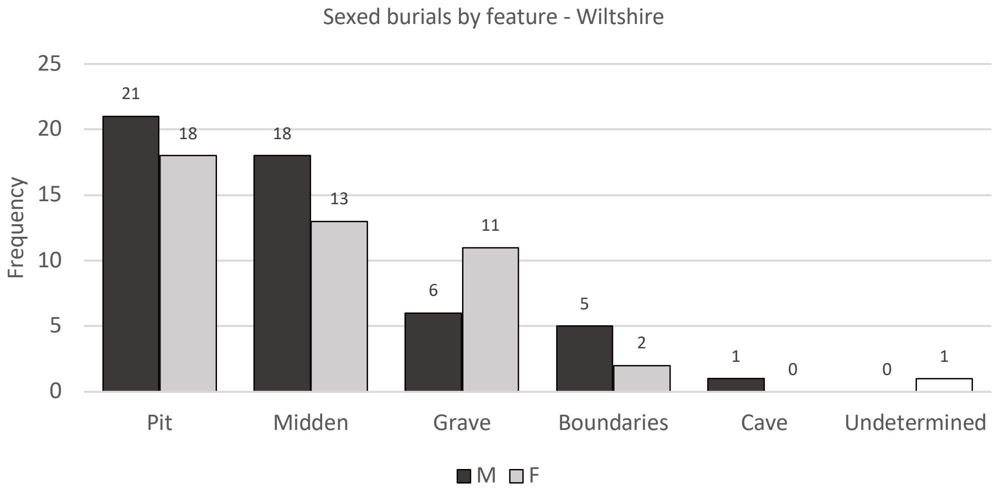


Figure 266. Graph showing the frequency of male and female burials/deposits in Wiltshire by feature. Source: author

Dorset

Figure 267. Map of sites with burial evidence from South Wales. Source: author

Deposit

Table 61. Frequency burials/deposits in Dorset by articulation. Source: author

	Articulated	Partially articulated	Disarticulated	Unknown	Total
Frequency	293	11	90	5	399

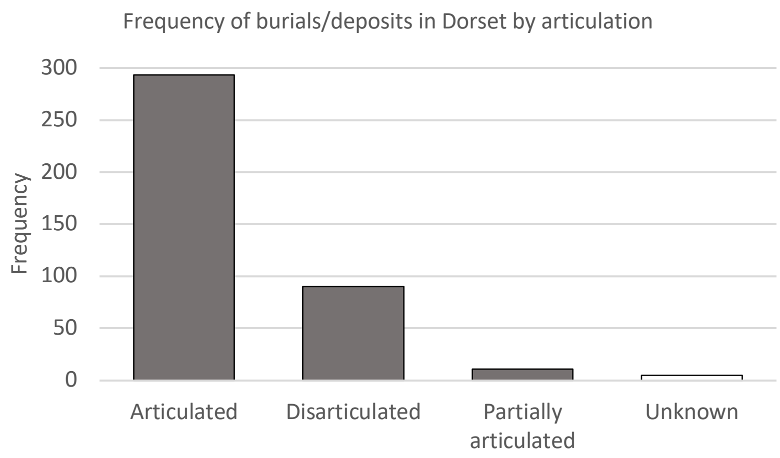


Figure 268. Graph showing the total percentage of deposit types in Dorset. Source: author

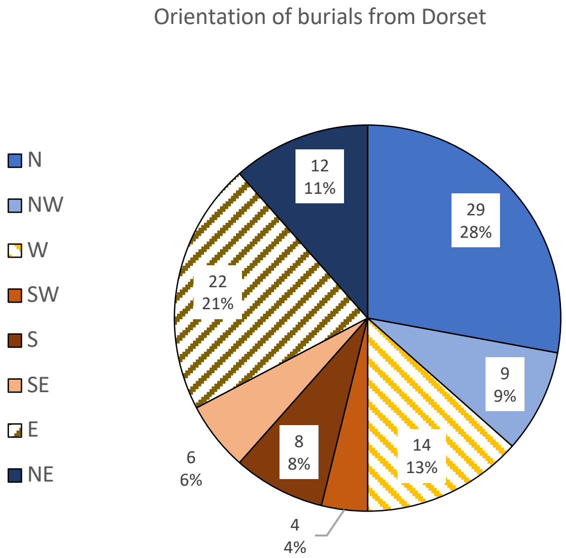


Figure 269. Chart showing the percentage of orientations in burials from Dorset. Source: author

Chronology

Table 62. Chronology of burials/deposits from Dorset. Source: author

	EIA	MIA	LIA	IA/Prob IA	Unknown	Total
Frequency	16	48	282	46	4	399

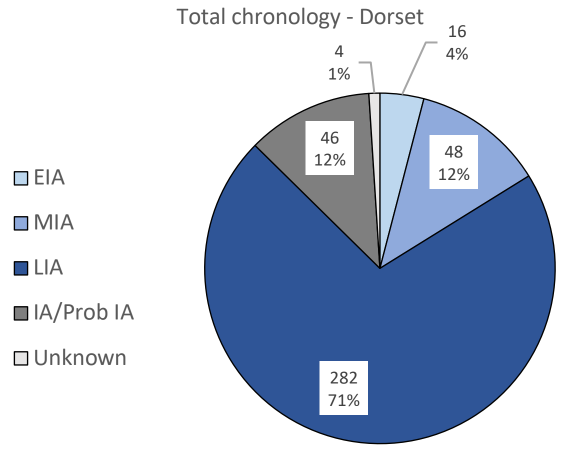


Figure 270. Chart showing the total percentage of chronological phases in burials from Dorset. Source: author

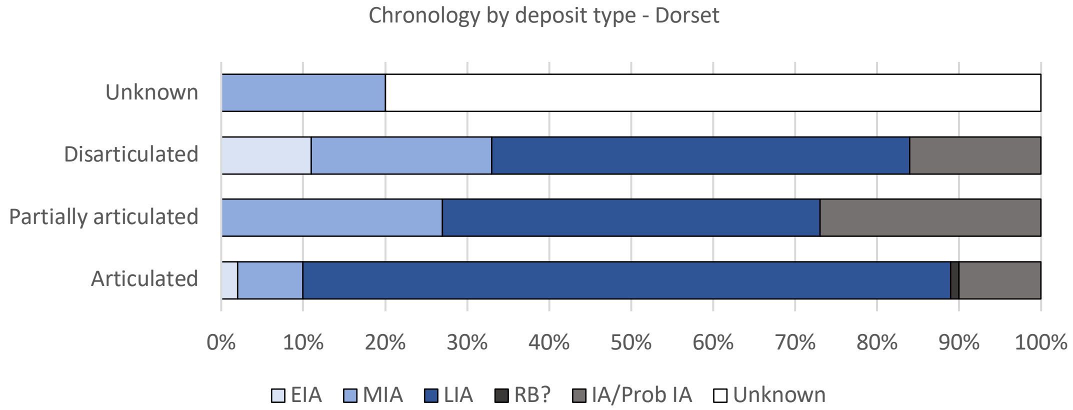


Figure 271. Graph showing the total percentages of chronological phases for each deposit type in Dorset. Source: author

Features

Table 63. Frequency of burials/deposits in Dorset by feature. Source: author

	Grave	Pit	Boundary	Clst	Layer	Gate	Barrow	Unknown	Total
Frequency	197	112	38	9	8	2	2	31	399

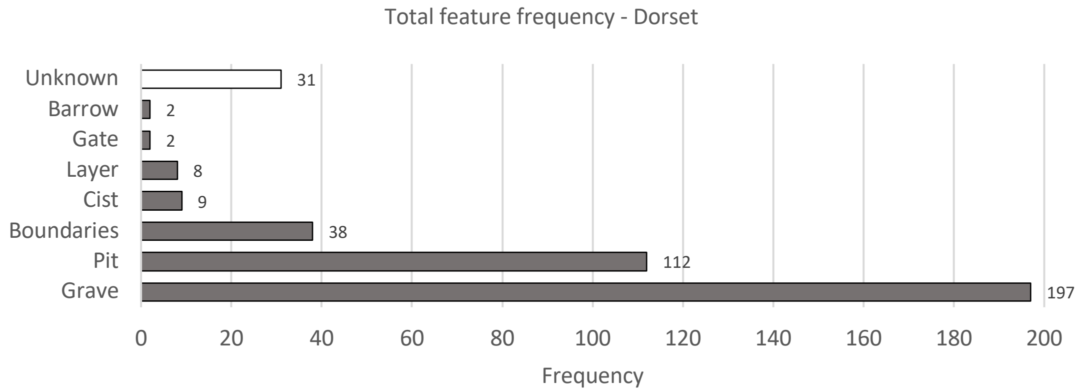


Figure 272. Graph showing the total frequency of burials/deposits in features from Dorset. Source: author

Articulated

Table 64. Frequency of articulated burials in Dorset by feature. Source: author

	Grave	Pit	Boundary	Cist	Gate	Barrow	Unknown	Total
Frequency	176	72	26	8	2	2	7	293

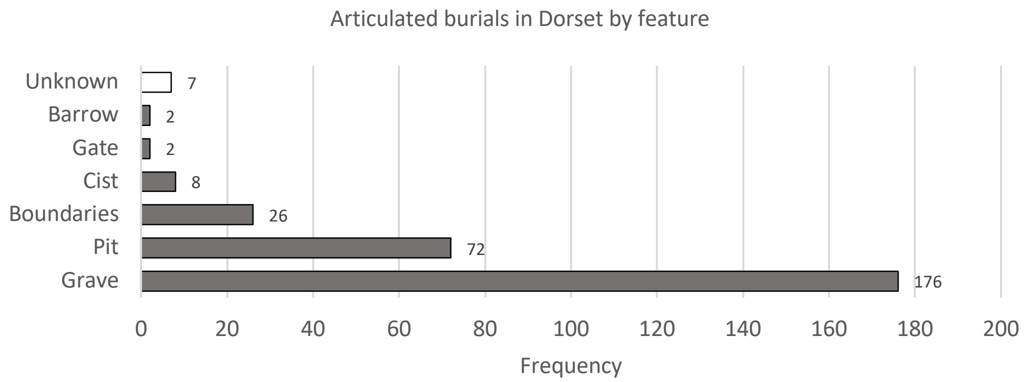


Figure 273. Graph showing the frequency of articulated burials in Dorset by feature. Source: author

Partially articulated

Table 65. Frequency of partially articulated deposits in Dorset by feature. Source: author

	Pit	Ditch	Unknown	Total
Frequency	7	1	3	11

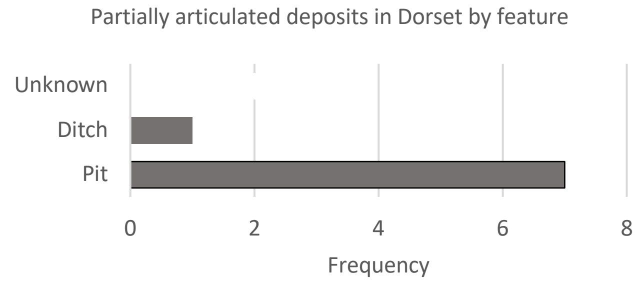


Figure 274. Graph showing the frequency of partially articulated deposits in Dorset by feature. Source: author

Disarticulated

Table 66. Frequency of disarticulated deposits in Dorset by feature. Source: author

	Pit	Grave	Ditch	Layer	Cist	Unknown	Total
Features	31	21	11	8	1	18	90

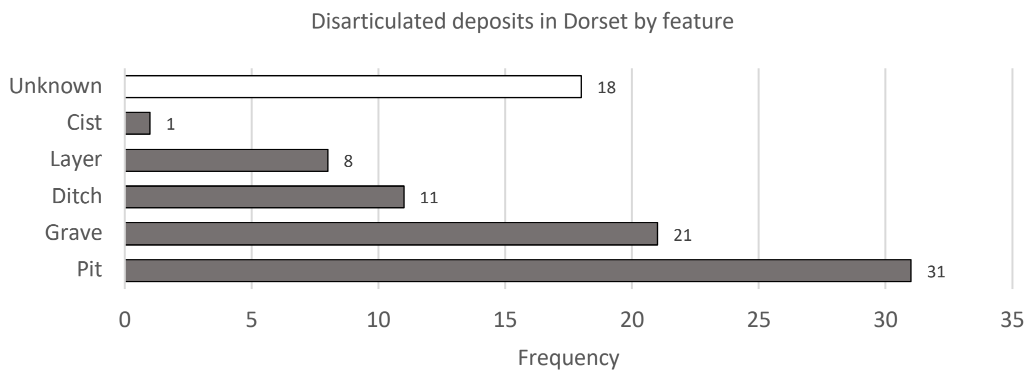


Figure 275. Graph showing the frequency of disarticulated deposits in Dorset by feature. Source: author

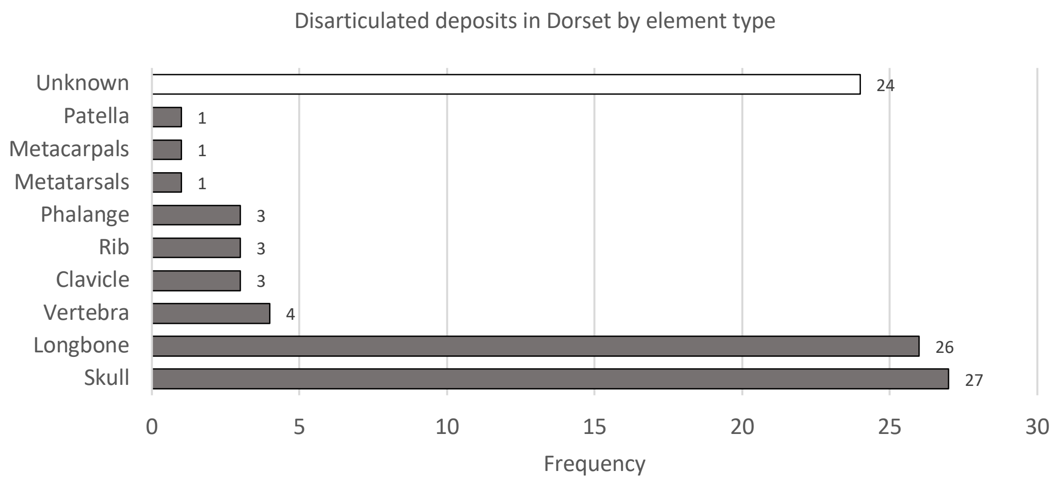


Figure 276. Graph showing the frequency of disarticulated element types in Dorset. Source: author

Age and sex

Table 67. Frequency of burials/deposits in Dorset by age category. Source: author

	Adult	Adolescent	Juvenile	Infant/neonate	Unknown	Total
Frequency	265	11	8	96	19	399

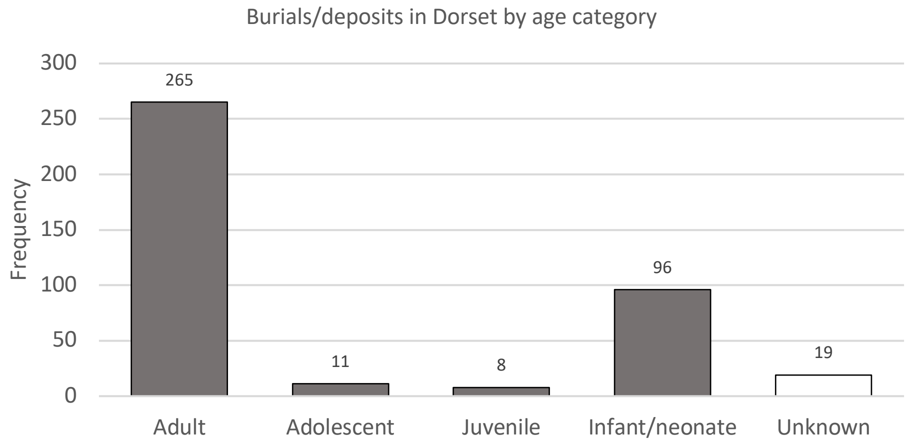


Figure 277. Graph showing the frequency of burials/deposits in Dorset by age category. Source: author

Table 68. Frequency of male and female burials/deposits in Dorset by feature. Source: author

	Grave	Pit	Ditch	Cist	Gate	Unknown	Total
Male	25	13	3	0	0	1	42
Female	23	23	5	1	1	1	54

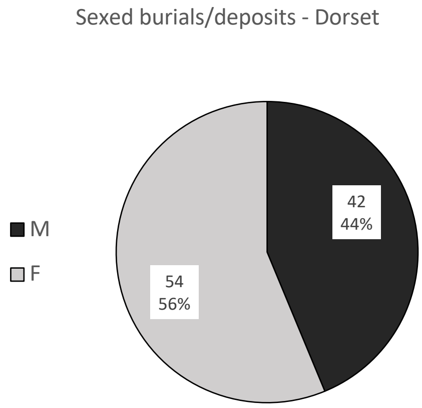


Figure 278. Chart showing the total percentage of male and female burials/deposits in Dorset. Source: author

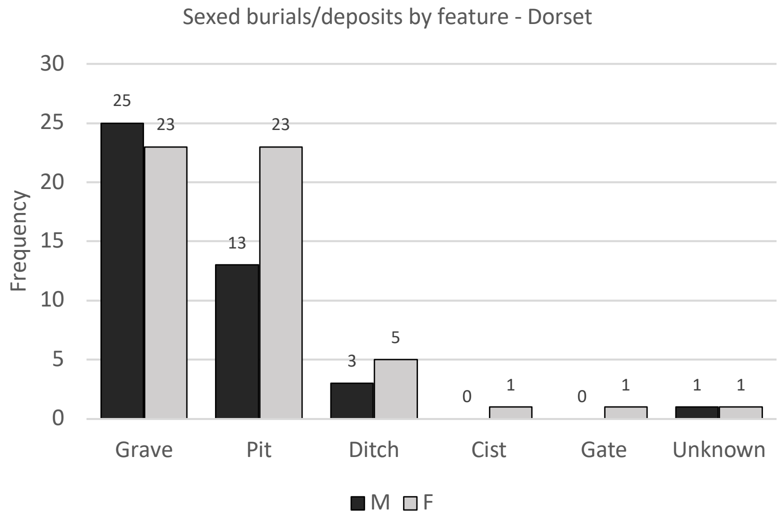


Figure 279. Graph showing the frequency of male and female burials/deposits in Dorset by feature. Source: author

Devon

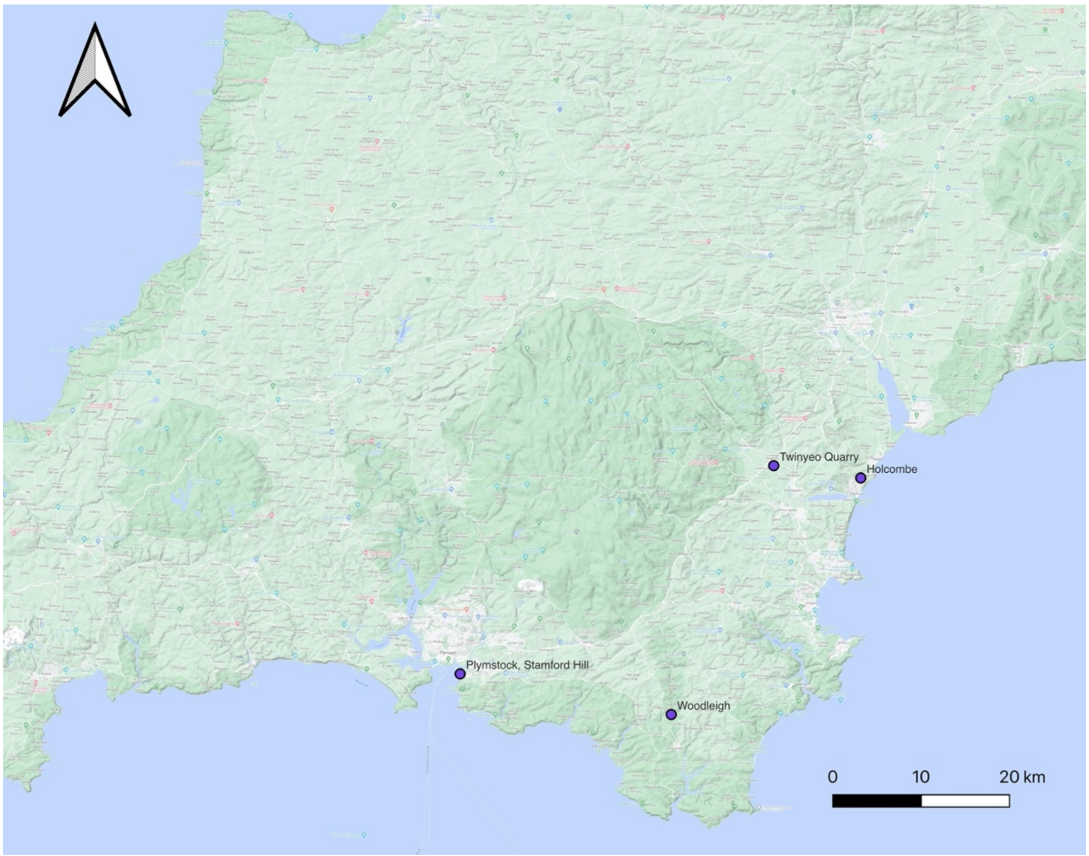


Figure 280. Map showing sites with burial evidence in Devon. Source: author

Only eight burial deposits, or possible burial deposits, from four sites have been dated (or tentatively dated to the Iron Age in Devon. Although few in number, the burials are significant – four of the seven included decorated bronze mirrors (the Holcombe mirror likely accompanied a burial, but this is not certain); four of the burials were in cists (typical of the 'southwest cist tradition); and includes the only known Iron Age cremation deposits from Devon and Cornwall. The cist cemetery at Plymstock, Stamford Hill was poorly recorded and the details of this cemetery are unknown.

The cremation deposit represents an adult male and an infant, both burned in a tree hollow. Radiocarbon dates 398-351 cal. BC (43.9%) and 303-210 BC (51.5%) (SUERC-50909) were produced from a cremated human bone sample placing the deposit within the Middle Iron Age. A copper alloy brooch of 2Ca or 2Cb (235-170 BC) (Adams 2013: 113-114) was found with the deposit and was suggested by excavators to possibly indicate the body or bodies were wrapped upon cremation (Farnell 2015: 268-269). Analysis of the charcoal present in the deposit indicates a mature oak tree was felled, likely specifically for the purpose of cremation, as seen in Bronze Age cremations (Thompson 1999: Straker 1988).

Apart from the cremations, all of the burials from Devon were probably articulated inhumation burials, although no human remains have survived. It is not certain if the Holcombe Mirror accompanied a burial – it was found in a small pit within an Iron Age enclosure with the plain reflecting face facing upwards (Fox 1972: 293). The pit was described as being 'heat reddened' and measured 1.5m by 0.3m and 0.3m deep and backfilled with dark earth and stones (Fox 1972: 293). Although no evidence of a body was mentioned, it is possible that the skeletal remains had been destroyed through natural taphonomic processes (which may account for the lack of Iron Age human remains from Devon in general). If the pit was indeed heated, it may be the site of a cremation (as in Twinyeo) and the mirror placed within the pit after the remains had been cleared.

Deposit

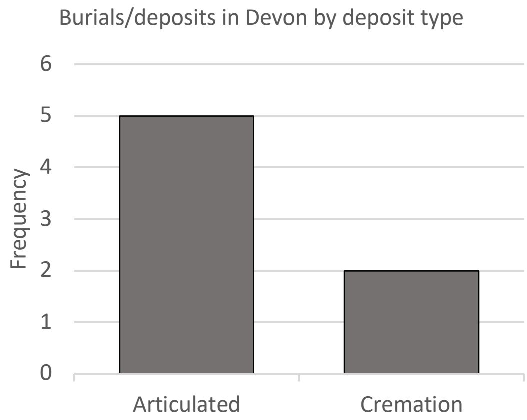


Figure 281. Graph showing the frequency of burials/deposits in Devon by deposit type. Source: author

Chronology

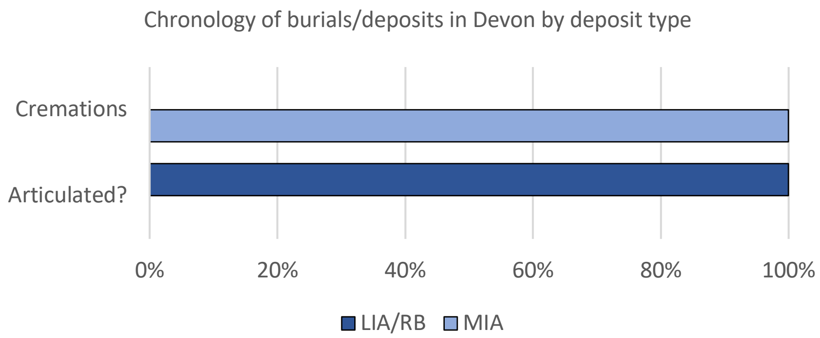


Figure 282. Graph showing the total percentages of chronological phases for each deposit type in Cornwall and Scilly. Source: author

Features

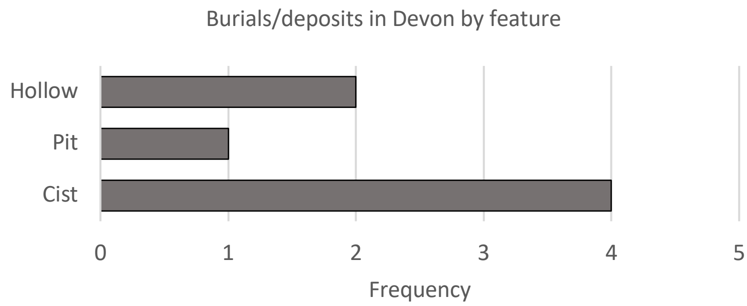


Figure 283. Graph showing the total frequency of burials/deposits in Devon by feature. Source: author

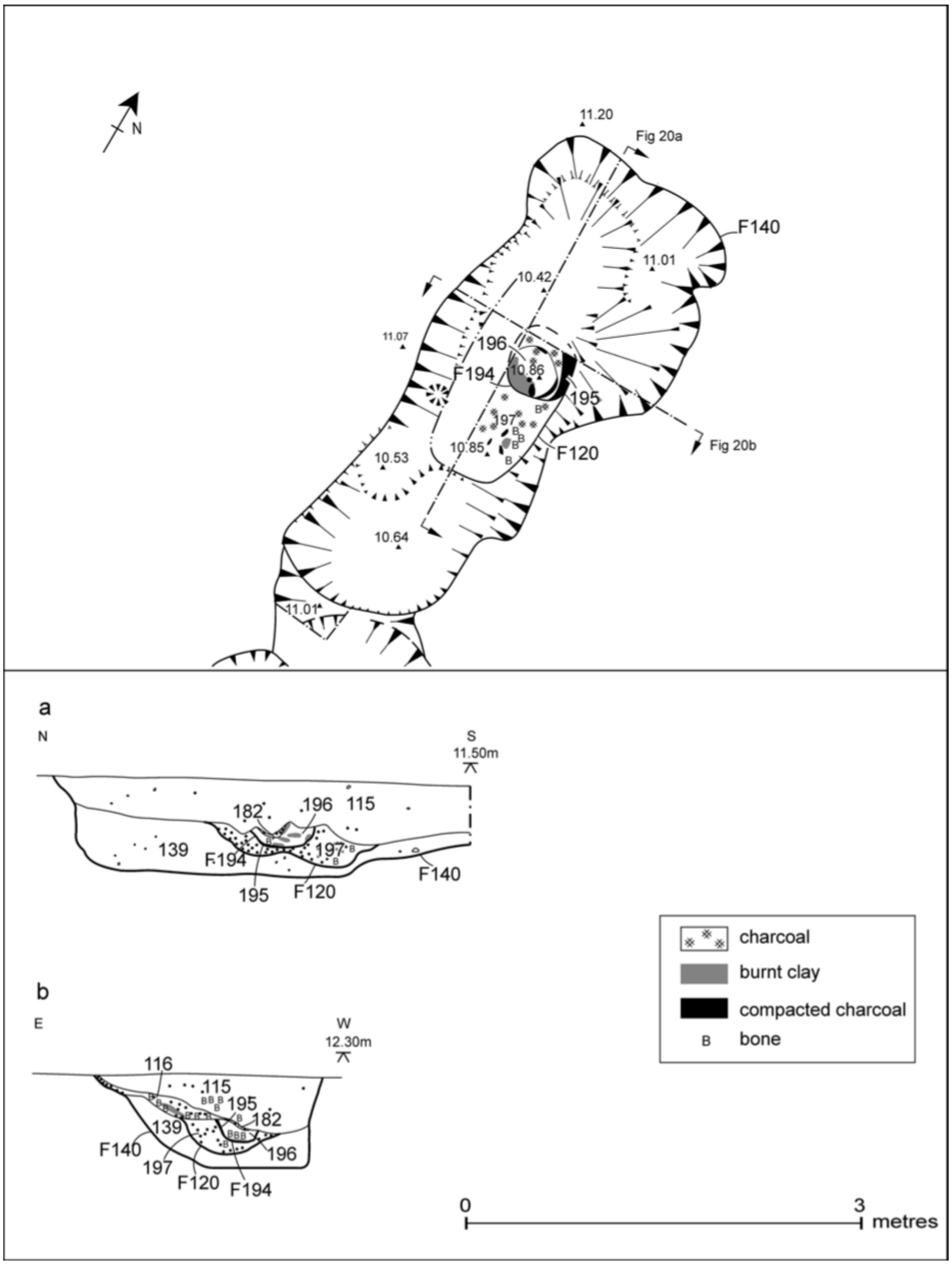


Figure 284. Middle Iron Age cremation pyre and associated deposits from Twinyeo Quarry (Area 8). Source: Farnell 2015: fig.20

Cornwall and Scilly

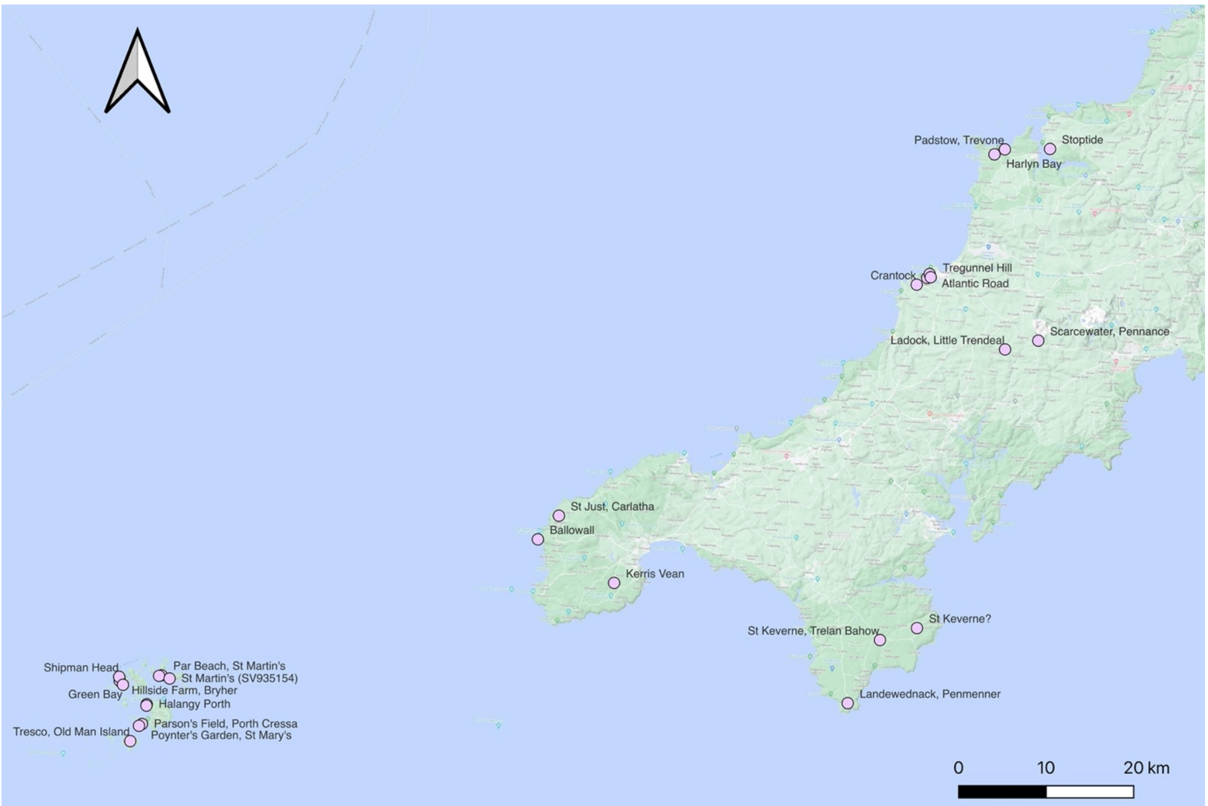


Figure 285. Map showing sites with burial evidence in Cornwall and Scilly. Source: author

Deposit

Table 69. Frequency of deposits in Cornwall and Scilly. Source: author

	Articulated	Partially articulated	Disarticulated	Cremation	Total
Frequency	106	8	26	1	106

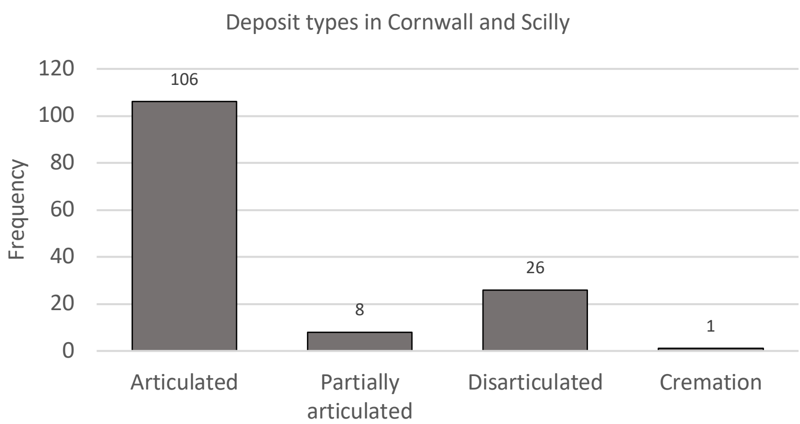


Figure 286. Graph showing the frequency of deposit types in Cornwall and Scilly. Source: author

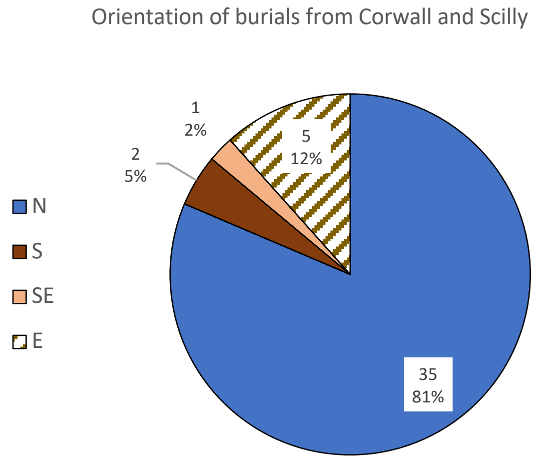


Figure 287. Chart showing the percentage of orientation in burials from Cornwall and Scilly. Source: author

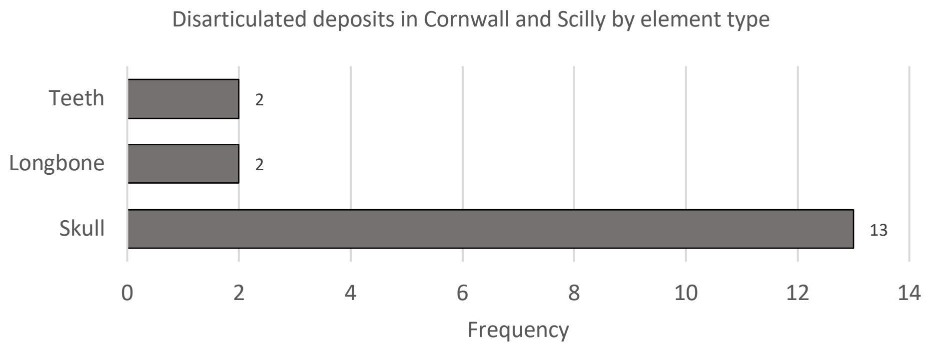


Figure 288. Graph showing the frequency of disarticulated element types in Cornwall and Scilly. Source: author

Chronology

Table 70. Chronology of burials/deposits from Wiltshire. Source: author

	EIA	MIA	LIA-RB	IA/Prob IA	Unknown	Total
Frequency	65	28	6	44	14	157

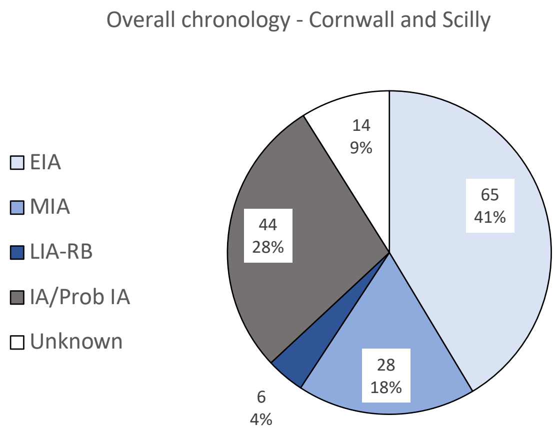


Figure 289. Chart showing the total percentage of chronological phases in burials from Cornwall and Scilly. Source: author

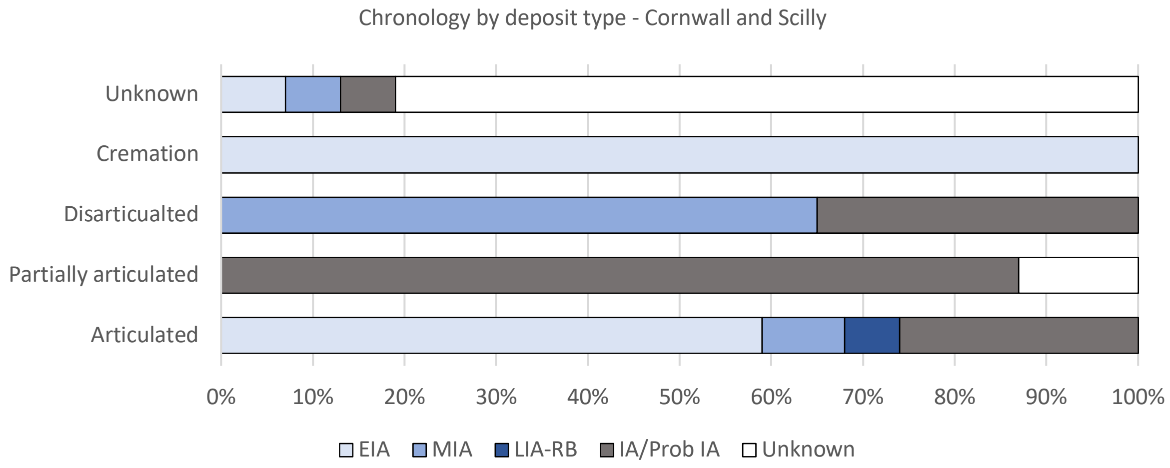


Figure 290. Graph showing the total percentages of chronological phases for each deposit type in Cornwall and Scilly. Source: author

Features

Table 71. Frequency of burials/deposits in Wiltshire by feature. Source: author

	Grave	Cist	Midden	Gate	Rectangular feature	Layer	Posthole	Cremation pit	Unknown	Total
Frequency	45	93	1	1	1	1	1	1	14	158

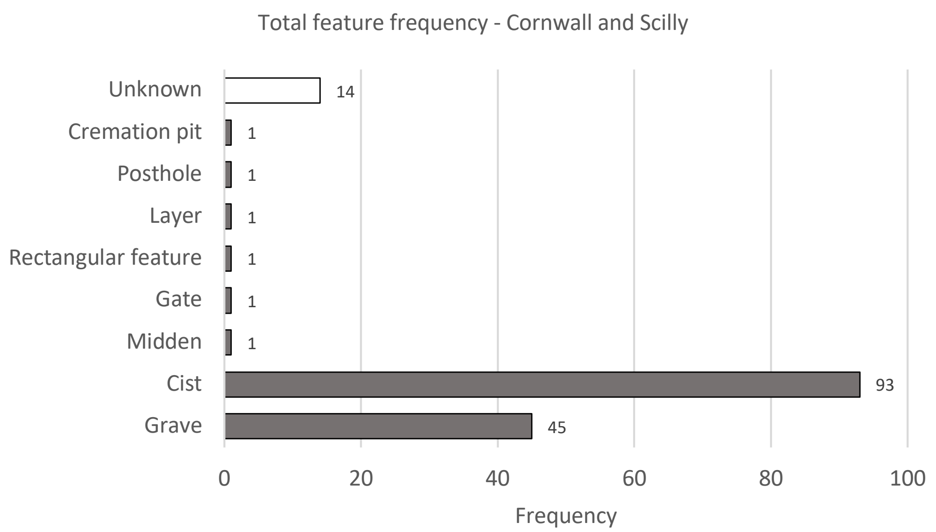


Figure 291. Graph showing the total frequency of burials/deposits in features from Cornwall and Scilly. Source: author

Articulated

Table 72. Frequency of articulated burials in Cornwall and Scilly by feature. Source: author

	Cist	Grave	Unknown	Gate	Total
Frequency	74	26	5	1	106

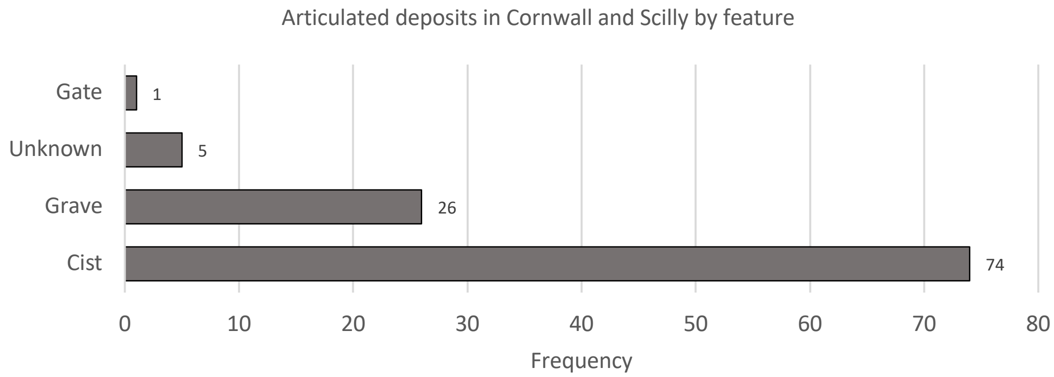


Figure 292. Graph showing the frequency of articulated deposits in Cornwall and Scilly by feature. Source: author

Partially articulated

Table 73. Frequency of partially articulated deposits in Cornwall and Scilly by feature. Source: author

	Cist	Grave	Total
Frequency	5	3	8

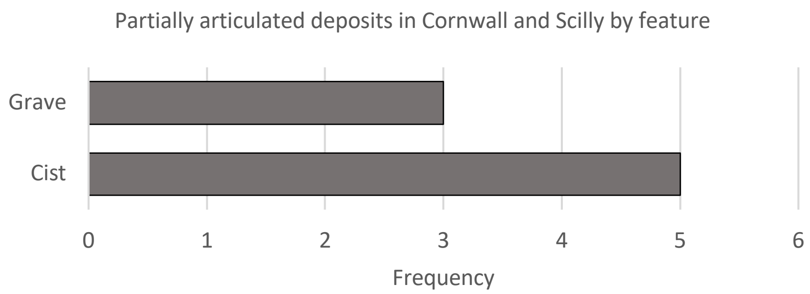


Figure 293. Graph showing the frequency of partially articulated deposits in Cornwall and Scilly by feature. Source: author

Disarticulated

Table 74. Frequency of articulated burials in Cornwall and Scilly by feature. Source: author

	Grave	Cist	Posthole	Layer	Rectangular feature	Total
Frequency	15	8	1	1	1	26

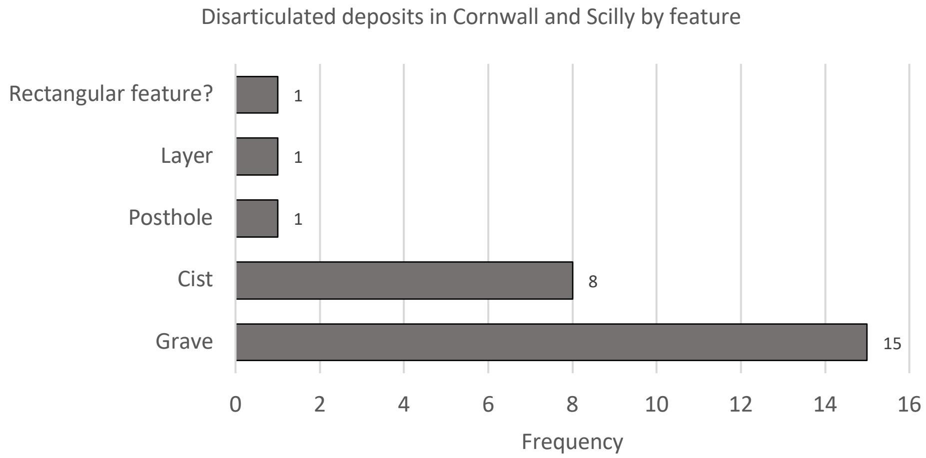


Figure 294. Graph showing the frequency of disarticulated deposits in Cornwall and Scilly by feature. Source: author

Cremation

The only cremation from Cornwall and Scilly was recovered from Tregunnel Hill. The cremation was deposited in a circular dish-shaped pit and radiocarbon dated to the LBA/EIA, 826–772 cal.BC (SUERC-80109). The cremation was noted to be heavier than usual, likely indicating the cremation pyre had not reached a high temperature like the Middle Bronze Age cremations elsewhere in the site (Brindle 2019).

Age and sex

Table 75. Frequency of burials/deposits in Cornwall and Scilly by age category. Source: author

	Adult	Adolescent	Juvenile	Infant/neonate	Total
Frequency	166	34	15	44	259

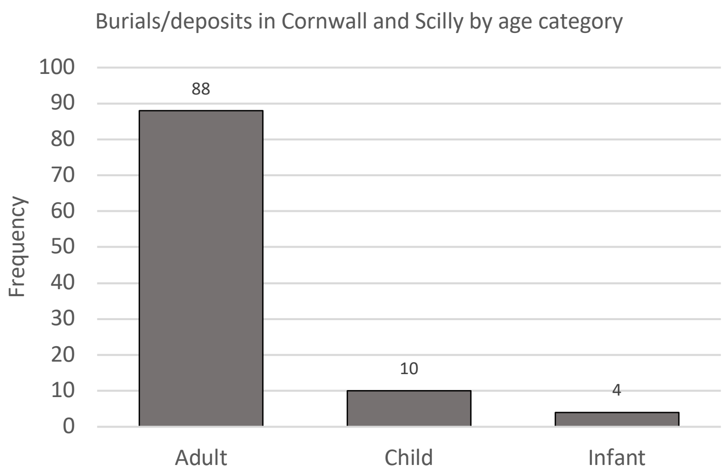


Figure 295. Graph showing the frequency of burials/deposits in Cornwall and Scilly by age category. Source: author

Only 10 of the burials from Cornwall and Scilly were ascribed a sex or probable sex: four from graves at Trethellan Farm; two from cists (or probably cists) from Harlyn Bay; one from an unknown feature at Trelan Bahow, and three from graves at Tregunnel Hill.

Table 76. Frequency of male and female burials/deposits in Cornwall and Scilly by feature. Source: author

	Grave	Cist	Unknown	Total
Male	3	2	0	5
Female	4	0	1	5

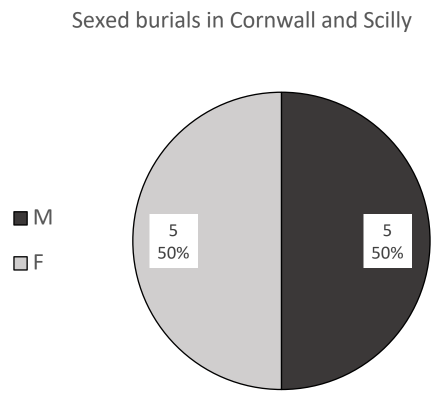


Figure 296. Chart showing the total percentage of male and female burials/deposits in Cornwall and Scilly. Source: author

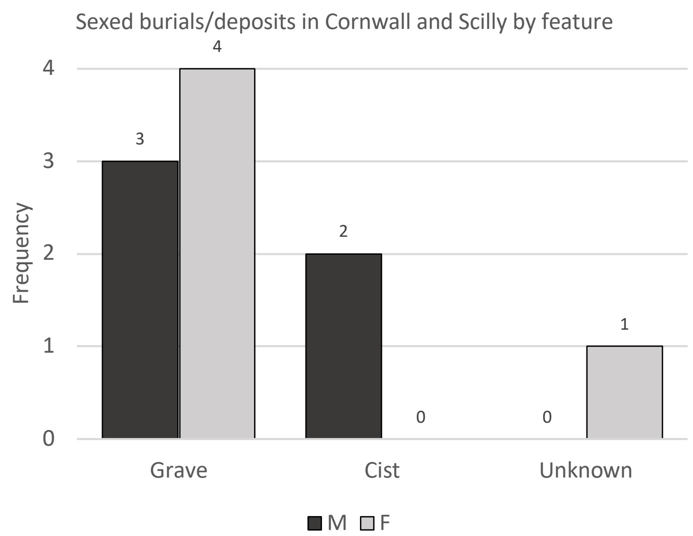


Figure 297. Graph showing the frequency of male and female burials/deposits in Cornwall and Scilly by feature. Source: author