

ANIMAL BONE AND ENVIRONMENTAL EVIDENCE FOR THE FUNCTION OF 'BANJO' ENCLOSURES IN SOUTH CENTRAL BRITAIN

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Summary

This dissertation discusses the enigmatic nature of 'banjo' enclosures, a distinctive archaeological feature found in south-central Britain, focusing on their purpose and function. Despite frequent mention in academic literature, 'banjo' enclosures remain poorly understood, with interpretations often centred on their unique morphological shape. This study reassesses existing animal bone and environmental evidence to contribute to the debate on the role and significance of these sites.

First defined by Perry (1969), 'banjo' enclosures are circular or sub-circular with funnel-like entrances formed by parallel ditches, and are primarily found in Oxfordshire, Berkshire, Gloucestershire, Wiltshire, Dorset, and Hampshire (Lang 2016). Initially, 'banjo' enclosures were interpreted as functional structures for animal husbandry. However, since these early interpretations, further excavations have expanded the range of theories about their purpose, from functional to symbolic. The environmental evidence examined in this dissertation suggests a need for revaluation of these interpretations.

This study examined HER data for sites identified as 'banjo' enclosures in Hampshire, West Berkshire, Gloucestershire, Oxfordshire and Wiltshire. Of 240 enclosures identified in the initial HER review carried out for this dissertation, 16 (7%) were excavated, with a further 6 (3%) having excavations of sites within 300m which could be used as proxies. Of these sites, 11 of the direct excavations and the 6 proxies had environmental data included in their excavation reports (7%).

The key finding of this study is that the evidence does not support a single, overarching purpose for 'banjo' enclosures. Instead, significant variation between sites suggests different functions across sites and regions. While economic factors likely influenced their use, cultural and symbolic interpretations remain difficult to evaluate with the current data.

This study emphasises the limitations of existing evidence and critiques the academic focus on monument form rather than artefactual and environmental evidence, calling for a more nuanced understanding of 'banjo' enclosures.

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1 Introduction

This dissertation aims to explore whether evidence from animal bones and plant remains can contribute to the understanding of the purpose of ‘banjo’ enclosures. ‘Banjo’ enclosures, named for their distinctive shape resembling a ‘banjo’ or frying pan, are a type of enclosure commonly found in south-central Britain, although examples exist further afield (Lang 2016). Most ‘banjo’ enclosures date to the Middle Iron Age (400 – 100BC), though some date to the Late Iron Age (100BC – AD43) or Early Roman period (AD43 – 150).

‘They are relatively small in area, predominantly sub-circular in outline and are notably furnished with a single, markedly elongated, entrance passageway; this funnelled approach giving the ground plan the appearance of a banjo or frying pan.’ (Historic England 2018, p.1).

Since the term was coined in the late 1960s (Perry 1969), ‘banjo’ enclosures have been subject to various interpretations, primarily focusing on their intended purpose. The enclosure’s unique form has often led to interpretations that emphasise either functional or symbolic uses.

This research will focus on ‘banjo’ enclosures located in the counties of Hampshire, West Berkshire, Wiltshire, Gloucestershire, and Oxfordshire, where there is a notable concentration of these monuments (Figure 1.1).

Although ‘banjo’ enclosures are frequently mentioned in discussions of monument types typical of the Middle Iron Age, they are often only briefly examined, or discussed in detail on a site-by-site basis. With the exceptions of Lang (2016) and Winton (2003), few studies have undertaken a comprehensive, region-wide analysis of this monument type. Furthermore, there has been little exploration of the environmental evidence related to ‘banjo’ enclosures as a whole.

This dissertation seeks to address this gap in the literature. Much of the existing scholarship has focused on the morphological characteristics of ‘banjo’ enclosures and their distribution across the landscape. Given that interpretations typically centre around their functional role

in agricultural practices of the Iron Age (e.g. Perry 1974; Fasham 1987), it is crucial to take a closer look at what the environmental evidence can tell us about their function.

While the number of excavated enclosures has been increasing, particularly in the south-central region where they are most concentrated, the overall growth in excavated examples remains limited. Many known sites have been identified through aerial or physical surveys, rather than through excavation. However, recent evaluation work on sites within 300 meters of 'banjo' enclosures, alongside a few new excavations with environmental sampling, makes this an opportune moment to synthesise the current knowledge of this monument type.

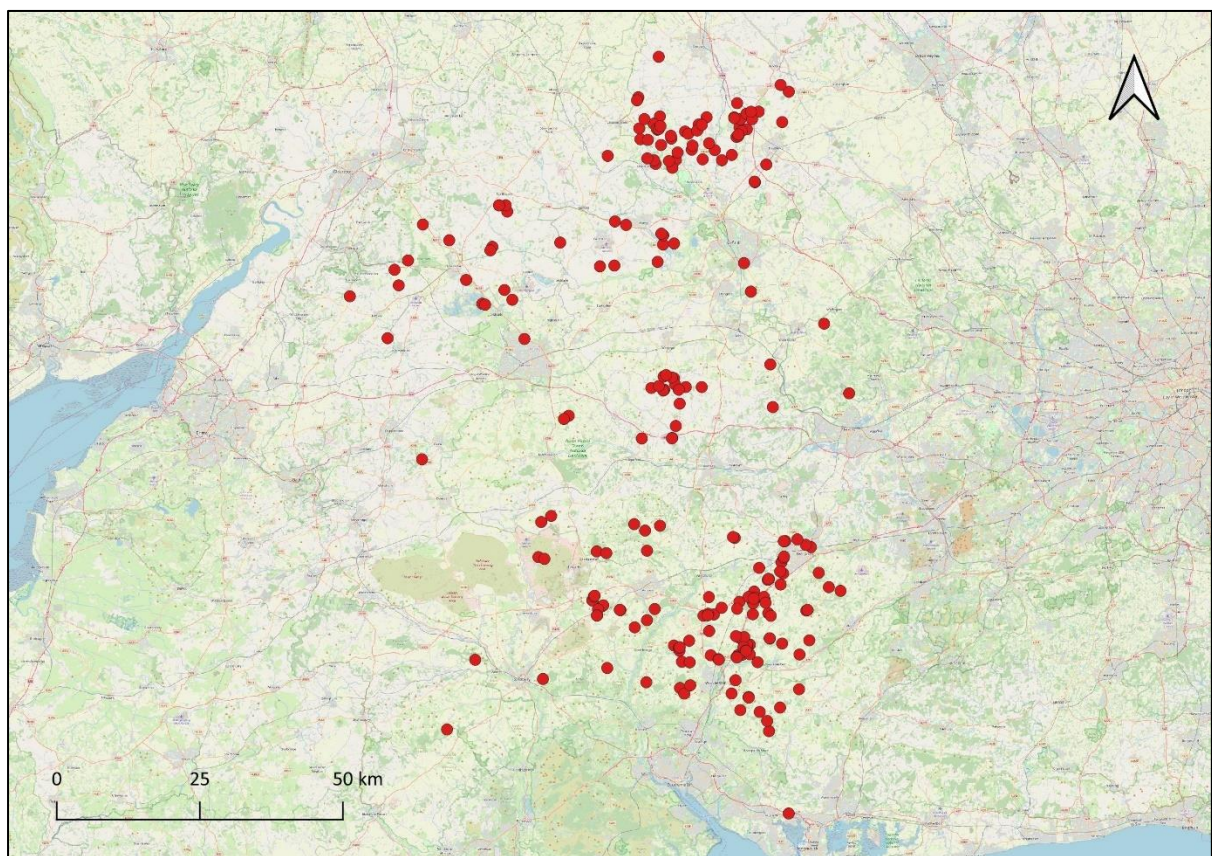


Figure 1.1 Map of 'banjo' enclosure across Hampshire, Wiltshire, Gloucestershire, Oxfordshire and West Berkshire as recorded on the HER

2 Literature Review

'Banjo' enclosures are frequently described as "enigmatic" in both academic literature and in popular media, with an almost reverential tone toward the mystery that surrounds their purpose and significance. Despite this air of uncertainty, there has been substantial discussion and analysis of these monuments in the archaeological community. Definitions and interpretations of 'banjo' enclosures have evolved over time, reflecting shifting perspectives and new discoveries. This section aims to explore the ongoing scholarly discussions and debates surrounding this site type, particularly focusing on developments in the academic literature since the 1960s.

2.1 The 'banjo' enclosure phenomenon

The first examples of 'banjo' enclosures in academic literature can be found in the early 20th century, however they were not collectively identified and defined as a specific archaeological feature until the 1960s, when Perry devised a definition and coined the term 'banjo' enclosure. Perry's original definition for 'banjo' enclosures was:

'Basically they consist of circular, sub-circular and sub-rectangular enclosures ranging in size from under half-an-acre to an upper limit of about one-and-a-half acres [roughly 0.2–0.6 ha]. The enclosure is approached by a funnel-like entrance formed by ditches which run more or less parallel away from the enclosure and then swing outwards in form.' (Perry 1969, p.37).

To Perry this shape was reminiscent of a 'banjo', hence the name for the feature. Perry's definition has not been significantly altered or challenged in the 50 years since he originally published it, with Historic England's definition in the 2018 *Banjo Enclosures: Introductions to Heritage Assets*:

'They are relatively small in area, predominantly sub-circular in outline and are notably furnished with a single, markedly elongated, entrance passageway; this funnelled approach giving the ground plan the appearance of a banjo or frying pan.' (Historic England 2018, p.1).

The most recent analysis of 'banjo' enclosures has been provided by Lang (2016). Lang does challenge Perry's definition stating that "the term itself is a catch-all, often hiding very different site forms, distinctly different landscape sitings, and potentially varied functions" (2016, p.353). However, the key point of debate in the academic literature is often not focused on defining the monument type but instead on understanding the purpose and interpretation of this feature.

Lang (2016) identified two main strands of interpretation for 'banjo' enclosures. The first by Perry and those immediately following him, focused on the functional aspects of the features, highlighting the utility of the design for animal husbandry and crop processing, and evaluating them in the context of the needs of small Iron Age farmsteads. The second strand, found in some of the more recent interpretations seeks to go beyond this functionalist approach and sees 'banjo' enclosures as not merely functional structures but as a phase within the ever-changing landscape of the Iron Age. There is an increased emphasis on how enclosure building and landscape alteration shaped and was shaped by the development of more complex societies, as well as the social and cultural relevance of 'banjo' enclosures.

2.2 'Banjo' enclosures under a functionalist framework

According to Perry (1974), these enclosures were part of a larger "Celtic field" system. He argued that they were too small to be interpreted as self-contained settlements and must have served an agricultural purpose. Specifically, the presence of ditches and a long approach to the main enclosure led him to believe that animal husbandry was their primary function. He noted that the entrance could have been used as a "race," with the example at Bramdean featuring a four-post structure at the entrance, which could have been used to create a crush for handling animals—such as sorting, branding, or gelding.

Experimental archaeology at Buster Ancient Farm tested this hypothesis by constructing a replica 'banjo' enclosure. Their results demonstrated that these enclosures were effective for herding cattle (Perry 1982, p.71).

Theories on the functional purpose of these sites expanded beyond animal corralling as more evidence was uncovered for further 'banjo' enclosures. Fasham (1987), in his discussion of

the excavation at Micheldever Wood suggests that 'banjo' enclosures may have been multi-functional sites. The excavation unearthed human burials and food storage, which Fasham takes as clear evidence of occupation, though they did not find any remains of a fixed dwelling. The excavation also found evidence of arable agriculture in the form of charred seeds and animal husbandry in the remains of animal bones, indicating a mixed economy.

It is important to note that the non-functionalist interpretations don't completely disagree with the above, but rather are trying to look at aspects beyond the functional purpose of the enclosures. They do not all refute the idea that there is a functional purpose to them, but believe focusing purely on this is too simplistic and that there are relevant social and cultural aspects to the emergence of this feature.

Even though interpretations of 'banjo' enclosures that go beyond functionality emerged after the 1970s, the functional interpretation has continued to be widely used. For instance, Cunliffe's fourth edition of *Iron Age Communities in Britain* (2005) still cites functionality as the likely explanation for 'banjo' enclosures. Additionally, this interpretation is still referenced in many unpublished site reports, such as Gilmour (2017) and Haslam (2012).

2.3 'Banjo' enclosures as class indicators

A prominent figure in this line of interpretation is Hingley, who authored several articles on the subject during the 1980s. He attributes the increasing complexity of social structures and the establishment of permanent settlements in the Middle Iron Age to significant social and agricultural changes. In particular, Hingley (1983) observes that in Oxfordshire, along the Thames Valley, 'banjo' enclosures were much more common in the upland areas, away from the Thames itself. These upland regions, which were more wooded, did not tend to feature the complex settlements found on the gravels along the river valley. According to Hingley, these more complex settlements (composed of multiple enclosures) were located in agriculturally fertile areas, where wealthier tribes resided. In contrast, the 'banjo' enclosures were typically associated with smaller, more isolated settlements in less densely populated regions. The relative poverty and isolation of these groups led him to speculate that their enclosures were used to protect animals from threats.

In this way, the use of 'banjo' enclosures was not driven solely by their design or function but was shaped by the social and environmental context of the area. Hingley also identifies a possible cultural dimension to enclosure forms; wealthier settlements tended to have rectangular enclosures, while poorer or more isolated areas had circular or oval enclosures. This suggests that the form of enclosures in the Iron Age held cultural significance that went beyond a purely functionalist interpretation.

While Hingley (1984, p.74) does not dismiss a livestock enclosure interpretation he states that this is insufficient to describe all 'banjo' enclosures stating that "the banjo enclosure has at least two distinct functions." He proposes that these enclosures were used both as enclosed settlements which separated arable land from pasture at the entrance and for livestock corralling with the settlement existing around the enclosure (Figure 2.1).

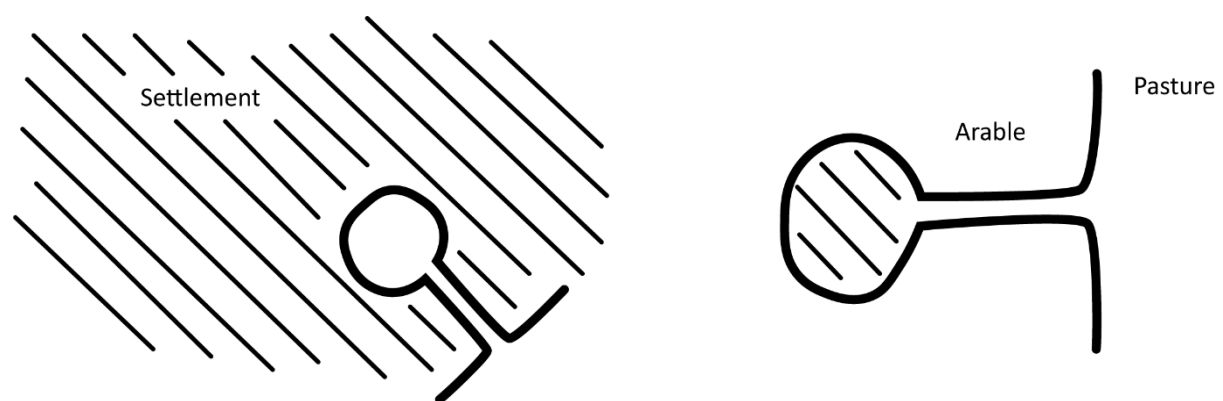


Figure 2.1 'Banjo' enclosures as a settlement component (left) and a settlement enclosure (right). Hingley 1984, p.74.

Cunliffe (1995) also suggested that 'banjo' enclosures may be indicators of wealth, though he believes they are more likely markers of higher-status inhabitants. He specifically looked at the continuity of these sites beyond the Iron Age into the Roman period. Cunliffe finds that many 'banjo' enclosures become the site of or are very near to subsequent Roman villas. These villas and other trappings of Romanisation are usually associated with high-status inhabitants, who are integrating with Roman culture after the invasion. It is common in this period for these high-status Romanised sites to continue pre-roman high-status occupation, potentially indicating that 'banjo' enclosures were prosperous and wealthy, rather than the more impoverished sites Hingley envisages.

It is important to note that Cunliffe and Hingley are taking their evidence from different regions. Hingley's paper is specifically limited to the Thames Valley in Oxfordshire, while Cunliffe is more focused on Wiltshire and Gloucestershire. The differences in their interpretation may be driven by regional differences in these sites' function and social expression, highlighting potential issues of applying the term 'banjo' enclosure over different areas.

2.4 'Banjo' enclosures as places of ritual

Cunliffe and Poole (2000) posit a mixed functional and symbolic interpretation. Discussing the evidence at Nettlebank, they suggest that the long and funnel-like entrance to the enclosure is very likely related to animal husbandry, specifically cattle and other livestock corralling. The site showed little evidence of permanent habitation, leading them to conclude that this was not a normally occupied enclosure, however, there was significant evidence of feasting. Cunliffe and Poole (2000) suggest that this was a site with symbolic significance used for seasonal gatherings and festivities, coinciding with livestock management events important for the function of animal husbandry.

"it is best to assume that they may have originated as stock-handling enclosures, quite possibly endowed with ritual significance, and that some might have continued to develop as settlements grew up around them"
(Cunliffe 2009, p.188).

3 Aims and Objectives

As discussed in the literature review it is clear that there are multiple differing interpretations put forward to explain the purpose of this feature. As Lang (2016) hypothesises using the term 'banjo' enclosure as a catch-all may be obscuring significant differences between different sites within this category. It is not a given that all 'banjo' enclosures represent the same phenomenon and were built with the same purpose and it is very possible that within this monument group there are several sub-groups each with their own functions and significance. The main aim of this dissertation is to try and substantiate whether the label of 'banjo' enclosure is being applied to common and related group of sites, or whether the underlying picture is more complex.

This question will be analysed through the lens of the environmental evidence recovered from these sites. Historically interpretations of these sites have focused on the shape of the site in plan, in large part because the majority of identified 'banjo' enclosures have not been excavated, but have only been identified through aerial photography. Environmental evidence has largely been analysed at the site level as excavations have been taking place. While the dataset of environmental evidence is still limited in terms of the number of sites, there is an opportunity to evaluate the main interpretations and hypothesised site activities in light of the environmental evidence at a more regional level. This dissertation will attempt to collate the environmental evidence across a number of sites to validate or question the overarching interpretations of the feature.

The aims and objectives of the dissertation are:

1. Assess the degree to which 'banjo' enclosures represent a common group of sites with a shared function or meaning.
2. Ascertain whether the animal bone evidence provides us with any indication as to the activities which were carried out within the enclosure.
3. Ascertain whether the plant remains evidence provides us with any indication as to the activities which were carried out within the enclosure.

4 Methodology

The method presented in this section refers only to the author's methods in collecting and analysing information on 'banjo' enclosures. The methodology used in the excavation or analysis of each relevant site can be found in the site reports which are referenced in the results section of this dissertation.

4.1 Defining data parameters

The first phase of work was to collate a dataset which can be used to identify commonalities and differences between sites interpreted as 'banjo' enclosures. To keep the dissertation focused and manage the amount of data to be reviewed it only covers the parts of Britain with the greatest incidence and density of this feature, namely the counties of West Berkshire, Hampshire, Wiltshire, Gloucestershire, and Oxfordshire. These counties have been selected as while 'banjo' enclosures have now been discovered over a wide area of Britain, their incidence is still centred on this region of south-central Britain (Lang 2016).

The dataset for this dissertation has been created by reviewing the county HER data to prepare a list of monument records described as 'banjo' enclosures. The term 'banjo' enclosure is used to describe quite a broad range of different sites and features. As Lang states,

“our broader understanding of 'banjo' enclosures remains problematic. The term itself is a catch-all, often hiding very, distinct site forms, distinctly different landscape sittings, and potentially varied functions.” (Lang 2016, p.353)

While this means that the dataset might include a variety of disparate sites, no judgements or exclusions were applied, in order to generate the most comprehensive dataset possible. By using such a broad definition it also becomes possible to evaluate whether the term 'banjo' enclosure as currently used is useful in identifying a distinct group of sites.

4.2 Data collection

When reviewing the HER data for Wiltshire and Hampshire, where the presence of this site type is well established in the academic literature this was done by selecting any sites described as being or resembling 'banjo' enclosures in their site data. In counties where 'banjo' enclosures were not initially considered to be widespread (West Berkshire, Gloucestershire, and Oxfordshire) sites may not have been identified as such, therefore the records of Iron Age enclosures were reviewed to identify any sites which may have been overlooked.

This was done by reviewing satellite imagery of the sites to investigate if they had any visible morphological attributes (such as the elongated entrance) which would class them as a potential 'banjo' enclosure. The satellite data used was publicly available data on Google Earth, which included multiple different years of images, in some cases going back to 1989. The conditions in 2005 and 2017 were highly suitable for the identification of archaeological features, which enabled easier identification of potentially relevant sites. If the Iron Age enclosures were not visible on satellite imagery their description as described in the HER data was used to determine if they could possibly be a 'banjo' enclosure. 240 possible 'banjo' enclosures were identified, of which two were not classified as 'banjo' enclosures on HER data.

The 240 possible 'banjo' enclosures were reviewed to ascertain which sites had been excavated and which sites were only identified through surveys. To ensure the dataset was broad enough for an informative discussion, in cases where no excavation of the 'banjo' enclosure itself had taken place, excavated sites within 300m of the enclosure, dating to either the Middle or Late Iron Age were used as proxies for these sites. Of the total, 22 sites were excavated, but only 11 provided environmental data for assessment. Additionally, six sites had nearby excavations with environmental data, which were used as proxies. Where proxy data was used, the relevance and reliability of this data is discussed in more detail in the discussion.

Given the differences in the level of engagement with 'banjo' enclosures in the academic literature across different counties a further classification exercise was carried out, judging

the confidence in the sites' status as a 'banjo' enclosure based off how closely its morphology meets the definition set out below (using a 4 point scale from “potentially a 'banjo' enclosure” to “very likely to be a 'banjo' enclosure”).

Confidence rating	Description
4	The enclosure has: • A single ditch • One elongated entrance • Antenna ditches that flaring out from the entrance. • The enclosed area is approximately 0.2-0.6 hectare. • The enclosed area is sub-circular or sub-square.
3	The enclosure has all of the elements bar one of the above.
2	The enclosure is has all bar two of the elements.
1	The enclosure has 2 or less of the elements.

Table 4.1 Description of the confidence rating matrix

4.3 Quantification metrics

To maximise comparability across sites, specific types of environmental data were selected for further analysis and discussion. The most available environmental evidence collected during the excavation of 'banjo' enclosures has been animal bone. Therefore this was selected as the primary point of comparison between the different sites covered in the discussion.

It is important to note here that varying methods for quantifying animal bone have been used across the sites, necessitating a flexible approach to have both standard metrics which can be compared across all sites, but also using non-standard data to further enhance the discussion. While animal bone has been selected as the primary comparative data, other environmental evidence will be used where relevant.

Plant remains were assessed to be common enough to provide further quantitative evidence, which will be used to support the animal bone comparisons. Other environmental evidence such as mollusc data was not assessed to be common enough across sites for meaningful comparisons, so this will not form part of the discussion.

4.4 Animal bone quantification

Given the importance of animal bone data to the analysis in this dissertation, some additional information on the method used to compare this data across sites is set out below. While there are a number of different quantification methods used for animal bone, the author has selected number of individual specimens (NISP) as the primary technique to form the standard data to compare across sites.

Total NISP was selected, as this metric was recorded across all sites where animal bone was recovered. While NISP risks an over representation of larger animals due to their increased volume often leading to high fragmentation counts, its inclusion should enable broad comparisons and conclusions to be drawn across sites. It is also a viable quantification method for low sample sizes, which is important as the sample sizes of each site in the dataset were often quite small, with 11 of the sites assessed having animal bone assemblages of less than 1,000 fragments and eight of these having less than 500 fragments.

In terms of animal bone quantification methods MNI is often preferred over NISP as it takes into account the greater fragment counts of larger animals and instead quantifies the minimum number of individual animals present at the site. However, MNI may underestimate the number of animals present in an assemblage and this limitation becomes more pronounced when sample sizes are small as they are in this dataset (Marshall and Pilgram, 1993). Additionally on review of the excavated sites only three site reports included this method of analysis. This means MNI could not be used for broader comparisons across the dataset. For these reasons MNI was not used as a primary quantification method for this dissertation.

Where other methods of animal bone analysis have been used, these are discussed as far as they are relevant to the analysis of individual sites, but are not used to compare across the dataset.

4.5 Control Sample

To evaluate whether any findings on 'banjo' enclosures represent a significant deviation from other Iron Age enclosure types, a small control sample was selected and compared against. The sites selected were Little Somborne, Cleveland Farm and Hatch Warren. This sample consists of sites dated to the Middle to Late Iron Age, and they are spread across the region assessed in this dissertation. The selection criteria were that the site had to be excavated, have sufficient environmental evidence for comparison and be located in the same geographical area as the 'banjo' enclosures analysed in this study. Only general enclosures were considered, with special enclosures such as hillforts excluded from this control sample.

5 Results

5.1 Introduction

The chapter will include a brief summary of the key findings of each site and then some initial aggregations to the data in terms of animal bones and archaeobotanical remains. This will form the basis of later discussions.

Of 240 enclosures identified in the initial HER review carried out for this dissertation, 16 (7%) were excavated, with a further six (3%) having excavations of sites within 300m which were used as proxies. Of these sites, 11 of the direct excavations and the six proxies had environmental data included in their excavation reports (7%). Figure 5.1 shows the location of these sites. Table 5.1 provides an overview of the sites that will be discussed and the data available for each site. Figure 5.2 shows the shape in plan of the excavated 'banjo' sites.

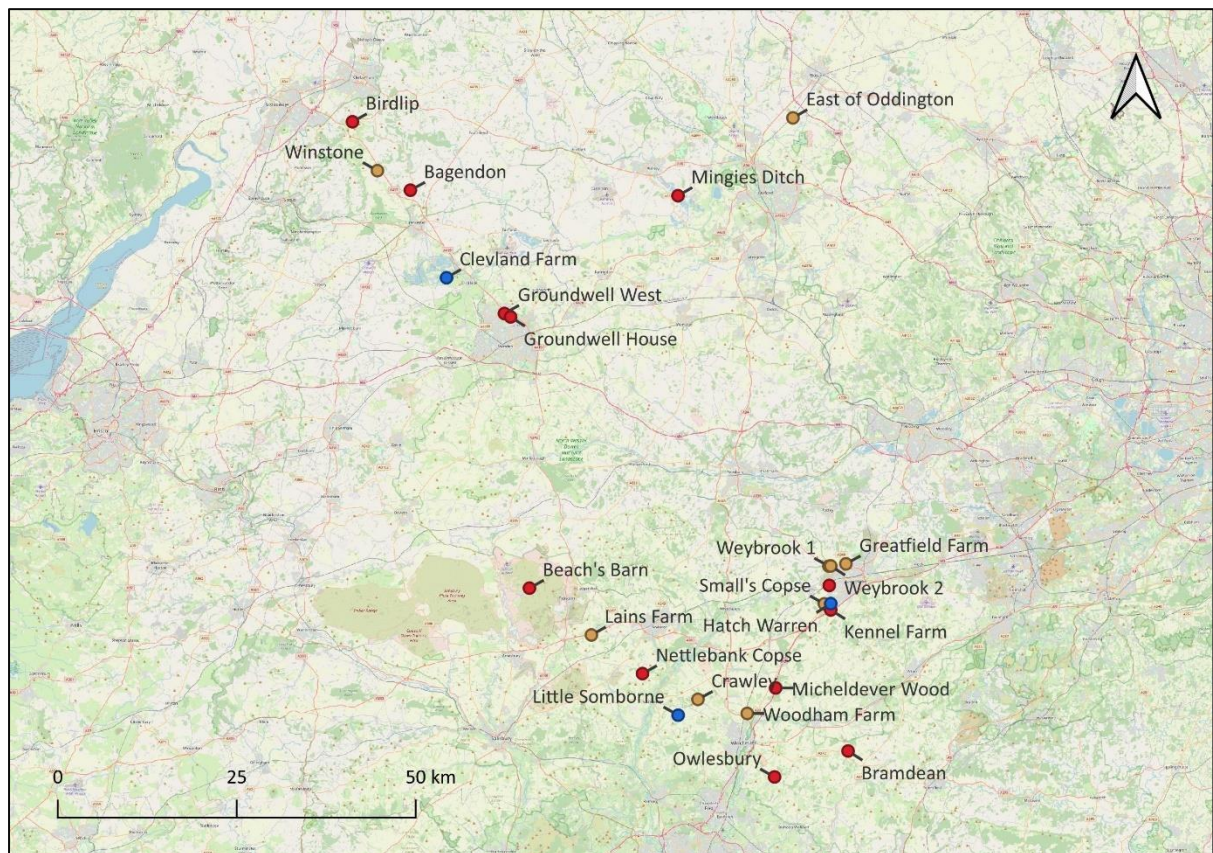


Figure 5.1 Location of 'banjo' enclosures discussed in this dissertation

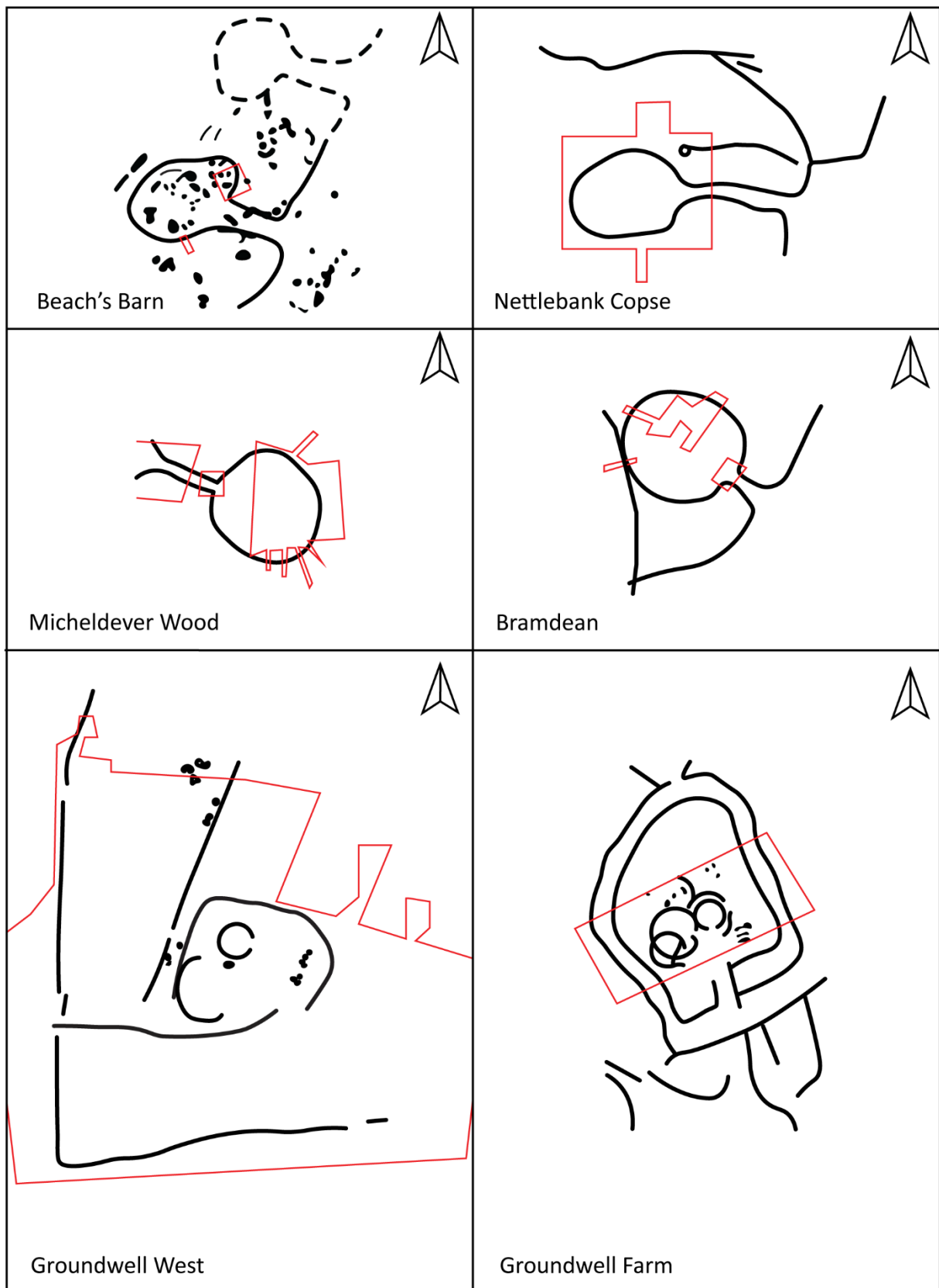
Banjo Enclosure	Period	Confidence rating	Abbreviation	Animal bone	Plant remains	Mollusc	Animal bone proxy	Plant remains proxy	Mollusc proxy
Beach's Barn 'Banjo' Enclosure	MIA	4		✓					
Birdlip 'Banjo' Enclosure	MIA	3		✓	✓				
Bramdean 'Banjo' Enclosure	IA	4		✓					
Crawley 'Banjo' Enclosure	NA	4*	CAW					✓	
Cutham Enclosure	MIA	3		✓					
East of Oddington Grange 'Banjo' Enclosure	N/A	1					✓	✓	
Greatfield Farm 'Banjo' Enclosure	N/A	2							
Groundwell House 'Banjo' Enclosure	MIA	2		✓					
Groundwell West 'Banjo' Enclosure	EIA-MIA	1	GWW		✓	✓			
Kennel Farm 'Banjo' Enclosure	ERB	3	KEN	✓	✓				
Lains Farm 'Banjo' Enclosure	N/A	1	LAN				✓	✓	
Micheldever Wood 'Banjo' Enclosure	MIA	4		✓					
Mingies Ditch enclosed settlement	MIA	1	MDE	✓	✓				
Nettlebank Copse 'Banjo' Enclosure	MIA - LIA	4	NBK	✓	✓				
Old Kempshott Lane 'Banjo' Enclosure	LIA	2	OKL	✓					

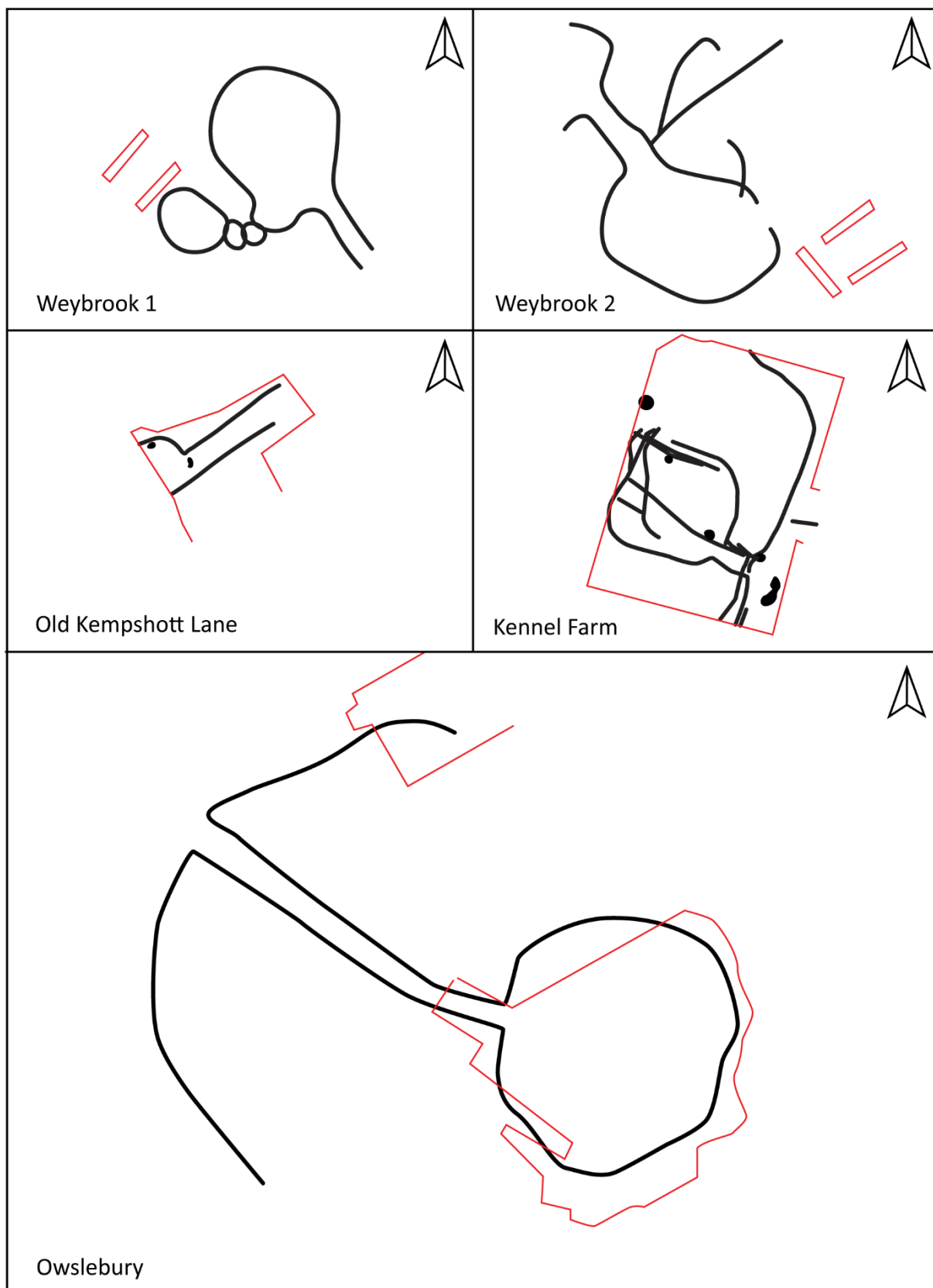
Banjo Enclosure	Period	Confidence rating	Abbreviation	Animal bone	Plant remains	Mollusc	Animal bone proxy	Plant remains proxy	Mollusc proxy
Owslebury 'Banjo' Enclosure	MIA	4		✓					
Scrubditch Enclosure	MIA	2		✓					
Small's Copse 'Banjo' Enclosure	N/A	N/A	SCO				✓	✓	
Weybrook 'Banjo' Enclosure 1	N/A	4							
Weybrook 'Banjo' Enclosure 2	N/A	4							
Winstone	N/A	N/A	WIN				✓		
Woodhams Farm 'Banjo' Enclosure	N/A	4					✓	✓	

Table 5.1 Overview of available data

IA = Iron Age, EIA = Early Iron Age, MIA = Middle Iron Age, LIA = Late Iron Age, ERB = Early Romano-British

** based on interpretation of aerial photograph in (Royall 2013, p.33)*





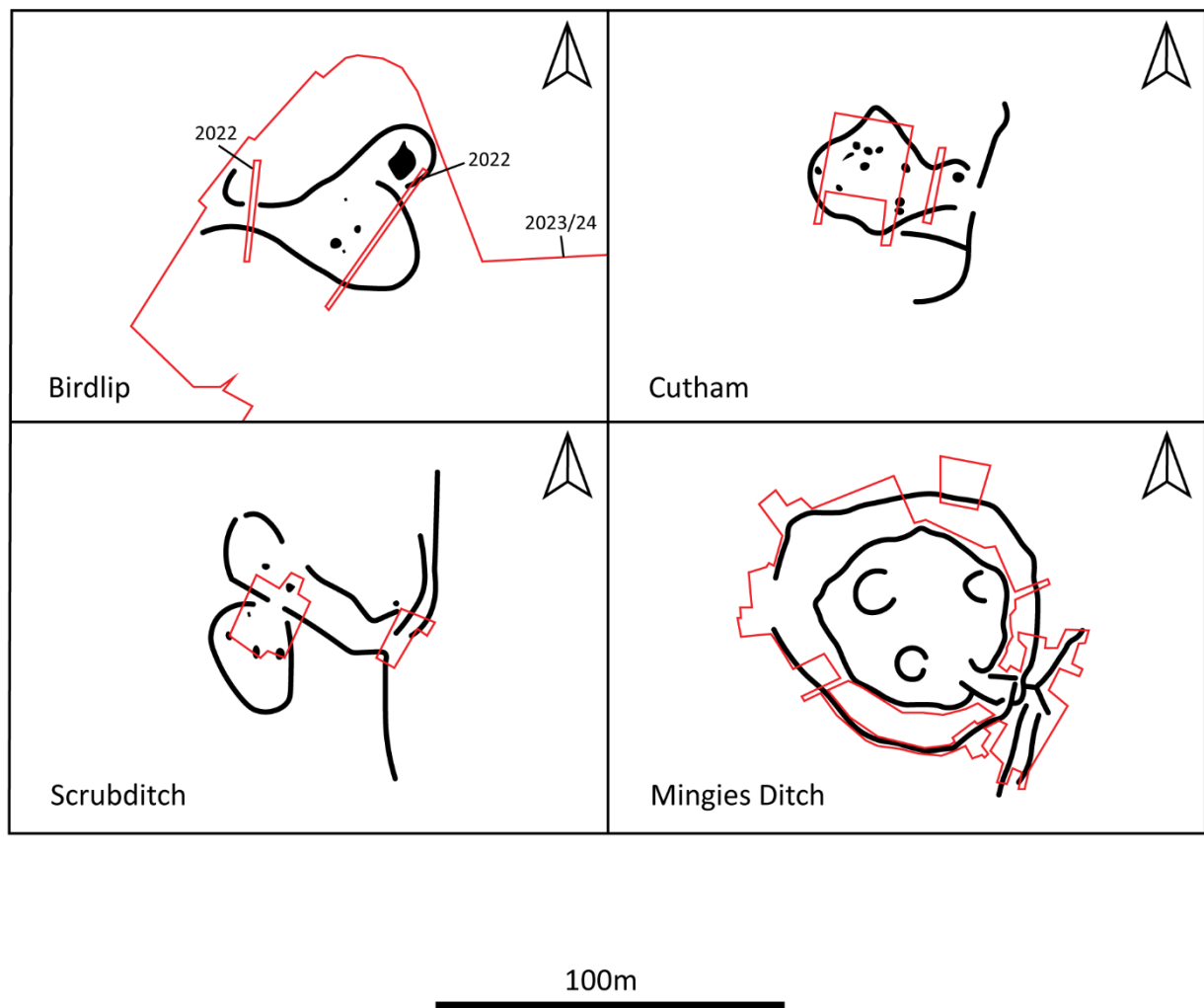


Figure 5.2 Shape in plan of the excavated 'banjo' sites, with the areas of excavation shown in red

5.2 Excavated ‘banjo’ enclosures

5.2.1 Bagendon (Cutham and Scrubditch)

A series of excavations were carried out at Bagendon between 2012 and 2014 by Moore (2020). This uncovered two closely located ‘banjo’ enclosures named Cutham and Scrubditch. No environmental sampling was done, but animal bone was recovered from each site which was assessed by Clegg (2020).

Both enclosures date to the Middle Iron Age and were only in use for a relatively short period of time, being abandoned by the Late Iron Age. Both enclosures had evidence of occupation, in the form of storage pits and Scrubditch also had evidence of firepits, leading Moore (2020) to speculate that their purpose was not primarily agricultural.

In terms of the animal bone assemblage this does not deviate significantly from other Iron Age sites, with remains of all major domesticates (pig, sheep, cattle and horse) recovered. Scrubditch had a higher proportion of pigs, while Cutham had a higher share of sheep remains, however the size of the assemblages was relatively small making it difficult to draw strong conclusions from this.

5.2.2 Beach’s Barn ‘Banjo’ Enclosure

This site (HER: SU15SE210) was excavated in 2000 by Time Team. Animal bone was collected by hand during the excavation. There was no archaeobotanical analysis as there was “nothing in the archive to indicate whether any of the deposits especially those in the ‘banjo’ enclosure ditch, were considered to be sufficiently well stratified, sampled and processed for the recovery of carbonised or other environmental remains” (Wessex Archaeology 2006, p.20).

The site reports and other accessible publications on the site (Powell 1995; Wessex Archaeology 2006; Harding 2007) did not include raw data tables for the animal bone, but the 2006 site report provides some headline statistics (Wessex Archaeology 2006). Most of the fragments which could be identified to species level were either cattle and sheep/goat. A high proportion of the cattle and sheep/goat was from the possible recut of the ‘banjo’ enclosure, and from late Romano-British fills in pits.

Across the site there was a relatively high proportion of horse (9% of the identifiable bone) and dog (3%), but both were mostly represented across the Romano-British features. However, horse and dog remains did occur in smaller quantities in the ditch of the 'banjo' enclosure, mainly from the possible recut, but also included one example of horse in the primary fill. The possible recut of the 'banjo' enclosure ditch also produced two deer bones (Wessex Archaeology 2006, p.20).

5.2.3 Birdlip 'Banjo' Enclosure

An evaluation excavation was carried out by Cotswold Archaeology at Birdlip in 2021 ahead of an open area excavation by Oxford Cotswold Archaeology in 2023-24. Due to the recency of the excavations only the 2021 data has been published and is considered below. No animal bone was recovered during the 2021 works and as this was an evaluation a full paleoenvironmental analysis was not conducted (Sausins 2021). However the key findings of the assessment are summarised below.

The environmental remains across all the Iron Age features ('banjo' enclosure ditch, and associated pits) included cereal grains, such as barley, and oat/brome grass seeds. Moderate to large numbers of terrestrial shells were noted in the samples. The presence of *Vallonia* sp. indicates a well-established open landscape, though the inclusion of intermediate species *Pomatias elegans*, *Trochulus hispidus*, and *Cochlicopa* sp., and the shade-loving species *Discus rotundatus*, *Carychium tridentatum*, *Aegopinella* sp., *Oxychilus cellarius*, and *Clausilia/Cochlodina* type suggest there were some areas of longer grass and scrub, woodland edge or hedgerows present (Aitken 2021, p.74).

5.2.4 Bramdean 'Banjo' Enclosure

The excavations at Bramdean were carried out between 1965-6 (Perry 1974), 1973-7 (Perry 1982) and 1983-4 (Perry 1986) by Brian T. Perry. The excavation included within this dissertation's data is 1973-7 which focused on the interior of the 'banjo' enclosure with animal bone recovered from the internal pits and enclosure ditch. Environmental sampling was not conducted at this site, though some carbonised seeds are mentioned as being present in the fills.

Two phases of occupation were identified by the excavation. Phase 1 dates before the construction of the 'banjo' enclosure ditch. The main phase of occupation is Phase 2, this phase saw an increase in both the number and proportion of sheep bone, from 39% to 58% of total bones of domesticated species (Table 5.2). Perry (1982) believes the increase in sheep bones potentially related to the spread of downland arable farming in this period. There is also an increase in the proportion of horse bones, again indicating the growing importance of livestock as part of agriculture.

	Cattle	Sheep/goat	Pig	Horse	Dog
Phase 1	98	104	55	2	11
Phase 2	180	394	53	47	9

Table 5.2 Major 5 domestics recovered from Phase 1 and Phase 2 of Bramdean (Clutton-Brock 1982)

Dogs seem to be treated differently from other domesticated animals at this site. With the exception of a complete or nearly complete skeleton of a cow and piglet in one of the pits, the only animals appearing to be deliberately buried are the three dogs. Together with a dog paw pendant recovered at the site this indicates that they were treated with additional regard, potentially in a role as herding animals or pets. The dog paw pendant is not included in the animal bone data table as it has been modified into an artefact.

In the comparative tables (Section 5.3) Phase 2 is used.

5.2.5 Crawley 'Banjo' Enclosure

The 'banjo' enclosure near Crawley (HER: 66696) has been identified via aerial photography, but has not been excavated. An excavation 80m to the south-east was carried out as part of the Barton Stacey to Lockerley pipeline, by Wessex Archaeology (De'Athe 2013), this site is used as a proxy. From this site there was insufficient animal bone for assessment (Grimm 2013).

Samples were taken from a deposit which likely dated to the Romano-British period (Pelling 2013). As such these results should be taken with caution as they are not Iron Age in date. This data is still included in the dissertation as there are examples of 'banjo' enclosures such as Kennel Farm, which date to the Early Roman period. The samples recovered an assemblage

primarily consisting of spelt/emmer wheat chaff. Moderate quantities of grain were also recovered. These were mostly indeterminate but included some emmer/spelt and barley. While most glume bases could not be identified, a few were identifiable as spelt wheat. A few weed seeds were present, including small vetches (*Vicia/Lathyrus* sp.), black bindweed (*Fallopia convolvulus*), chickweed (*Stellaria media*), goosegrass (*Galium aparine*), and small grasses.

The assemblage suggests the site was used for wheat processing and storage, though it's unclear which processing stages occurred here. The low number of weed seeds indicates some pre-processing may have happened elsewhere (Pelling 2013).

5.2.6 Greatfield Farm 'Banjo' Enclosure

A potential 'banjo' enclosure was identified at Greatfield Farm, via aerial photography (HER: 36285). An excavation was carried out 300m to the east of this site in 2004-8 in advance of a housing development by Wessex Archaeology (Wright et al. 2009).

This excavation found no Middle or Late Iron Age features, despite evidence of Early Iron Age habitation. The author speculates that it is possible that the community shifted to the 'banjo' enclosure site as part of wider change in settlement patterns in this period towards enclosed settlement (Wright et al. 2009, p.19).

5.2.7 Groundwell House 'Banjo' Enclosure

A potential 'banjo' enclosure was excavated at Groundwell House (HER: SU18NE200) by Wiltshire Archaeological and Natural History Society and the Department of the Environment in 1976-7 (Gingell 1982). Animal bone was recovered from the site, but no environmental sampling was carried out.

In terms of dating the site, the outer ditch of the enclosure was not excavated, and the inner ditch was only excavated down to the water level. The pottery retrieved from these upper fills was Romano-British. However, since this pottery pertains to the later phases of the ditch, it is not used for dating the enclosure. Instead, Gingell (1982) relied on the age of the internal

structures, which date to the Iron Age, likely the Middle Iron Age based on the pottery recovered.

During the lifetime of the enclosure there were multiple phases of occupation. For the purposes of analysing the animal bone in this dissertation the animal bone results from all phases during the use of the enclosure have been grouped together. The cattle-size animal bone were reclassified as large mammal bone and the sheep-size bone was recategorised as medium-sized mammal bone. The bones exhibited very fine fragmentation, which could suggest extensive use of the carcasses and bones. Additionally, the considerable surface erosion may imply that some bones were crushed while lying exposed on or near the settlement's surface (Coy 1982, p.69).

The sheep and pig remains were recorded by Coy (1982) using Grant's (1975) tooth wear guide. Of 30 ageable sheep jaws, 13 are at Grant stage 30 or above, and of 49 ageable jaws of pig the bulk are Grant stage 19 or more but only four are older than stage 30. There are a few much younger individuals and no apparent differences between the different deposits (Coy 1982, p.71).

5.2.8 Groundswell West 'Banjo' Enclosure

Groundswell West 'Banjo' Enclosure (HER: SU18NW200) was excavated in 1996 by Cotswold Archaeology (Walker et al. 2001).

The environmental evidence recovered from the site included small quantities of wood charcoal and other charred material. In terms of crop plants barley and spelt were identified, with wheat making up the majority of the deposits recovered from the pits. The deposits also contained a moderate quantity of wild seeds, especially those associated with cultivated fields and to a lesser extent arable fields and grasslands. The degree of preservation suggests that the pits at this site were primarily used for grain storage, while the makeup implies relatively minimal processing before storage (Stevens and Wilkinson, 2001).

5.2.9 East of Oddington Grange 'Banjo' Enclosure

A potential 'banjo' enclosure has been identified east of Oddington Grange through aerial photography (HER: MOX5151). While this site has never been excavated there were two sites excavated nearby by Oxford Archaeology as part of the East-West Rail works in 2014-5. One called "East of Oddington" was 20 meters away from the 'banjo' enclosure, while the other was "Holt's Farm", 500 meters to the north-east (Simmonds and Lawrence 2018).

The animal bone assemblage was assessed by Broderick (2018). The assemblage at East Oddington was too small to be considered. Of note the animal bone found at Holt's farm has an unusually high proportion of pig remains. Broderick (2018) suggests that this indicates a more wooded environment in this area during the Middle Iron Age. The animal bone remains included in the comparison tables are from Phases 2 and 3 of the site phasing which date to the Middle and Late Iron Age respectively.

Samples were collected from both Holt's Farm and the site east of Oddington, but the charred plant remains were in too poor condition for full analysis (Meen 2018). While the charcoal remains from both sites were assessed, only the results from the site east of Oddington are included in this dissertation due to its closer proximity. The dataset comprises two samples: one from Phase 2 and one from Phase 3. The charcoal was analysed by Challinor (2018a).

At East Oddington, the charcoal deposits were heavily imbued with orange iron inclusions. Coupled with the blue-green staining indicative of vivianite, Challinor (2018a) suggests that the charcoal was likely deposited in a water-lane or a seasonally waterlogged environment, consistent with the site's proximity to a tributary of the River Ray. Additionally, Challinor (2018a) proposes that the substantial quantity of charcoal points to intentional deposition rather than random accumulation over time. It likely represents domestic waste, such as remnants from cooking fires, which would account for the variety of local tree species present. However, the poor condition of the charcoal may have resulted in an overrepresentation of oak.

5.2.10 Kennel Farm 'Banjo' Enclosure

Kennel Farm was excavated by Northamptonshire Archaeology in 1998 (Thorne & Holmes 2002). Unusually, the use of the 'banjo' enclosure dates to the Roman period (site Phases 6-7). While the main structure of the enclosure dates to the Middle to Late Iron Age, the funnel-like ditches at its entrance are Roman, which is what qualifies the site as a potential 'banjo' enclosure. For this reason, the environmental evidence from this site is from the Roman period, rather than the Iron Age, as is the case with other sites in this dissertation.

There is no environmental or animal bone evidence that directly corresponds to the phases of the entrance ditches (Phases 7/8). However, data from the immediately preceding Phases 6/7 (0–45 AD versus 45–60 AD) is available and is used here as proxy data (Thorne & Holmes 2002). The animal bone and charred plant remains were both assessed by Deighton (2002a; 2002b).

It appears that on the whole the animals were quite young. Seven out of the 11 pig mandibles (across all phases of the site) came from young adults and all four of the cattle mandibles which could be aged (out of eight specimens) were also young adults (Deighton 2002a, p.33). All the species' animal bones represent good cuts of meat. Deighton (2002a) believes it is possible to speculate that the sheep/goats were kept primarily for meat, as opposed to wool or milk.

The charred plant remains from the site suggest that the early stages of crop processing such as threshing were taking place off-site as there is very little chaff and similar waste products recovered. Remains of pulses were also found suggesting that there was potentially deliberate sowing of legumes together with the cereal crops. The presence of goose foot also suggests that the soil was nitrogen rich when this site was occupied (Deighton 2002b: p.39).

5.2.11 Lains Farm 'Banjo' Enclosure

A potential 'banjo' enclosure has been identified at Lains Farm through aerial photography (HER: 30341). While the 'banjo' enclosure itself has not been excavated, fieldwork was carried out in 1984 for the enclosures 20m - 50m to the north and north east (Bellamy 1992). There was also an evaluation excavation carried out in this area by Cotswold Archaeology in 2016 in

advance of a solar farm though this uncovered no Iron Age features (Howard 2016) so is not used for this analysis.

The animal bones were assessed by Coy (1992), the charred and mineralise plant remains by Carruthers (1992) and molluscs by Allen (1992). Phase 3 is contemporaneous with when one would expect the 'banjo' enclosure to be active (3rd - 1st century BC) and remains from this period are therefore used in the analysis. For the purposes of animal bone comparisons sheep/goat and sheep data were combined. The small artiodactyl group has been reclassified as small mammal and rodents have been reclassified as micro mammal.

In terms of the makeup of the assemblage there is a bias towards cattle limbs. A number of the cattle and sheep bones have skinning marks and there was very little gnawing on the bones. Coy (1992, p.33) argues that the animal remains are probably closely related to butchery. Overall sheep and cattle seem to have been the primary sources of meat at this site, though horse and pig were also butchered at this location (Coy 1992, p.35).

Carbonised plant remains at the site primarily appear to represent waste from a late stage in crop processing. Carruthers (1992, p.39) notes that three of the pits contained quantities of burnt flint, which may have originated from hearths. The plant remains recovered were not significantly different in composition from those in other pits. Carruthers (1992) suggests that it is likely all the pits contained some carbonised remains from hearths, as chaff makes for good tinder. Additionally, Carruthers (1992, p.39) observes that the pit fills contained relatively few weed seeds but large numbers of chaff fragments, possibly indicating that weed control was less of a concern at this site.

5.2.12 Littlemore 'Banjo' Enclosure

This 'banjo' enclosure (HER: MOX26757) was excavated in 2013 by TVAS (Ford 2013). Only 36 fragments of bone were recovered, these were categorised into large, medium and small mammals by Falys (1993).

5.2.13 Manor Farm 'Banjo' Enclosure

Manor Farm (HER: 69102) was field walked by TVAS in 1992 (Ford 1992). However no excavation took place so this is not considered any further.

5.2.14 Micheldever Wood 'Banjo' Enclosure

There are three 'banjo' enclosures in Micheldever wood (HER: 17875, 22531, 22532). One was excavated (HER: 17875) by Wessex Archaeology in 1975-6 (Fasham 1987) and the other two identified through a fieldwalking survey. Animal bone was recovered from this site, but no environmental sampling took place. The animal bone was assessed by Coy (1987).

For the comparative table, cattle-sized bones have been recategorised as large mammals and the sheep-sized animal bones have been categorised as medium sized mammal. For the purposes of this dissertation the data included is only from contexts dating to Phase 2 of the site, which is when the entrance to the enclosure was constructed, along with multiple pits inside the enclosure. This phase is dated to the Middle Iron Age.

Regarding the animals present, there's no significant difference between when the 'banjo' enclosure was in use and the abandonment phase, with the proportion of animals being fairly consistent. In Phase 2, excluding the animal bones that couldn't be identified to species level, cattle make up 34% of identified bones, whereas sheep/goat make up 47%. In Phases 3/4, cattle make up 33%, and sheep/goat make up 37%. However, there is a difference in the quantity of either burnt or ivoryed bone between the two phases. In Phase 2, 6.6% of the recovered bone was either burnt or ivoryed, compared to just 1.4% from Phases 3/4 (Coy 1987, p.46).

It's possible that the bone that appears ivoryed, which makes up two-thirds of the ivoryed or burnt bone from Phase 2, is due to burial factors. However, given that the burial conditions are similar to those in Phases 3/4, it's more likely related to activities that occurred before the bones were buried. Notably, while two-thirds of the ivoryed or burnt bone in Phase 2 was ivoryed, only one-seventh of the bone from Phases 3/4 was ivoryed. This indicates that something different was happening with the animals on the site, even though the distribution and quantities of animals remained consistent (Coy 1987, p.47).

5.2.15 Mingies Ditch Enclosed Settlement

Mingies Ditch Enclosed Settlement (HER: MOX1698) and was excavated in 1977-8 (Allen and Robinson 1993). Animal bone and carbonised plant remains data is available from this site.

The majority of the bones were heavily fragmented, with over 13,000 fragments recovered during the excavation. Of these, 14% were obtained through sieving soil samples. The number of fragments were doubled due to damage from excavation activities and the bones' fragility caused by leaching. The assemblage as a whole represents at least 99 individual animals. More than 90% of the skeletal elements were destroyed by processes such as butchery, scavenging, leaching, trampling, or other related factors (Wilson 1993, p.123).

Bone debris accumulation was sporadic, primarily found near four of the house sites, and the trackway ditches. Bones were less common around the four-post structures and in areas with minimal ancient digging or thin occupation layers.

Wilson (1993) suggests that the fragmentation distribution (Table 5.3) and skeletal elements (Table 5.4) indicate varying distances between slaughter sites and houses, ranging from 2 to 10 meters depending on carcass size. Wilson (1993) states that it's unlikely that all butchery occurred in the same place, especially for large carcasses, which were typically butchered on the ground rather than hung, in line with Iron Age practices of separating limbs rather than splitting carcasses in half.

Mean distance from the centre of site (m)	Identified fragments	Cattle %	Sheep/goat %	Pig %	Horse %
7.2	698	23	67	4	6
12.4	363	22	59	10	9
16	278	33	50	9	8
18.9	158	48	15	9	28
22.6	52	31	25	2	42
28.6	75	47	25	5	23
36.4	58	55	29	2	14
45.7	19	26	47	5	21

Table 5.3 Percentage of bones by species outward from the centre of Mingies Ditch Enclosed Settlement (Wilson 1993, p.124)

n	Cattle 521	Sheep 914	Pig 103	Horse 203
Hc	1.3	0.1	-	-
Cranium	7.3	0.2	1.0	3.4
Maxilla	1.2	0.2	1.0	0.5
Mandible	12.7	8.4	17.4	8.9
To	39.9	54.3	49.5	39.4
Subtotal	62.4	63.2	68.9	52.2
Vertebra	3.1	0.4	1.0	0.5
Scapula	3.3	1.6	4.9	2.5
Pelvis	4.0	1.3	1.0	4.9
Humerus	1.9	1.9	6.8	3.0
Femur	1.5	1.6	1.9	2.0
Subtotal	13.8	6.9	14.6	12.8
Radius	1.9	7.0	1.0	5.4
Ulna	0.8	0.7	2.9	1.5
Tibia	2.3	11.9	1.9	5.9
Fibula	-	-	1.0	-
Patella	-	-	-	0.5
Subtotal	5.0	19.7	6.8	13.3
Carpal	2.5	1.1	3.9	2.0
Tarsal	2.1	0.5	1.0	2.5
Other element joints	2.8	0.1	1.9	2.0
Subtotal	7.5	1.8	6.8	6.4
Metacarpal	3.6	2.8	-	3.0
Metatarsel	3.3	4.3	2.9	6.4
Phalange 1	1.3	0.9	-	2.0
Phalange 2	2.9	0.2	-	1.0
Phalange 3	0.2	0.2	-	0.5
Mp acc	-	-	-	2.5
Subtotal	11.3	8.4	2.9	15.3

Table 5.4 Percentage of skeletal elements in the totals of identified bone of species from Mingies Ditch Enclosed Settlement (Wilson & Bramwell 1993).

Wilson (1993, p.130–1) interprets the data to suggest that the presence of sheep and horse bones indicates an open, pastoral landscape. In contrast, the presence of pig bones, small birds, three beaver teeth, two pieces of deer antler, and goat remains suggests some nearby woodland or scrubland. Pig bones, however, were not unusually abundant and may indicate pigs were kept within the settlement. Wilson (1993) speculated that small birds and goats were likely associated with hedges or scrub that may have grown around the enclosure

ditches. While the beaver and duck bones would suggest a well-watered environment, the high percentages of sheep and cattle indicate the site was drier compared to other regional locations.

Wilson (1993, p.133) suggests that the high amount of juvenile animal remains (Table 5.5) and skeletal elements (Table 5.4) suggest that meat production was a primary driver of animal husbandry.

	Early		Late	
	F	UF	F	UF
Cattle	37	1	22	5
Sheep/goat	22	2	15	7
Pig	4	1	1	1
Horse	34	1	21	1

Table 5.5 Epiphysial fusion frequency, Mingies Ditch Enclosed Settlement (Wilson & Bramwell 1993)

The cumulative NISP table shows the total number of bone fragments from both hand-collected bones and those recovered through sieving from all phases, except the post-occupation phase. Rodents have been reclassified as micro-mammals. There was no minimum number of fragments estimated for bird bones so this is omitted.

Some of the carbonised assemblages from Mingies Ditch, however, are unusual in that they have components that were not derived from arable fields. For example some of the samples contained remains of damp ground plants or shrubs, including seeds of *Rhamnus catharticum*, *Rubus* prickles, *Prunus* or *Crataegus* thorns and immature *Salix* catkins. (Jones & Robinson 1993, p.121).

In terms of crop plants the most common remains were barley and spelt, with a small amount of rye also recovered. The burned waste assemblage contained both the grains and the chaff indicating processing was taking place at this site (Jones & Robinson 1993, p.122).

5.2.16 Nettlebank Copse 'Banjo' Enclosure

The 'banjo' enclosure at Nettlebank Copse was excavated in 1993 as part of the Danebury environs project (Cunliffe 2000). Animal bones were recovered from this site but no environmental sampling took place.

The 'banjo' enclosure ditch was in use through Periods 2 and 3 of the site phasing (Cunliffe and Poole 2000). The majority of animal bone was from Period 1 and 3. The animal bone author has included the Period 2 bones in with the numbers for Period 3 (Hamilton 2000, p.101), Period 2 and 3 data is used in the comparison tables for this dissertation. Sheep/goat and sheep have been combined. Small mammal has been combined with small.

Aging analysis was also carried out for the sheep mandibles found at this site (Table 5.6; Table 5.7).

5.2.17 Old Kempshott Lane 'Banjo' Enclosure

A 'banjo' enclosure (HER: 60472) was excavated at Kempshott Lane by pre-construct archaeology in 2006-2007 (Haslam 2012). Animal analysis was conducted by Rielly (2012) and the archaeobotanical analysis by Allot (2012). The 'banjo' enclosure ditch dates to site Phase 3, this is the animal and archaeobotanical data included in this dissertation.

Large storage pits, yielded most of the bones from Phase 3. The majority were cattle or cattle-sized, making up 77.8% of the assemblage (Table 5.8). This phase shows a lower proportion of cattle-sized bones compared to later periods, possibly indicating a shift toward more cattle by the early Roman era. The cattle remains were a mix of skeletal parts, mostly from animals aged 3 to 4 years (Table 5.9).

Butchery marks were rare, but this is likely due to poor preservation. Only one butchered cattle bone, a skull fragment with knife marks, was identified. A horse mandible with knife cuts also indicated meat use. Other horse bones, including a mandible and femur, likely came from the same adult animal, as did some cattle-sized vertebrae. Additionally, a partial dog skeleton, including the skull and mandibles, was found (Rielly 2012, p.111).

MWS	Definite n	Attributed n	o/c MWS cumulative total	Cumulative total %	Grant ranges	N		N	Cumulative total dead by stage min.	Cumulative total dead by stage max.
1-5	1	2	3	4.2	1-10		1-15	1	3.1	4.2
6-10	3	6	12	16.7	6-15	1	6-20	1	12.5	15.6
11-15	2	3	17	23.6	11-20	6			19.8	27.1
16-20	2	3	22	30.6	16-25	4			32.3	36.5
21-25	3	6	31	43.1	21-30	5			45.8	51.0
26-30	3	5	29	54.2	26-35				59.4	59.4
31-35	11	8	58	80.6	31-40	4			79.2	83.3
36-40	8	1	67	93.1	36-45	2			92.7	94.8
41-45	1	3	71	98.6					99.0	99.0
45-50	1		72	100					100	100
Total	35	37				22		2	96	

Table 5.6 Sheep mandible wear stages (Grant's method) for Nettlebank Copse, Period 3 (Hamilton 2000, Microfiche 10: E5-6)

MWS	Definite n	Attributed n	o/c cumulative total	Cumulative total %	Payne ranges	N		N	Cumulative total dead by stage % min	Cumulative total dead by stage % max.	Suggested age
A	1		1	1.3	AB				1	1	0-2m
B	3		4	5.3	BC	4			3.9	7.8	2-6m
C	9	4	17	22.7	CD	6			16.7	26.5	6-12m
D	13	10	40	53.3	DE	6			39.2	54.9	1-2y
E	13	1	54	72	EF	1	EFG	5	52.9	74.5	2-3y
F	9		63	84	FG	3			61.8	81.4	3-4y
G	9	1	73	97.3	GH	1			71.6	97.1	4-6y
H		1	74	98.7	HI	1			72.5	99.0	6-8y
I	1		75	100					100.0	100.0	8-10y
Total	58	17				22		5	102		

Table 5.7 Sheep mandible wear stages (Payne's method) for Nettlebank Copse, Period 3 (Hamilton 2000, Microfiche 10: E7-8)

	N	%
Cattle, Horse, Cattle-size	42	77.8
Sheep/Goat, Sheep, Pig, sheep-size	12	12.2

Table 5.8 Number of large and medium sized mammals at Old Kempshott, Phase 3 (Rielly 2012)

The bone fragmentation was significant, so the fragment totals in the cumulative NISP table are those Rielly (2012) adjusted after refitting. For Phase 3, 173 fragments were hand-collected, which reduced to 62 after refitting—a 64.2% decrease. For Phase 4, 713 fragments were collected, reducing to 484—a 32.1% decrease. The high number of red deer remains was due to the burial of three red deer in a special deposit (Rielly 2012, p.109). Cattle-sized bones were classified as large mammals, sheep-sized as medium mammals, and small rodents as micro mammals. The totals for Phases 3 and 4 combined cover areas 1 and 2, including external features, with the ‘banjo’ enclosure representing only Area 1 .

Juvenile	Early		Intermediate		Late	
	F	UF	F	UF	F	UF
0	3	0	4	0	1	4

Table 5.9 Distribution of cattle age groups for Phase 3 at Old Kempshott (Rielly 2012). Ages of fusion (from Schmid 1972, 75) are Early – 0.5 to 1.5 years, Intermediate and Late – 3.5 to 4 years. Juvenile represents older calves, aged between 0.5 and 1 year. Key: F and UF are the number of fused and unfused epiphyses respectively

In terms of botanical remains, these were primarily found in the excavated storage pits across the site. These assemblages contained significant remnants of cereal crops, indicating agricultural activity at this site. There were also material quantities of weed seeds that flourish in arable field environments (Allot 2012).

5.2.18 Owslebury 'Banjo' Enclosure

Excavations at Owslebury 'banjo' enclosure and later Roman settlement were carried out between 1962-1972 by the Department of Archaeology, Southampton (Collis 1968; Collis 1970). The animal bone was assessed by Maltby (1987). The animal bone had 2,891 bones found within the 'banjo' ditch itself, which are the animal bones included within this dissertation.

Maltby (1987) conducted an analysis of the changing proportions of animal bones in the layers of the enclosure ditch from layer one being the basal, fill up to layer 7 being the uppermost fill. Maltby (1987) found that in all of the layers cattle and sheep/goat were dominant with cattle ranging from 30% to 47% in each layer and sheep/goat ranging from 37% to 53%. In all of the layers pig fragments were the third most common domesticate though they did decrease in the uppermost layers and apart from the uppermost layer horse bones outnumbered dog bones.

A total of 72 cattle mandibles were examined by Maltby (1987) dating to Iron Age contexts (Table 5.10) using the recording system of Grant (1975; 1982). Nearly half were found in the 'banjo' enclosure ditch, with many specimens from pits also dating to this period. The other mandibles were mostly from quarries and smaller gullies mostly dating from the 1st century B.C. In all contexts, except the 3rd-century B.C. ditches, over half the mandibles reached stage 6, indicating cattle over 40 months old. The 'banjo' ditch had more animals culled between stages 4-5 (18-40 months), likely immature cattle slaughtered for meat.

Cattle							
Stage	Pits	3 rd C. Ditches	1 st C. Gullies	Quarries	Total	Stage %	Cumulative %
1							
2	2	4			6	8	8
3		1	1	1	3	4	13
3/4			1		1	1	14
4	4	8	2	2	16	23	36
4/5		1			1	1	38
5		4		1	5	7	44
5/6		1			1	1	46
6	8	16	7	8	39	54	100
Total	14	35	11	12	72		

Table 5.10 Wear stages of cattle mandibles in Iron Age deposits (Maltby 1987)

The percentages of sheep/goat mandibles at eruption stages 1-7 (Table 5.11) show a higher kill-off rate of younger animals in 3rd-2nd century B.C. deposits. Like with the cattle, the proportion of stage 4 mandibles increased from 18% in the 3rd-2nd century B.C. ditches to 25% in 1st century B.C. gullies, suggesting more sheep were culled for meat at that age in the later period.

Sheep/goat									
Stage	3 rd -2 nd Pits	3 rd C- 2nd. Ditches	3 rd – 2 nd C. Quarri es	1 st C. Pits	1 st C. Gullies	1 st C. Quarri es	Total	Stage %	Cumulati ve %
1	1	1					2	1	1
2	4	3		6	1	1	15	8	9
2/3	6	4	1	1	3	1	16	9	18
3	10	5	2	3	4	5	29	16	34
3/4	1	5	2	5	4	4	21	11	45
4	1	9	2	2	10	11	35	19	64
4/5				1	2	1	4	2	66
5	3	10	1	4	7	5	30	16	82
5/6		1		1			2	1	83
6	2	6		3	4	2	17	9	92
6/7	1	1		1	1		4	2	94
7		4	1		3	3	11	6	100
Total	29	49	9	27	39	33	186		

Table 5.11 Wear stages of sheep/goat mandibles in Iron Age deposits (Maltby 1987)

Pig									
Stage	3 rd -2 nd Pits	3 rd C- 2nd. Ditches	3 rd – 2 nd C. Quarri es	1 st C. Pits	1 st C. Gullies	1 st C. Quarri es	Total	Stage %	Cumulati ve %
1	2						2	2	2
2		1			1		2	2	4
3	4	5		1		1	11	13	17
4		1		1		2	4	5	22
4/5	1	2			1		4	5	27
5	2	5	1		3	16	27	32	59
5/6	1	1			1	1	4	5	64
6	1	7	2	3	1	3	17	21	85
6/7			1				1	1	86
7		7	2			3	12	14	100
Total	11	29	6	5	7	26	84		

Table 5.12 Wear stages of pig mandibles in Iron Age deposits (Maltby 1987)

There is a notable difference between cattle and sheep/goat kill of patterns within the mandibles from pits with the proportion of sheep/goat mandibles at stage 3 greater in both 1st and 3rd century pits. When considering only ditches and gullies, the variation between samples is smaller (Maltby 1987).

The 3rd-2nd century B.C. deposits revealed variability in pig mandible ages (Table 5.12), similar to the sheep/goat assemblage from the same contexts; only 11 ageable mandibles were found in the pits, including two neonatal specimens and four at Stage 3, with just one reaching Stage 6. In contrast, the enclosure ditches yielded 29 mandibles, with seven at Stage 6 and seven at Stage 7 (over 36 months), while five of the six quarry specimens were at Stages 6-7. This high proportion of adult pigs is unusual, as most systems typically cull pigs as immature animals for meat and lard, given their high reproductive rates and tolerance for immature mortalities (Maltby 1987).

5.2.19 Small's Copse 'Banjo' Enclosure

Small's Copse is potential 'banjo' enclosure identified through aerial photography (HER: 37862). An excavation by Cotswold Archaeology 260m south of the 'banjo' enclosure will be used as a proxy. For this site environmental data, attributed to Phase 2 (dated to the Middle to Late Iron Age) is used (Massey and Nichol 2018). The animal bones were assessed by Holmes (2018) and the charred plant remains by Wyles (2018) and the charcoal by Challinor (2018b). The condition of the animal bone was generally good (Table 5.13).

Condition						
Fresh	Very good	Good	Fair	Poor	Very poor	Total
2	28	42	52	43	0	167
Other taphonomic factors						
Refit	Fresh break	Gnawed	Loose mandibular teeth	Teeth in mandible	butcher	burning
83=11	28	18	29	13	6	2

Table 5.13 Condition of animal bone from Middle Iron Age contexts near Small's Copse (Holmes 2018)

Tooth wear data indicates that animals were culled at various ages (Table 5.14), ranging from just a few months old at wear stage B to adults at wear stages G and H (Holmes 2018: 81). The fusion data presents a similar pattern (Table 5.15).

	Cattle	Sheep/goat
A		
B		1
C		1
D		
E		1
F		
G		1
GH		
H	1	1
I		

Table 5.14 Tooth wear patterns for teeth from Middle Iron Age/Late Iron Age contexts near Small's Copse (Holmes 2018). Recorded using guidelines from Grant (1982) and Payne (1973)

	Cattle		Sheep/goat	
	Unfused	Fused	Unfused	Fused
Neonatal		3		9
Early		2	2	27
Intermediate		2	3	6
Late			3	4
Final		2	6	3
Total		9	14	62

Table 5.15 Fusion data for cattle and sheep/goat near Small's Copse (Holmes 2018). Recorded using guidelines from (von den Driesch 1976)

Wood mice remains were present, which indicates the environment included grasslands, fields and woods (Holmes 2018: 81).

Charred plant assemblages were recovered from pits across the site. In terms of plant remains the recovered assemblages were dominated by cereal grains and cereal chaff was also present. The cereal grains were mostly wheat though barley was also represented. Weed seeds were also present, with Wyles (2018) suggesting this was likely waste products from the process of cleaning the grain. Finally some assemblages were found that may represent the remains of domestic hearth waste.

Several similar charcoal assemblages dominated by hedgerow and scrub plants were found across the site, likely from branches used in domestic activities (Challinor, 2018b; 85-88).

5.2.20 Weybrook 'Banjo' Enclosure 1 and 2

Two potential 'banjo' enclosures have been identified via aerial photography near Weybrook (HER 19550; 36343). John Moore carried out an excavation near these enclosures in 2016-8, but did not uncover any archaeological features (Davis 2018, p.9).

For Weybrook 'Banjo' Enclosure 2 a TVAS excavations in 1991 dug two trenches 280m NEE of the 'banjo' enclosure. However these only recovered one animal bone fragment, likely from the Roman period, therefore the results of this excavation have not been assessed in further detail (Torrance and Ford 1991).

5.2.21 Winstone 'Banjo' Enclosure

A site approx. 140m west of Winstone 'Banjo' Enclosure (HER: was excavated by Cotswold Archaeology in 2010 (Hart et al. 2016). The animal bones were assessed by Holmes (2016). The plant macrofossils and charcoal were assessed by Cobain (2016).

Both the animal bone remains and environmental samples were limited in quantity. Only 11 animal bone fragments and 20 macrofossils were recovered. The animal remains consisted of an equal representation of cattle and sheep/goat, with one fragment belonging to a pig (Holmes 2016, p.76). The plant remains included a variety of species such as maple, alder, hazel, oak, ash, hawthorn/rowan/crab apple, and cherry (Cobain 2016, p.81).

5.2.22 Woodhams Farm 'Banjo' Enclosure

A potential 'banjo' enclosure near Woodham Farm has been identified through aerial photography (HER: 23798). A site approx. 250m to the south of this was excavated by Pre-Construct Archaeology in 2019 (Howland 2019) and a site approx. 220m to the north was excavated by TVAS in 2012 (Platt and Castle 2012). The animal bone data presented in this report has combined the animal bone data from both sites.

The environmental result from the features interpreted as being Iron Age/Roman from the 2019 excavations are used in this dissertation as a proxy for the 'banjo' enclosure. The animal bone was assessed by Deighton (2019) and the charred plant remains and molluscs were assessed by Turner (2019).

The preservation of the bone was poor, and therefore, 33% of the assemblage could only be placed in a broad size category. No evidence for butchery or canid gnawing was noted, but this would have been obscured by surface abrasion (Deighton 2019, p.30).

The animal bone results were very limited, and heavily skewed by a partial dog skeleton, with only 9 bones accounting for over half of the identifiable bones collected. The comparative table includes both animals collected through hand collection and sampling. Cattle and sheep size, which have been recategorized as large mammal and medium mammal, respectively, for the comparative tables.

The recovery of archaeobotanical remains was also limited. Small to moderate quantities of charcoal were found, but was largely too small to be identified in terms of species. Similarly carbonised grains were found but due to their condition could not be identified beyond indeterminate wheat. Weed seeds and molluscs were also identified (Turner 2019, p.33-34).

5.3 Animal Bone

The full animal bone tables can be found in Appendix 1, this section offers a summary of the key findings. The size of the animal bone assemblages varied quite significantly between sites with Littlemore only recovering 7 animal bones up to Mingies Ditch which uncovered 12,727. There doesn't appear to be any significance in the amount of animal bone recovered as it

mostly relates to the size of the area being excavated. Most of the sites with small assemblages are from evaluation trenches near the site as opposed to being excavations through the 'banjo' enclosure itself.

The chart below compares the proportions of fragments from different domesticates recovered at each site. The sizes of the assemblages vary significantly between sites, making interpretation of the data more complex, however there are some clear general trends.

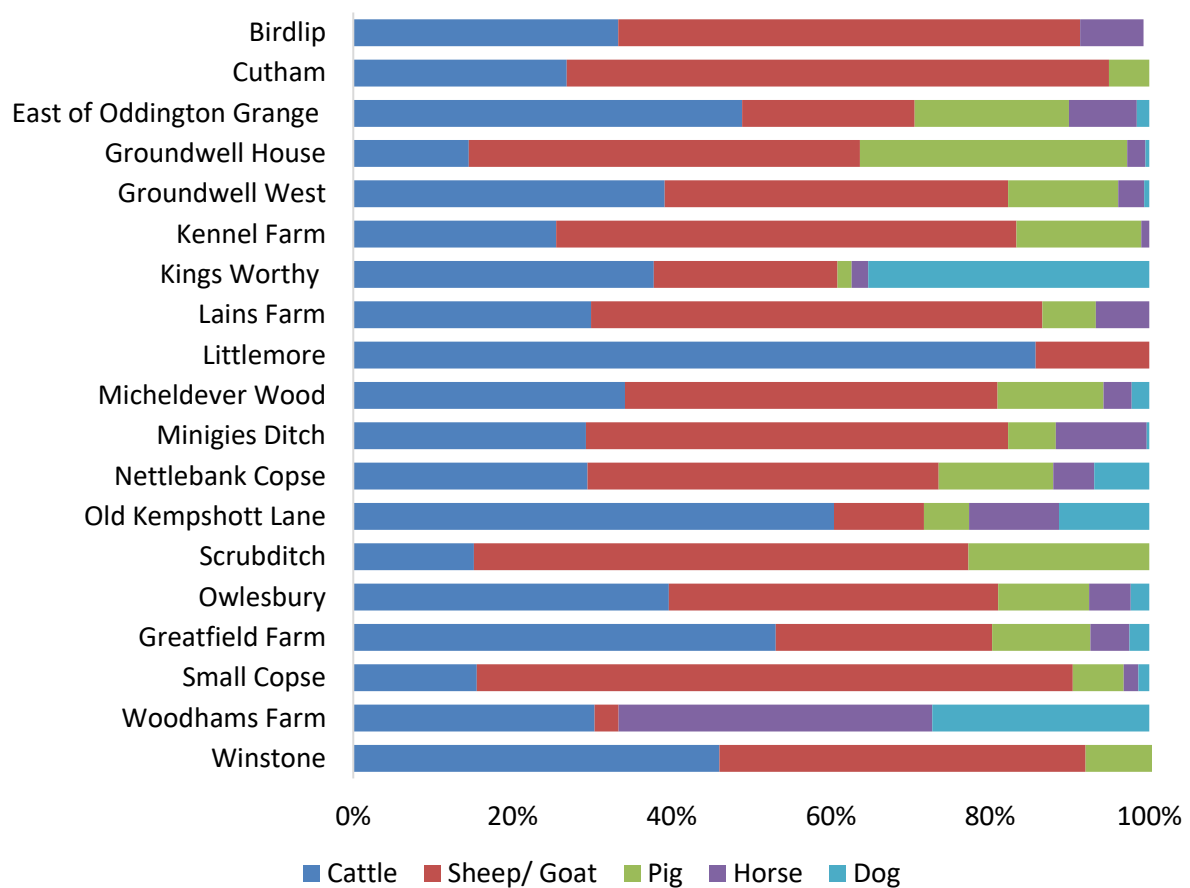


Figure 5.3 proportions of the five main domesticates (tabulated data in Appendix 1)

The majority of sites had either cattle or sheep as the domesticates with the highest proportion of fragments recovered. Of these two main domesticates most sites have sheep making up the plurality of fragments, though there are a couple of exceptions where cattle fragments predominate (e.g. Littlemore and Kempshott).

The only sites to significantly deviate from this general pattern and show greater proportions of minor domesticates are Kings Worthy and Woodhams Farm, the results of which are skewed by small assemblage size and the articulated remains of a dog and horse respectively.

Figure 5.4 takes a slightly wider look at all identifiable bone fragments by size category for large and medium mammals. Here it can be seen that even including unidentifiable fragments we see the same pattern of medium sized mammals such as pigs and sheep dominating with larger mammals such as cattle and horses making up a smaller but significant proportion of the assemblage.



Figure 5.4 Proportion of large and medium mammals

5.4 Archaeobotanical evidence

The full plant remains data can be viewed in Appendix 2. A comparative discussion looking at the plant remains across the excavated sites can be found in the discussion (Section 6.3).

5.5 Control group

Little Somborne animal bone was assessed by Locker (1980). The animal bone data for Cleveland Farm is from Wessex Archaeology (2007). Hatch Warren data from Maltby (1995).

Site	Cattle	Sheep/goat	pig	horse	dog	Red deer	Large mammal	Medium mammal	Small mammal
Little Somborne	268	256	45	47	120	2	171	161	0
Cleveland Farm	288	178	36	0	6	0	0	0	0
Hatch Warren	159	379	58	19	10	1	185	0	297

6 Discussion

6.1 Potential interpretations

As presented in the literature review, the probably most common view of ‘banjo’ enclosures is that they were primarily used for the purposes of animal husbandry. This view has largely been driven by the fact that the design of ‘banjo’ enclosures seems particularly well suited for this purpose.

If this hypothesis is correct one would expect to see similar animal husbandry practices across different ‘banjo’ enclosures and a distinction between these practices and what is seen at other types of enclosures. After all there would be no need to go through the additional effort and investment of building a ‘banjo’ enclosure or altering an existing enclosure if there was no practical advantage or difference in function and they are simply used as regular enclosures were.

Conversely, if there is no functional significance to the shape and the spread of ‘banjo’ enclosures, it could be because it was a cultural development or fashion. Therefore, there may be no significant differences in terms of the animal husbandry related finds between ‘banjo’ and regular enclosure sites. If the shape was related in some way to the status of the settlement, with the significance of the elongated entrance deriving from the extra effort and investment (Moore 2020), or if there is a ritual significance associated with the site, this is likely to result in less clear cut differences in the assemblage. There may still be some indication such as a greater incidence of high-status cuts of meat, more uncommon animal finds, or feasting events but this is likely to be less identifiable than systematic differences in butchery assemblages particularly for sites with smaller animal bone assemblages.

There several possible interpretations of these sites, each with specific indicators linked to the animal husbandry related finds:

A) These enclosures were for the purpose of animal husbandry which should manifest itself in consistent trends across animal bones assemblages at 'banjo' sites, distinct from those found at other enclosure sites.

B) These enclosures have a practical purpose relating to crop processing.

C) That these are status symbols, with the elongated entrance way being a sign that they can afford or control the effort to create them, in which we would expect to see higher more prized cuts of meat on these sites than other sites.

D) That these are a trend born out of lower status farmsteads, representing low occupancy but small agricultural units. The animal bone here would be similar to other Iron Age enclosures, having all the major domesticates represented, as well as a variety of cuts of meat.

E) That these are ritual sites, or ritually significant sites, where feasts and other festivities are taking place. The animal bone from these sites may also be more prized cuts of meat, and may tend towards specific species.

F) These are merely a different enclosure shape that means very little and is just a fashion and we would expect to see no major differences between the animal bone remains in 'banjo' enclosures versus other enclosure types and a similar spread of differences. As Collis wrote about Owlesbury:

"there is no sign that the enclosure was specifically constructed to corral cattle; there are storage pits and quarries in its interior as is usual with other settlements at this time ... Like most ditches of this period, they seem to have marked boundaries in land-use rather than being physical boundaries to prevent livestock moving" (Collis 2010, p.5).

It is important to note that the above interpretations are not all mutually exclusive, and combinations of them could be valid for each site. There is nothing stopping a high status site also having a ritual purpose.

Several of the sites discussed in the results section have been interpreted as having a ritual purpose, for example Birdlip and Micheldever are considered as being sites of ritual feasting but it is speculated that this feasting may have occurred around agricultural events that would

have been taking place within the enclosure. This means they could fit both A and D in the above list of interpretations. Additionally it is important to remember that ‘banjo’ enclosures can be found over a wide geographical area and that even within the south-central scope of this dissertation individual sites may not be particularly close to each other. The significance of the enclosure shape may vary across different geographical areas.

6.2 ‘Banjo’ enclosures as practical animal husbandry sites

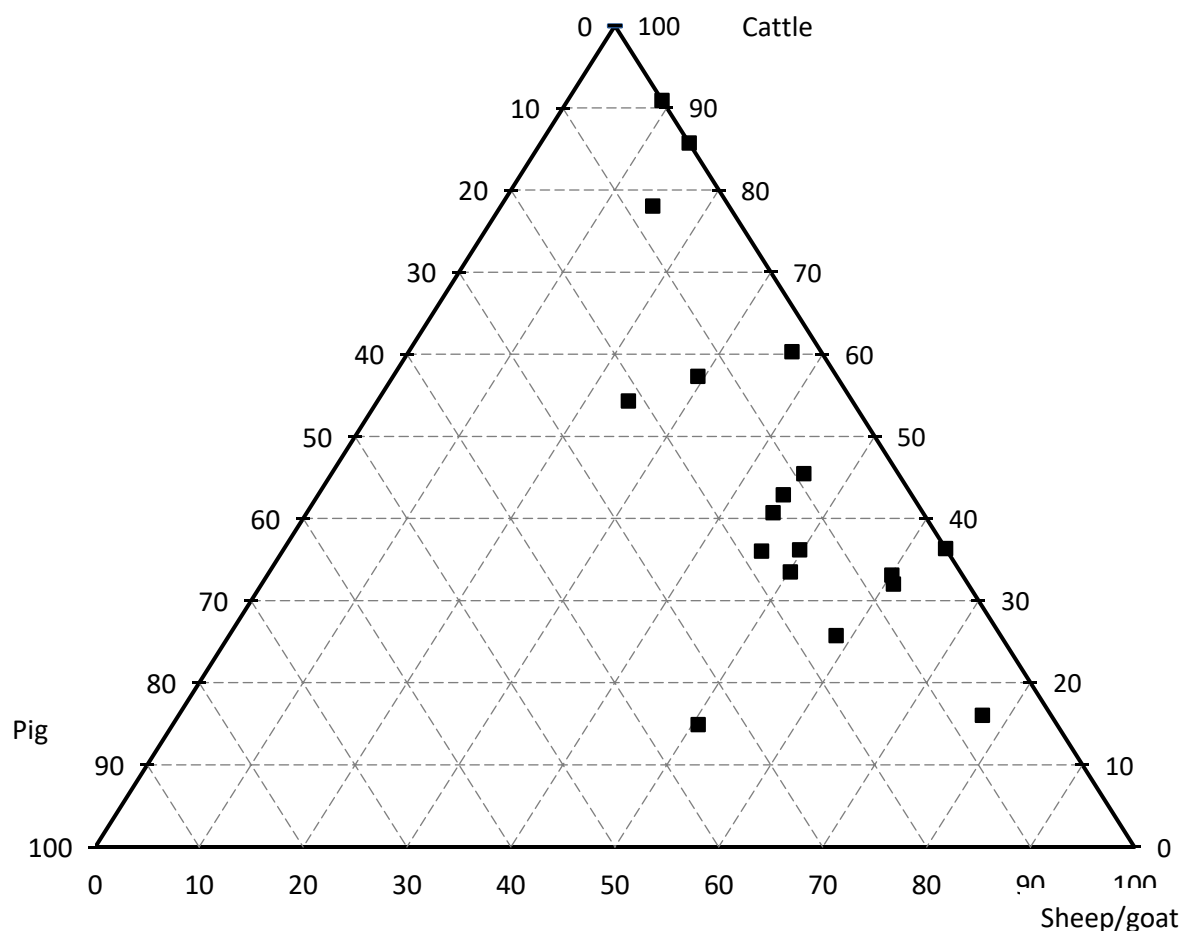


Figure 6.1 Proportion of the three major domesticates

In terms of similarities it's clear that all the sites have the same three main domesticates of pig, sheep/goat and cattle. It's also clear that on all of the sites pigs make up by far the smallest proportion of these three main domesticates, however there does not seem to be a particularly strong trend beyond this. The spread between cattle dominated sites and

sheep/goat related sites is pretty even, with sites having from 88% sheep/goat to 90% cattle and the majority falling somewhere in between these two extremes.

Here it is interesting to go back to what Coy (1987, p.52-3) notes about Micheldever Wood in that “the mixture species from the site indicates that its function was quite varied although cattle would have provided most of the meat sheep and pigs were strongly represented in terms of individuals”. It is clear that the majority of the sites are not relying on one a single species except for limited exceptions in the form of Old Kempshott, Woodhams Farm and Littlemore.

If the primary purpose of ‘banjo’ enclosures was related to animal husbandry and they are designed with a specific practical advantage in mind, we would not only expect similar assemblages across sites but also a heavy bias towards the animal the ‘banjo’ enclosure is designed to deal with. The fact that the animal assemblages are so diverse calls this interpretation into question.

In this regard, the data shows that ‘banjo’ enclosures are similar to other enclosure types from the Iron Age in their diverse spread of animal remains. Further to this point we have evidence from Micheldever Wood where the proportion of different animals stays the same at the site throughout the period the ‘banjo’ enclosure is in use, and the subsequent period where it has been abandoned. This indicates the form of the ‘banjo’ enclosure had little bearing on what animals the community was keeping.

It must be mentioned here that the data set is not as rich as it could be, given the limited number of sites, the fact many were not excavated and that many excavations were carried out in the 70’s. However there has been limited work done in this area since that time so it is unlikely that significant amounts of new data will become available in the short to medium term.

6.3 ‘Banjo’ enclosures as functional arable husbandry sites

To a large extent it seems that the animal husbandry interpretation has been reasoned back from the fact that the shape is something that could be suited for corralling animals. As more

of the sites were excavated, archaeologists increasingly uncovered evidence of internal features and evidence of storage and processing of grains (Lang 2016; Moore 2020). This doesn't tie in very neatly with the functionalist view of 'banjo' enclosures that directly links their shape with a practical purpose in the form of animal husbandry.

Despite the lack of evidence for this direct link in the data, most of the interpretations remained functionalist and instead tried to integrate this new information into the existing hypothesis. The idea became that these were mixed agricultural sites which combined crop storage, processing and animal husbandry functions. The shape of the enclosure is still discussed as serving an integral practical purpose (e.g. Fasham 1987), but in the context of an arable husbandry site this is a much more tenuous argument with no significant advantage derived from its structure. It seems like the purely functionalist interpretation is something of a holdover from the initial interpretations that is being stretched to try and accommodate the new evidence, when it might be more productive to fundamentally re-evaluate in light of new evidence.

In this regard it is interesting to consider whether the primary purpose of 'banjo' enclosure sites was arable rather than animal husbandry. If this were the case one would expect to see the same parts of the crop processing cycle happening at each site. Similarly to the animal husbandry example if there is a functionalist reason for the spread of 'banjo' enclosures one would expect clear trends and differentiation in the plant evidence from these sites. There are two facets to consider when comparing across sites looking for similarities. The first is whether the plant species found show systematic patterns across sites and the second is whether the type of plant remains (e.g. chaff vs. grains) are similar.

The examination of this in this essay is somewhat complicated by the fact that for some sites there is direct data available while for other sites there is only proxy data. Proxy data is not appropriate to draw conclusions from regarding crop processing as one would expect different stages of the crop processing cycle to be happening at different but closely located sites (Parks 2013). For this reason data from proxy sites will only be used as part of the control samples and only direct evidence will be evaluated.

In regards to the species of crops present, there is some degree of similarity across the sites examined (Figure 6.2). Generally plant remains contained cereal crops with spelt wheat, emmer wheat and hulled barley being the most common. There was significant variety in the number of finds and analysing the proportions of the different species showed significant inter-site differences.

Similar types of crops are present across the sites, with spelt wheat, hulled barley, and emmer wheat being the most commonly found cereals. However, there are some differences in the frequency of these crops at each site. For example, Mingies Ditch shows a higher percentage of barley compared to other locations, which tend to have a greater prevalence of wheat. Distinguishing between emmer and spelt wheat can be challenging, particularly at Lains Farm and Crawley, where the majority of wheat grains could not be identified beyond the general emmer/wheat category. However, the grains that could be identified showed variation; at Lains Farm, no definite emmer wheat was found, but there were 64 instances of spelt, while Old Kempshott Lane, with a much smaller sample size, had 10 emmer grains compared to 4 spelt grains. Mingies Ditch was also unique in having rye present, highlighting the inter-site differences.

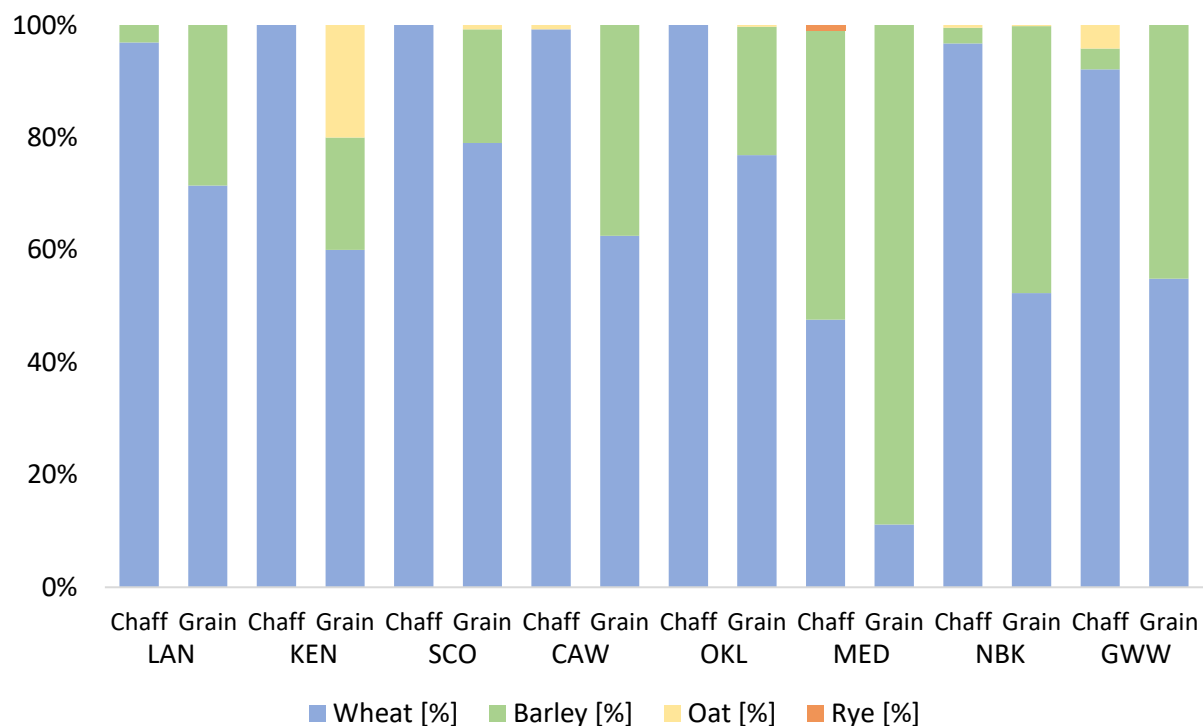


Figure 6.2 Proportion of different crop species

It is important to note here that barley and wheat are common Iron Age cereal crops and there is no unusually dominant species (Lodwick L. 2023; Parks 2013). Campbell (2008) notes that the archaeobotanical assemblage from the Danebury environs region dating to the Iron Age reveals a consistent pattern in crop types, though there are changes in the relative abundance of different species. Campbell (2008) does note that there is a noticeable decline in emmer wheat, while six-row hulled barley and spelt wheat become more dominant. Additionally, rye, peas, and free-threshing wheat are present in smaller quantities. As with the animal remains then, in terms of species distribution there is no immediately apparent difference between 'banjo' enclosures and other comparable Iron Age enclosures.

Many of the theories presented in the literature review regarding agricultural practices in 'banjo' enclosures, are not necessarily based around what specific crops are cultivated at these sites. As such, it is not necessarily disqualifying that there are no clear trends in regards to plant species within 'banjo' enclosures. Instead they tend to focus on the processes taking place at these sites.

Figure 6.3 shows the proportion of chaff, wild plants and grains that have been found at each site. This is indicative of which crop processing activities took place at each location. After the harvested crops are brought to the site the first stage of processing is threshing where the chaff and grains are separated. Once this is done, the chaff is discarded and finally wild plant seeds are removed from the cereal grains to leave only the desired product. This means that a site with a very high proportion of chaff is indicative of early stages of processing, while a site with a high proportion of grains is indicative of late stages of processing (with wild plant seeds falling somewhere in the middle) (Van der Veen & Jones 2006).

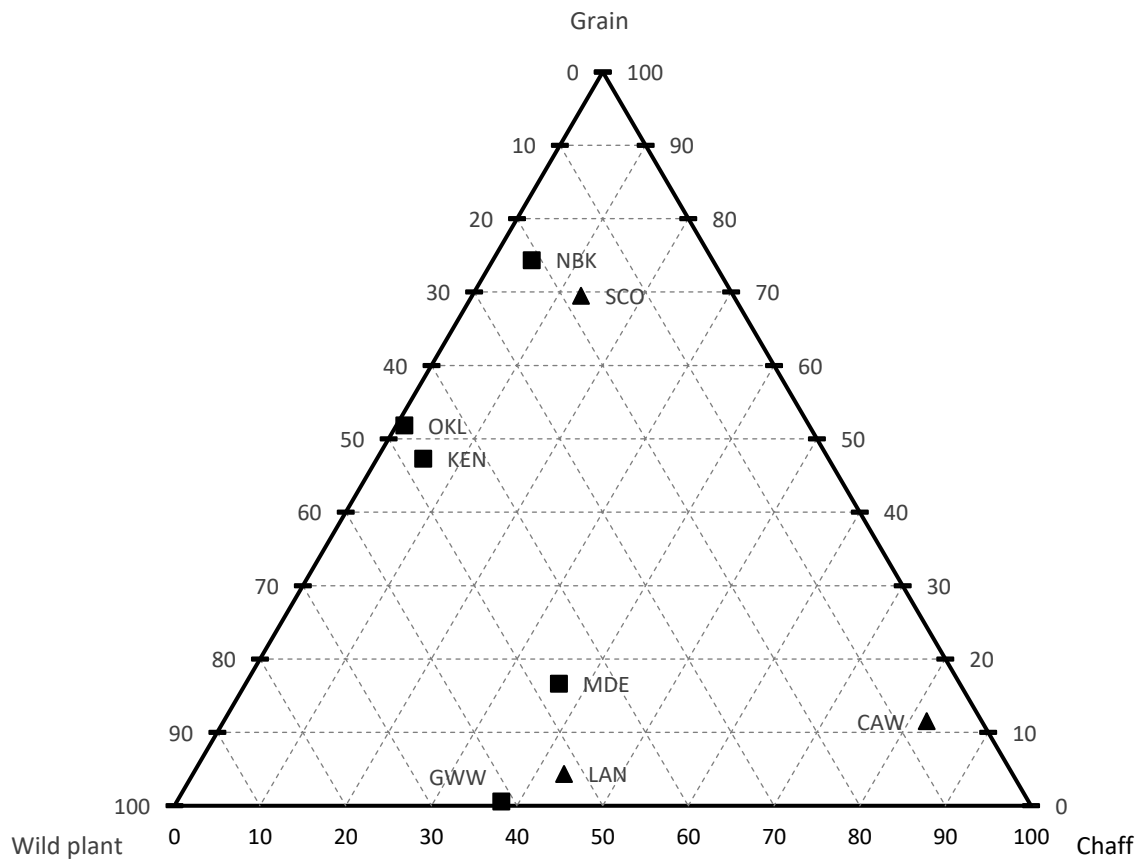


Figure 6.3 Proportion of grain, chaff and wild plants across sites assessed. Square = 'banjo' sites, triangle = proxy site.

There is detailed evidence of crop processing across several of the sites. At Mingies Ditch initial crop processing is taking place with harvested cereal arriving at the site, being separated from weeds, which together with other waste products such as chaff and stalks were burned to dispose of them (Jones and Robinson 1993, p.123). As these burnt plant remains form the majority of plant evidence from this site, it is clear early stages of crop processing took place here, but it is not conclusive whether later stages also did. Groundswell West is similar in that the evidence found there also suggests initial processing took place at this site. This can be seen on the Figure 6.3 with both Mingies Ditch (MDE) and Groundswell West (GWW) sitting at the central, lower area of the chart.

Most other 'banjo' enclosures, however seem to show the initial crop processing happening off-site with the partially processed crops being stored and final crop processing stages taking

place at the 'banjo' enclosure. This is the case for Old Kempshott Lane (OKL), Nettlebank Copse (NBK) and Kennel farm (KEN), which all sit in the top left section of the chart. Here we see a much higher proportion of grains, the final output of these processes. The one site that represents a significant outlier is Crawley (CAW), which is a proxy site. This is likely because the excavated features at this site date to the Roman period, meaning it is probably not representative of the 'banjo' enclosure.

It is of interest to note that the two 'banjo' enclosure sites that fall into the group that has initial crop processing happening on site, both have relatively low confidence ratings (1 out of 4). However the sample size is too small to really draw conclusions from this fact.

There is no clear consistency as to which stages of crop processing are taking part in each 'banjo' enclosure. Interestingly there is also no consistency in this regard across the proxy sites, indicating that yet again the 'banjo' enclosures do not have any distinctly different patterns in either crop type or crop processing activity to generalised Iron Age enclosures.

Overall, there is no clear evidence that the primary purpose of these sites is arable agriculture or that the agricultural practices at 'banjo' enclosure sites significantly diverge from the norm.

6.4 'Banjo' enclosures a high status sites

Though this is not a theory widely discussed in the academic literature for 'banjo' enclosures it is something that is briefly mentioned by Cunliffe (1995). There is very little environmental evidence which can be used to support or disprove this theory. Some sites report on the quality of cuts of meat, so this is the main indicative evidence that can be examined in this regard. However the number of sites where this data is available is very small, limited to just Kennel Farm, Lains Farm and Mingies Ditch. This means any conclusions gained from this dataset need to be treated with care and scepticism as the potential for a biased dataset which is misleading or unrepresentative is very high.

"The initial advantage of using animal remains to suggest human activity is that man did not create bones; therefore we can create a culture-free taxonomy of bones. In other words, there are no cultural influences that would affect the taxonomy because human beings did not create the animal

bone themselves. This fact allows one to conclude with certainty that any variability in frequency or anatomical parts must be due to the dynamics of their use (Binford 1978). The human role in the placement of faunal assemblages is to partition, segment, and differentially distribute animal bone. There is little question that these activities reflect human use” (Torgerson, 2023, 82).

At Kennel Farm the only animal bone found represented good cuts of meat, leading Deighton to speculate that the sheep/goats were being raised predominantly for meat opposed to wool or milk (Deighton 2002a). A similar trend was viewed at Lains farm where there was bias towards cattle limbs (Coy 1992). This is in contrast to Mingies Ditch where the plurality of the animal bone could be grouped in skull and related bones (Table 5.4).

In summary there are some initial indications in the environmental evidence that ‘banjo’ enclosures are markers of status in Iron Age culture, but this does not appear to be applicable across all the sites and there is simply not sufficient evidence to come to a firm conclusion on this hypothesis.

6.5 ‘Banjo’ enclosures as small farmsteads

This theory is based on the landscape analysis of ‘banjo’ enclosures and whether they are associated with other enclosures to form more complex settlement. Conceptually if ‘banjo’ enclosures represent small remote farmsteads we should see indicators of self-sufficiency in the environmental evidence, such as full utilisation of animal products, a lack of specialisation and all stages of crop processing taking place within the ‘banjo’ enclosure site. Indicatively we can see that this is not true for all ‘banjo’ enclosure sites as the evidence generally does not suggest that all stages of crop processing took place within a single site. Similarly while most sites have a mixed animal assemblage made up of the main iron age domesticates there are clear examples of sites heavily specialising towards cattle or sheep/goat in contrast to what we would expect for isolated farmsteads. The level of utilisation of animal products inferred from the quality of the bones (e.g. butchery marks etc.) would perhaps be the most telling in evaluating this theory, however as mentioned above the data available for this analysis is too limited to draw any firm conclusions. Finally there is the fact to consider that many of these ‘banjo’ enclosure sites have other enclosures in very close proximity (e.g. the proxy sites

discussed throughout this essay), suggesting that these were often not isolated sites, but rather parts of a larger Iron Age society. Perhaps the best example of this is Greatfield Farm, where Wright et al. (2009) theorise that the main settlement migrated from its original enclosure to the 'banjo' enclosure nearby. While the environmental data is far from conclusive on this theory, indicatively there is not much supporting it and a few findings suggesting this is not the most valid interpretation of 'banjo' enclosures as a whole.

6.6 'Banjo' enclosures as ritual sites

The final interpretation to discuss is that of 'banjo' enclosures as ritual sites. Birdlip, Micheldever Wood and Nettlebank Copse have all been interpreted as potential ritual sites. In terms of identifying ritual sites we would be looking for similar markers as high status sites discussed above. Evidence of feasting in the form of specific cuts of meat or potentially in the presence of cooking fires beyond what would be expected for a normal occupied site. A strong candidate for this interpretation is the 'banjo' enclosure at Scrubditch, where the large proportion of pig remains and evidence of firepits may indicate feasting activity. This is further supported by indications the site was only in use sporadically, perhaps seasonally and the fact that the funnel seemed more suited to creating a "dramatic entrance" (Moore 2020, p.128) than to funnel livestock. Finally there is also the fact that the linked 'banjo' enclosure at Cutham, appears to have been abandoned by ceremonial backfilling, which included an inhumation burial.

6.7 Summary of findings

To summarise, the environmental evidence is insufficient to identify a clear purpose for 'banjo' enclosures. That being said it is noteworthy that evidence across the range of 'banjo' enclosures examined shows much less support for the traditional functionalist view than one would expect from the academic discourse on these sites. That is not to say that there may not have been important economic or functionalist factors in their development and construction, but the environmental evidence clearly does not support a universal interpretation that can be applied across all 'banjo' enclosures.

It is interesting to note that out of the 240 possible 'banjo' enclosures assessed in this dissertation's study area, only two were not listed as such in the HER data. This suggests that the term is widely used and more likely over-attributed than under-attributed. Of the examples with sufficient data on their shape in plan, only 45% featured all of the characteristics: a single square or sub-circular enclosed area, approximately 0.2-0.6 hectares in size, marked by a single ditch with an elongated, flared entrance. The remaining 55% were missing at least one of these features.

Cultural or ritual interpretations are more difficult to evaluate with the current environmental data, but given the lack of evidence for the functionalist there is a clear need to further investigate non-functionalist interpretations. The data currently suggests that 'banjo' enclosure do not signify a monument type with a common meaning and function across all sites. Interpretations of 'banjo' enclosures should be made on a site by site basis, driven by specific evidence, rather than trying to fit them into the pre-existing framework currently dominant in the literature.

7 Conclusion

What is apparent from the diversity of interpretations of different 'banjo' enclosure sites, is that either the evidence is too limited to point to clear conclusions or that there is simply not a shared purpose or function across 'banjo' enclosure sites. Overall this dissertation strengthens both of these points, with the available evidence being more suited to disproving hypotheses on their purpose than substantiating them, and also showing that more evidence is needed to evaluate more complex theories of their use.

There is a clear sense that rather than existing theories being based on a strong evidential base, the evidence is following and in many cases undermining the interpretations which dominate the academic discourse on 'banjo' enclosures. To some extent this field of study is still shaped by initial hypotheses generated in the 1970s, which have not been sufficiently challenged in light of the additional data gathered over the past 50 years.

This lack of a strong evidentiary base for 'banjo' enclosures also means that the term is perhaps used too inconsistently and may obscure significant differences between sites. This is not to say that the term is not relevant and should not be used, but rather that it is potentially overused, applying to anything that remotely resembles the shape, rather than being confined to sites whose morphology strongly adheres to the original definition. Ultimately what is most needed to answer the outstanding questions about these enclosures is further high quality excavations of 'banjo' enclosure sites, especially those focused on excavating a higher proportion of the site rather than individual evaluation trenches with limited environmental sampling.

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10 Appendix 1: Animal bone data

	Cattle	%	Sheep/ Goat	%	Pig	%	Horse	%	Dog	%
Bagendon	1769	35.8%	2265	45.8%	877	17.7%	32	0.6%	4	0.1%
Bramdean	180	26.4%	394	57.7%	53	7.8%	47	6.9%	9	1.3%
East of Oddington Grange	63	48.8%	28	21.7%	25	19.4%	11	8.5%	2	1.6%
Greatfield Farm	43	53.1%	22	27.2%	10	12.3%	4	4.9%	2	2.5%
Groundwell House	556	14.5%	1886	49.2%	1288	33.6%	88	2.3%	18	0.5%
Groundwell West	302	39.1%	333	43.1%	107	13.9%	25	3.2%	5	0.6%
Kennel Farm	26	25.5%	59	57.8%	16	15.7%	1	1.0%	-	-
Lains Farm	49	29.9%	93	56.7%	11	6.7%	11	6.7%	-	-
Littlemore	6	85.7%	1	14.3%	-	-	-	-	-	-
Micheldever Wood	836	34.1%	1147	46.8%	326	13.3%	87	3.6%	54	2.2%
Mingies Ditch	526	29.2%	955	53.1%	108	6.0%	205	11.4%	6	0.3%
Nettlebank Copse	1101	29.4%	1649	44.1%	538	14.4%	192	5.1%	259	6.9%
Old Kempshott Lane	32	60.4%	6	11.3%	3	5.7%	6	11.3%	6	11.3%
Owslebury	646	39.7%	674	41.4%	186	11.4%	85	5.2%	38	2.3%
Small Copse Banjo Enclosure	34	15.5%	164	74.9%	14	6.4%	4	1.8%	3	1.4%
Winstone	5	45.5%	5	45.5%	1	9.1%	-	-	-	-
Woodhams Farm	118	37.0%	67	21.0%	5	1.6%	19	6.0%	110	34.5%

Table 10.1 NISP of the five main domesticates

	Roe deer	Red deer	Deer	Dog/fox	Fox	Hare	Beaver	Field vole	Water vole	House mouse	Wood mouse	Common shrew	Goose	Crane	House sparrow	Raven	Buzzard
Bagendon																	
Bramdean										1		1					
East of Oddington Grange																	
Greatfield Farm	1																
Groundwell House	1	1			1	5							1	1		2	4
Groundwell West	2																
Kennel Farm																	
Lains Farm								30		25					10		
Littlemore																	
Micheldever Wood																	
Mingies Ditch			2				2		1								
Nettlebank Copse		43		9	371	10											
Old Kempshott Lane		373										1					
Owslebury	3	4															
Small Copse	1		1					10			34	10					
Winstone																	
Woodhams Farm																	

Table 10.2 NISP of mammals and birds

	Micro mammal	Small mammal	Medium mammal	Large mammal	Unidentified mammal	Unidentified amphibian	Unidentified bird
Bagendon							
Bramdean							
East of Oddington Grange	6	4	43	435			
Greatfield Farm					75		
Groundwell House	15		4690	1366	18	1	7
Groundwell West			377	366	951		1
Kennel Farm			22				
Lains Farm	1	58					
Littlemore							
Micheldever Wood			2403	1051	23		
Mingies Ditch	2				10914		6
Nettlebank Copse	16	97	979	770	3196	18	40
Old Kempshott Lane	2		5	112			
Owslebury			428	658	78		
Small Copse	54		186	195	124		
Winstone							
Woodhams Farm			29	4	3		

Table 10.3 NISP of unidentified animal bone

	Sorex araneus	Microtus Agrestis	Apodemus sylvaticus	Mus musculus	Dog	Horse	Pig	Cervus elaphus	Cattle	Sheep/ goat
Skull + Skeleton										
Horn core						2	2			1
Skull		4		1			4		2	3
Maxilla			1				8			16
Mandible		8	1	1			16		3	29
Tooth							5		13	17
Scapula							3		3	2
Humerus										2
Radius									1	
ulna									1	
Innominate					2		1		2	1
Femur							1		4	5
Tibia							1		2	8
fibula							4			
Talus								1	2	
Metapodial					9		2		2	4
Phalanx 1							2			
Phalanx 2									1	
Hoof core							1			1
Vertebra							2			10
Rib										
Hyoid										4
Sternum									1	
Fragments									60	
Total		12	2	2	11	2	55	1	98	104
Domestic species	-	-	-	-	4	1	20	-	36	39

Table 10.4 Animal bones from Bramdean Phase 1, pits 3, 6, 8, 12 (Clutton-Brock, p. 53)

	Sorex araneus	Microtus Agrestis	Apodemus sylvaticus	Mus musculus	Dog	Horse	pig	Cervus elaphus	Cattle	Sheep/ goat
Skull + Skeleton					3		1		1	
Horn core									1	
Skull	1			1		2			2	3
Maxilla					1	1	2		2	2
Mandible					2	6	8		12	30
Tooth						19	16		44	137
Scapula					1	1	3		4	2
Humerus							2		2	8
Radius					1	1	3		3	7
ulna							1		3	1
Innominate						2			2	2
Femur						2			2	3
Tibia						2	1		3	6
fibula							6			
calcaneum									1	2
Talus						1			1	6
Metapodial						7	2		6	6
Phalanx 1							2			2
Phalanx 2						2			1	3
Hoof core							2		1	
Vertebra						1	2		8	3
Rib										37
baculum					1					
Fragments									81	134
Total	1			1	6+ (3)	47	52+ (1)		179+ (1)	394
Domestic species					1	7	8		26	58

Table 10.5 Animal remains from Bramdean Phase 2, pits 5, 7, 9, 10, 11, cuttings A, B, E, 'Activity area' (Clutton-Brock ,p. 54). Numbers in brackets, in the total denote partial or complete skeleton

11 Appendix 2: Plant remains data

			WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples			1	7	2	5	2	16	14	12	2	11
(L) sampled			46	105	NA	83	10	NA	NA	NA	NA	200
Trees (charcoal)												
	<i>Quercus</i> sp.	Oak									20h, 20rhs	
Aceraceae	<i>Acer campestre</i> L.	Field maple	1									
Aceraceae	<i>Acer campestre</i> L. r/w	Field maple r/w										
Adoxaceae	<i>Sambucus nigra</i> L. r/w	Elder r/w				6r						
	<i>Alnus glutinosa</i> (L.)											
	Gaertn./ <i>Corylus</i>											
Betulaceae	<i>avellana</i> L.	Alder/Hazel	4									
	<i>Alnus glutinosa</i> (L.)											
	Gaertn./ <i>Corylus</i>											
Betulaceae	<i>avellana</i> L. r/w	Alder/Hazel r/w										
Betulaceae	<i>Corylus avellana</i> L.	Hazel				7r						
Betulaceae	<i>Corylus avellana</i> L. r/w	Hazel r/w										
	<i>Quercus petraea</i>	Sessile										
	(Matt.) Libel./ <i>Quercus</i>	oak/Pedunculate										
Fagaceae	<i>robur</i> L.	oak	5			-						
Oleaceae	<i>Fraxinus excelsior</i> L.	Ash	6			7						
Rosaceae	Maloideae	hawthorn group									6	

			WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples			1	7	2	5	2	16	14	12	2	11
(L) sampled			46	105	NA	83	10	NA	NA	NA	NA	200
Rosaceae	<i>Crataegus monogyna</i> Jacq./ <i>Sorbus</i> L./ <i>Malus sylvestris</i> (L.) Mill.	Hawthorn/Rowans /Crab apple	2									
	<i>Crataegus monogyna</i> Jacq./ <i>Sorbus</i> L./ <i>Malus sylvestris</i> (L.) Mill. r/w	Hawthorn/Rowans /Crab apple r/w										
		Maloideae hawthorn group				15r						
Rosaceae	<i>Prunus</i> L.	Cherries	2			91r						
Rosaceae	<i>Prunus spinosa</i> L.	Blackthorn				41r						
	<i>Rhamnus cathartica</i> L.	buckthorn				1						
		Willows/Poplars										
Salicaceae	<i>Salix</i> L. <i>Populus</i> L. r/w	r/w										
		interminate diffuse				22r						
Ulmaceae	<i>Ulmus glabra</i> Huds.	Wych elm	-			-						
Total			20	0	0	190	0	0	0	0	6	0
Grain												
Cerealia	<i>Avena sativa</i>	Oat (grain)			1	2						
Cerealia	<i>Avena</i> sp.	Oat (grain)						5				
Cerealia	cf. <i>Avena</i> sp.	Oat (grain)								1		
Cerealia	<i>Avena</i> sp.	Wild oats (grain)							7			6
	<i>Hordeum distichol</i> L. or <i>vulgare</i> L.	Barley (grain)							435			
Cerealia	<i>Hordeum distichol</i> L. or <i>vulgare</i> L.	Hulled barley (hulled indeter.							108			

			WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples			1	7	2	5	2	16	14	12	2	11
(L) sampled			46	105	NA	83	10	NA	NA	NA	NA	200
		grains)										
Cerealia	<i>Hordeum distichol</i> L. or <i>vulgare</i> L.	Hulled barley (hulled median grains)							22			
Cerealia	<i>Hordeum</i> sp.	Barley (grain)		2				338		196		
Cerealia	<i>Hordeum</i> sp.	Barley (sprouted grain)								3		
Cerealia	<i>Hordeum</i> sp.	Hulled barley (hulled grain)								43		50
Cerealia	<i>Hordeum</i> sp.	Hulled barley (hulled straight grain)								9		
Cerealia	<i>Hordeum</i> sp.	Hulled barley (hulled twisted grain)								13		
Cerealia	<i>Hordeum</i> sp.	Barley (grains undiff.)										10
Cerealia	<i>Hordeum vulgare</i>	Naked barley			1							
Cerealia	<i>Hordeum vulgare</i> L. emend.	6-row hulled barley (grain)						2	32			
Cerealia	<i>Hordeum vulgare</i> L. sp.	Barely (grain)				53	3					
Cerealia	Indet. cereal	(grain)		25	17	141	46	105	299	1384		
Cerealia	<i>Triticum aestivum</i>	Bread wheat (grain)			1			97				
Cerealia	<i>triticum aestivum</i> <i>compactum</i> Schiem	Bread or club wheat (grain)							1			
Cerealia	<i>Triticum</i> cf.	Emmer or spelt								6		

			WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples			1	7	2	5	2	16	14	12	2	11
(L) sampled			46	105	NA	83	10	NA	NA	NA	NA	200
	<i>dicoccum/spelta</i>	wheat (grain)										
Cerealia	<i>Triticum cf. spelta</i> L.	Spelt wheat (grain)								2		
Cerealia	<i>Triticum cf. spelta</i> L.	Spelt wheat (short grain)								2		
Cerealia	<i>Triticum dicoccum</i> (Shrank) Schuble.	Emmer wheat (grain)								4		
Cerealia	<i>Triticum dicoccum/spelta</i>	Emmer or spelt wheat (grain)		5		207	3	1067		44		24
Cerealia	<i>Triticum monococcum/dicoccum</i>	Einkorn or emmer wheat (grain)								4		
Cerealia	<i>Triticum sp.</i>	Wheat (grain)					2	80	70	208		
Cerealia	<i>cf. Triticum sp.</i>	Wheat (grain)								4		
Cerealia	<i>Triticum spelta</i> L.	Spelt (grain)			3				4	15		
Cerealia	<i>Triticum spelta</i> L.	Spelt wheat short grain								2		
Cerealia	<i>Triticum/Hordeum</i>	Wheat or barley (grain)			21							
Cerealia	<i>Triticum undiff.</i>	(grain)										49
Cerealia	cereals undiff.	(grain)										33
Cerealia	cereal frag.	est. whole grains				72						
Total				32	44	403	54	1694	978	3818	0	6
Chaff												
Cerealia	<i>Avena sp.</i>	Oat (twisted awn)								8		
Cerealia	<i>Avena sp.</i>	Oats (awn frags.)					3					9

			WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples			1	7	2	5	2	16	14	12	2	11
(L) sampled			46	105	NA	83	10	NA	NA	NA	NA	200
Cerealia	Cereales indet.	(glume base/rachis)								96		
Cerealia	cf. <i>Avena</i> sp.	Oat (floret base)								1		
Cerealia	cf. <i>Hordeum</i> sp.	Barley (rachis)								1		
Cerealia	cf. <i>Triticum</i> sp.	Wheat (basal rachis node)								10		
Cerealia	<i>Hordeum distichon</i> L./ <i>vulgare</i> L.	Barley (awn frags.)							31			
Cerealia	<i>Hordeum distichon</i> L./ <i>vulgare</i> L.	Barley (internodes)							1075			
Cerealia	<i>Hordeum</i> sp.	(rachis frags.)										3
Cerealia	<i>Hordeum</i> sp.	Barley (grains tail)										5
Cerealia	<i>Hordeum</i> sp.	Barley (awn)								9		
Cerealia	<i>Hordeum</i> sp.	Barley (rachis)								24		
Cerealia	<i>Hordeum vulgare</i> L. emend.	6-row barley (rachis frags.)		10								
Cerealia	<i>Hordeum vulgare</i> sp. <i>Vulgare</i> L.	6-row barley (rachis frags.)								18		
Cerealia	indet. Cerealia	(spikelet forks)										
Cerealia	indet. Cerealia	(chaff frags.)						10				
Cerealia	Parenchyma (cf. <i>Conopodium majus</i>)											2
Cerealia	<i>Secale cereale</i> L.	Rye (internodes)							20			
Cerealia	<i>Triticum</i> cf. <i>dicoccum</i> (Shrank) Schubl.	Emmer wheat (glume base)								3		

			WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples			1	7	2	5	2	16	14	12	2	11
(L) sampled			46	105	NA	83	10	NA	NA	NA	NA	200
Cerealia	<i>Triticum cf. dicoccum</i> (Shrank) Schubl.	Emmer wheat (spikelet fork)								1		
Cerealia	<i>Triticum cf. dicoccum</i> Schubl.	Emmer wheat (glume bases)							2			
Cerealia	<i>Triticum cf. spelta</i> L.	Spelt wheat (glume base)								6		
Cerealia	<i>Triticum cf. spelta</i> L.	Spelt wheat (rachis internode)								4		
Cerealia	<i>Triticum cf. spelta</i> L.	Spelt wheat (spikelet fork)								1		
Cerealia	<i>Triticum dicoccum</i> (Shrank) Schuble.	Emmer wheat (glume base)								4		
Cerealia	<i>Triticum dicoccum</i> (Shrank) Schuble.	Emmer wheat (spikelet fork)								1		
Cerealia	<i>Triticum dicoccum</i> L.	Emmer wheat (glume bases)						10				1
Cerealia	<i>Triticum dicoccum/spelta</i>	Emmer or spelt wheat (glume bases)		231		2	372	6		1148		167
Cerealia	<i>Triticum dicoccum/spelta</i>	Emmer or spelt wheat (rachis frags.)		2								1
Cerealia	<i>Triticum dicoccum/spelta</i>	Emmer or spelt wheat (spikelet forks)		14			4			133		4
Cerealia	<i>Triticum</i> sp.	Wheat (awn frags.)							39			
Cerealia	<i>Triticum</i> sp.	Wheat (brittle)							63			

			WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples			1	7	2	5	2	16	14	12	2	11
(L) sampled			46	105	NA	83	10	NA	NA	NA	NA	200
		internodes)										
Cerealia	<i>Triticum</i> sp.	Wheat (chaff frags.)			3							
Cerealia	<i>Triticum</i> sp.	Wheat (glumes)							358			
Cerealia	<i>Triticum</i> sp.	Wheat (basal rachis node)								4		
Cerealia	<i>Triticum</i> sp.	Wheat (glume base)								124		
Cerealia	<i>Triticum</i> sp.	Wheat (node)								3		
Cerealia	<i>Triticum</i> sp.	Wheat (rachis internode)								17		
Cerealia	<i>Triticum</i> sp.	Wheat (spikelet fork)								42		
Cerealia	<i>Triticum spelta</i> L.	Spelt wheat (glume base)								282		
Cerealia	<i>Triticum spelta</i> L.	Spelt wheat (spikelet fork)		1						11		
Cerealia	<i>Triticum spelta</i> L.	Spelt wheat (rachis internode)								5		
Cerealia	<i>Triticum spelta</i> L.	Spelt wheat (glume bases)		64	2		6	4	561			25
Cerealia	<i>Triticum/secale</i> sp.	Wheat or rye (awn frags.)								18		
Cerealia	Cereal size	(culm base)								20		
Cerealia	Cereal size	(rhizome)								47		
Cerealia	Cereal size	(embryo-unsprouted)								32		

			WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples			1	7	2	5	2	16	14	12	2	11
(L) sampled			46	105	NA	83	10	NA	NA	NA	NA	200
Cerealia	Cereal size	(sprout)								1		
Cerealia	Cereals undiff.	(culm nodes)								32		2
Cerealia	Cereals undiff.	(rachis)										1
Cerealia	Cereals undiff.	(tail grain)										9
Cerealia	cf. cereal	(culm bases)										3
Cerealia	cf. <i>Juncus</i> sp.			1								
Cerealia	Gramineae	(rhizome)								2		
Cerealia	Gramineae size	(culm base)								1		
Cerealia	Gramineae size	(culm nodes)								1		
Cerealia	Gramineae size	(embryo-unsprouted)								2		
Total			0	323	5	74	385	30	2149	234	0	398
Wild plants [mineralised]												
Adoxaceae	<i>Sambucus nigra</i> L.	Elder								2		
Apiaceae	<i>Torilis arvensis japonica</i>	Upright hedge-parsley										4
	<i>Torilis nodosa</i> (L.) Gaertn.	Knotted hedge-parsley										
Apiaceae	<i>Umbelliferae</i> N.F.I.			[1]								
Asteraceae	<i>Tripleurospermum</i> sp.	Mayweed		[2]						24		
Asteraceae	<i>Centaurea</i> sp.	Knapweed/cornflower								1		
Betulaceae	<i>Corylus avellana</i> L.	Hazelnut shell frag				6		41				
Boraginaceae	<i>Lithospermum arvense</i> L.	Corn gromwell		11[6]					1			1

			WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples			1	7	2	5	2	16	14	12	2	11
(L) sampled			46	105	NA	83	10	NA	NA	NA	NA	200
Boraginaceae	<i>Myosotis arvensis</i>	Field forget-me-not										2
Boraginaceae	<i>Myosotis</i> sp.	Forget-me-not		[4]								
Caryophyllaceae	<i>Agrostemma githago</i> L.	Corn cockle						1		2		
Caryophyllaceae	<i>Agrostemma githago</i> L.	Corn cockle										
Caryophyllaceae	<i>Arenaria</i> cf.	(capsule tip)									1	
Caryophyllaceae	<i>sephyllifolia</i> L.	Thyme-leaved sandwort									2	
Caryophyllaceae	<i>Caryophyllaceae</i> N.F.I.			[2]				8	6	3		
Caryophyllaceae	<i>Cerastium</i> sp.	Mouse-ear chickweed							2			
Caryophyllaceae	<i>Cerastium/stellaria</i> sp.	Chickweed/										
Caryophyllaceae	<i>Silene</i> cf. <i>vulgaris</i>	Mouse-ear chickweed										2
Caryophyllaceae	(Moench) Garcke	Bladder campion										
Caryophyllaceae	<i>Silene</i> sect.											
Caryophyllaceae	<i>Melandrifformes</i> or											
Caryophyllaceae	<i>Inflatae</i> sp.	Campion							14			
Caryophyllaceae	<i>Silene</i> sp. L.	Campion				1		11				
Caryophyllaceae	<i>Stellaria media</i>	Chickweed										8
Caryophyllaceae	<i>Stellaria media</i> (L.) Vill.	Chickweed					1		7			
Caryophyllaceae	<i>Stellaria media</i> sp.	Chickweed								12		
Caryophyllaceae	<i>Stellaria</i> sp.	Chickweed or stichwort						4		13		
Caryophyllaceae	<i>Scleranthus annuus</i> L.	Annual knawel								1		
Chenopodiaceae	<i>Atriplex hastata/patula</i>	Orache										

			WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples			1	7	2	5	2	16	14	12	2	11
(L) sampled			46	105	NA	83	10	NA	NA	NA	NA	200
	L.											
Chenopodiaceae	<i>Atriplex</i> sp. L.	Orache				1		200	210	44		20
	<i>caryophyllaceae/</i>											
	<i>chenopodiaceae</i>											
Chenopodiaceae	indeterminate									2		
	<i>Chenopodiaceae</i>											
Chenopodiaceae	indeterminate									3		4
Chenopodiaceae	<i>Chenopodiaceae</i> N.F.I.								97			
Chenopodiaceae	<i>Chenopodium album</i> L.	Fat hen		2	3	3						4
	<i>Chenopodium</i> cf.											
Chenopodiaceae	<i>album</i> L.	Fat hen						379	38			
Chenopodiaceae	<i>Chenopodium</i> sp.	Goosefoot				13		114	1	2		4
	<i>Chenopodium</i>											
Chenopodiaceae	sp./ <i>Atriplex</i> sp.	Goosefoot fam		[2]	15							
	<i>Helianthemum</i>											
Cistaceae	<i>nummularium</i> L. Miller	Common rock-rose								1		
Compositae	<i>Anthemis cotula</i> L.	Stinking mayweed						8				
Compositae	cf. <i>Picris</i> sp.	Oxtongues						2				
	<i>Compositae</i>											
Compositae	indeterminate							23		6		
Compositae	<i>Compositae</i> N.F.I.			1[2]				-				
Compositae	<i>Lapsana communis</i> L.	Nipplewort						8	1			
	<i>Onopordum acanthium</i>											
compositae	L.	Cotton thistle							1			
	<i>Tripleurospermum</i>											
Compositae	<i>maritimum</i> L. Koch	Scentless mayweed		13		1			13			

			WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples			1	7	2	5	2	16	14	12	2	11
(L) sampled			46	105	NA	83	10	NA	NA	NA	NA	200
Cruciferae	<i>Brassica cf. rapa</i> L.	Wild turnip							15			
Cruciferae	<i>Brassica sp./Sinapis sp.</i>	Cabbages or mustards		2[211]								
Cyperaceae	<i>Carex</i> flat	Flat sedge										4
Cyperaceae	<i>Carex</i> sp.	Sedge		10				12	5	9		
Cyperaceae	<i>Carex</i> trig	Sedge										15
Cyperaceae	cf. <i>Carex</i> sp.	Sedge								1		
Cyperaceae	<i>Cyperaceae</i> indet.									1		3
Cyperaceae	<i>Eleocharis palustris</i>	Spike-rush								2		5
Cyperaceae	<i>Eleocharis</i> sp.	Spike-rush						8				
	<i>Eleocharis</i> sub.											
Cyperaceae	<i>Palustres</i>	Spike-rush							12			
	<i>Pteridium aquilinum</i> L.	Bracken frond										
Dennstaedtiaceae	Kuhn	fragments							71	30		
Fabaceae	Fabaceae indet.											3
Fabaceae	<i>Lathyrus nissolia</i> L.	Grass vetchling								2		
	<i>Anisantha sterilis</i> L.											
gramineae	Nev	Barren brome							1			
	<i>Avena</i> L. / <i>Bromus</i> L.											
Gramineae	sp.	Oat or brome grass				8						33
	<i>Bromus</i> cf. <i>racemosus</i>											
Gramineae	type	Brome								10		
	<i>Bromus</i> cf.	Rye brome or soft										
Gramineae	<i>Secalinus/hordeaceus</i>	brome								1		5
	<i>Bromus hordeaceus</i>											
Gramineae	type	Brome								225		

			WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples			1	7	2	5	2	16	14	12	2	11
(L) sampled			46	105	NA	83	10	NA	NA	NA	NA	200
Gramineae	<i>Bromus hordeaceus</i> type (sprouted)	Brome										
Gramineae	<i>bromus mollis</i> agg./ <i>secalinus</i> L.	Soft brome or chess							71			
Gramineae	<i>Bromus</i> sect. <i>Bromus</i>	Chess		2								
Gramineae	<i>Bromus</i> sect. <i>Genea</i>	Barren brome										
Gramineae	<i>Bromus</i> sp. L	Brome grass				8	1	79				11
gramineae	cereal or large grass culm nodes								10			
Gramineae	<i>festuca</i> sp.	Fescue							1			
gramineae	<i>Gramineae</i> (large) indet.	Grass								129		
gramineae	<i>Gramineae</i> (small) indet.	Grass								244		
gramineae	<i>Gramineae</i> N.F.I	Grass		10					1358			
gramineae	Ignota								486			
Gramineae	Indeterminate culm bases							1				
gramineae	<i>Poa annua</i> type	Annual poa								13		
gramineae	<i>Poa</i> cf. <i>annua</i>	Meadow grass										1
gramineae	<i>Poa pratensis/tibialis</i> sp.	Soft meadow grass										3
gramineae	<i>poa</i> sp	Meadow grass							4			16
gramineae	<i>Poa/Phleum</i> sp. L	Meadow grass or cat tails				2	1					
gramineae	small grass culm nodes								2			

			WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples			1	7	2	5	2	16	14	12	2	11
(L) sampled			46	105	NA	83	10	NA	NA	NA	NA	200
Juncaceae	<i>Juncus inflexus</i> L sp.	Hard rush (stems)							1			
Juncaceae	<i>Juncus</i> sp.	Rushes							1			107
Juncaceae	<i>Juncus</i> sp.	Rushes (stems)							4			
Juncaceae	<i>Luzula</i> sp.	Woodrush							1			
Labiatae	<i>Ballota/glechoma</i> type	False dittany or ground-ivy							1			
Labiatae	<i>Mentha</i> sp.	Mint							1			
Labiatae	<i>Prunella vulgaris</i> L.	Self-heal							16			1
Lamiaceae	<i>Stachys</i> sp.	Marsh woundwort										1
Lamiaceae	Labiatae indet. <i>cf. Medicago lupulina</i>											1
Leguminosae	L.	Black medick							37			
Leguminosae	<i>cf. Trifolium pratense/ trifolium repens</i>	Pratense red clover or white clover										1
Leguminosae	<i>Leguminosae</i> indeterminate	Pulse			23					26		
Leguminosae	<i>Medicago lupulina</i> L.	Black medick		9					3	1		92
Leguminosae	<i>Medicago</i> type <i>Medicago/ trifolium</i> sp.	Medick, clover, etc.								6		
Leguminosae	L.	Medick or clover				4						19
Leguminosae	<i>Medicago/melilotus</i> <i>Melilotus cf. laticissima</i>	Medick or sweet yellow clover										1
Leguminosae	Thuill.	Melilot							1			
Leguminosae	<i>Pisum sativum</i> L.	Pea						1		1		
Leguminosae	<i>Trifolium repens/</i>	White clover or										22

			WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples			1	7	2	5	2	16	14	12	2	11
(L) sampled			46	105	NA	83	10	NA	NA	NA	NA	200
	<i>arvense/ dubium/ campestre</i>	creeping thistle or sun star or field maple										
Leguminosae	<i>Trifolium</i> sp.	Clover						6	5	2		5
Leguminosae	<i>Vicia</i> sp.	Vetch										1
Leguminosae	<i>Vicia faba</i>	Celtic bean				cf. 3						
Leguminosae	<i>Vicia</i> L. / <i>lathyrus</i> sp. L.	Vetch or wild pea				2						15
Leguminosae	<i>Vicia</i> L. / <i>lathyrus/ pisum</i> sp. L.	Vetch or wild pea or vetch or tare								5		
Leguminosae	<i>Vicia sativa</i>	Common vetch										1
Leguminosae	<i>Vicia</i> sp./ <i>lathyrus</i> sp.	Vetch or tare		4			1	1	9	22		
Leguminosae	<i>Vicia tetrasperma</i>	Smooth vetch										1
Linaceae	<i>Linum catharticum</i> L.	Purging flax		[1]					1	1		
Malvaceae	<i>Malva sylvestris</i> L.	Common mallow		-					28			
	<i>Euphrasia rostkoviana/odontites verna</i>	eyewort or red bartsia										13
Orobanchaceae	<i>Odontites verna</i>	Red bartsia										78
Papaveraceae	<i>Fumaria</i> sp.	Fumitory		3						4		
Papaveraceae	<i>Papaver argemone</i> L.	Long prickly-headed poppy							1	3		
Papaveraceae	<i>Papaver argemone</i> L.	Long prickly-headed poppy (capsule lid)							1	1		
Papaveraceae	<i>Papaver</i> cf. <i>rhoeas</i> .											
Papaveraceae	<i>dubium</i>	Poppy										1

			WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples			1	7	2	5	2	16	14	12	2	11
(L) sampled			46	105	NA	83	10	NA	NA	NA	NA	200
Papaveraceae	<i>Papaver dubium/hybridum</i>	Poppy		3[1]								
	<i>Papaver rhoeas</i> L.											
	<i>duium</i> L., <i>lecoqii</i>											
Papaveraceae	Lamotte/ <i>hybridum</i> L.	Poppy							2	8		
Papaveraceae	<i>Papaver somniferum</i> L.	Poppy								3		
Papaveraceae	<i>Papaver</i> sp.	Poppy		[74]				15		5		
Plantaginaceae	<i>Plantago lanceolata</i> L.	Ribwort plantain		3		2			27			
Plantaginaceae	<i>Plantago major</i> L.	Plantains							2			6
Plantaginaceae	<i>Plantago media/lanceolata</i>	Plantains										13
Plantaginaceae	<i>Plantago</i> sp.	Plantains						1				
		Ivy-leaved										
Plantaginaceae	<i>Veronica hederifolia</i> L.	speedwell										
	<i>Arrhenatherum elatius</i>	Onion couch grass										
Poaceae	L. Pres.	(tuber)							1			
	<i>Arrhenatherum elatius</i>	Onion-couch										
Poaceae	spp. <i>bulbosum</i> (Wild)	(tuber)								63		
	<i>Arrhenatherum elatius</i>	False oat grass										
Poaceae	Var. <i>bulbosum</i> (Wild)	(tuber frags)				2	1					
Poaceae	cf. <i>Phalaris</i> sp.											1
Poaceae	<i>Lolium</i> sp.	Perennial ryegrass										1
Poaceae	<i>Monocot</i>	(stem/rootlet frag.)				3						
Poaceae	<i>Phleum</i> sp.	Timothy grass										15
Poaceae	<i>Poaceae</i>	Grass (large seeds)					1					
Poaceae	<i>Poaceae</i>	Grass (small seeds)					20					

		WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples		1	7	2	5	2	16	14	12	2	11
(L) sampled		46	105	NA	83	10	NA	NA	NA	NA	200
Poaceae	<i>Poaceae</i> indet.										7
Poaceae	<i>Poaceae</i> mid indet.										5
Poaceae	<i>Poaceae</i> small indet.										7
Poaceae	cf. <i>Festuca</i> sp.										1
Poaceae	cf. <i>Festuca/lolium</i> <i>Arrhenatherum</i> <i>tuberosum</i> (Gilib.) Schultz										8
Poaceae			1								
Polygonaceae	cf. <i>Persicaria</i> sp						14				
Polygonaceae	<i>Polygonum Persicaria</i> L., <i>lapathifolium</i> L. or <i>nodosum</i> Pers. <i>Bilderdykia</i> <i>convolvulus</i> (L.) Dumort.							3			
Polygonaceae					3						
Polygonaceae	<i>Polygonaceae</i> indet.										2
Polygonaceae	<i>Polygonum aviculare</i>										1
Polygonaceae	<i>Polygonum aviculare</i> agg.							5			
Polygonaceae	<i>Polygonum aviculare</i> agg.		1		6						
Polygonaceae	<i>Polygonum aviculare</i> L. <i>Polygonum</i> cf. <i>aviculare</i> agg.						2				
Polygonaceae								5			

			WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples			1	7	2	5	2	16	14	12	2	11
(L) sampled			46	105	NA	83	10	NA	NA	NA	NA	200
	<i>Polygonum convolvulus</i>											
Polygonaceae	L.	Black bindweed							18			
Polygonaceae	<i>Polygonum</i> sp.											
Polygonaceae	<i>Polygonum/ fallopia</i> undiff.	Knotgrass or black-bindweed										1
Polygonaceae	<i>Polygonum/ rumex/ bolderdykjia</i> sp.	Knotgrass or dock or bindweed						544				
Polygonaceae	<i>Rumex acetosella</i> agg.	Sheep's sorrel							6			
	<i>Rumex</i> cf. <i>conglomeratus/ obtusifolius/ sanguineus</i>	Clustered dock, bitter dock, bloody dock										
Polygonaceae												2
Polygonaceae	<i>Rumex</i> cf. <i>crispus</i>	Curley dock										12
Polygonaceae	<i>Rumex</i> sp.	Dock		2	2	8			29			
Polygonaceae	<i>Rumex</i> sp. L.	Curled dock				5						
Polygonaceae	<i>Rumex</i> undiff.	Dock										5
Polygonaceae	<i>Fallopia convolvulus</i>	Black-bindweed				2						7
	<i>Montia fontana</i> sp.											
Portulacaceae	<i>chondrosperma</i>	Blinks		1					3			
Primulaceae	cf. <i>Anagallis arvensis</i> L.	Scarlet pimpernel		[2]								
	<i>Ranunculus acris/ bulbosus/ repens</i>	Buttercup		1		1				1		
Ranunculaceae	<i>Ranunculus</i> cf. <i>acris</i> L.	Buttercup							1			
Ranunculaceae	<i>Ranunculus</i> cf. <i>repens</i> L.	Buttercup							14			
Ranunculaceae	<i>Ranunculus flammula</i> L.	Lesser spearwort							1			
Ranunculaceae	<i>Ranunculus</i> sp.	Buttercup							8	4		1

			WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples			1	7	2	5	2	16	14	12	2	11
(L) sampled			46	105	NA	83	10	NA	NA	NA	NA	200
Rhamnus	<i>Rhamnus cathartica</i> L.	Buckthorn							2			
Rosaceae	<i>Agrimonia eupatoria</i> L.	Common agrimony							3			
Rosaceae	<i>Aphanes arvensis</i> agg.	Parsley piert		1			1					
Rosaceae	<i>Aphanes arvensis</i> L.	Parsley piert						1		1		2
rosaceae	<i>Crataegus</i>	Hawthorn							1			
rosaceae	<i>Crataegus monogyna</i> Jacq.	Hawthorn				1						
Rosaceae	<i>Potentilla anserina</i> L.	Silverweed										
Rosaceae	<i>Potentilla reptans</i> L.	Cinquefoil							1			
Rosaceae	<i>Potentilla</i> sp.	Cinquefoil										6
Rosaceae	<i>Potentilla/ fragaria</i> sp.	Cinquefoil or strawberry							6			
Rosaceae	<i>Prunus</i> sp.	Cherries						1				
Rosaceae	<i>Prunus spinosa</i> L.	Sloe							1			
	<i>Prunus spinosa</i> L./ <i>Crataegus monogyna</i> Jacq (thorns and twigs)	Sloe or hawthorn type thorns				4			5			
Rosaceae	<i>Rosa</i> sp.	Rosehip			1							
Rosaceae	<i>Rubus fruticosus</i> agg.	Blackberry							1			
Rosaceae	<i>Rubus</i> sp.	Blackberry (prickle)							3			
rubiceae	<i>cf. Sherardia arvensis</i> L.	Field madder								5		
Rubiaceae	<i>Galium aparine</i> L.	Goose grass		5			1		17			23
Rubiaceae	<i>Galium palustre</i>	Common marsh bedstraw										1

			WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples			1	7	2	5	2	16	14	12	2	11
(L) sampled			46	105	NA	83	10	NA	NA	NA	NA	200
Rubiaceae	<i>Galium</i> sp. L	Bedstraw				1		15	8	53		3
Rubiaceae	<i>Rubiaceae</i> indet.									2		
rubiceae	<i>Sherardia arvensis</i> L.	Field madder		6					6	42		
Rubiaceae	<i>Gallium</i> cf. <i>aparine</i> L.	Cleavers								20		
Salicaceae	<i>Salix</i> sp.	Willow (catkins)							2			
scrophulariaceae	<i>Euphrasia/ Odontites verna</i> (Bell.)	Eyebright or bartsia							24			
scrophulariaceae	<i>Linaria vulgaris</i> Mill.	Toadflax							1			
Solanaceae	<i>Hyoscyamus niger</i>	Black henbane										1
Typhaceae	<i>Typha</i> sp.	Bulrush								1		
umbelliferae	<i>Peucedanese</i> N.F.I.								1			
Urticaceae	<i>Urtica dioica</i> L.	Stinging nettle		[2]					2			
Urticaceae	<i>Urtica urens</i> L.	Small nettle		[2]								
valerianaceae	<i>Valerianella dentata</i>	Lamb's lettuce										6
	<i>Valerianella dentata</i>	Narrow-fruited										
valerianaceae	(L.) Poll.	corn salad							2	18		
	<i>Valerianella rimosa</i>	Broad-fruited corn										
valerianaceae	Bast.	salad							1	1		
Violaceae	<i>Viola</i> sp.	Violet						27				
	Bud					3				18		
	cf. <i>Torilis</i> sp.			[4]								
	Concretion									++'		
	Grass stems indet.											2
	Herbage									+++		

	WIN	LAN	KEN	SCO	CAW	OKL	MDE	NBK	EOG	GWW
Number of samples	1	7	2	5	2	16	14	12	2	11
(L) sampled	46	105	NA	83	10	NA	NA	NA	NA	200
Ignota					2			161		
Mineralised nodule				3						
Mineralised object 1								2		
Sambucus igra L.								4		
Seed indet. (large)										5
Seed indet. (small)										39
Tuber indet.								93		
Tuber type 1								1		
Tuber/Rhizomes				10						
Unidentified seeds						17				
Total	0	74[316]	44	103	30	1544	2749	1084	0	647