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Wild wetlands and domestic drylands?

Prehistoric communities of the East Anglian Fens in their broader regional context (c. 4000 BC - 100 AD)

By
F.J. Huisman

Volume 1: Text

Department of Archaeology
Durham University

May 2019

Front page image: A reconstruction drawing of Bradley Fen. (Image from Knight and Brudenell in prep., reproduced with kind permission of the Cambridge Archaeological Unit (CAU))

Abstract

The potential of well-preserved prehistoric wetland sites for our understanding of the past has long been recognised but is currently not fully realised due to the isolation of the sub-discipline of Wetland Archaeology from mainstream Archaeology. This is mostly because wetlands and wetland people have often been studied separately from dryland(er)s in the UK. Although it is now recognised that wetlands and wetland people were in fact connected to (those in) drier areas, wetland(er)s remain somewhat isolated. It is often unclear what role they played in the wider landscape, who past 'wetlanders' were, or how they related to nearby 'drylanders'.

The aim of this research is to address these issues by contextualising later prehistoric (c. 4000 BC-100 AD) wetland sites and communities in the East Anglian Fens (UK). It examines how wetland(er)s fit in the wider socio-cultural and physical landscape by considering past human-environment interaction and its social outcomes through time. It focusses on food remains in and around the former Fens to understand how the wetlands were used throughout time. It then uses social theories current in mainstream Archaeology to examine how people's identities were constructed through their interaction with the wetland environment and to assess to what extent 'wetlander' identities may have affected people's relations with others.

Unlike many previous projects this study uses a large scale, broad comparative approach, which encompasses both wetland and dryland sites. A range of domestic and wild plant and animal remains from 145 selected sites in and around the former Fens were recorded in a purpose-built relational database and systematically compared to study subsistence practices and reconstruct human-environment interaction in three different environments (wetlands, drylands and the fen edge) through time (Neolithic to Iron Age, c. 4000 BC-100 AD).

This analysis has identified five stages of human-wetland interaction, demonstrating that the former Fens were of greater interest in some periods, whereas there is less activity in others. Yet in all phases there are connections between the wetland, fen edge and dryland environments, through those exploiting and inhabiting these landscapes. People's changing interaction with the dynamic wetland environment led to a range of different wetland identities, some stronger and more distinct than others, but wetlanders were always part of, or interacting with, 'dryland' communities, just like various wetland environments were an integrated part of the wider landscape.

Wild wetlands and domestic drylands?

Prehistoric communities of the East Anglian Fens in their broader regional context (c. 4000 BC -100 AD)

By

Floor Joke Huisman

A thesis submitted in fulfilment of the requirements for the qualification of PhD

Volume 1: Text

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“Although their condition was very miserable, they enjoyed a wild sort of liberty amid the watery wastes, which they were not disposed to give up.”

W.H. Wheeler - *A History of the Fens of South Lincolnshire* - 1896

“The Fens may have seemed to me the ideal non-setting, the ideal flat, bare platform for my human drama. Little did I know. What quickly happened was that the apparent background became a foreground, even a principal character.”

G. Swift - *Waterland* - 2008

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List of abbreviations

ME/ENE	Mesolithic/Early Neolithic
ENE	Earlier Neolithic
LNE	Later Neolithic
LNE/EBA	Late Neolithic/Early Bronze Age
EBA	Earlier Bronze Age
M/LBA	Middle/Late Bronze Age
LBA/EIA	Late Bronze Age/Early Iron Age
EIA	Earlier Iron Age
M/LIA	Middle/Late Iron Age
LIA/ROM-B	Late Iron Age/Romano-British

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I have spent much time at the Cambridge Archaeological Unit (CAU) over the past four years and I have benefitted greatly from discussions with Chris Evans, Mark Knight and several others at the CAU. Mark's enthusiasm for Fenland prehistory first drew me to the Fens. He introduced me to the Fenland landscape and showed me its dynamic nature and subtle complexities. Chris' extensive knowledge on and insights into the archaeology and prehistory of the region and beyond has been of great value to this thesis. My conversations with him and Mark have provided inspiration throughout my research. They, and several of their colleagues, very kindly gave me access to grey literature and provided me with much unpublished material on Must Farm and other Fenland and dryland sites in Cambridgeshire and Peterborough, for which I am very grateful. I would also like to thank Andrew Hall of the CAU for giving me permission to use many of the images in this thesis, and Rachel Ballantyne from the University of Cambridge for taking time to discuss my research approach and results, and for sharing unpublished material and data with me.

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During my PhD research I have spent six months on placements in three different museums. Although my work there was not directly related to my thesis, the various projects I worked on, including an exhibition on Beaker people in Europe, a Late Bronze Age hoard from Yorkshire, and a website on Grauballe Man, have been of great value. These projects, and my discussions with colleagues at these various institutions broadened my horizon and gave me many new insights which have shaped this thesis. I would especially like to thank Jaap Beuker (Drents Museum), Neil Wilkin (British Museum), Camilla Sørensen Bjarnø and Pauline Asingh (Moesgard Museum) for hosting me at their museums, for sharing their passion for sharing archaeology with a wider audience, and for their support and encouragement both during and after my placement.

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Voor mijn ouders

Chapter 1. Wetland(er)s vs dryland(er)s – An introduction

Prologue

"Fire! Fire! Get out of your house, now!" The family was startled as their neighbour burst into the house. They were sat around the hearth, having their meal (a gruel of emmer served in newly made, shiny pots). "What...?" said the woman, her spoon midway in the air between the pot and her mouth, and her children looking startled. "GET OUT! NOW!", her neighbour shouted again, looking frantically from her to the children; "Your roof is on fire!". She jumped up instantly, dropping the bowl and spoon. The children, very frightened, looked at her wide-eyed. "Take them, quickly!" she told her neighbour, who gestured wildly at them to come out of the house. She smelled it now, the fire and the smoke. She could see it creeping in through the reeds that covered the roof. How could she have missed it before? Perhaps it had been the burning smell of the food in the cooking pot on the hearth that had masked it (she had been distracted by one of the little ones and some of the porridge had burnt). She turned around and scanned the contents of her house. Behind her there was a collection of pots, plates, baskets, cups and bowls, the flint quern and her stores of grain. Just beside that a chest with tools, including several fine axes which needed sharpening after the recent completion of the palisade around the village. Next to that, their beds and her loom, a new and finely woven cloth (almost finished) upon it. Her tools and several hanks of unspun material, as well as many carefully coiled balls of spun threads and her bobbins lay strewn around the area (she had intended to tidy after the meal). Up in the rafters, now obscured by thick smoke which made her cough and her eyes water, was more storage space and their supplies of dried and smoked fish and meat. "What to take, what to save?!" she thought desperately, but before she could decide, her neighbour grabbed her arm and dragged her outside "There is no time, it's too late!"

When she came outside, coughing, and blinking her eyes, the bright sunlight was obscured by thick clouds of smoke, which she realised, were not only coming from her roof. A neighbour's house was burning like a torch; this was where the fire must have started. The flames roared, and she could hear several dogs barking and howling frantically. She could see the fire was spreading quickly, setting alight the wood of the walkways between the houses and the walls and roofs of the houses themselves. Bits of them were falling into the sluggish river above which their houses were built. A few people near the palisade were desperately filling buckets and pots with water, throwing them on the flames in an attempt to quench the fire, but there were too few of them and they could not stop the fire spreading. Her *neighbour and she tried to make their way over to help but found their path blocked. "We need to get out!" she said. "Leave!" another woman shouted, "It's no use, we have to go!" The woman and her young son got into one of the log boats tied to the palisade and paddled off swiftly, away from the settlement in the river. She turned to her neighbour. "Is everyone safe?", she asked. "I hope so…!" her neighbour replied, "Let's go!" They turned and ran across the stretches of the walkways that were still intact, through the palisade and along the path connecting the settlement to the slightly raised drier ground nearby.*

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Hours later, as dusk began to fall, the villagers looked at the flames consuming their newly built homes and all their possessions. A boy cried for his dog, which had been tied up near the house; there had been no time to save him. Those who had been out hunting, fishing and tending the herds and fields had returned, having seen the smoke or having heard from neighbours on the fen edge about the fire. Finding their families safe and unscathed, they watched the fire together. Some were angry, others sad; the village was less than a year old and the palisade had only been completed around ten days back! They had just started to feel at home here in the river just off the marsh edge. They stood there watching until it had gone dark and there was nothing left but a few burnt uprights and the remains of the palisade. Many others, living in the settlements along the marsh edge, came to watch, offering them shelter and food until they could rebuild their settlement. Yet it was soon decided that it could not be reconstructed here, in this cursed location. After the harvest, some of the villagers packed what little they had left and rounded up their herds, heading inland along the river, to where their kin were living. Others joined friendly fen edge communities, or those who dwelled further out in the marshes, reluctant to leave the wetlands where they'd grown up. They might build their own village again eventually, but not quite yet, and certainly not in that cursed location.

1.1 Must Farm; a British 'Pompeii' in the East Anglian Fens

In 1999, no-one expected the wooden posts sticking out of the edge of a clay pit just east of Peterborough to belong to one of the best-preserved Later Bronze Age settlements in the UK. Yet excavations in the Whittlesey brick pits conducted by the Cambridge Archaeological Unit between 2015-2016 revealed that the piles belonged to the now famous Late Bronze Age site of Must Farm. Dubbed the 'Pompeii of Britain', this is an incredibly well-preserved pile dwelling settlement dated to c. 900-800 BC (Knight et al. 2017). At least five typical Bronze Age roundhouses, surrounded by a palisade, were discovered here (ibid.)[1] (Figure 1). However, it is unlike any other known Late Bronze Age settlement as its houses were

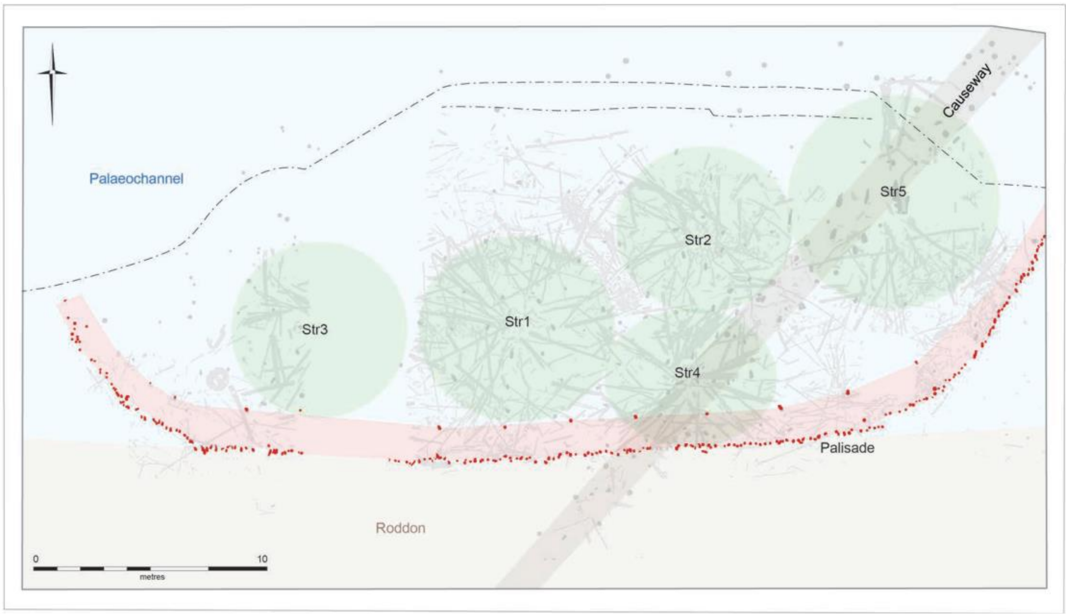

Figure 1: The five roundhouses found during the 2015-16 excavation of Must Farm. The palisade is visible in red and an earlier, Middle Bronze Age causeway, no longer in use when Must Farm was built, crosses the site diagonally. (Image from Knight et al. 2017, reproduced with kind permission of CAU)

once raised on stilts over the course of a former channel of the river Nene. At the time, this river flowed sluggishly through the former East Anglian Fens, a great expanse of wetland around the Wash on the East Coast of England (Figure 2) (Must Farm 2018, 22).[2]

The settlement burnt down after a short life span (possibly no more than a year) and as the structures and their contents collapsed, they fell into the river, where a thin layer of silt quickly covered everything (Figure 3) (Must Farm 2018, 31,32,38). This silt, in combination

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[1] As half the site was unfortunately quarried away, there may have been up to ten houses originally (cf. Knight et al. 2017).

[2] Much of the information about the discoveries at Must Farm comes from the Dig Diaries (written during the most recent excavation in 2015-2016) on the Must Farm website: <http://www.mustfarm.com/bronze-age-settlement/progress/archive/>. The numbers refer to specific Dig Diary entries.

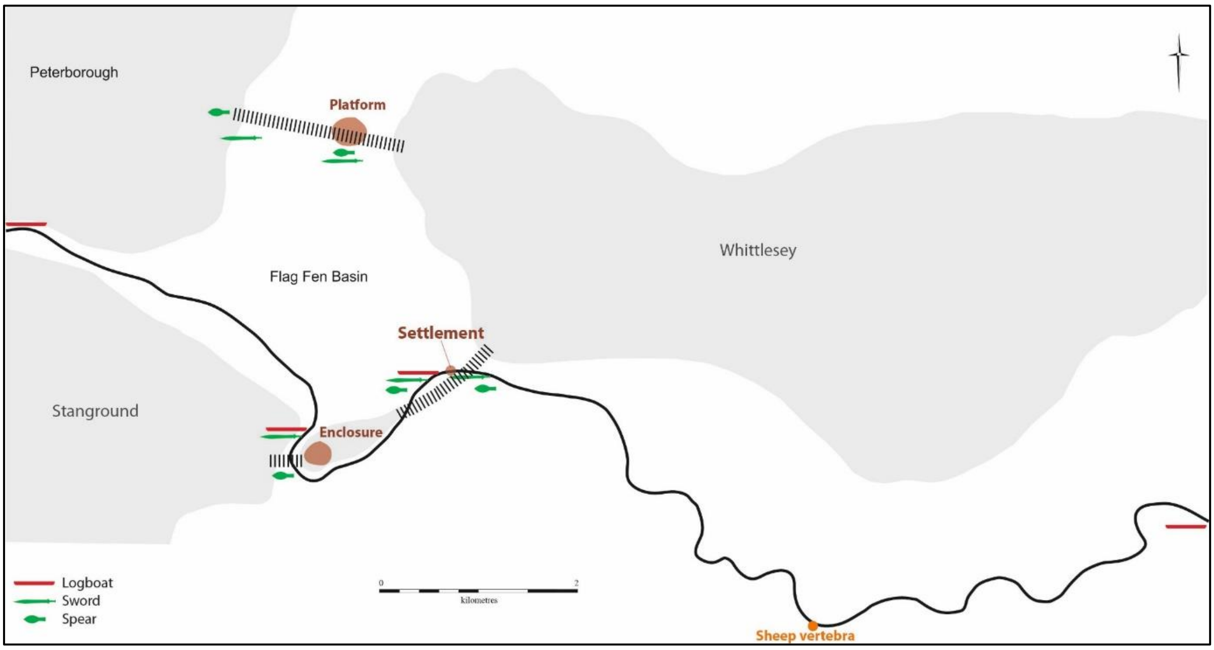

Figure 2: The location of the Must Farm settlement, just south of the slightly raised Whittlesey 'island' in the Flag Fen Basin. The Flag Fen platform and alignment can be seen to the north of the site. (Image from Must Farm 2018, courtesy of the CAU)

with the waterlogged burial environment, helped preserve a wide range of materials, including the timbers used to build the structures Figure 4) and a range of material culture (Figure 5) (Must Farm 2018 10, Knight et al. 2017). Much of these items were found more or less in situ (hence the Pompeii analogy) (Must Farm 2018, 26). This provides us with unprecedented insights into the life of the people inhabiting the Must Farm settlement (Figure 6).

The Must Farm settlement is clearly unique, both in terms of its location in the deep Fens (rather than on the fen edge) and because of its exceptional preservation. Yet although the site seems very special to us now, it may not have been so in prehistory, when a great variety of wetland settlements existed in Europe (cf. Coles and Coles 1989, Menotti 2012, Menotti and O'Sullivan 2013). Whilst we might consider these wetlands as marginal, uninhabitable areas, in the past these landscapes seem to have been valued and often well-connected parts of the landscape, with waterways acting as trade and communication routes. Indeed, the presence of many dryland resources (including building materials, domestic plants and animals) and beads with a central European origin at Must Farm demonstrates that the people living here were far from isolated (cf. Knight and Brudenell in prep., Must Farm 2018, 12, 34).

Unfortunately, however, well-preserved wetland sites like Must Farm are often studied in relative isolation due to a number of reasons, including the much richer archaeological and environmental records found at such sites, a lack of theory, the absence of people in many wetland narratives, and our modern perception of wetlands as different or special (cf. Van de Noort and O'Sullivan 2006, Menotti 2012, Tilley 1991, Evans 1990).[3] These issues have long been recognised and problematised and many scholars have proposed a range of possible solutions to overcome them (e.g. Van de Noort and O'Sullivan 2006, Menotti 2012, Scarre 1989, Tilley 1991, Evans 1990, Coles and Coles 1992). Yet although these studies demonstrate that wetland(er)s are clearly part of the wider landscape, their relation to dryland(er)s remains somewhat unclear, limiting our understanding of past life in both wetland and dryland areas.

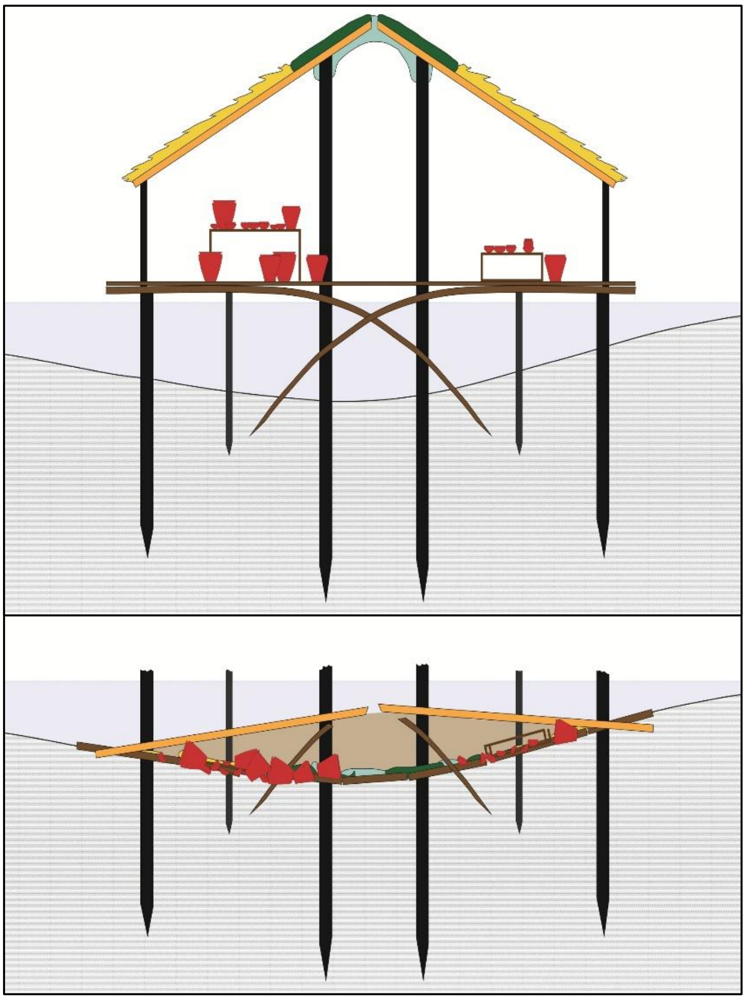

Figure 3: A schematic representation of one of the houses at Must Farm before and after the fire, which shows that many finds were found more or less in situ. (Drawing by Vicki Herring, Must Farm 2018, courtesy of the CAU)

[3] When wetlands sites *are* contextualised, parallels are often looked for in other wetlands, sometimes located hundreds of kilometres away. Must Farm for instance, has been compared to the circum-Alpine lake villages (Must Farm 2018, 11). It is likely however, that the more immediate local and regional 'dryland' context of wetland sites would have been more meaningful to the inhabitants of sites like Must Farm. It is this more immediate regional and interregional context that will be the focus of this research.

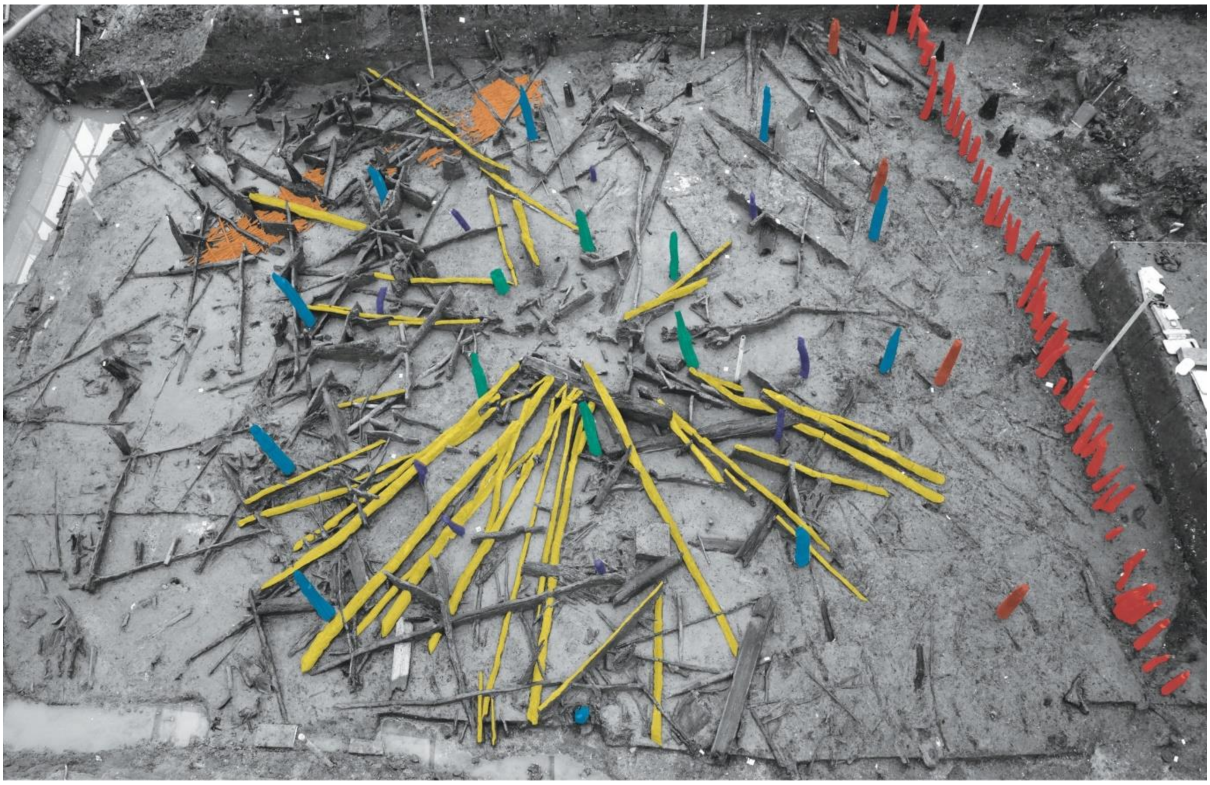

Figure 4: Roundhouse 1 at Must Farm can be recognised from its rafter beams fanning out like the spokes of a wheel. Two rings of oak uprights (blue and green) are also clearly visible. The palisade is visible to the right (red) and a wattle panel in the top left (orange). (Image from Must Farm 2018, courtesy of the CAU)

Figure 5: A selection of material culture from Must Farm (NB: not to scale). (Photos from Must Farm 2018, courtesy of the CAU)

This thesis aims to address these issues by contextualising later prehistoric wetland sites and communities like those at Must Farm within their wider geographic and socio-cultural landscape. It will study wetland(er)s role and place in relation to nearby dryland areas and communities by examining if, how and why wetland settlement and communities differed from their dryland contemporaries, how they related and to what extent they interacted. Because identities and the way different communities relate are closely linked to the landscapes and environments that people inhabit, these questions may be answered by examining human-environment interaction and its social outcomes.

The aim of this chapter is to discuss the wet/dryland(er) divide and the proposed solutions in more depth, before explaining how this thesis aims to address this issue. The first section (1.2) explains how and why wetland(er)s are often studied in isolation. Section 1.3 discusses the way this issue has been approached by others within wetland Archaeology and beyond. In section 1.4, the solution proposed in this thesis is outlined. It starts with an overview of the theories underlying the approach, followed by an explanation of how this research aims to study human-environment interaction and its social outcomes. The study area, the former Fens and surrounding drier areas, is briefly introduced in section 1.5. After this, the research aims and objectives are outlined (1.6), followed by a discussion of four wider research themes, all concerned with bridging simplistic divides or structural oppositions (1.7). The final two sections provide a summary of this chapter (1.8) and an outline of the following chapters (1.9).

1.2 Wetland(er)s in isolation – Outlining the issues

Many scholars, both within wetland Archaeology and beyond, point out that wetlands are a wonderful resource for archaeologists (e.g. Coles and Coles 1989, Menotti 2012, Scarre 1989, Evans 1990, Purdy 1988, Tilley 1991). Their often well-preserved environmental and archaeological records provide us with a wealth of information which can greatly contribute to our knowledge of the past (ibid.). Unfortunately, this potential has not been fully realised until now, as wetland landscapes (and the sites and people therein) are generally not considered in relation to the wider geographical and cultural landscape (cf. Menotti 2012, 12, Van de Noort 2013, Van de Noort and O'Sullivan 2007, 79, Scarre 1989, Tilley 1991, Evans 1990, Jones, 1983, Coles and Coles 1992). This section will outline some of the factors that have resulted in this artificial divide between wetlands and drylands.

One of the main reasons that wetlands tend to be studied in isolation is the unique nature of wetland landscapes and environments, where both the environmental and archaeologi-

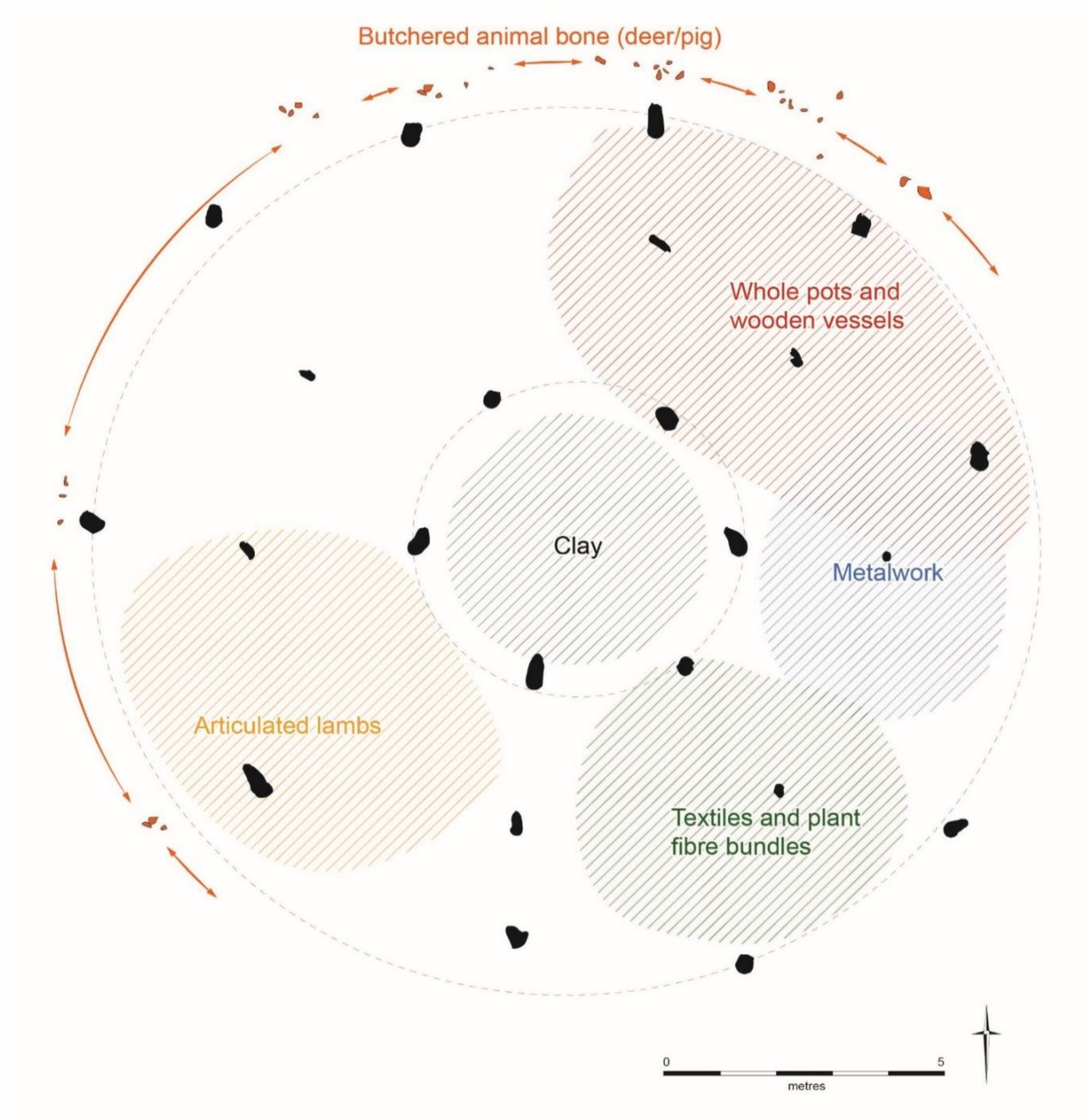

Figure 6: A plan of Roundhouse 1, showing where particular groups of material were after they fell into the river during the fire. The butchered remains of large animals were found around the edges on the outside of the house and semi-articulated lambs on the inside of the structure, suggesting they may have been stored here. The north-east of the house seems to have been related to food storage and preparation, and textile production possibly concentrated in the south-east. (Image from Must Farm 2018, courtesy of the CAU)

cal record are often much better preserved than in most dryland areas (cf. Menotti 2012, 15, Evans 1990).

This has resulted in a different research focus in wetland Archaeology than in mainstream Archaeology, which focusses on drylands. The well-preserved environmental remains found on many wetland sites mean that reconstructing the environment and past economies through a range of scientific approaches has been a major research focus in wetland

Archaeology right from the start (Menotti 2012). Yet although this results in very detailed depictions of past landscapes, it has led to an overemphasis on the environment and even environmental determinism, which only explores the exploitative relation between landscape and people (Van de Noort and O'Sullivan 2006, 10).

With the arrival of Post Processual Archaeology, the deterministic, functionalist approaches common in wetland Archaeology became less popular in mainstream Archaeology, but they continued to be used in wetland Archaeology (Menotti 2012). The exquisitely well-preserved material found in wetland sites was thought to 'speak for itself', without need for complicated models and theory (Menotti 2012, 361, Van de Noort and O'Sullivan 2006, 143). Thus, it seems that the quantity and quality of remains found at waterlogged sites have stopped wetland archaeologists from developing a strong theoretical basis and interpretative framework for wetland Archaeology (Van de Noort 2013, 726, Scarre 1989). This lack of theory is a second factor that contributes to the divide between wetlands and drylands, where such theories are far more common.

An issue closely related to the last is the lack of in-depth social analyses within many wetland studies. The emphasis on the environment and well-preserved material culture, in combination with a lack of (social) theory, mean that there are few social interpretations within wetland Archaeology that consider past people (Tilley 1991, Evans 1990, Van de Noort and O'Sullivan 2007). This has dehumanised wetland people, turning them into a group of faceless and generic 'wetlanders' (cf. Van de Noort and O'Sullivan 2006), or as Tilley (1991, 214) puts it: "The 'people of the wetlands' are…considered as bodies requiring tools, shelters, clothing and full stomachs of fish and fowl" for whom "some kind of sociological unity" is assumed for the groups inhabiting wetlands. People are reduced to the environment they inhabited, and a distinct 'wetlander' identity, which sets them apart from groups inhabiting other, drier parts of the landscape, is assumed rather than proven (ibid.).

A final factor that has played an important role in creating and maintaining the divide between wetlands and drylands and the people within them is our modern perception of wetland landscapes and their inhabitants, which we tend to contrast. This perception seems to be based on a long history of generally negative attitudes to wetlands and their inhabitants by dryland 'outsiders' (cf. Huisman 2017). From the Roman period onwards, we frequently find derogative descriptions of dangerous, wild and wasteful wetlands and the uncivilised people who lived here (ibid.). In these accounts, 'bad' wetland(er)s are structurally opposed to 'good' dryland(er)s. Pliny's description of the Chauci, who lived on raised *terpen* in the saltmarshes of the northern Netherlands and Germany as a 'miserable race' eking out a meagre existence in a large empty plain which is flooded twice a day is an early example (Pliny, *Natural History,* XVI, 2-4)(Figure 7). Early medieval accounts of the former East Anglian Fens describe the wild and dangerous wetlands and the 'Britons' who lived here (Felix,

Figure 7: A reconstruction of a terp settlement. It is likely that its inhabitants lived a far more comfortable life in the saltmarshes than Pliny suggests. (Image reproduced with kind permission of Archeoweb 2011, www.archeoweb.nl)

The Life of St. Guthlac, XXIV). They are a distinctly different from the Saxons, who inhabited the drylands (Brady 2010). Despite clear exploitation of the Fens' rich resources, the later medieval Fens were still considered as wild and uninhabitable, and it is no surprise that these 'useless' wetlands started to be drained from the 10th century onwards in response to demands for more agricultural land (Rippon 2000). The Christian ideology at the time portrayed wetlands and their inhabitants as wild, undomesticated and ungodly, and it was argued that drainage would tame both the landscape and its people, turning them from wild savages into hard-working Christians (Zwart 2003, Hall and Coles 1994). In the post-medieval period similar arguments were used to justify the continued drainage of the Fens (cf. Evans 1997a). When the Fens had almost gone, more romantic views of this landscape and its people replaced former disdain, but the structural opposition between wet and dryland(er)s remained in place (ibid., Huisman 2017). Even nowadays, wetland landscapes and those who inhabit these areas are frequently considered with suspicion. The 'Marsh Arabs' who inhabited the Iraqi Marshes until relatively recently for instance, were looked down upon by 'drylanders' around the marshes (Thesiger 1964, 49).[4]

The historical opposition between wetland(er)s and dryland(er)s and the generally negative stereotypes about these landscapes and their peoples greatly influence the way in which we approach and understand past wetland(er)s. Wetland people are often portrayed as "a bit wild and rebellious, ruggedly individualist, highly skilled and resourceful" (Van de Noort and O'Sullivan 2006, 66, cf. Evans 1997a). Hall and Coles (1994, 156) for instance, characterise Fenlanders as fiercely independent and suspicious of outsiders, emphasising their difference from those in other areas. In his study of the Fens and its inhabitants, McCollough (2001, 505) describes Fenlanders as "a singular people" who developed a feeling of "freedom and individuality" and a "culture unique from that of the rest of the island [the UK]".

In line with historical ideas about wasteful and unproductive wetlands, many scholars, particularly those who do not study wetlands, think of these landscapes as either physically or socially marginal (Van de Noort and O'Sullivan 2006, 33, 42, Louwe Kooijmans 1993, 71). Despite clear evidence for extensive settlement in prehistoric wetlands, many still consider these areas as essentially uninhabitable. An article on French lake dwellings for instance, asks: "…what reasons would incite a group of agriculturalists to build their cereal lofts and their permanent residences in an environment so inhospitable, muddy, unstable and prone to flooding…?" (Petréquin and Bailey 2004, 39). This statement, though apparently valid, is based on our modern perceptions of these landscapes as wild and 'unproductive areas'.

Most wetland archaeologists, who have extensively studied these landscapes and the way people interacted with them, tend to have a more nuanced view of these landscapes. They emphasise the myriad ways in which people interacted with wetlands, arguing that the

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[4] The wet/dryland(er) divide is so strong that it is visible in popular culture too. Many folk and fairy tales and even modern fiction (especially of the fantasy genre) portray bogs, marshes and other wetlands as dangerous, wild and magical, inhabited by witches, the dead and wicked, or else by inferior people (cf. Meredith 2002). Examples include fantasy novels like Tolkien's (1954) *Lord of the Rings* where the 'Dead Marshes', a 'forsaken country', are inhabited by the spectres of those who died in a battle that once took place here. In *The Game of Thrones* series (Martin 1999), the inhabitants of a big swampy area are viewed with suspicion by 'drylanders' who refer to these 'crannogmen' as 'mudmen', 'bog devils', or 'frog eaters' because they do not live and farm like the drylanders. In *Harry Potter and the Goblet of Fire* (Rowling 2000), the dark wizard Zalazar Slytherin comes from the Fens, in contrast to his more virtuous colleagues who come from respectable drylands, like valleys and glens. Finally, in Graham Swift's novel 'Waterland' (2008) the Fens feature prominently. Although it is set after drainage in the 20th c. AD, descriptions of the Fenland landscape are used to set the dark mood throughout the book. The book features Bill and Martha Clay, who have lived in the Fens all their lives. Bill makes a living by (illegally) shooting ducks and Martha is known as a witch, demonstrating the negative attitude to this landscape's inhabitants, even after drainage.

wealth of wild resources available here would have been a major draw for past people (e.g. Menotti 2012, Van de Noort and O'Sullivan 2006, Hall and Coles 1994, Brown 2005). In part, this seems to be a response to the traditionally negative view of wetland(er)s as outlined above. However, these more positive views are also closely related to the 19th century romantic movement, a belief in the virtues of the untamed wilderness of nature, and our own disconnect from the "perceived simplicities and pastoral rhythms of the rural lives lived by our ancestors" (Van de Noort and O'Sullivan 2006, 141, Evans 1997a). This clearly demonstrates how our modern context still influences our approaches to and understanding of wetland landscapes.

These modern perceptions, in combination with functionalist and environmentally deterministic approaches in wetland Archaeology, the absence of theory, and the lack of consideration for past people and their social life, resulted in descriptive rather than explanatory accounts of the archaeological record in wetland areas (cf. Van de Noort and O'Sullivan 2006, 143-144). In many of these, the past is not brought to life, despite the wealth of remains found on wetland sites (Tilley 1991). The purely descriptive accounts of these discoveries, that were often not interpreted within a theoretical framework, leave us wondering where they are leading us (Scarre 1989). This contrasts sharply with studies in dryland areas, where despite (or perhaps because of) having a far poorer record we find much more detailed and explanatory interpretations of past life.

In some areas in Europe, the various issues outlined above have led to the development of the sub-discipline of 'wetland Archaeology', which has become isolated from mainstream Archaeology (Menotti 2012, Van de Noort and O'Sullivan 2006). In the UK for instance, the lack of theory and the purely descriptive nature of most wetland publications meant that wetland Archaeology was ignored by mainstream Archaeology when Post Processual approaches were introduced by Hodder (Van de Noort 2013). This means that insights gained from the often very rich records in wetland areas go unnoticed in mainstream Archaeology (cf. Menotti 2012). At the same time, wetland Archaeology cannot benefit from the theoretical insights in mainstream Archaeology, limiting our understanding of past wetlands and their people. Thus, it is vital that wetland Archaeology is reintegrated into mainstream Archaeology. The next section will consider some possible ways of doing so, as proposed by several scholars in the field.

1.3 Bridging the divide? Towards a solution

The issues outlined above and the resulting isolation of wetland Archaeology from mainstream Archaeology in the UK have long been recognised and problematised by numerous scholars both inside and outside wetland Archaeology (e.g. Van de Noort and O'Sullivan 2006, Menotti 2012, Scarre 1989, Tilley 1991, Evans 1990, Coles and Coles 1992). To bridge the divide between wetlands and drylands is "a matter of priority" and since the 1990s several books and articles have been dedicated to the reintegration of wetland Archaeology in mainstream Archaeology (Coles and Coles 1992, Menotti 2012, 17, Van de Noort and O'Sullivan 2006, 2007, Van de Noort 2013, Menotti and O'Sullivan 2013). The solutions proposed to the wet/drylander divide by most scholars can be summarised as follows:

- Wetlands need to be placed within their wider socio-cultural and geographical context
- We need to introduce new theoretical approaches to understand the high-resolution wetland evidence
- We need a greater focus on wetland people and their social lives

All of these things were already noted by Coles and Coles in 1992 and they have been reiterated in various forms ever since. Yet although it is surely important that we continue "hammering home, time and again, the wetland message" (ibid. 152), it is even more vital that these solutions are implemented.

1.3.1 Rethinking wetland Archaeology

Van de Noort and O'Sullivan, in their book *Rethinking wetland Archaeology* (2006), were amongst the first to systematically address the issues outlined above, and to provide a new direction for wetland research. Theirs is certainly the most detailed and thorough critique of wetland Archaeology. Like previous studies, they emphasise the need to contextualise wetlands geographically and to introduce new ideas, concepts and theories to study past wetlands and the people inhabiting or engaging with these landscapes (ibid.). Wetlands, they argue, are not islands in the wider landscape, as wetland people were actively engaging with the physical landscape beyond wetlands and the people who lived here, just as dryland people engaged with wetland(er)s (ibid. 147). Moreover, wetland people should not be considered as a generic group of passive 'wetlanders' inhabiting a dynamic landscape and environment that determined their actions, but as active individuals whose various interactions with different wetland landscapes shaped their social identities (ibid. 66). Unlike most previous studies, Van de Noort and O'Sullivan provide numerous examples of the links that existed between wetlanders and drylanders and of how people who lived or worked in wetlands "constructed and negotiated distinctive social identities within broader worlds" (ibid. 88).

A third important point Van de Noort and O'Sullivan make is that we should consider wetlands from past people's perspectives, rather than our own (ibid.). Rather than opposing two extremes (wetlands and drylands), we need to recognise that there were many types of wetlands and past people engaged with these in many different ways. Whilst economic aspects were certainly important, we should also consider the social, political and religious aspects (ibid.) It is through these many interactions that various wetlands were encultured and given meaning and different wetlands were perceived differently within various societies at particular points in time (ibid.). Thus, it is important to consider 'the native eye' and study past wetlands from the point of view of past people, rather than foregrounding our (modern) understanding of wetlands (ibid. 63).

1.3.2 Denying the divide

Whilst many scholars note and problematise the wet/dryland divide and the isolation of wetland Archaeology in the UK, others have simply dismissed it as untenable. They argue that wetland and mainstream Archaeology cannot be separated, either on a conceptual or interpretative basis, as wetlands are always connected to drylands (e.g. Gearey 2002). Similar arguments are made in other parts of Europe, like Denmark or the Netherlands, where wetland Archaeology is not recognised as a sub-discipline (cf. Louwe Kooijmans 1993, Kristiansen 2013). Louwe Kooijmans (1993) for instance, argues that the divide is a modern construct. His study of wet/upland exploitation of the Dutch delta clearly demonstrates how wetland landscapes are an integrated part of the wider socio-cultural landscape (Figure 8). He argues that wetland communities were members of "wider regional communities, interconnected by flows of information, goods and people" (ibid. 88). Their exploitation of the wetland landscape changes throughout the later prehistoric period but can be considered as "fairly representative of prehistoric society as a whole" and we could ask "how far the basic distinction between 'wetland' and 'upland' was experienced" by past people (ibid. 105). The implication then, is that wetland and dryland people were very similar, if not the same. Thus, it seems we can simply dismiss the wet/dryland(er) divide which has plagued wetland Archaeology for such a long time.

Figure 8: A map of the locations and regions studied by Louwe Kooijmans. Part of the reason that wetland Archaeology is not recognised as a sub-discipline in the Netherlands is the fact that much archaeology is located in formerly wet areas. (Figure 6.1 from Louwe Kooijmans 1993, 72, reproduced with kind permission of the Historic Environment Service, Norfolk County Council)

The issue with this solution is that there *are* in fact meaningful differences between wetland and dryland landscapes and people. Whilst historic accounts of wetland(er)s may overemphasise these differences, it is true that people's interactions with various wetland landscapes resulted in the construction of a range of rather distinct wetlander identities (cf. section 1.4.1 below).

Van de Noort and O'Sullivan (2006) present many examples of such 'water-based identities' and others have equally noted distinct differences between wetland and dryland dwelling communities in (pre)history (e.g. Amkreutz 2013, McCollough 2001). Even today, there are societies in which there are clear distinctions between wetlanders and drylanders (cf. section 1.4.1 below). These differences mean we cannot simply dismiss the wet/dryland(er) divide. At the same time however, we should not use these differences to separate them. Instead, we should consider how these different communities may have related to each other.

1.3.3 Discussion - Towards true integration

Rethinking wetland Archaeology was published more than ten years ago but despite this and many other efforts to reintegrate wetland Archaeology within mainstream Archaeology, this sub-discipline remains isolated (cf. Menotti 2012).[5] Several excellent studies have considered the wider context of wetland landscapes and demonstrated how wetland(er)s and dryland(er)s and wetland and mainstream Archaeology can be integrated, but the nature of relations between wetland(er)s and dryland(er)s, or the way these changed over time, remain somewhat unclear, meaning that the divide between them has not yet been bridged successfully.

Many studies are unable to study the interrelation between wetland(er)s and dryland(er)s in-depth as they are limited in space and/or time. They consider one group of wetland people, one area, or one period only. This is problematic as it results in a rather 'static' image, with distinct wetlanders on the one hand and rather vague 'drylanders' on the other. These people are not considered in much depth, as the focus is on the wetland(er)s whom we are trying to bring out of isolation. Moreover, the need to contextualise wetlands and their people spatially (e.g. within their wider geographical and socio-cultural setting) means that there has been far less attention to the fact that wetland(er)s frequently remain decontextualized in time as well (cf. O'Sullivan and Van de Noort and 2007). However, the way people engaged with different wetlands changed over time (cf. Van de Noort and O'Sullivan 2006), and it is likely that this affected both their identities and their relations with others. Thus, for a more in-depth and dynamic understanding of the relations between wetland(er)s and dryland(er)s, we need to consider time alongside space.

[5] This is reflected in the existence of the *Journal of Wetland Archaeology* and publications like *Wetland Archaeology and beyond. Theory and Practice* (Menotti 2012.) or the *Handbook of wetland Archaeology* (Menotti and O'Sullivan 2013).

1.4 A new approach – The role and place of wetland(er)s in relation to dryland(er)s

The last few sections have demonstrated that wetland sites, landscapes and people have often been studied in isolation, limiting our understanding of past life in these areas and preventing insights from wetland Archaeology to be used in mainstream Archaeology and vice versa. This thesis aims to address this issue by considering the relations between wetland and dryland communities in more depth, reconstructing their role and place within the wider-sociocultural landscape. Like previous studies, it will attempt to contextualise wetlands and their people. It will use social theories common in mainstream Archaeology to study dynamic wetland landscapes and examine the social lives of those who engaged with them. However, unlike many previous approaches, it will consider drylands in the same depth, collecting data from sites in both wetland and dryland areas in a large database to compare the way people inhabited and interacted with these landscapes. It will focus on the former East Anglian Fens and its drier hinterland and examine the changing role of these landscapes and the changing relationship between wetland and dryland communities throughout the later prehistoric period at multiple spatial and temporal scales. This section will outline the theoretical background to the proposed approach and explain how human-environment interaction and its social outcomes will be examined in this thesis.

1.4.1 A theory for wetland Archaeology - Human-environment interaction

Although the aim of this research is to reconstruct the relation between different people, it will do so by considering the interaction between people and the environments they inhabited. This is necessary because there are meaningful differences between wetland and dryland landscapes, affecting those engaging with them, and this is not always explicitly recognised. Most critiques of wetland Archaeology mention the over-emphasis on the environment that leads to environmentally deterministic interpretations. They argue for much more focus on past people, their agency and social life. Ironically, by applying social theories aimed at bridging the wet/drylander divide, they have demonstrated that there *are* considerable difference between those inhabiting wetland and dryland areas, leading to an unspoken contradiction in wetland Archaeology; yes wetland(er)s are part of wider geographical and socio-cultural landscape, but equally they differ from dryland(er)s.

Yet differences do not equal a divide; we can recognise these distinctions but equally study links between different people by considering both human and environmental factors (cf. Van de Noort 2013). There is no need to return to environmental determinism, but it is vital that we recognise the considerable influence that dynamic wetland environments or landscapes had on past lifeways, including both practical aspects (like settlement and economy), and social ones (people's identities and their relations with other people). A theory of wetland Archaeology, aimed at explaining past life and socio-cultural developments in wetland areas, needs to incorporate both the landscape and environmental factors *and* human agency (cf. Van de Noort 2013). It should consider their dynamic and hybrid interrelations (ibid.) and the way they shape each other through their interaction. This thesis will attempt to implement this relational approach by considering human-environment interaction and its social outcomes in wetlands and drylands.

Human-environment interaction – The dwelling perspective and archaeologies of inhabitation

Beyond wetland Archaeology, the close link between people and the landscape has been theorised and analysed through a number of interrelated approaches that ultimately derive from phenomenological approaches of the philosophers Heidegger and Merleau-Ponty (Amkreutz 2013, 284, 286). They examine how people understand the world and their place within it through active engagement, regular movement and routine, everyday practices (ibid.). In Archaeology, these ideas have been used to study people's social life and their relation with the landscape (e.g Tilley 1994, Gosden 1994, Cummings 2002, Edmonds 1999, Watson 2001, Tilley 1996 in Amkreutz 2013). However, these approaches have been criticised for being too subjective and descriptive and for focussing on individuals and their experiences, which limits their application in Archaeology (Amkreutz 2013, 286, Thomas 2000a, 150).

Ingold's (1993, 2000) dwelling perspective and the closely related 'archaeologies of inhabitation' provide a more useful framework for examining social dynamics in relation to the landscape and environment (cf. Amkreutz 2013). Equally rooted in phenomenological philosophy, Ingold's dwelling perspective draws upon Structuration Theory and Agency Theory as outlined in the work of sociologists Giddens (1984) and Bourdieu (1977). It examines people's 'being-in-the-world', arguing that the world comes into being through people's dwelling within it. Rather than seeing the landscape as a passive backdrop to people's activities, it argues that human and natural factors are an interwoven part of one existence through their 'mutual involvement' (Amkreutz 2013, 281-2, Ingold 1993, 2000).

'Archaeologies of inhabitation' also focus on the "active and recursive relationship between humans and their (natural) environment (including the landscape)" (Amkreutz 2013, 284, cf. Chadwick 2004). They examine how people's interaction with both animate and inanimate entities like the landscape and environment influenced societal structure over time (ibid.). It is this interaction, situated within relational networks, that over time results in the construction of a range of identities and social relations (ibid. 291). In line with its phenomenological roots, archaeologies of inhabitation stress the importance of everyday routine movement and activities in this process (ibid., Chadwick 2004). Through these practices, taking place in different settings at various locations and involving different (groups of) people, animals and material culture, various identities and social relations are constructed and maintained (Brück 2005, 62). In this way, the landscape and environment that people inhabited or dwelled in actively influences the creation of people's sense of identity (Van de Noort and O'Sullivan 2006, 67).

From Marsh Arabs to Fen Slodgers – The making of wetlanders

As different landscapes offer different opportunities and constraints, daily routines, land-use, economy and settlement patterns will vary from one landscape type to the next and so will the identities that result from them. Wetlands are a very specific and dynamic type of landscape, and activities here tend to differ significantly from those in drylands. Those inhabiting these areas will have been familiar with this environment in ways that others, living in drylands, were not. As a result, communities in both environments may have had different identities, which may in turn have affected the way they related. This can be illustrated through several examples, taken from Anthropology, History and Archaeology.

The Marsh Arabs, or Ma'dan, who inhabited the marshes of southern Iraq until relatively recently, lived a true wetland life structured around the wetland environment and were considered to be very different from cultivators living along the rivers and the nomads in the dessert (Thesiger 1964, 49). These 'drylanders' describe the Marsh Arabs as a poor people who "live like their buffaloes" in "houses that are half under water" (ibid. 19). In Papua New Guinea the riverine community at the village of Avatip, situated in the dynamic wetland landscape of the middle Sepik river, defines themselves as river people; "very different in kind from their forest-dwelling neighbours, whom they call Numbundu or 'dry land men'" (Harrison 2004, 137). The Avatip people fear the forest and stay close to the river, which is not only a source of livelihood, but also "an important source of identity" (ibid. 138). Finally, in northern Australia marine specialists represent themselves as Saltwater People (McNiven 2004, 229). They are highly specialised and have an intimate knowledge of the seascape they exploit through their daily use of and engagement with this landscape (ibid).

Their close connection to the sea is expressed in this quote of a Meriam Elder: “I am part of the sea and the sea is part of me when I am on it” (George Kaddy, Meriam Elder, Torres Strait 1999, cited in Sharp 2002, 27 in McNiven 2004, 229).

In Archaeology, the close links between people’s identity and wetland landscapes has been studied in several areas and periods. In the Lower Rhine region in the Netherlands, for instance, it has been argued that Mesolithic hunter-gatherers’ interaction with the dynamic wetland which they had been inhabiting and exploiting for centuries, resulted in a wetland identity and mentality that set these communities apart from those in nearby dryland areas Amkreutz 2013, 435). This may explain why wetland communities’ attitude to Neolithic novelties differed from those in dryland areas; wetlanders selectively adopted aspects, whereas drylanders seem to have been ‘converted’ much quicker (ibid. 441, 415, 435). Similar dynamics may have played out in wetlands in southern Scandinavia, where Neolithization seems to have involved “cultural and economic negotiation between the last foragers and the first farmers” (ibid., Gron and Sørensen 2018, 958, cf. Sørensen and Karg 2012, ibid.).

Van de Noort and O’Sullivan (2006) also demonstrate how past people’s identities were shaped through their interaction with dynamic wetland landscapes. Medieval fishing communities, for instance, spent much time in estuarine landscapes (ibid. 80-85). Through their day to day practical engagement with this environment (e.g. as they set out, emptied and maintained fish traps), they acquired an in-depth knowledge of this landscape, which they sometimes used to place themselves apart from the wider community (ibid.). Similarly, farmers bringing their cattle down to graze in the wetlands may have used their exclusive and specialist knowledge to sustain their unique place as a distinctive social group within the wider community (ibid.).

Such wetland identities could be very strong, as demonstrated in the historic East Anglian Fens, where written sources frequently contrast ‘civilised dryland people’ with ‘wild wetlanders’. Although most sources are written by drylanders,[6] folk tales from the Fens also depict Fenlanders as a rebellious, fiercely independent, wily and clever folk, in contrast to the naively civilised, weak and immoral monks and academics (Evans 1997a, 115, 124). Thus, Fenlanders use the same rhetoric of a wild and independent people living of wild resources

[6] Indeed, wetlanders generally do not have a voice, as historic sources tend to be written by drylanders. The fact that wetland(er)s are described by ‘outsiders’ explains the negativity in many accounts.

rather than agriculture to distance themselves from drylanders (ibid. 124). Yet rather than seeing these things as negative qualities they are proud of them. This demonstrates that wetlanders felt a very strong connection to the wet Fenlands. Wheeler (1896, 35) describes these 'fen slodgers' as enjoying "a wild sort of liberty amid the watery wastes, which they were not disposed to give up" (Figure 9).

This became very clear in the 17th century AD, when large-scale drainage endangered the long-established link between people and the land. As wetlanders saw their livelihood taken from them, they started to sabotage 'drylander' drainage efforts. Young (1808, 256) describes how, after the initial drainage of a tract of land in the Lincolnshire Fens in the seventeenth century, "a large mob, under the pretence of playing at foot-ball, levelled the whole of the enclosures, burnt the corn and the houses, destroyed the cattle and killed many of those who occupied the [newly drained] land...[They] proceeded to destroy the works of drainage...[and] the country was again inundated as it formerly had been."

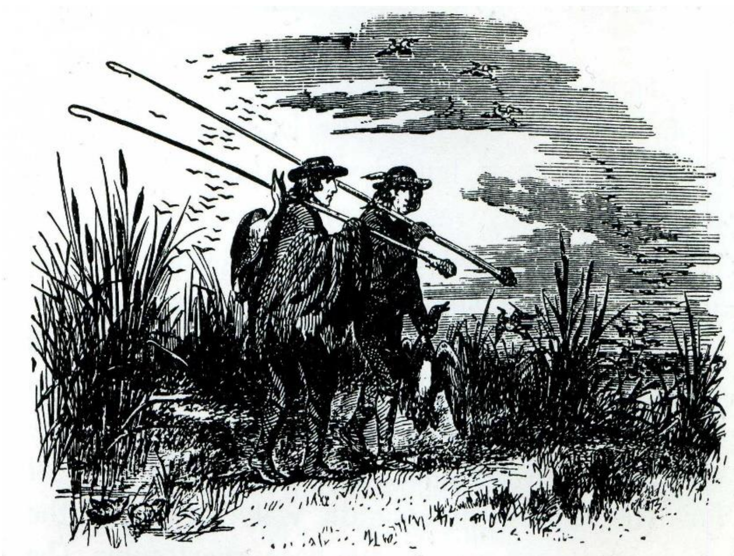

Figure 9: 'Fen slodgers'. (Image from Wheeler 1896)

The above case studies demonstrate the strong link between wetland environments, lifeways, and people's identities. It shows how people's intimate interaction with various dynamic wetland environments may result in the construction of very specific wetlander identities, which often sets wetland dwelling people apart from nearby 'drylanders'. These distinctions between wetlanders and drylanders clearly influence relations between these groups. Moreover, their different worldviews may affect the way in which they respond to larger-scale socio-cultural developments such as the introduction of farming, or the drainage of the Fens. Thus, these examples demonstrate that we can use human-environment interaction and its social outcomes to consider the relations between wetland(er)s and dryland(er)s in more depth, as this thesis aims to do.

1.4.2 The approach - Human-environment interaction and its social outcomes

This thesis aims to overcome the artificial divide between wetland(er)s and dryland(er)s through a study of human-environment interaction in areas in and around the prehistoric East Anglian Fens, comparing the ways in which people used and interacted with wetland and dryland landscapes and changing environments through time. It will examine the different identities that resulted from this human-environment interaction at various scales, and how this affected relations between people inhabiting different environments. Thus, the role and place of the people inhabiting or using the Fens within the wider socio-cultural landscape will be reconstructed.

To study human-environment interaction and its social outcomes through time and space, this research proposes a large-scale, comparative approach that will analyse site distributions and food remains (plants and animals) from more than 140 selected later prehistoric sites located in the (former) wetlands, drylands and on the fen edge.[7] The Fens saw major environmental and landscape changes throughout the later prehistoric period, which will have impacted human-environment interaction in and around this area (cf. section 1.5 below), so a long time span was considered, ranging from the Neolithic to the Early Roman period (c. 4000 BC to 100 AD).

Studying human-environment interaction –Food remains

To reconstruct human-environment interaction in the former East Anglian Fens and the drier areas around this region, this research will focus on food remains, i.e. plant and animal remains. This category of data is a very suitable one, as what people eat is closely connected to the physical environment and landscape as well as culture and (group) identity (cf. Mintz and DuBois 2002, Aranda Jiménez et al. 2011, Buxó and Prinicipal 2011, Gosden 1999, Hastorf 2016). In the prehistoric past most of people’s everyday routine activities through which their identities were constructed would have revolved around plants and animals. The sowing, tending and harvesting of crops, the herding of flocks, the hunting, fishing and gathering of wild resources, as well as the storage, preparation and consumption of food arguably took up most of a day’s work. As different plants and animals could be

[7] Of course, the wetland and dryland category both encompass a variety of landscapes that differ in nature, but it is beyond the scope of this research to compare developments in the various wetland and dryland landscapes within these broad landscape or environmental ‘zones’ (cf. section 2.2).

grown, gathered, hunted and kept in different environments, a comparison of the food remains from wetland and dryland sites provides insights into different subsistence practices and the identities and social relations that may have resulted from people's interaction with various landscapes and environments. By comparing data from several periods, changes in subsistence practices, human-environment interaction, people's lifestyle and their identities and relations through time (as the Fens developed) may be traced.

Building a database

To collect, organise and analyse the food remain data in wetland and dryland areas, a large relational database was built especially for this research, in which the presence and absence of a great number of wild and domestic plant and animal species could be recorded for each of c. 140 selected sites in the study area. They were recorded by (former) environment (wet, dry, or 'fen edge') and time period (from the Early Neolithic to the Late Iron Age, c. 4000 BC-100 AD), allowing for the comparison of food remains in different landscapes and for the tracing of developments through time. Once recorded, the plant and animal remains were analysed to reconstruct past subsistence practices and the ways in which the three different environments or landscapes were used in the past, and how this changed between the Neolithic and Iron Age. The comparison of this human-environment interaction allowed for the reconstruction of the role of the former Fens within the wider landscape and the possible identities and social relations of the people interacting with this environment, demonstrating how those within the former Fens related to and/or interacted with those outside and how these relations changed over time. Thus, the database provides the basis for a period-by-period assessment of the changing interrelationship between wetland and dryland communities.

1.5 Introducing the study area – The former East Anglian Fens

The east Anglian Fens (Figure 10) were Britain's largest wetland before they were drained between the 17th and 19th century AD (Pryor 2001). This area has a long research history (starting in the 19th century) and many excellent projects have been undertaken here. As a result, both the environmental and archaeological sequence are well understood. Yet at the same time, the recent discovery of Must Farm reminds us that there is much we do not know about this area yet. A true wetland settlement, Must Farm proves that the wet Fens (rather than the fen edge or drier islands) were once inhabited, demonstrating that the former Fens were not only entered temporarily for grazing or the extraction of wild resources. Yet although the site is unlike any other previously found, whether in the Fens or

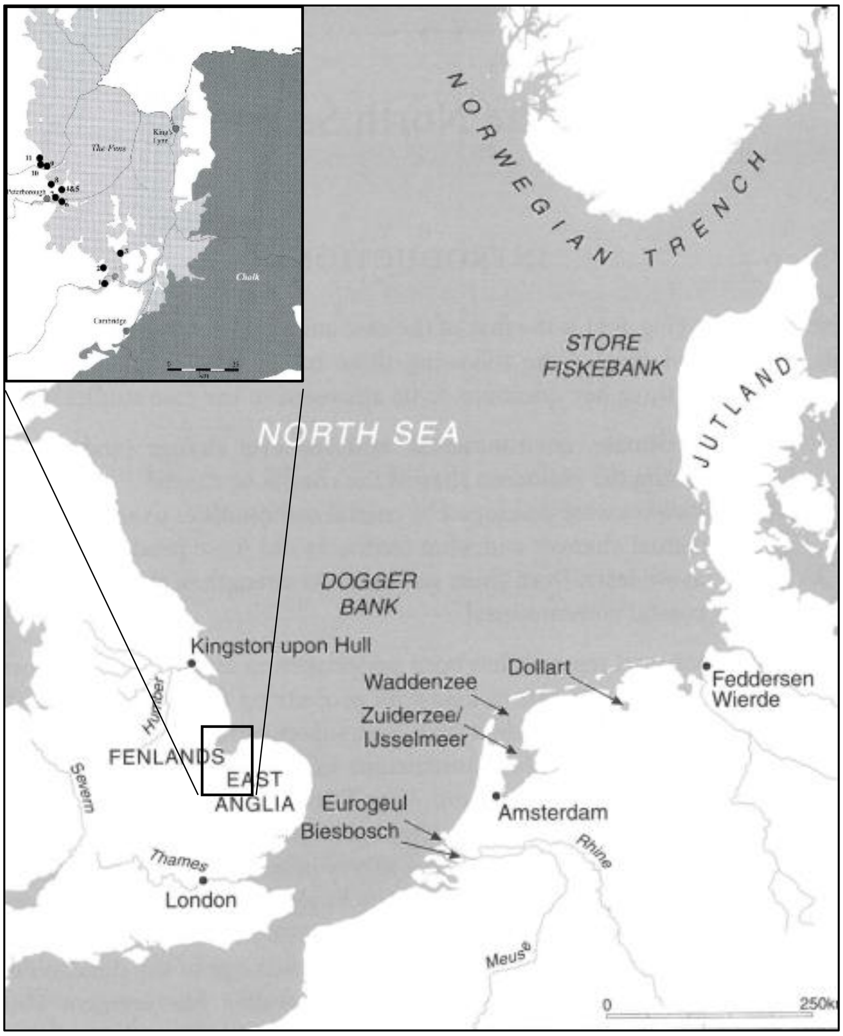

Figure 10: Location of the Fens in north-western Europe. (Maps adapted from Van de Noort 2011a, 99 and Evans 2009, 43 reproduced with kind permission of Oxford Publishing Limited through PLSclear and the CAU)

elsewhere, it also seems strangely familiar. Its roundhouses are very similar to 'dryland' ones in lay-out and many of the materials used to build these structures and the palisade originate in dryland areas, as did many of the plants and animals found at the site. Whilst there is evidence of long-distance trade in the form of glass beads from central Europe, most of the material culture, including the well-preserved pottery, fits into regional assemblages (Must Farm 2018, 37). The log boats found in the same river channel just upstream of the settlement equally attest to regular contact along river routes, which would have connected Fenland communities with people further inland, those along the coast of eastern England and continental communities across the North Sea. Thus, this site exemplifies the issues addressed in this thesis.

Aside from being well-researched and containing one of the most exciting prehistoric wetland settlements ever found in Britain, the later, historic Fens also have a rich and interesting history, which, like Must Farm, touch upon some of the issues addressed in this research. The historic fen slodgers were clearly very intimately connected to the wetlands they inhabited and interacted with and they valued these wetlands above anything else. When this landscape, and consequently their way of life, were threatened by drainage imposed by dryland ‘outsiders’, they did their utmost to protect it, which led to clashes between wetlanders and drylanders. These fen slodgers are described by many contemporary sources as having a strong sense of identity. They are frequently depicted as fiercely independent, stubborn, suspicious of outsiders and unwilling to change (cf. Hall and Coles 1994, McCollough 2001, Evans 1997a). Interestingly, we find these sentiments not only in accounts by ‘drylanders’, but also in their fenland folk tales, where these characteristics become virtues rather than vices (cf. Evans 1997a). Hall and Coles (1994, 156) suggest that even modern Fenlanders, despite now inhabiting a dryland area, can be characterised as independent and somewhat suspicious of outsiders. They and several other scholars seem to assume that there is an almost continued line between the historic fen slodgers and the people who established the ‘wetland way if life’, sometime in the prehistoric period (e.g. ibid., McCollough 2001).

Yet we cannot transpose such historic accounts directly into the prehistoric past because the ways of life both inside and outside the former Fens will have changed significantly, in tandem with the Fenland landscape, which equally developed over time (cf. section 2.2.1). In fact, at the beginning of the Neolithic, the first period under consideration in this research, the Fens did not exist yet. The area where they would develop was a low-lying, dryland basin intersected by numerous rivers (e.g. the Great Ouse, Nene and Witham) (Waller 1994). Then, as seawater levels started to rise and these rivers were impeded, a range of different wetland environments (including salt and freshwater ones) became established in the basin (ibid.). This process took many centuries, right into the Iron Age, which means that the former Fens were a very dynamic and varied landscape in the period under consideration in this research. Although the general trend is one of a slowly expanding increasingly wet landscape, there were important local variations and change did not happen at the same rate everywhere (ibid.) (Figure 11).

These dynamic changes, which have been very well documented by Waller (1994) and others (e.g. Scaife 2001, French 2001a-d, Gearey et al. 2009, Scaife and French in prep.), are another major reason for choosing the former Fens and its hinterland as the study area for this research. It allows us to study the effects of landscape change on human-environment interaction and how this affected their identities and social relations. Given the dynamic

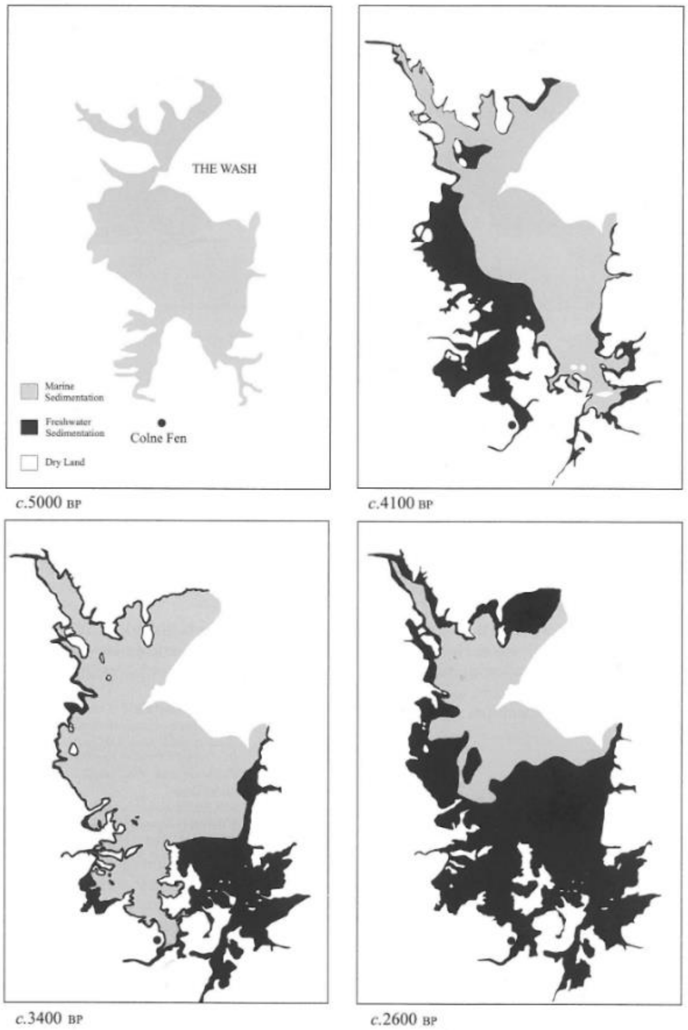

Figure 11: Schematic representation of the inundation of the East Anglian Fens between 5000-2600 BP. (Map from Evans 2013a, 39, reproduced with kind permission of CAU)

nature of the former Fens, we cannot assume a static 'wetland' or Fenland identity for the people interacting with this environment or presuppose that the historic 'fen slodgers' were the direct descendants of a prehistoric equivalent. Instead we need to consider if, when and how people's interaction with the developing wetlands led to the creation of distinct wetlander identities and what, if any, effect this may have had on their relations with others, especially those outside the Fens. If Must Farm is anything to go by, it seems that social dynamics in prehistory may have been rather different from those in the later historic Fens.

1.6 Research questions, aims and objectives

The aim of this research is to contextualise later prehistoric (c. 4000 BC-100 AD) wetland sites and communities in the former East Anglian Fens (UK) by studying past human-environment interaction through a comparison of food remains in different environments. Thus, the main research question is:

- What was the role and place of the later prehistoric East Anglian Fens and those engaging with this wetland environment within the wider socio-cultural and physical landscape and how and why did this change over time?

To answer this question, a set of sub-questions will be considered, including:

1. How do subsistence practices change through time, between the Neolithic and Iron Age, and space, in wetlands, drylands and on the fen edge?
2. What does this tell us about people's (changing) interaction with wetlands, drylands and the fen edge?
3. What social identities were constructed as a result of this human-environment interaction?
4. Can we identify distinct 'wetlander' identities?
5. How did these identities affect relations between different people, specifically between those in the former Fens and those in drier areas?

1.7 Wider research themes and broader aims

The main issue addressed in this thesis is the wetland(er)/dryland(er) divide. However, by studying the relations between people within the former Fens and those in drier areas, this research hopes to also touch upon a few broader, closely related themes underlying this research. These may be summarised as follows:

- The influence of modern perceptions on our approach to and understanding of the past
- Past people's presence in our narratives of the past
- The dialectic nature of human-environment interaction and its effect on social life
- Different spatial and temporal scales and their integration

1.7.1 Archaeology and the 'native eye'

Our modern, western propensity to think in structural opposites is one of the main causes for the wet/dryland(er) divide. This modern worldview unconsciously affects not only how we understand, but also how we approach wetlands, and indeed the past more generally. It tends to create simplistic dichotomies that are unlikely to represent past reality, which is likely to have been much more complex and varied. Whilst similar distinctions between wetland(er)s and dryland(er)s may have been made by past people, it is more likely that a great variety of landscapes was recognised, which can be placed on a spectrum from more to less wet (cf. Van de Noort and O'Sullivan 2006). These were used and perceived in different ways by different people in different periods, emphasizing the need to use an 'emic' approach, considering our evidence from past people's perspective, or through the 'native eye' (e.g. Van de Noort and O'Sullivan 2006, Amkreutz 2013).

Yet whilst it is indeed very important not to impose our views on the past, it is equally vital to recognise that we, as modern scholars, will always be 'outsiders'. Indeed, Archaeology, studying the material remains left behind by people long gone, is essentially 'etic' in nature. To be truly emic, we would need to ask a past person to describe to us their perspective, which is simply not possible, even if, on rare occasions, we get to study individual people or their activities in the past. Moreover, the kind of long-term, etic overviews that are common in many archaeological studies are one of the main strengths of our discipline, allowing us to study key patterns and changes in past human behaviour.

However, the emic and etic approach do not have to be mutually exclusive. Indeed, by arguing for either one or the other, we set up another dichotomy. Of course, we cannot escape our modern context, but we can be more explicit and sensitive towards the biases this brings and try to address these by considering how past people *may* have perceived and understood themselves and their world (cf. Van de Noort and O'Sullivan 2006). In particular, we could consider the possible identities and social relations of past people, based on what we find in the archaeological record, as this thesis proposes to do. By explicitly focusing on past people and considering their (social) lives in the context of a long-term etic perspective, this thesis hopes to overcome the dichotomies that result from our modern worldview and provide a more dynamic narrative of past life.

1.7.2 Past people and their social lives

In wetland Archaeology the focus is often on sites, the landscape or material culture rather than on people and their social lives. As a result, past people are curiously absent from many narratives. Although it is more common in mainstream Archaeology to consider people and their social lives, many academic publications talk about generic past communities or people, with little interest in the individuals that make up these collectives. Thus, past people remain somehow invisible in prehistoric Archaeology. This lack of people is also reflected in museum displays of prehistoric Archaeology, where objects and material culture are central. They happen to be made by people, but there is often little sense of who these people were. As a result, members of the wider public may find it hard to connect with them, and despite our efforts to bring the past to life, we fail to convey our knowledge about the past beyond our academic discipline.

By considering past people and their social lives in more depth we can get much closer to them. Of course, this is challenging, and it requires us to move out of our comfort zone and beyond conventions. It requires a significant amount of interpretation and possibly even some creativity. Yet as the preamble to this chapter demonstrates, it is possible to write an accurate narrative, based on actual archaeological facts and data, which puts past people at the forefront and brings the past to life. Wetland Archaeology, with its often well-preserved and rich archaeological and environmental records, is exceptionally well placed to do so. The discoveries made in wetlands have long captivated the general public. This is reflected in the many wetland publications aimed at a wider audience (cf. Kaeser 2013), museum visitors' fascination with bog bodies or the large number of people who closely followed the recent Must Farm excavation on several social media platforms. Yet to truly capture the imagination, we need to move beyond the 'wow factor' of well-preserved sites, bodies and material culture. By including past people in our narratives, wetland Archaeology can contribute significantly towards popularising Archaeology amongst a wider public.

1.7.3 Human-environment relations

In Archaeology, whether wetland or mainstream, the landscape and environmental factors on the one hand, and people and socio-cultural factors on the other are often separated or even structurally opposed. Despite a considerable body of literature that demonstrates the intimate link between people and the landscape and the environments they inhabited (e.g. Thomas 2000a, Chadwick 2004, Brück 2005, Amkreutz 2013), the divide between people and the landscape, or humans and nature continues to exist. This is reflected in many excavation reports, where reports on environmental remains are frequently consigned to an appendix and only referred to when the authors want to sketch an image of the landscape in which past people's activities took place. Similarly, environmental archaeologists tend to only provide descriptive accounts of the landscape, and although they may refer to the impact of human activities, there is little social interpretation in most environmental reports.

As with the other dichotomies resulting from our modern worldview, this opposition is problematic as it limits our understanding of life in the past. The choices people make, the lives they live, and even who they are, are closely related to the landscapes and environments they inhabit. This is clearly visible in dynamic wetland landscapes (cf. section 1.4.1), but it is equally true in drier areas, where the landscape and environment are frequently overlooked. Of course, this is partly due to issues of preservation; fewer environmental remains survive in drier areas than wet ones, but by ignoring the landscape and environment we miss out a major source of information on past life. We should study the dialectic relation between people and the environment and consider how they affect each other through their interaction for a better understanding of past life and socio-cultural change (Van de Noort 2013).

1.7.4 Bridging scales in time and space

It has long been recognised that developer-funded archaeology has resulted in a great amount of data on the small, local scale, but that there is little integration of all this material at larger (inter-)regional or even national scales (e.g. Pryor 2001, 17, Hodder 2013). This has led to a fragmented picture of the past and prevents us from understanding developments at larger scales. Several 'big data' projects, such as the Roman Rural Settlement Project, Atlantic Europe in the Metal Ages and the English Landscape and Identity Project, have started to address this issue by bringing together all or much of the available data at a larger scale (Fulford and Holbrook 2011, Atlantic Europe in the Metal Ages 2018, University of Oxford 2018). However, by focussing on these larger scales we run the risk of losing sight of the people we want to study.

We encounter similar problems with time. Archaeologists frequently consider long-term trends and developments, overlooking the shorter timespans within which people lived their lives. As a result, our narratives of the past can become overly simplistic and generalist. Of course, smaller time spans are much harder to study through archaeological remains, but wetland Archaeology is very well-placed to do so. Well-preserved environmental records frequently allow for seasonal rounds to be reconstructed in considerable detail and even single events become visible at sites like Must Farm, where a wooden spoon stuck in one of the pots with food gives us unique insights into people's daily life in the Bronze Age and helps us relate to these individuals.

It is these shorter time spans at a local scale that would have been most meaningful to the people we study, but we cannot ignore longer-term, larger-scale developments either. Instead we need to try and integrate different spatial and temporal scales, considering how shorter-term developments in one area or settlement, relate to longer-term developments in the wider region. In this way we gain more detailed insights into the complexity and nuances of past life.

In summary, whilst this thesis will study the East Anglian Fens and its people it equally hopes to address some of the wider issues outlined above, all of which are essentially about overcoming problematic and simplistic structural oppositions. It is hoped that focussing on past people and their relation to the landscapes and each other at multiple, integrated spatial and temporal scales, will result in a more nuanced and dynamic picture of past life in the former Fens.

1.8 Summary – Contextualising wetlands and bridging divides

The recent discovery of Must Farm in the East Anglian Fens has highlighted some issues that have long plagued wetland Archaeology in the UK. This discipline has become isolated from mainstream Archaeology in the UK due to a number of interrelated reasons, the main one being the isolation of wetlands from the wider geographical and socio-cultural landscape. The over-emphasis on the environment, the lack of (social) theory, the absence of people from wetland narratives, and our modern perceptions of wetlands and those within them have equally contributed to the divide.

These various issues have long been recognised and several scholars have started to contextualise wetland landscapes by introducing new theoretical approaches and studying wetland people and their social lives in more depth. Unfortunately, however, wetland Archaeology still fails to influence mainstream Archaeology. Although wetland(er) were clearly connected to dryland(er)s, it is unclear *how* they related, or in what ways strong wetlander identities affected wet/drylander interactions.

This research aims to address this issue by considering the relation between wetland and dryland communities in and around the former East Anglian Fens, reconstructing the role and place of this former wetland and its people throughout the later prehistoric period (c. 4000 BC-100 AD). Whilst the focus is on past people and their social lives, the important role of the past environments and landscapes which shape the identities and social relations of those within them is also recognised. Comparing human-environment interaction and its social outcomes in former wetland and dryland areas and on the fen edge, allows us to examine both the important, and often unspoken, differences between wetland and dryland landscapes and their people, and the nature of their links and interactions, which are likely to have changed significantly as the former Fens developed throughout the period under consideration.

By contextualising the former Fens and its people within the wider landscape in this manner, a few broader themes will also be addressed including the problematic modern worldviews that affect our approach to and understanding of the past, the apparent absence of past people in many prehistoric narratives, the separation of people and the landscape in many archaeological studies, and the lack of integration of various spatial and temporal scales. Due to its well-preserved archaeological and environmental records and distinct landscapes, wetland Archaeology is well placed to address these wider issues. It is hoped this thesis provides insights into how this sub-discipline can contribute, so that wetland Archaeology may be brought closer to mainstream Archaeology.

1.9 Thesis outline

The East Anglian Fens have a long research history and the recent discovery of Must Farm challenges our previous understanding of this landscape. Moreover, it is a very dynamic landscape, that came into being over the course of the period under consideration. This allows us to examine the effects of a changing landscape on human-environment interaction and its social outcomes, and to consider how the role and place of this wetland and those engaging with it changed over time. The next chapter (**chapter 2**) will discuss the study region in more depth, describing the physical and socio-cultural landscape of the former Fens and the drier areas around it. Both the physical and socio-cultural landscapes in the study area were clearly very varied. As the evidence base grew, our understanding of them developed, and previous simplistic and generalist understandings have been replaced by more nuanced and detailed interpretations that stress the variety and complexity of these landscapes and past life within them. However, despite our considerable knowledge of past life in the study areas, there are a few outstanding issues (discussed in the second half of chapter 2), including the isolation of Fenland Archaeology from that in drier areas around it, and the resulting divide between the former Fens and surrounding drier areas.

To address this issue, this thesis will examine human-environment interaction and its social outcomes throughout later prehistory (c. 4000 BC -100 AD) through a comparison of food remains from sites in former wetlands, drylands and on the fen edge. Information on these food remains was collected in a large, custom-built database that is introduced in **chapter 3**. Here, the process of site section and data collection is explained as well as the structure of the database, which allowed for a period by period recording of wild and domestic plant and animal remains on the c. 140 sites selected for this research. By mapping these sites in ArcGIS and organising all data into three different environments and ten different periods, food remains and human-environment interaction in the three environments could be compared and developments through time could be traced.

In **chapter 4**, the results of this detailed analysis are presented through a period-by-period discussion of food remains in the three environments, thereby answering the first of the sub-questions outlined above. This demonstrates that subsistence practices differ in the three environments and that there is considerable change over time as well.

Chapter 5 discusses these results, reconstructing human-environment interaction through time and space. It highlights the key findings and places the results in a wider context by considering both the nature and character of the selected sites where the food remains were found, and the wider socio-cultural developments in the research area. It demonstrates how people's interaction with the three environments changed through time due to a combination of environmental and socio-cultural factors. The former Fens seem to be more important in some periods than others and developments in this environment are closely related to those on the fen edge and dryland areas.

The second discussion chapter (**chapter 6**) examines these connections in more depth by firstly summarising the role and place of the three environments (and particularly the former Fens) within the larger region, and then discussing the implications of these findings for people's (group) identities and their social relations both within and beyond their communities, so that their role and place within the wider landscape may be reconstructed. It demonstrates that different kinds of wetlanders seem to have existed at various points in time, and that wetland identities may have been more pronounced in some periods than others. Yet this did not lead to the isolation of wetlanders, as they were always closely connected to drylanders, whether through trade and interaction or kinship ties.

The final chapter (**chapter 7**) draws together the main points outlined in this thesis, summarising its key findings and discussing their wider implications, both for our understanding of past life in the Fens and drier areas around it, but also for the wider discipline of Archaeology. It refers back to the wider research aims as outlined above and argues that we need to move from dichotomies to dynamics to gain a better understanding of the past.

Chapter 2. The former Fens – Introducing the research area

2.1 Introduction

The last chapter has outlined the main issues to be addressed in this thesis, most notably the artificial divide between wetland and mainstream Archaeology, sites, landscapes and people. The aim of this chapter is to introduce the study area, the East Anglian Fenland and its dry hinterlands, in more depth and to situate this research within the context of other projects undertaken in this area and the issues outlined in chapter 1. The Fens are a low-lying area around the Wash on the East coast of England (Figure 12). Before drainage in the 17th c. AD, this used to be Britain's largest wetland (Pryor 2001, 1). The Fens are very rich in archaeological and environmental remains and have been intensively researched from the end of the 19th century onwards (Hall and Coles 1994, 5-8). More recently, surrounding dry areas have also seen considerable work in the context of the Planning Policy Guidance 16 (PPG16).[8] This makes the Fens and their drier 'hinterland' a very suitable study area for an examination of the links and relations between the formerly wet Fens and its inhabitants and surrounding dryland(er)s. Doing so will help place the former Fens and its people, which are often studied separately from nearby dryland areas, within their wider physical and socio-cultural landscape context.

This chapter has three main sections. In the first (2.2), the physical landscape of the study area will be introduced in terms of geology, landscape and environment types. The development of the Fen wetlands and the major environmental and landscape changes that took place in this area between the Neolithic and Iron Age will be outlined, as well as the character of surrounding dryland environs. The second section (2.3) will then consider the socio-cultural landscape by summarising the previous research that has taken place in and around the Fens. It will briefly discuss various larger and smaller scale research projects and outline how our understanding of past life in the study area has developed throughout the years, demonstrating that both the physical and socio-cultural landscape of the study area are very varied and complex. However, despite our increasingly in-depth understanding of the Fens and its drier hinterlands, there are a number of outstanding issues in the study area, including the artificial divide between the Fens and surrounding drylands and those who inhabited these areas. Section 2.4 will briefly outline these issues and explain how this research aims to address them.

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[8] Replaced in 2010 by the Planning Policy Statement 5 (PPS5).

2.2 The physical landscape - Geology and environment

The study area for this research contains a diverse set of landscapes and soils, including the entirety of the former wet Fens and considerable tracts of 'dryland' around it. Most of this lowland landscape is characterised by coastal plains and the undulating valleys of major slow-flowing rivers like the Ouse and Cam, Trent, Welland, Witham and Nene that flow through the former Fens into the Wash (Brudenell 2012, 58). Whilst this landscape will be

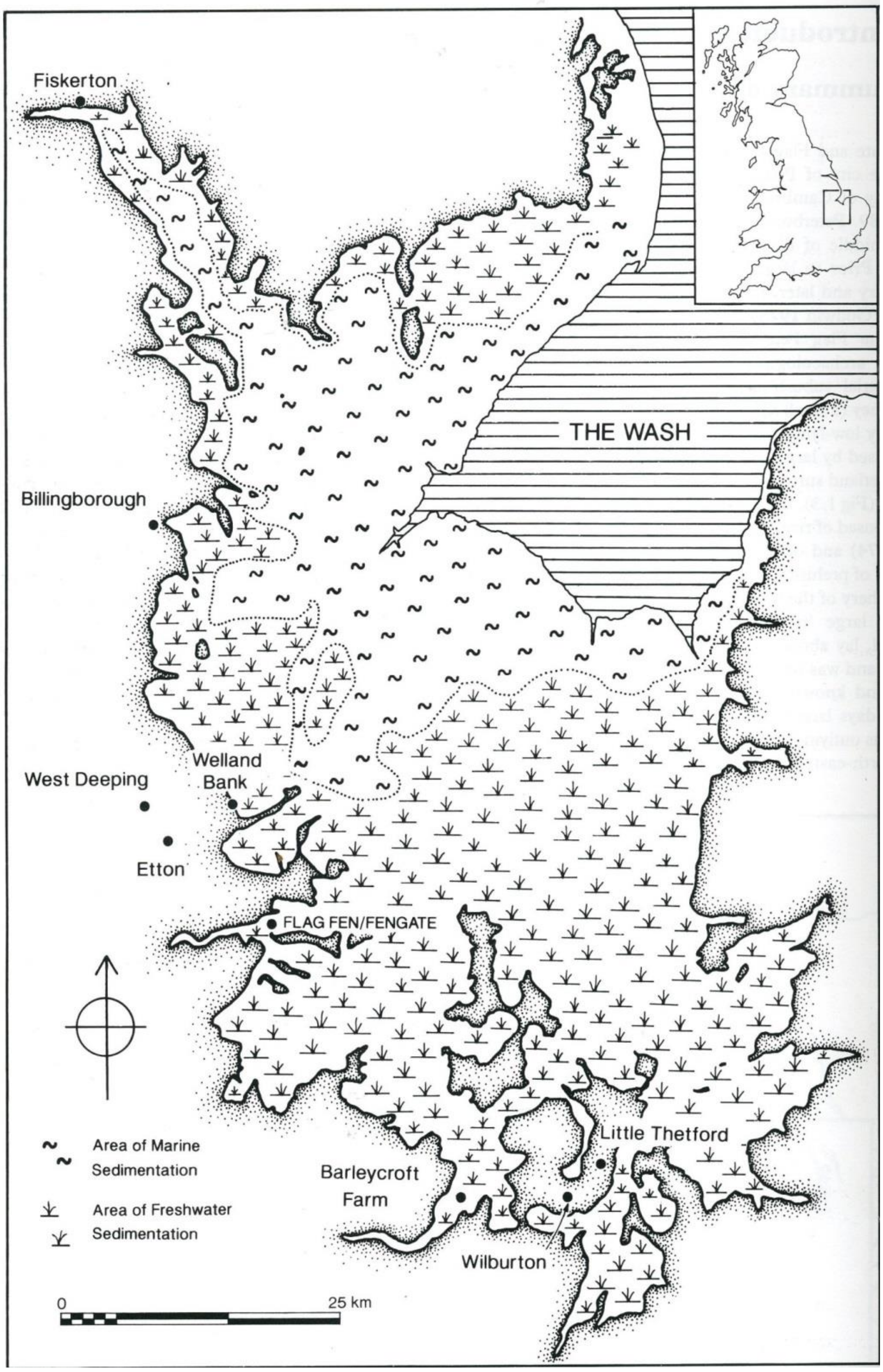


Figure 12: The East Anglian Fens on the east-coast of England. The pre-Flandrian 'islands', protruding from the peat in the south-central Fens are visible as well. (Map from Pryor 2001, 2, reproduced with kind permission of Historic England)

divided into ‘wetlands’ and ‘drylands’ for the purpose of this research, the area contains a considerable variety of landscapes and environments, which will be outlined below. The former East Anglian Fens will be considered first. This apparently unassuming flat landscape has a very complex sedimentary sequence and environmental history, resulting in major landscape changes throughout the later prehistoric period under consideration. The dry-land areas are less dynamic, but these too include a range of different geologies and land-scape types. It is important to consider the different environments and landscapes in the study area and the way they changed in some depth, as their nature will have affected the ways in which people interacted with them.

2.2.1 Wetlands – Fenland formation and Flandrian environmental change

The East Anglian Fens are located around the Wash on the east coast of England, stretching from Lincoln to Cambridge and from Peterborough to King’s Lynn (Lane and Morris 2001, 3) (Figure 13). Today, this region can be described as a “somewhat monotonous agricultural flatland”, but in the prehistoric past the landscape was characterised by great expanses of open water and water-logged marshland, dotted with in-fen ‘islands’ of various sizes, ‘rod-dons’ (the raised sediments which form the banks of tidal rivers and creeks or former river channels) and numerous fen-edge peninsulas and embayments around its edges (Brudenell 2012, 58, Van de Noort 2002, Hall and Coles 1994). (Figure 12). Thus, the current unpromis-ing flat arable landscape of the Fens belies the very dynamic and complex nature of this vast wetland (cf. Sturt 2006).

Ironically, this wet ‘wilderness’ originated as a low-lying, dryland basin (the Fenland Basin), which was created during the Quaternary period (the last two million years) as a result of the erosive powers of several ancient rivers flowing into the North Sea and the influence of ice advancing into the basin in cold periods (Hall and Coles 1994, 13, Waller 1994, 7-10). When relative sea levels changed due to a combination of coastal zone and terrestrial pro-cesses in the Flandrian period (from 10.000 BP onwards) marine incursions started to flood the low-lying dryland basin around the Wash (Waller 1994, 47 Lane and Morris 2001, 3). As clastic marine silt sediments were deposited, the lower reaches of the rivers draining into the Wash were drowned, causing the back-up of freshwater upstream (Waller 1994). The resulting freshwater overflow led to the accumulation of peat further inland, around the edges of the basin (Lane and Morris 2001, 4, Waller 1994, 1). In some periods the sea re-treated somewhat, resulting in the extension of this area of peat growth, whilst in others, marine influence increased (Waller 1994, 1). This interplay between marine flooding and

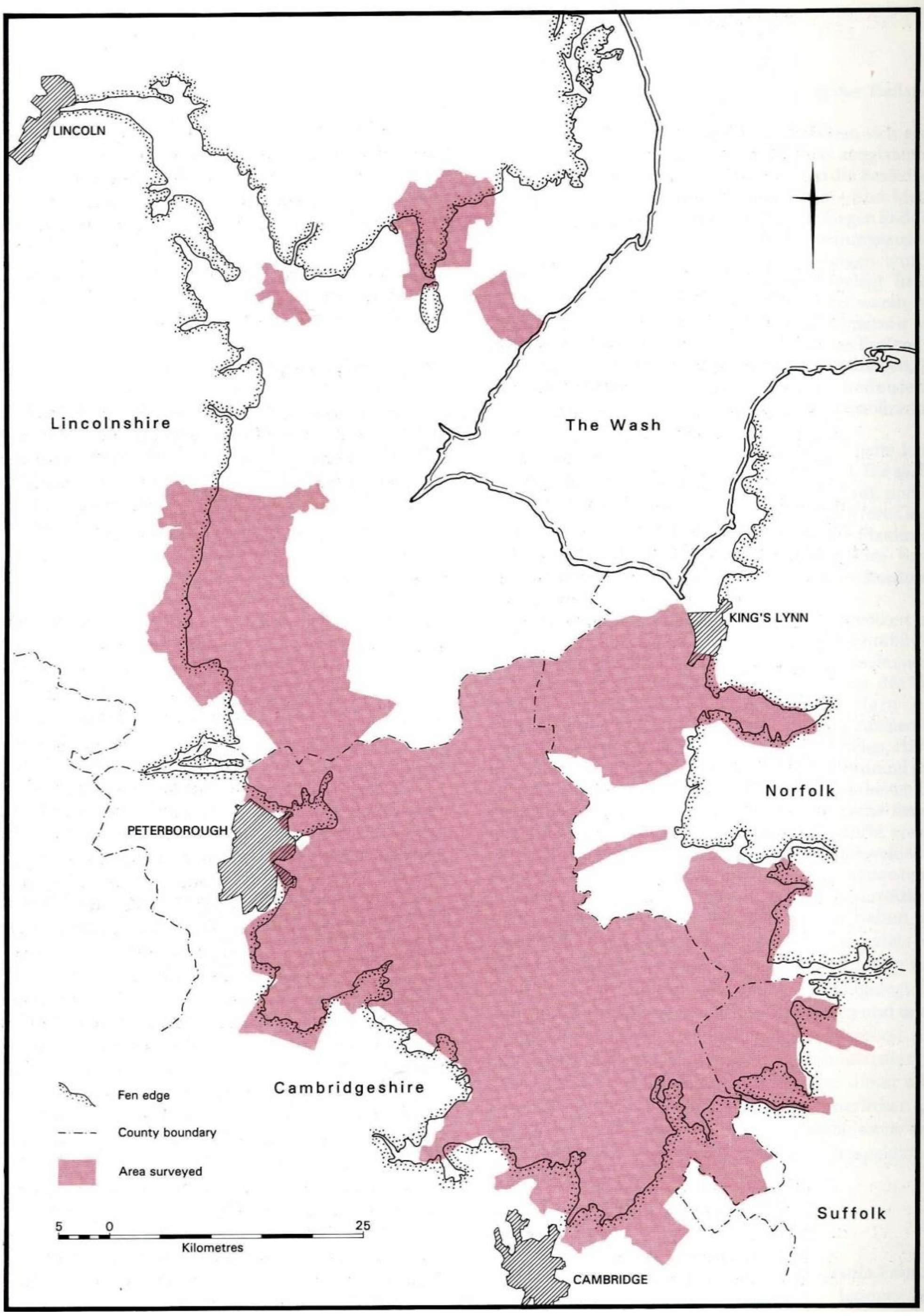


Figure 13: The areas walked by the Fenland Project. (Map from Hall and Coles 1994, xii, reproduced with kind permission of Historic England)

the extension of peat under the influence of the major rivers draining into the Fens, resulted in a series of interbedded layers of marine and organic sediments (ibid.).

Most of these environmental developments, which turned an essentially dry and densely wooded landscape into the vast open wetland described above, took place during the period under consideration in this thesis, i.e. between 4500 BC- 100 AD (Waller 1994, Sturt

2006).[9] As these major changes in the landscape will have affected the way in which people interacted with it, it is important to provide a brief overview of the main developments (cf. Figure 14 and Figure 15).[10] Until about 4500 BC the Fenland Basin was a dry and well-drained densely wooded, stable landscape (Waller 1994, Sturt 2006). Yet from the Late Mesolithic onwards, the influence of a rising sea level began to be felt in the lowest parts of the basin and the lower reaches of the rivers draining into the Fens, and a series of tidally affected environments was established along the Wash margins by c. 4500 BC (Hall and Coles 1994, 38, Sturt 2006, 134) (Figure 14A). The landscape started to change and became more dynamic as river valleys came under the influence of a tidal regime (ibid.). Throughout the Neolithic, sea levels continued to rise, advancing marine sedimentation over the western half of the basin, whilst peat started to accumulate around the basin's edges (Waller 1994, 66) (Figure 14B). Moving from the Late Neolithic into the Early Bronze Age (Figure 14C), freshwater conditions seem to have dominated the western and south-western fen edges, whilst the sea continued to advance landwards in the northern, north-western, eastern and south-eastern Fens (ibid. 70). In the Early Bronze Age, landscape change was speeding up as marine conditions pushed further landwards in all parts of the Basin (ibid. 72, Hall and Coles 1994, 65) (Figure 14D). By the Middle Bronze Age marine deposits had reached their maximum extent inland, with tidal creek systems located close to the Basin's edge (Waller 1994). As marine influence decreased between the Middle and Late Bronze Age peat started to grow in areas formerly under marine influence, turning them into freshwater fens (ibid. 75) Figure 15A). The Late Bronze Age and Early Iron Age were characterised by the fen-wide expansion of these freshwater conditions (ibid. 75) (Figure 15B), but from the Middle Iron Age onwards (from c. 550 BC) marine sediments were deposited in large parts of the Fens again (ibid. 78). Yet whilst the northern and north-western Fens could be characterised by saltmarsh environments, the southern half of the basin was still mostly under the influence of freshwater peat growth (ibid. 77) (Figure 15C).

The above sequence demonstrates that landscape and environmental change were not synchronous throughout the entire Fenland area and that the sedimentary sequences and environmental history within the Basin varied considerably at the local scale (Waller 1994).

[9] The Flandrian sedimentation in the Fenland Basin reached its maximum altitude slightly later, in the Early medieval period, prior to widespread drainage (Waller 1994, 79).

[10] These maps come from Waller's study of Flandrian environmental change in the Fens, which remains the benchmark for Fenland formation during this period. A more detailed outline of this Fenland wide environmental change in relation to two local sequences (the Flag Fen Basin and the Lower Ouse region) is provided in appendix 1.

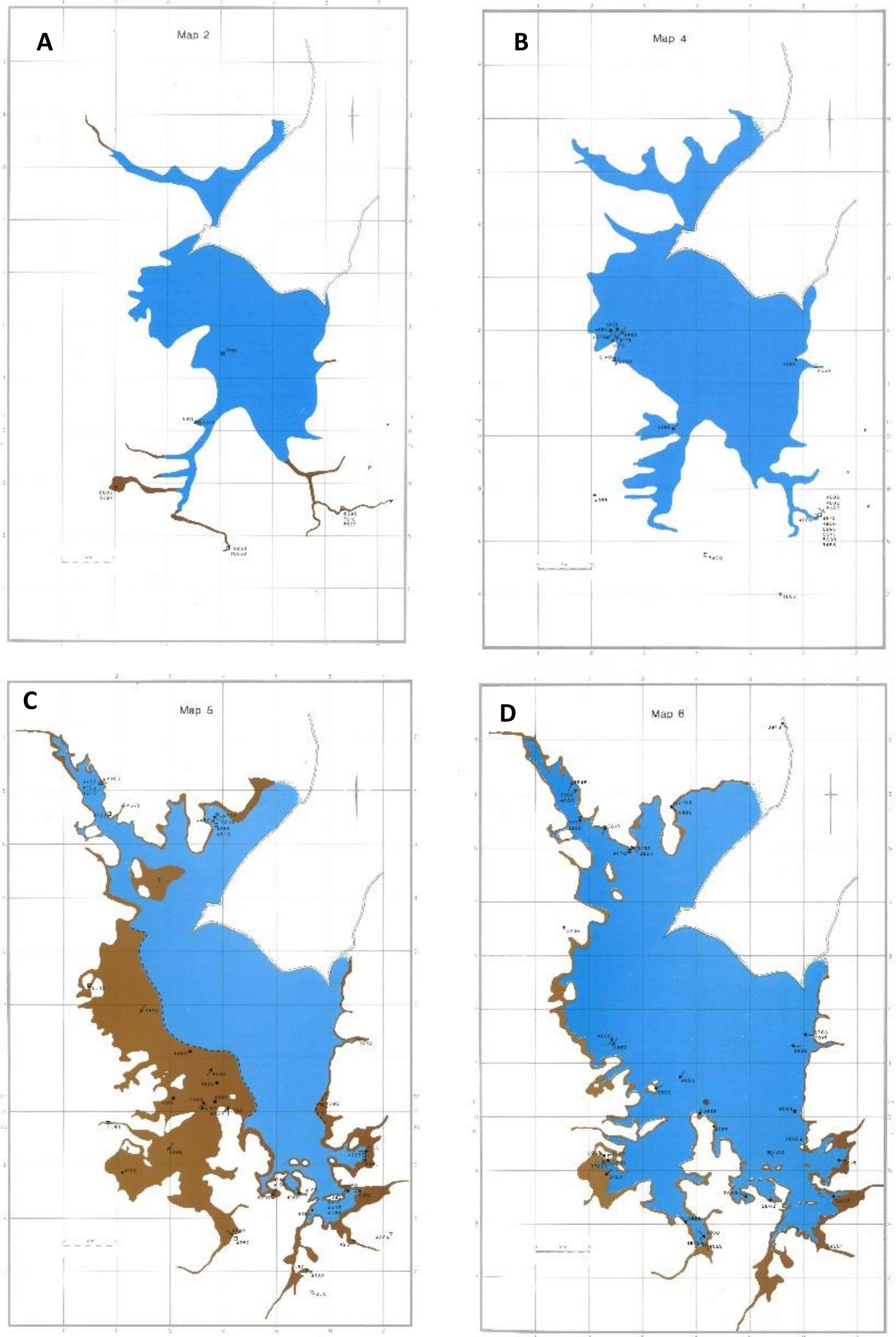
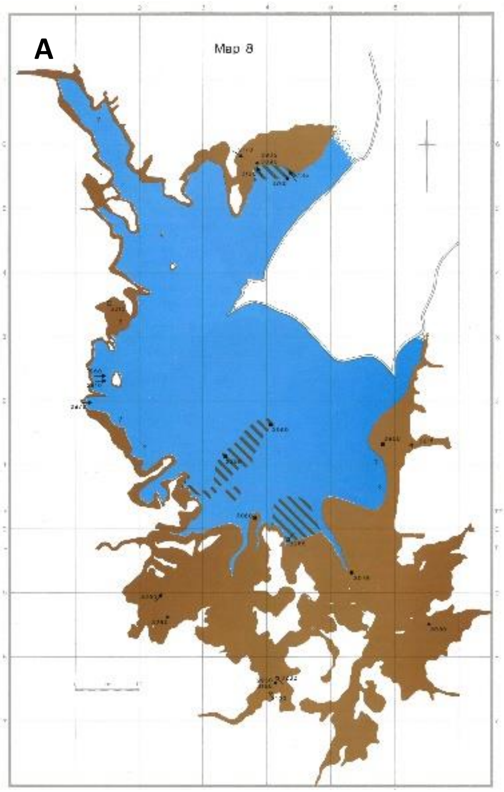
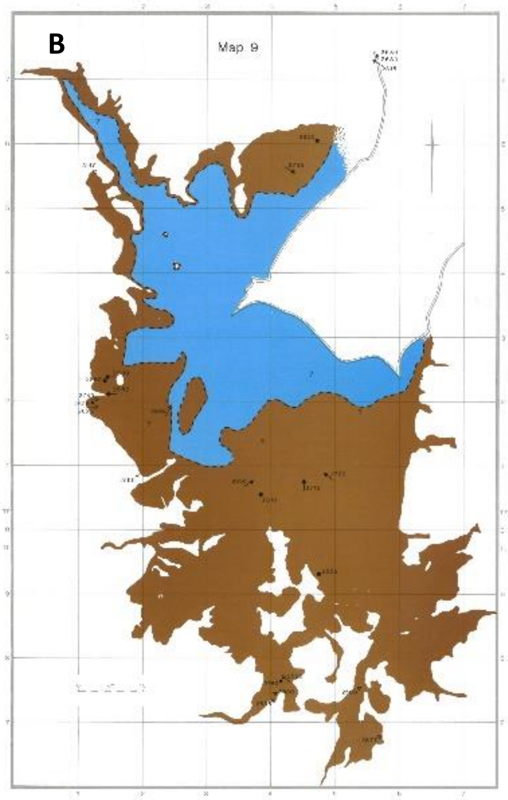


Figure 14: A: Map 2, by Waller, demonstrating how the lowest part of the Fenland start to be inundated by the sea (marine deposits are blue), resulting in peat growth in river valleys further inland (in brown) around c. 4500 BC. B: Map 4 by Waller, demonstrating the extent of marine sedimentation in the Later Neolithic, c. 3650-2650 BC. C: Map 5 by Waller, demonstrating the extent of marine (blue) and freshwater sedimentation (brown) in the Late Neolithic/Early Bronze Age, c. 2650-2150 BC. D: Map 6 by Waller, demonstrating that sea levels rise again, with marine depositions (blue) covering areas previously characterised by freshwater deposition (in brown) in the Earlier Bronze Age, c. 2150-1750 BC. (Maps from Waller 1994, reproduced with kind permission of Ordnance Survey and Cambridgeshire County Council)





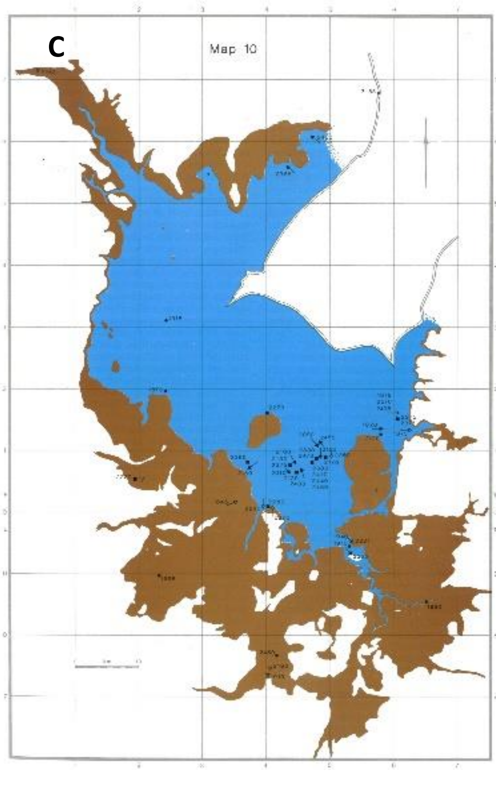


Figure 15: A: Map 8 by Waller, demonstrating peat growth over the Early Bronze Age marine deposits in the Middle/Late Bronze Age, c. 1350-950 BC. B: Map 9 by Waller, showing the further expansion of freshwater sedimentation (brown) in the Late Bronze Age/Early Iron Age, c. 950-550 BC. C: Map 10 by Waller, demonstrating how marine influences become dominant in some parts of the Fenland Basin, whilst others are still characterised as freshwater environments in the Middle/Late Iron Age and Romano-British period, c. 550 BC -150 AD. (Maps from Waller 1994, reproduced with kind permission of Ordnance Survey and Cambridgeshire County Council)

The extent of marine and freshwater influence differed through time and space, making it very difficult to characterise the Fenland landscape at any one time during the period under consideration (cf. ibid.). The landscape was constantly changing and a series of different marine and freshwater environments co-existed in different parts of the Fens (ibid.) (Figure

16). Appendix 1 contains an in-depth description of the wide range of landscapes that the rather vague term ‘wetland’ covers.[11] These various wetland landscapes differed considerably in character and nature and would have offered different opportunities and constraints for the people inhabiting and exploiting the Fens in later prehistory (cf. Van de Noort and O’Sullivan 2006, 35-38). These important variations in landscape and the major environmental changes in the area must have greatly affected the ways in which people interacted with the wet Fenlands over time.

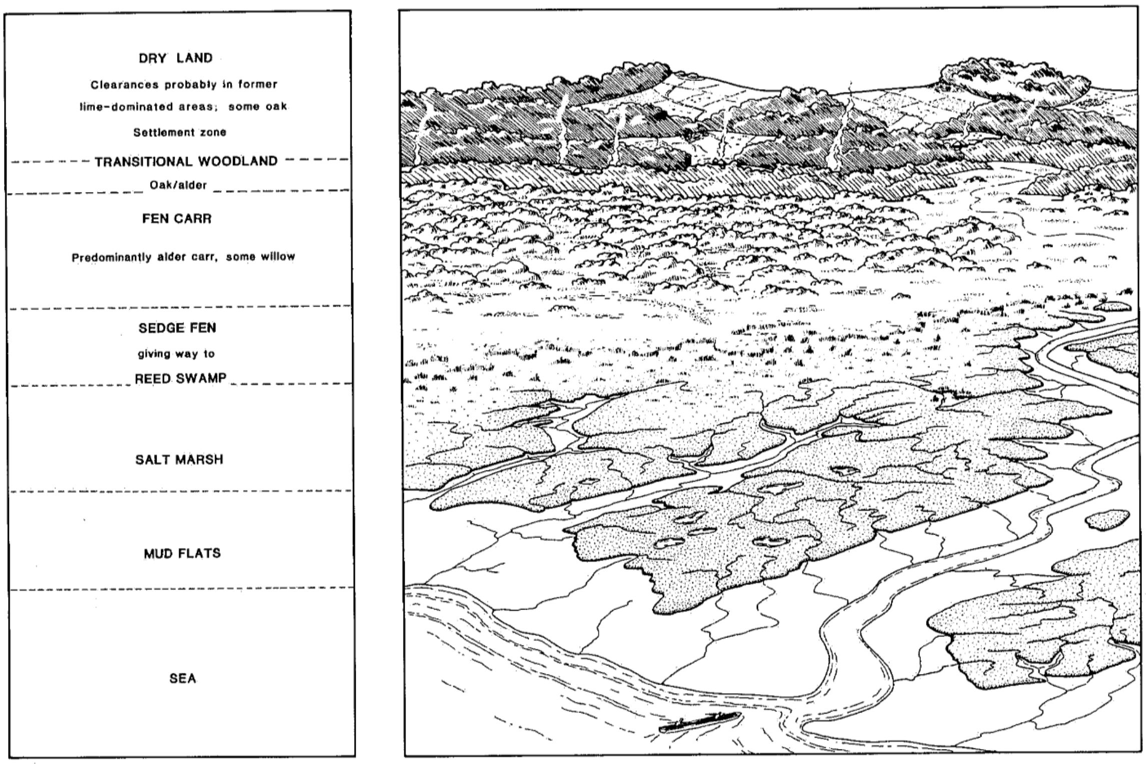


Figure 16: Reconstruction of the range of fen edge environments showing the different zones of vegetation between the fen edge and saltmarsh mudflats. (Figure 48 from Silvester 1991, 84, reproduced with kind permission of the Historic Environment Service, Norfolk County Council)

2.2.2 Drylands – River gravels, chalk downlands and heavy clays

As this thesis aims to consider the role and place of wetland(er)s in the wider region it is important to consider the dryland landscapes within the study area as well. Although this landscape may be considered more stable than the dynamic Fens, the study area contains various types of drylands, and human influence over the course of the later prehistoric period has altered these landscapes considerably. The dryland parts of the study area contain

[11] Indeed, the term ‘wetland’ has only existed in the English, Dutch, French and Danish languages from around the 1960s (Van de Noort and O’Sullivan 2006). Before this, different landscape types within this environment were described by their own term (Sturt 2006, 128).

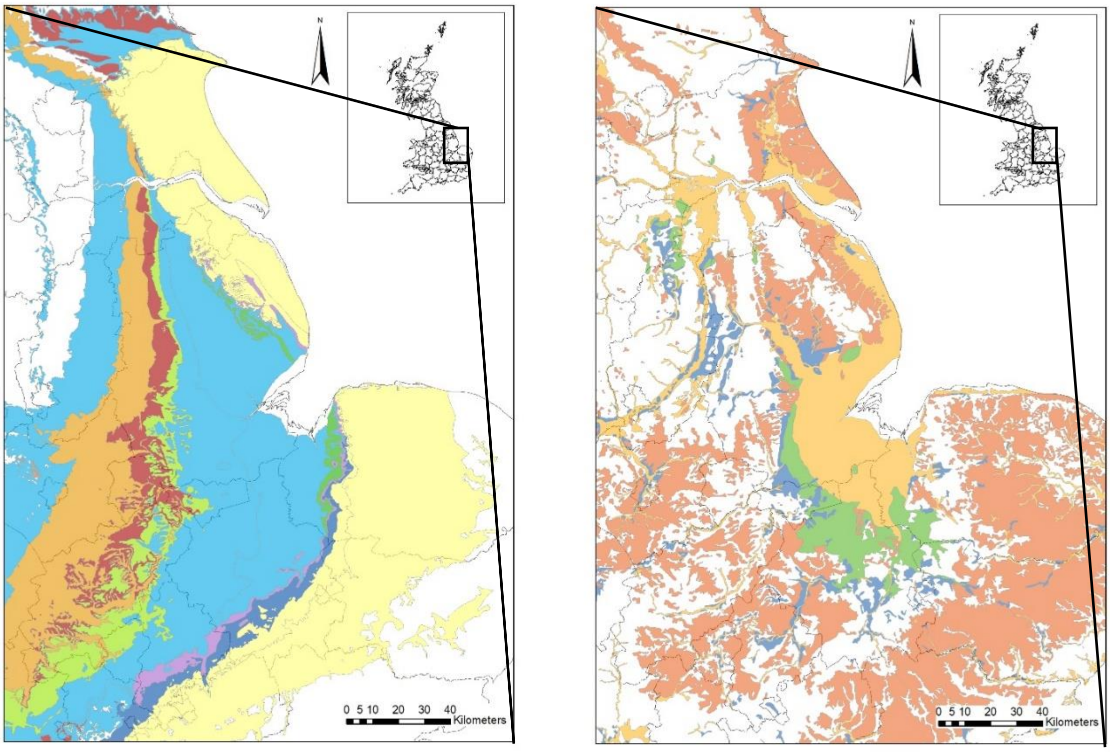


Figure 17: Maps displaying the most important bedrock (left) and superficial (right) geologies in the study area. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

a diverse set of landscapes and soils. To the south-east of the Fenland Basin there is a ridge of higher ground formed of chalk flanked by crags, clays and greensands on its eastern and western sides (Figure 17)[12] (Brudenell 2012, 58). To the west of this ridge, several major

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[12] This map and all others that follow in this thesis were made by the author, using data downloaded from the EDINA Digimap Service < https://digimap.edina.ac.uk/> They contain Ordnance Survey (OS) and British Geological Survey (BGS) data, which should be credited as follows:

OS: Boundary-Line [Shapefile geospatial data], Scale 1:10000, Tiles: GB, Updated: 13 August 2014, Ordnance Survey (GB), Using: EDINA Digimap Ordnance Survey Service, <http://digimap.edina.ac.uk>, Downloaded: May 2015.

rivers like the Ouse, Cam, Nar and Wissey (ibid. 61) flow into the Fens. Near the Fenland Basin, these rivers are flanked by extensive terrace gravel deposits (ibid.). Around the eastern fen-edge is a broad band of lighter and freely draining soils, including the 'Goodsands' in northwest Norfolk, the Breckland, and the downland landscapes of southern Cambridgeshire (ibid.). However, the plains between the major rivers on the western and south-western sides of the fen-basin are dominated by heavier boulder clay soils (ibid.).

Further west a belt of limestone running roughly north to south marks a major division. (Cooper and Clay 2006, 5). To the west of this we find upland areas characterised by permeable limestone, sandstone and claylands (ibid.) (Figure 17). To the east the land slopes down towards sea level in the Fenland Basin. This research focusses on this lower-lying eastern area, where geology is characterised by terrace gravel deposits at lower altitude, and, at higher levels, by claylands cut through by the drainage of several major rivers, including the Trent, Welland, Nene, Derwent and Witham, most of which drain into the Wash (ibid.).

The above outline demonstrates that the dryland areas around the former Fens are very diverse, including a range of geologies and landscapes (Figure 17). Most recorded sites are located on river terrace gravels which attracted dense prehistoric occupation (Brudenell 2012, 61). Fewer sites are found on chalk downlands and on heavier clay soils. This is partly due to the biases of modern excavation, which focusses on areas of development. Whilst chalk, limestone, clay and carstone are all industrially quarried, the region's sand and gravel deposits are the focus, resulting in more archaeological investigation in these areas (ibid. 62). Many of these projects are relatively large in scale, covering large tracts of land, in contrast to many much smaller scale field projects elsewhere (Evans et al. 2008, 186). With fewer quarries and investigation in chalk and claylands, the prehistory of the latter is less well understood (ibid. 187).

Yet although modern practices have created a bias, it is also true that different dryland landscapes seem to be colonised at different points in time. Whilst lighter sand and gravel soils in river valleys seem to have been attractive from the Mesolithic onwards, the heavier clay soils were not truly occupied until the Iron or possibly the Bronze Age (cf. Clay 2002,

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Abrams and Ingham 2007, Ellis et al. 1998, Evans and Patten 2012). Thus, although the dry-land landscapes in the study area may not have been as dynamic and varied as those in the Fenland Basin, they clearly differed in nature and character, and this affected the ways in which people interacted with them.

Moreover, although drylands were not affected by a rising sea level in the same way that the Fenland Basin was, they did also see major change over the course of prehistory, mostly due to human, rather than environmental influences. Whilst the first Neolithic farmers may have only cleared small areas on lighter gravel soils in a densely wooded landscape, areas further inland will have started to be cleared in the Bronze Age. As settlement became more permanent and expanded into previously uninhabited areas like the heavy clays, the landscape became increasingly open. Thus, the term 'dryland', just like 'wetland' hides considerable complexity and variety.

2.3 The socio-cultural landscape - Previous research in and around the East Anglian Fens

The prehistoric socio-cultural landscape in the study area, once thought to be relatively simple, was in fact as varied and complex as the physical one. The East Anglian Fens have a long history of research, starting with the first Antiquarian interest in the region at the end of the 19th century and continuing until today, when the 'deep Fens' are starting to be explored. Throughout this period, the focus of research has changed significantly and so have interpretations on how the wetlands were used throughout time. Despite this, there are a number of research themes the have been important throughout the Fens' research history, most notably the relation between past communities and the dynamic Fenland environment and landscape.

It is beyond the scope of this review to discuss all the various projects and research initiatives which have taken place in the Fens since the earliest investigations in the 19th century. However, some major research initiatives and a few important smaller projects, all focussing on the prehistoric evidence in this region, will be used to summarise the main trends. For a longer and more detailed version of the Fenland's research history and trends outlined below the reader is referred to appendix 2.[13]

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[13] The dryland areas around the Fens have received less attention and their research history is covered in this section rather than appendix 2. Of course, this thesis could not cover all previous work in the drier areas, but this section does contain a summary of several important projects.

2.3.1 Preservation and developer-funded fieldwork – A note on research biases

Before outlining the Fens' research history, it should be noted that not all counties of which the Fenland is a part have received the same amount of attention. The Cambridgeshire Fens have seen most investigations, with some major projects east of Peterborough, including the excavations at Fengate and Flag Fen (Evans 2009, Pryor 1974, 1978, 1980, 1984, 2001), as well as those in the south-central fens (Colne Fen, Haddenham) taking place here (Evans and Hodder 2006a,b, Evans 2013a,b, Lane and Morris 2001, 5). Lincolnshire and Norfolk have seen far fewer excavations, with the Iron Age timber trackway at Fiskerton (Field and Pearson 2003) and the settlement at Billingborough (Chowne et al. 2001) being notable exceptions (Lane and Morris 2001, 4,5).

These differences are due to variations in the level of development and related differences in research traditions (cf. Brudenell 2012). Whilst there is much development in Peterborough and Cambridgeshire where large areas of settlement were excavated, development in Norfolk and Suffolk have not required excavations at a significant scale and our understanding of the landscape and past settlement in these areas is mostly based on the analysis of surface and metal detector finds within their topographic and geological setting (ibid. 67). As a result, the below overview will mostly focus on the western and south-eastern Fens rather than the North and East, but these areas will be referred to when relevant.

Another issue to keep in mind is the fen edge focus in this area. Fenland research should perhaps be called fen edge research, as the development of the Fens has made true wetland sites very difficult to see and investigate until very recently (cf. section 2.3.2). Thick deposits of marine clay and peat cover much of the prehistoric evidence in the Basin (Figure 18). Moreover, although there have been fen-wide surveys, most excavations (and especially the most informative, large-scale ones) have been located in areas of development, like the Fengate/Flag Fen area east of Peterborough and the lower reaches of the river Great Ouse in Cambridgeshire. Thus, our understanding of this landscape and people's uses of it is mostly based on rather restricted and limited evidence.

Recently, however, previously unexplored spaces in the 'deep Fens', have started to be excavated, giving us insight into people's interaction with the true wetlands. Yet although these new discoveries have increased our understanding of the Fens, they also raise many questions, particularly in relation to the role and place of these wetland sites and communities in relation to those on the fen edge and the true drylands further inland. This highlights

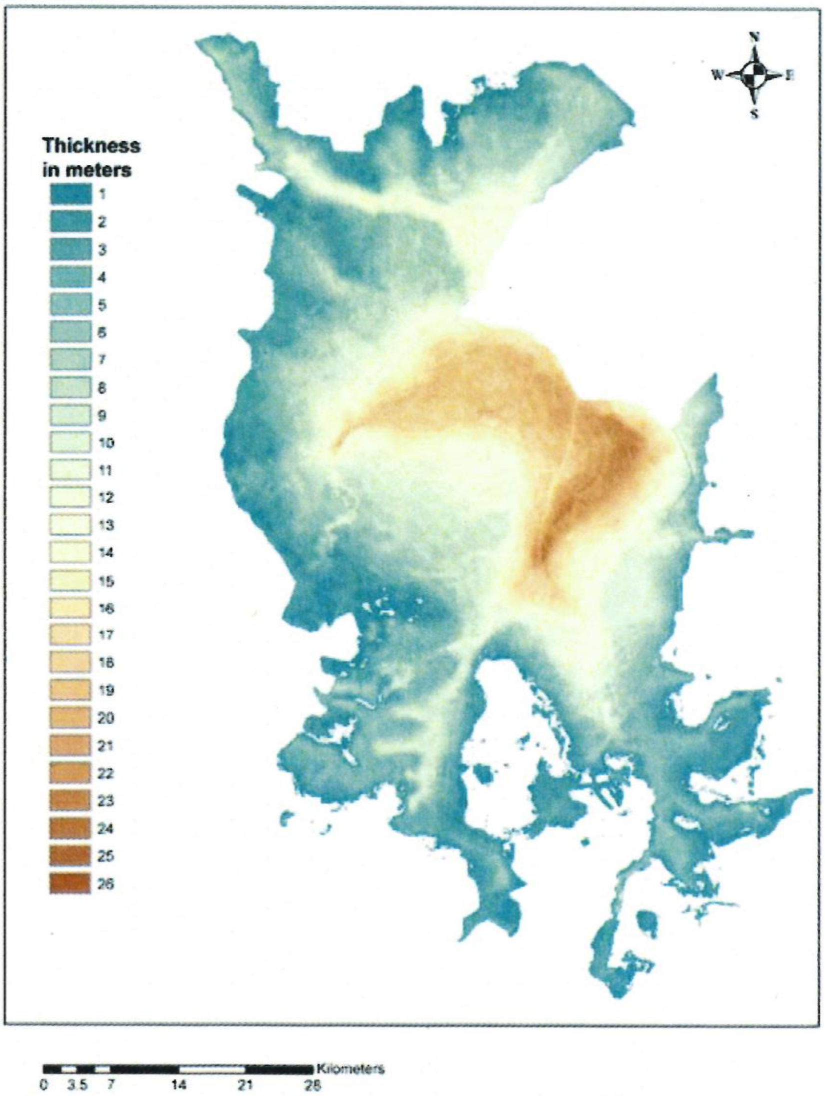


Figure 18: Isopachyte map of Holocene deposits in the Fenland Basin, modelling the thickness of sediments in different parts of the basin. (Map from Sturt 2006, 123, © Science+Business Media, Inc. 2006)

the need for an integrated study of this area, which considers multiple landscapes, areas and sites.

2.3.2 Wetlands - A history of Fenland research

Despite the differences in research intensity outlined above, several broad phases in the Fenland's research history can be recognised, all with different characteristics and research foci. These will be briefly summarised below.

The foundations of Fenland Archaeology (1870-1940) – Mobile pastoralism

The Fens already attracted research interest at the end of the 19th c. However, due to the issues of visibility outlined above, evidence for the Fenland's prehistoric occupation was limited. Scholars relied on small-scale excavations, accidental discoveries, surface finds and historic accounts of the Fenland landscape and its uses (Evans et al. 2008, 200, Evans 1988, 27). The changing nature of the former landscape was not realised yet and the apparent absence of evidence in combination with known historic uses of the Fens lead to interpretations of pastoralist uses of this landscape (Evans 1988).

The foundation of all later work in the Fenlands was laid by the Fenland Research Committee, established in Cambridge in 1932 and active until 1940 (Hall and Coles 1994, 6). Inspired by palaeoenvironmental work in Scandinavia, they pioneered the use of natural sciences and palaeoenvironmental studies in Archaeology (Smith 1997). Through their excavation at Shippea Hill they were able to elucidate the complex development history of the Fenland deposits, establishing a four-part stratigraphic division which they related to four different phases of occupation, each within its own environmental setting (ibid., Clark et al. 1935 (cf. Figure 19). Their recognition of the potential of well-preserved environmental and

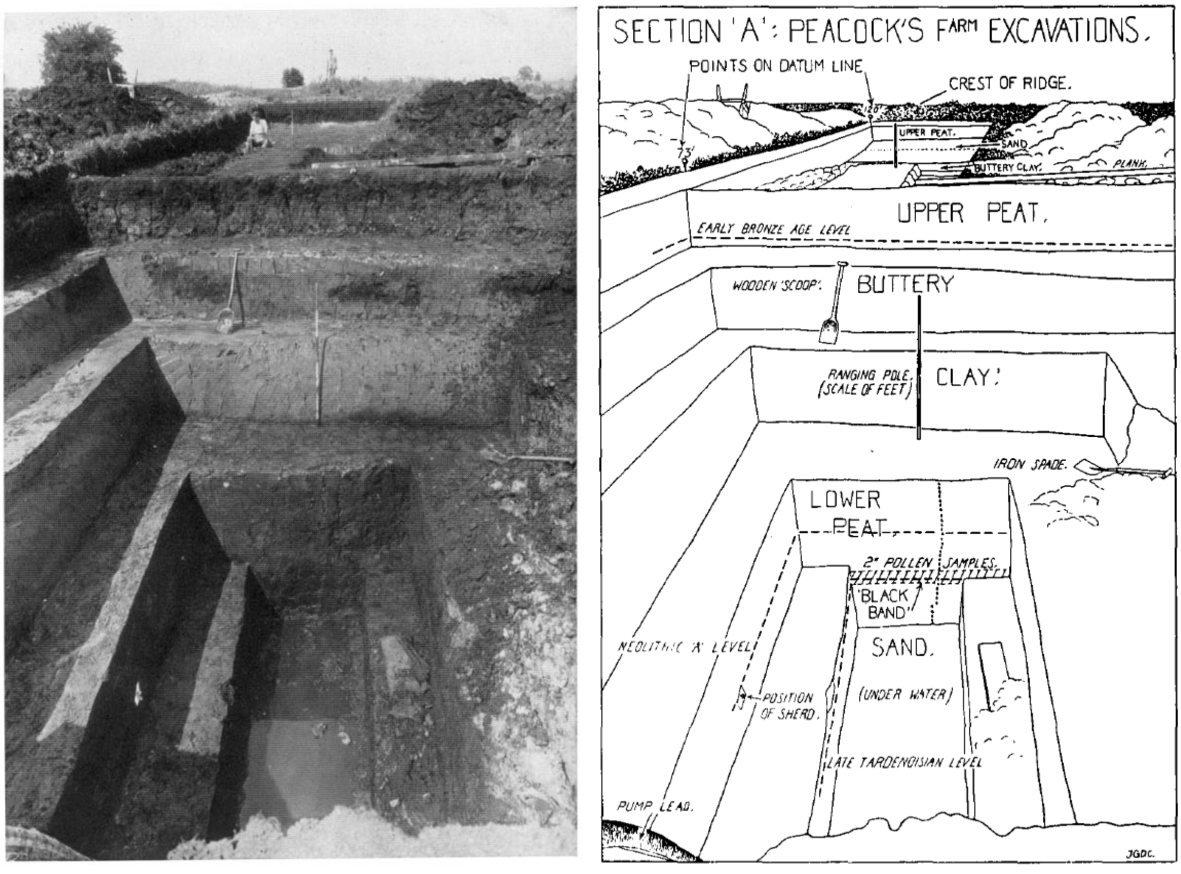


Figure 19: The four-part stratigraphic division of the southern Fenland established during the Fenland Committee's excavations of Peacock Farm, Shippea Hill (Clark et al. 1935). The section shows the basal or Lower Peat, overlain by the 'buttery' Fen Clay (Hall and Coles 1994, 14). This was followed by the Upper Peat layer, which often formed the surface sediment (ibid.). In some areas however, this peat layer was overlain by a layer of Upper Silt (ibid.). (Figure from Clark et al. 1935)

archaeological records and their emphasis on human-environment relations underlies all subsequent work in the Fens (Hall and Coles 1994).

Fengate (1940s-1970s) – From pastoralism to seasonal transhumance

Between the second World War and prior to 1970, the Fens did not receive much interest, as most members of the Research Committee were now focussing their attention on other projects (e.g. Graham Clark started excavating Star Carr (Clark 1954)). This changed when Peterborough was designated as a new town in 1967, prompting the large-scale excavations at Fengate, east of the city (Pryor 2001, 9). A large, second millennium BC field system with major droveways laid out in right angles to the fen edge was discovered, which was related to seasonal transhumant use of the Fens (Pryor 1976, 1980). This shift in thinking (from whole communities moving year-round to the seasonal movement of task groups) reflects developments in the wider discipline, including a move away from cultural historical approaches, the impact of absolute dating and the increasing application of ecological approaches (Evans 1988, 35). The advance of rescue archaeology led to a greater intensity and quality of excavation and in increase in the available evidence. It also meant a change in focus, from the whole Fenland region to a smaller, local scale.

The Fenland Projects (1980-1990) – Inhabiting the Fens

From the 1980s onwards, the basic research framework in Fenland research started to shift as several major projects added large amounts of environmental and archaeological data (Evans 1988, 33). As part of a wider interest in well-preserved wetland landscapes (cf. John and Bryony Coles' Somerset Levels Project (Coles and Orme 1975-1989, Coles 1978)) research interest in the Fens grew. The Fengate project had demonstrated that there was a well-preserved buried Fenland landscape, which was fast disappearing due to deep ploughing and peat wastage (caused by the drainage of the Fens) (cf. Figure 20). To assess the potential of what was still there, David Hall was appointed as Fenland Field officer in Cambridgeshire in 1976 (Hall and Coles 1994, 7). He mapped archaeological finds and features, but, in line with previous research traditions, also soils and sediments (Lane and Morris 2001, 5). His work demonstrated that there were many sites of great quality, resulting in a much larger survey project starting in 1981 (Hall and Coles 1994). During this 'Fenland Survey Project', which took place between 1982 and 1988, about 60% of the former Fens was fieldwalked by four archaeologists, resulting in the discovery of c. 2000 sites, dating from the Mesolithic to the medieval period (ibid.) (Figure 13).

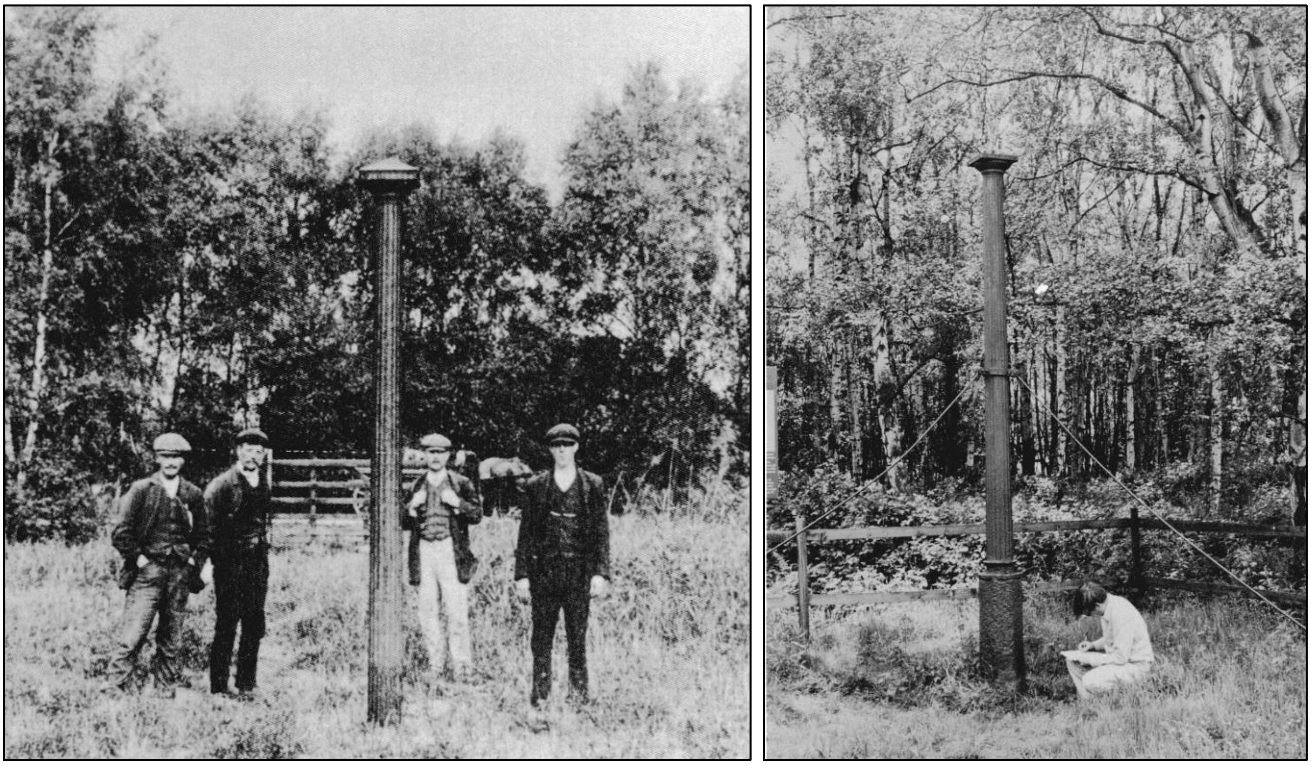


Figure 20: When large-scale drainage in the Fens commenced, peat wastage was not measured, but when the area around Whittlesey Mere started to be drained in 1850 a datum (fixed point) was put in place (Hutchinson 1980). A wooden pile, later replaced by a cast iron column was sunk into the bog, with its head level with the ground (ibid). The column is now known as the Holme Post and clearly demonstrates peat wastage in the area over the years. The photo on the left was taken between 1910 and 1913 and the one on the right in 1978, clearly showing how much the level of the land is dropping (today it is c. 4 m below the level recorded in 1848 (ibid.). (Photos from Hutchinson 1980, © 1980 Blackwell Scientific Publications, reproduced with permission of John Wiley and Sons Limited through PLSclear)

The Fenland Survey has been fundamental to all further work in the Fens. It provided the first region-wide overview of the archaeological sequence through time in relation to the changing landscape (expertly studied by Waller (1994)). It demonstrated that there were important local and regional differences in the archaeological record and that landscape change was not synchronous throughout the Fens either; important local and regional variation occurred (ibid., Hall and Coles 1994, cf. section 2.2.1). Thus, both the socio-cultural and physical landscape of the Fens was proven to be much more complex than previously thought.

Aerial photography and several other, smaller-scale, projects taking place in the Fens at this time (Figure 21) reinforced this image (cf. Evans 1988). All these projects added many new sites to the evidence base and demonstrated that parts of the Fens might have been inhabited more permanently than previously thought, making it likely that arable agriculture took place alongside pastoralism in this landscape (ibid.). As a result of all these projects, there was an increasing emphasis on the study of more localised land-use patterns instead of earlier fen-wide ones (ibid.).

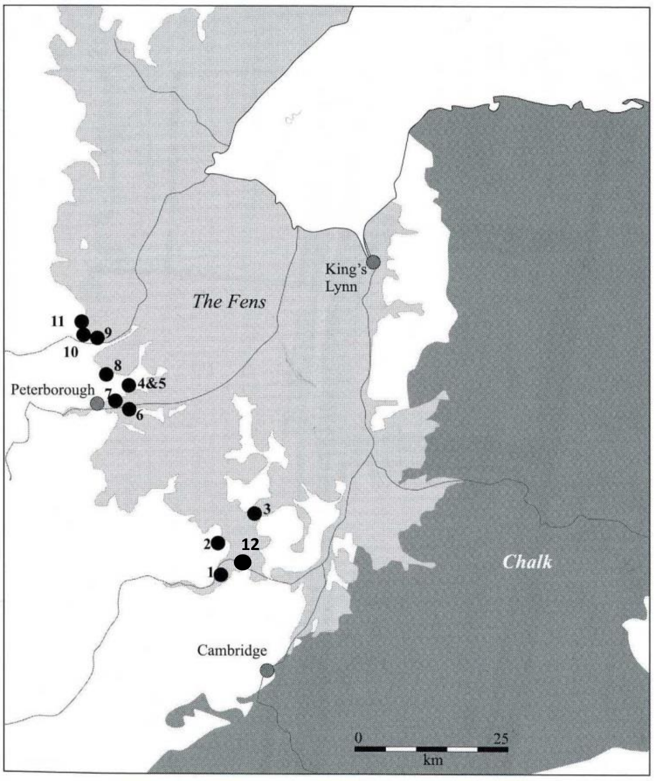


Figure 21: Important sites in the Fenlands, many of which will be discussed below. 1. Barleycroft farm/Over, 2. Colne Fen, 3. Block Fen, 4. Pode Hole, 5. Tanholt Farm, 6. Bradley Fen and Must Farm, 7. Fengate, 8. Newborough, 9. Welland Bank, 10. Market Deeping, 11. Langtoft, 12. Haddenham. (Map adapted from Evans 2009, 43, reproduced with kind permission of CAU)

Another important research trend in this period is the introduction of less environmentally focussed and deterministic and more social and ritual interpretations of the evidence. The famous Flag Fen site was of great importance in this respect (cf. Figure 23). This very well-preserved Bronze Age site consisted of five rows of timber posts, which continued the line of a droveway through the Fengate field system on the fen edge into the fens towards the higher and drier areas at Northey, about 1200 metres to the east (Pryor 2001, xviii). This post-alignment crossed a large contemporary timber platform (ibid) (cf. Figure 98). Much material culture and many animal bones were found along the alignment and in association with the platform, which is argued to have been built for ritual purposes and votive deposition (ibid.). An equally well-preserved Iron Age trackway at Fiskerton, excavated in 1981, was equally related to votive deposition and may have been located on a tribal boundary (Field and Parker Pearson 2003, xi, xii, 93).

The advance of post-processualism at the end of the 1970s probably influenced the interpretations of sites like Flag Fen and Fiskerton. This influence is also clearly seen in the publication of the Haddenham project, which took place in the south-central Fens around the same time as that of Flag Fen and Fiskerton (between 1981 and 1987) (Evans and Hodder 2006a, xv) (cf. Figure 24). Like in most previous research, the relation between people and the changing landscape and environment were of great importance in this project, but social issues were also considered (cf. Evans and Hodder 2006a,b). The work at the various Haddenham sites, which included a well-preserved Neolithic long barrow with a collapsed timber chamber, an equally well-preserved Iron Age settlement compound where people seem to have specialised in wetland hunting, and a Romano-British shrine, demonstrate that social organisation, landscape perception and ritual practice were becoming increasingly important research themes alongside 'traditional' cultural and environmental sequences in the 1980s (ibid.).

Y et despite an increasing interest in past social life, environmental remains and the relation between landscape change and human activity continued to be a key area of research in most major projects. Indeed, social aspects of past life were frequently linked to the changing environment. At Flag Fen for instance, it was argued that "the principal local stimulus for its [the timber platform and alignment] construction can be seen in the steadily rising waters of the Fens" l (Pryor 2001, 431) and at Haddenham the social impact of the major landscape changes was one of the main research themes (Evans and Hodder 2006a, 1).

PPG16 and developer-funded archaeology (1990s) – Increasing evidence, variability and complexity

With the introduction of PPG16 legislation and developer-funded archaeology in 1990, the number of fieldwork projects increased further, mostly on the western and south-western fen edge. Numerous smaller and larger-scale projects, many of which occurred in quarries on the fen edge, added much more detail on human activity and environmental change in the later prehistoric Fens. Many of the larger-scale projects allowed archaeologists to consider entire landscapes, enabling them to reconstruct archaeological and environmental sequence in much detail.

Not all projects can be outlined here, but a few should be mentioned (more details on what was found at the various sites mentioned can be found in appendix 2). At Fengate many more excavations have been carried out since Pryor's original fieldwork in the 70ies, adding at least ten more sites to Pryor's original seven (cf. Pryor 2001, 17, Evans 2009, 15-19) (Figure 22). Through this, a more detailed picture and better understanding of the field system lay-out, dating and the nature of settlement in this area has been achieved (Evans 2009, 63-64, 243-250).

The requirements of PPG16 also allowed archaeologists access to new areas, including the many brick pits and gravel quarries in and around the Fens (cf. Knight 2012, 3). As quarrying opens up large areas, these excavations offer insight into the later prehistoric landscape on an unprecedented scale, covering whole landscapes rather than just individual sites. Several important, large-scale projects (many still ongoing) started in the Eye and Whittlesey

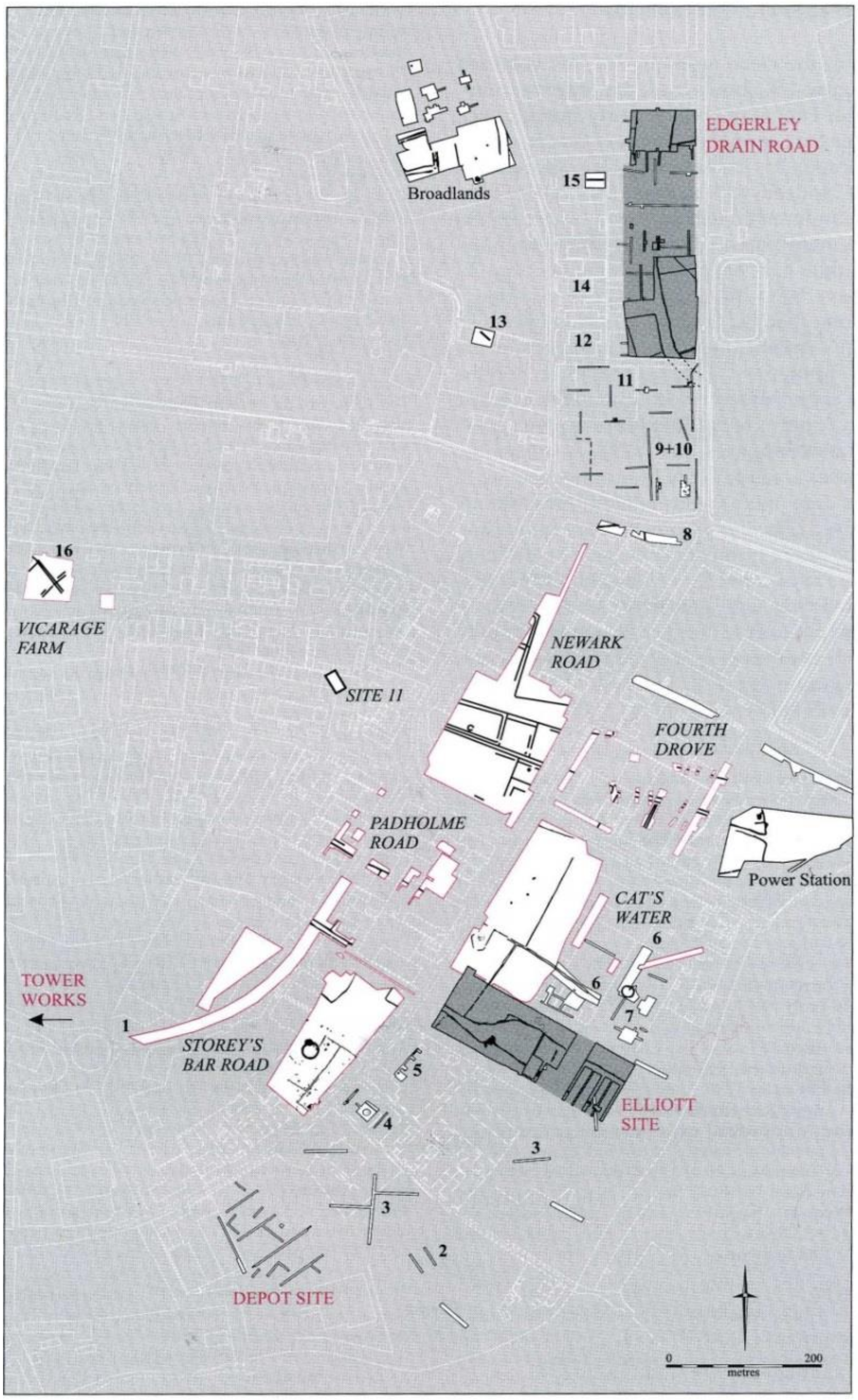


Figure 22: The main Fengate projects until 2009. (Map from Evans 2009, 18, reproduced with kind permission of CAU)

Quarries on the western fen edge (Evans 2009, Knight 2012), where many prehistoric sites have now been excavated, including Pode Hole, Tanholt Farm and King's Dyke West (Evans 2009, 47, 49, Daniel 2009, Garrow 2000, Patten 2002, Knight 1999) (Figure 23).

The south- western Fens are another area that has seen much research. The sites of Barley-croft Farm and Over in the Needingworth Quarries have been under investigation since 1992 on opposite banks of the River Ouse (Evans 2009, 53) (Figure 24). Nearby, on the

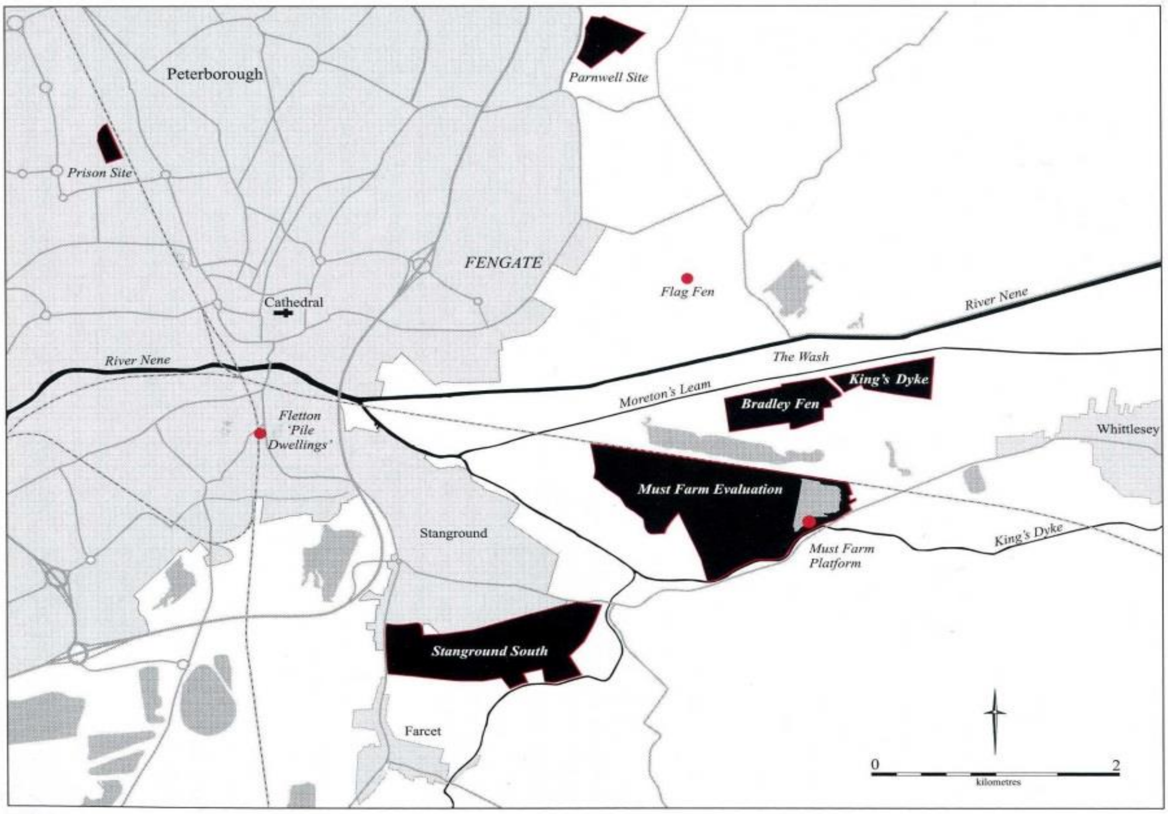


Figure 23: The main projects in the Whittlesey Quarries; Bradley Fen, King's Dyke, Must farm and Stanground South. (Map from Evans 2009, 47, reproduced with kind permission of CAU)

north-bank of the same river, excavations took place at Colne Fen in the Earith Quarry. Together, these various quarry excavations have provided us with detailed insight into Neolithic, Bronze Age and Iron Age land-use and settlement in relation to the major environmental and landscape changes in these areas. The demonstrate some similarities (e.g. the occurrence of field systems in many fen edge locations), but also important differences between various areas.

Whilst human-environment relations remain important, social issues are also considered at sites like Barleycroft Farm, Colne Fen, Over and Fengate (cf. Evans and Knight 2000, Evans 2009, 2013a,b, 2016). Yet although these social studies are of considerable interest, discussion about social life remains quite generalist and tentative (cf. section 2.4). Moreover, many of these studies tend to focus on developments in one area only. This increasing focus on local narratives at particular sites or research areas within the Fens is a result of developer-funded archaeology, and has been cause for concern, as it leads to a certain fragmentation; there has been little effort to compare and integrate the results of the many developer-funded projects now taking place into broader narratives (cf. Hodder 2013, xi, Pryor 2001, 17).

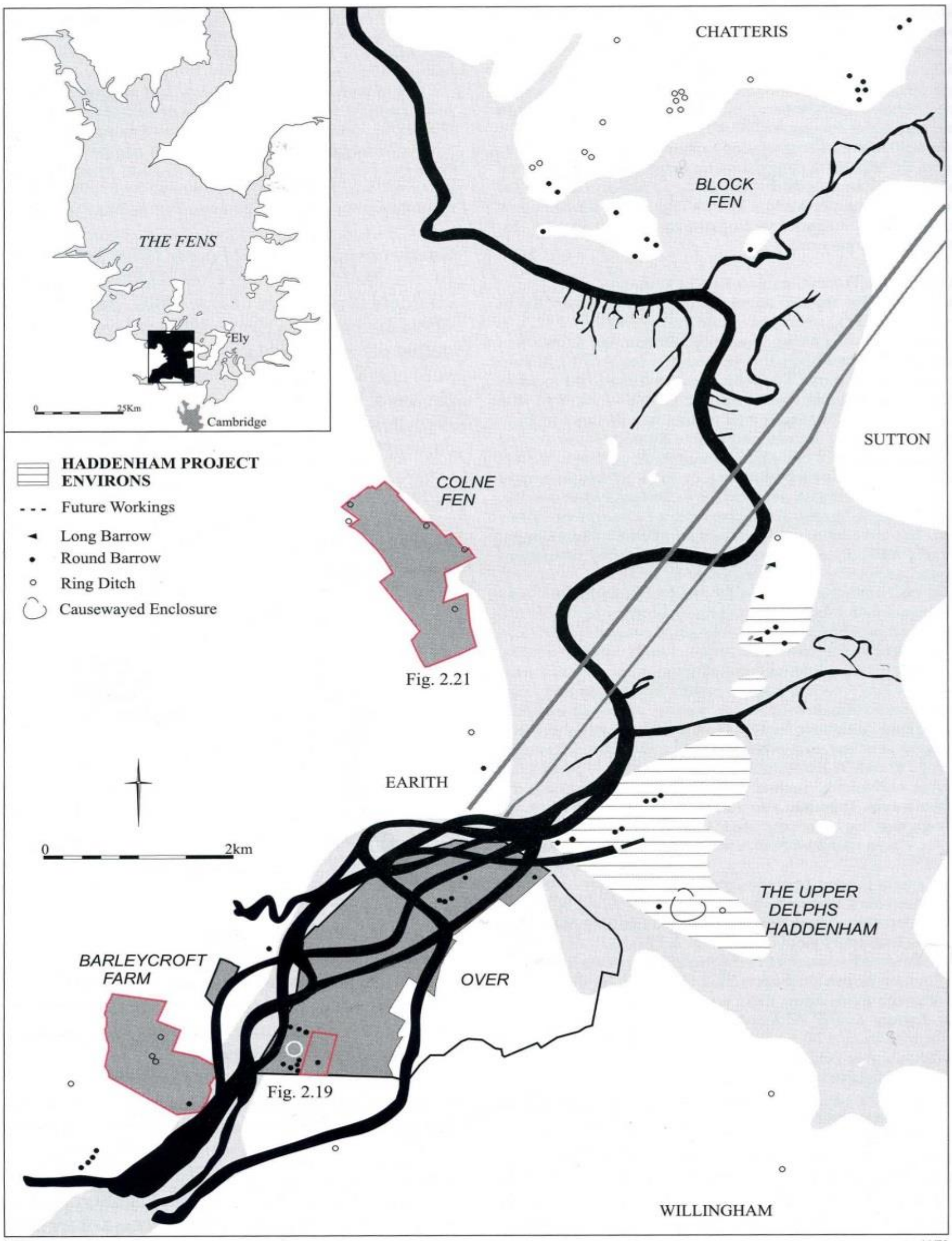


Figure 24: A map showing the major projects in the south-central Fens: Colne Fen, Haddenham, Over and Barleycroft Farm. (Map from Evans 2009, 52, reproduced with kind permission of CAU)

In addition to the larger scale developer-funded fieldwork, a number of smaller-scale research projects should also be considered, most notably the ‘Fenland Evaluation’ and Fenland Management Projects’. These projects were a follow-up to the Fenland Survey Project and aimed to preserve and investigate a number of identified sites in more depth (Hall and Coles 1994, 157). These excavations at 148 often well-preserved sites, though much smaller in-scale than the developer-funded ones, are important as many of them took place in areas that saw little development, like Lincolnshire (cf. Lane and Trimble 2010). Here sites like

Market Deeping, Hoe Hills, Fen Farm and Dowsby have added to our understanding of past life in a saltmarsh environment (which differed from that in the freshwater fens further south) (ibid.).

Quarries and current investigation (2000 onwards) – Deep Fen explorations and wetland dwelling

Although developer-funded archaeology has greatly increased the evidence base, and with it our knowledge of the former Fens, it should be noted that most information still comes from a very restricted area within the Fens. Because of the issues of visibility outlined above, most sites investigated lie close to the surface of the former Fens, in higher areas where sediment cover is thin, i.e. on the fen edge and the fen islands rather than in the true wet Fens (Sturt 2006, 123). Recently, however, several projects undertaken in advance of clay extraction in the brick pits at Whittlesey in the western Fens have given us a glimpse into this deep fen world (Knight 2012). Protected by the same sediments that normally hide them from view, an almost pristine ancient land surface with a great number of exquisitely well-preserved settlement-related features and finds was uncovered at sites like Bradley Fen and Must Farm (Knight and Brudenell in prep.)(cf. Figure 23). The evidence at Bradley Fen spans the Neolithic to the Iron Age and includes a Beaker roundhouse, cattle hoof prints around watering holes, a Bronze Age field system and Iron Age settlement (ibid.). The archaeological sequence could be matched very precisely to the landscape changes in this area (studied in-depth by Scaife and French (in prep.)).

Further south lies Must Farm, where excavations started in 2004 (Figure 23). Here an even more deeply and well-preserved buried landscape was investigated, which included Neolithic fence lines, paths, tracks and monuments (Evans 2009, 49, Knight 2012, 6). A palaeochannel of the Nene located nearby was found to contain eight incredibly well-preserved log boats, numerous fish traps and weirs and a large timber trackway dating to the Middle Bronze Age (Knight 2012, 11, Murrell 2012, 2, Symonds 2012). The most exciting find however, was the now famous Late Bronze Age pile-dwelling site of Must Farm (ibid.). Incredibly well-preserved due to a combination of the fire that destroyed it and the river silt that covered the remains of the houses in this settlement, the site provides us with a unique insight into daily life in the Late Bronze Age Fens (Knight 2009, 2, Knight 2012, 9) (Figure 3 to Figure 5). All these finds were made in a mere 150 m stretch of the palaeochannel, suggesting that these finds represent the tip of the iceberg and that many more settlements may be hidden in the deep Fens (Knight 2012, 11). The expert way in which this settlement was built certainly suggests that there was an established tradition of specialist wetland construction, and the discovery of another fish trap and butchered bones in several narrow test slots through the channel further downstream equally testify to more widespread activity in the wet Fens (M. Knight, pers. comm).

These ‘deep fen’ finds have provided us with a much more in-depth view of the ‘true’ wet Fens, changing our perspective on this landscape. Previously it was recognised that the wet Fens were used for (seasonal) grazing, some fishing and hunting, salt-making and the ritual deposition of metalwork, but they had been considered unsuitable for habitation, which was thought to occur only on the fen edge and islands (Hall and Coles 1994, 151-152). Yet the finds at Must Farm demonstrate that the actual wetlands were inhabited at some point and that people clearly interacted with this dynamic wetland landscape a lot more intensively than previously thought.

The deep Fen evidence at Must Farm is unique, but equally attests to close links between wetland and dryland communities (cf. section 1.1). Unfortunately, these links have not been considered in much depth over the past 30 years. This is probably due to the increasing emphasis on local or micro-regional narratives which have resulted from developer-funded archaeology. Yet whilst it is important to recognise local variation, it is equally important to integrate the results of the many projects that are now taking place within the Fens, placing its sites and those inhabiting them within their broader regional context. As the finds at Must Farm demonstrate, this wider context should not be restricted to the Fenland region but should also include the drier areas around the Fens. It is to these areas that we will now turn our attention.

2.3.3 Drylands – Previous work around the Fens

As in other regions, there are great variations in the amount and extent of fieldwork undertaken within the study area (cf. Clay 2002, 9). Often related to issues of visibility and development, there are biases towards particular classes of evidence, towards sites rather than landscapes and towards particular landscape zones (ibid.). In the study area, the Fens, or rather the fen edge seems to be the main focus. Issues of visibility prevent us from examining true wetland sites in the ‘deep Fens’, whilst those near the edges are often in areas of development (especially quarries) and therefore excavated. Many ‘dryland’ sites located on the extensive gravel terraces in the lower reaches of rivers flowing into the Fens have also been investigated, but dryland sites located in other landscapes, like the chalk and the heavy claylands, have received much less attention (Clay 2002, 9, Brudenell 2012, 62).

Issues of visibility and lower levels of development in these areas mean fewer large-scale excavations (ibid.), which limit our understanding of these 'true' dryland landscapes (Evans et al. 2008, 187).

However, just as the 'deep Fens' have started to come into focus, so these dryland landscapes are now starting to receive more attention. Whereas most previous investigations were relatively small in scale, providing little information, several larger-scale developer-led projects have taken place recently that provide insight into larger swathes of this landscape (e.g. Abrams and Ingham 2007, Evans et al. 2008, Evans and Patten 2011, Paul and Hunt 2015). The results of these studies demonstrate that contrary to the traditional view, several of these inland areas saw significant activity prior to the later Iron Age (cf. Clay 2002, Evans et al. 2008, Evans and Patten 2011). This section will provide a brief overview of some of the projects that have taken place in the inland areas away from the fen edge and river valleys, which demonstrate that, like the Fens, these areas were not marginal or liminal hinterlands, but important landscape zones in their own right, particularly from the Middle Bronze Age onwards (cf. Evans et al. 2008, 181). The focus will be on the heavy clays, as it is these landscapes, which clearly contrast with lighter chalk and gravel soils in the area, that are now starting to become more visible.

Dryland Archaeology before the 1990s – Marginal clays

Unlike the Fens, the heavy claylands in the study area received little antiquarian interest (Evans et al. 2008, 174). Part of this probably results from a rather negative perception of these landscapes as not conducive to early settlement, in contrast to lighter chalk, limestone, sand and gravel soils (Clay 2002, 1). This idea seems to have originated in Cyril Fox's seminal publication *Personality of Britain* (1932, 54-5 in Clay 2002, 1) in which he argues that the heavy clays were "unbelievably sticky, caking into iron hard clods in summer", and "very retentive of water". Other authors, including Woodridge and Linton (1933 in ibid.), Clark (1945, in ibid.) and Hoskins (1957 in ibid) agreed with Fox that the heavy clays would have been largely devoid of early settlement and this may be why little fieldwork was undertaken in claylands of the East Midlands (ibid.). As a result, scholars continued to consider these landscapes as marginal to lower lying areas with lighter soils (e.g. Tinsley 1981, Turner 1981 in Clay 2002, 2). The first fieldwork in the East Midlands, including fieldwalking surveys, seemed to confirm this idea (Hall 1985 in ibid.). Despite growing evidence that in this area the "model of minimal clayland settlement and land-use might be an over-simplification", there has been too little fieldwork in the East Midland claylands to confirm or refute these ideas (Clay 2002, 2).

Until recently, the same was true for the Cambridgeshire claylands and inland regions in the catchment of the River Ouse further south (Evans et al. 2008, Dawson 2000, 107). After Fox's study, it was not until the introduction of aerial photography in the 1970s and 80s that the first significant sites started to be recognised as earthworks, but few were excavated (Evans et al. 2008, 174). As (rescue) excavations started to become more common from the 1970s onwards and settlement remains (rather than surface artefact collection) become more important (Brudenell 2012, 67), several landscape surveys in the 1970s and 1980s attempted to link ceramic chronologies to the excavated settlement evidence (e.g. Cunliffe 1974, Hall and Hutchins 1972, Simco 1973, Waugh et al. 1975, Knight 1984 in Dawson 2000, 107). However, excavated evidence remained limited and the evidence base for these surveys mostly consisted of aerial photography, antiquarian sources and surface finds (ibid. 108, Evans et al. 2008, 200). This paucity of excavated evidence prevented more detailed studies of settlement and land-use (ibid.).

The traditional model for clayland land-use emerging from the various studies above suggests that the heavy clay soils were marginal to the settled areas on lighter soils (Clay 2002, 3). It is thought they would have remained forested and little exploited until the 1st millennium BC (ibid.). Although some transient and/or pastoralist use may have occurred before this, it is not until the later Iron Age, with the development of more sophisticated tools, that clearance and settlement took place on a larger scale (Clay 2002, 3). However, from the 1990s onwards, there has been increasing evidence to the contrary, demonstrating that the heavy clays may have been settled much earlier.

Developer-funded projects (1990s onwards) - Colonising the clays

This evidence was generated as a result of significant changes in the availability of evidence and archaeological interpretations from the 1990s onwards (Evans 1992 in Dawson 2000, 108). An important change is the development of regional archaeologies (Dawson 2000, 109). Advances in ecological studies are also important as they allow us to study the relation between the physical environment and people's choices when studying land-use (ibid. 111).[14] The most important change however, is the exponential increase in the number and

[14] Unfortunately, however, palaeoenvironmental research remains rather limited in dryland areas (cf. Evans et al. 2008), which means we do not get the same detailed insights into environmental change and human impact as we do in the Fens.

scale of excavations in the context of PPG16 (ibid., Evans et al. 2008, 198). This planning-led, development-related fieldwork provides much more funding for large scale fieldwork (ibid.). This new archaeological practice means that much larger-scale projects are now taking place in parts of the study area, particularly in Cambridgeshire (ibid.). Although there are fewer quarries in the inland areas, much development around the city of Cambridge means we are no longer only relying on earthworks, stray finds and small-scale excavations, but can for the first time consider proper sites and the way these sit within their local landscape (ibid.). They have revealed a far more complex landscape with much higher population densities (cf. Evans et al. 2018), as well as evidence for much earlier permanent settlement of these landscapes than expected (ibid., Evans and Patten 2011, Paul and Hunt 2015).

In the Addenbrooke's environs south of Cambridge for instance, the Middle/Late Bronze Age rather than the Middle Iron Age seems to be the initial horizon of obvious permanent settlement (Evans et al. 2008, 189). It is likely that settlement became possible when deep pit wells, ensuring a constant water supply, were introduced (ibid. 179). Before this, permanent settlement of the inland areas would have been impossible unless there were springs (ibid.). Other sites with clear evidence for substantial Middle Bronze Age activity include Barrington's Ridge and Granham's Farm (ibid. 189). The Striplands Farm site at Longstanton is another site with clear Bronze Age settlement evidence, although it dates to the Late Bronze Age. The Neolithic and Early Bronze Age evidence only suggests woodland-resource tasking activities, but these explorative forays (perhaps related to hunting and pastoralism) may have led to the full colonisation and settlement of the area in the later Bronze Age (Evans and Patten 2011, Paul and Hunt 2015). This settlement was permanent and not seasonal or only related to pastoralism (Evans and Patten 2011, 41). Instead, pollen evidence, quernstones and the presence of four poster granaries suggests a mixed farming economy (Evans and Patten 2011, Paul and Hunt 2015).

Several other (large-scale) excavations have also uncovered substantial Middle/Late Bronze Age and Early Iron Age remains, including the north-west Cambridge evaluation, Papworth Everard, Stansted and Cambourne (Evans and Patten 2011, 41-42). A large Middle Bronze Age (Deverell-Rimbury associated) cremation cemetery, containing at least 41 individuals, was found in the claylands near Papworth (Gilmour et al. 2012, 7). At Cambourne too, there is evidence for substantial Middle/Late Bronze Age activity. Whilst the Neolithic and Early Bronze Age landscape seems to be mostly wooded still, most of this forest had been cleared by the Middle/Late Bronze Age (Wright et al. 2009, 64). Trackways were found that linked the Cam to the Great Ouse and several roundhouses indicate shifting or semi-permanent settlement that lasted several generations (ibid.). People probably farmed hedged fields next to the settlement at this point. Finally, the north-west Cambridge area seems to be first colonised for permanent occupation in the Late Bronze Age/Early Iron Age, although 'formal' settlement does not take off until the Middle Iron Age (Evans and Newman 2010, 142).

Despite these new discoveries, which clearly show that some claylands inland areas were occupied much earlier than expected, other areas seem to conform to the established model. In the claylands west of Cambridge for instance, it seems that early settlement focussed mostly on the lower grounds to the north and south, with unenclosed pasture scrub on the heavy clays (Abrams and Ingham 2007, 13). It was not until the Middle Iron Age that a farmstead was established in these 'marginal lands' (ibid. 20). At Tort Hill too, landscape use seems to be episodic and non-intensive during the Neolithic and Bronze Age, but by the later Iron Age, occupation of this landscape is clear and field boundaries indicate the start of agricultural activities on the heavy clays (Ellis et al. 1998, 33).

The question is to what extent these results reflect differences in the scale of fieldwork, or the nature of the evidence. Abrams and Ingham (2007, 19), although dismissing the clays (and the Fens for that matter) as 'marginal land', acknowledge that when "the clay blanket is lifted by intensive survey or excavation…prehistoric Archaeology is revealed - and it is plentiful". They also emphasise that later Iron Age settlement, which is often enclosed, contrasts with less visible open settlement of earlier periods (ibid.). This, in combination with the above evidence from large-scale excavations elsewhere, warns us to be careful; an apparent absence of evidence is not evidence of absence.

This is especially true in areas with different research traditions and/or levels of development. The large-scale excavations outlined above have been restricted to very specific areas within the study area, most of which are in Cambridgeshire, as this country has much higher levels of development than the others (cf. Brudenell 2012, 74). Ever since the 1970s, which saw the introduction of rescue archaeology in relation to development, the number and scale of excavation here has been much larger than in other counties (cf. ibid. 67-68). In Lincolnshire, Norfolk and Suffolk there were far fewer occasions to excavate (ibid.). As a result, understanding of the later prehistoric landscape in these counties continued to rely on stray finds and objects collected during fieldwalking and metal detecting (ibid.). Even today, the evidence base differs from county to county, seriously affecting our ability to understand the later prehistoric landscape and preventing us from easily comparing patterns across county barriers (ibid.).

The great impact of these different levels of development and the resulting research traditions and evidence base can be appreciated by briefly considering the East Midland claylands. The available evidence here suggests low intensity use between the Mesolithic and Late Bronze Age/Early Iron Age, whilst from the Middle Iron Age onwards settlement and farming become much more visible (Clay 2002). Although it is clear that this landscape was not ignored before the Iron Age, these patterns do seem to conform to the traditional model. Yet without the same large-scale excavations that occur in Cambridge, Clay mostly relies on 'traditional' limited evidence categories, including cropmarks, earthworks, artefact scatters and stray finds (ibid. 5-7). It is possible that more and larger-scale fieldwork would uncover more Bronze Age activity, just like in Cambridgeshire.

However, whilst differences in development and fieldwork practice will have affected our understanding of people's use of the heavy clays in different areas, it is likely that there are some true regional or local differences. Although some claylands may have been 'colonised' in the Bronze Age, and arable farming may have been introduced here, others may have continued to remain mostly pastoral in nature. Moreover, whereas there clearly was significant activity before the later Iron Age in parts of the Cambridgeshire claylands, the Middle/Late Iron Age does seem to be a turning point, with a noticeable increase in permanent settlement.

2.4 Outstanding issues in Fenland Archaeology

The many excellent previous studies that have been undertaken within the study area have done much to advance our understanding of past life, settlement and land-use within and around the former Fens, reconstructing how its landscapes changed and how people engaged with the dynamic Fens and drier areas over time. Developer-funded-archaeology in particular, has greatly increased the amount of available data, providing more detailed insight into the various landscapes within the study area, both within and around the former Fens. This has demonstrated that both the physical and socio-cultural landscape were much more complex and varied than previously thought. As relatively simplistic region-wide narratives have been replaced by more detailed locally specific interpretations we have gained a more nuanced and complex picture of people's use of and interaction with various landscapes. Recently, new areas, including the true wetlands and heavy clay drylands, have started to be explored and these challenge previous understandings of these landscapes, which were used much more intensively than previously thought.

Unfortunately, however, although the complexity and variety of past life in the Fens and areas around it are now widely recognised, they are currently difficult to understand or explain due to three interrelated reasons. Firstly, the former Fens and its people, like many other wetland(er)s tend to be studied in isolation, separate from nearby dryland(er)s (cf. section 1.2). The different research foci in the Fens and surrounding dryland areas, in combination with the different nature and amount of the evidence available in wetlands and drylands has led to the development of the sub-discipline of 'Fenland Archaeology', which is essentially a regional expression of wetland Archaeology (cf. chapter 1). Despite the relatively early recognition of the importance of Fenland's wider context (cf. Pryor 1984, 240-255), most previous studies have focussed on the former wet landscape and/or fen edge, without really considering the wider landscape (e.g. the Fenland Research Committee and the later Fenland Projects). Developer-funded archaeology has replaced region-wide Fenland studies with a focus on smaller micro-regions and locally specific interpretations, which discourages scholars from integrating the results of various projects in broader narratives through comparative analyses (cf. Hodder 2013, xi, Pryor 2001, 17). Thus, the traditional wet/dryland divide is perpetuated, and it remains unclear how developments in various parts of the Fens relate to those in nearby drylands. As a result, the role and place of the former Fens within the wider region is not entirely clear.

A second problem is that past people and their social lives lack from many narratives in the study region. Whilst people are implicitly present, they remain rather invisible. Their identities and social relations are assumed rather than examined, leading to general and slightly simplistic social reconstructions. In the 1960s and 70s a rather vague community of 'Fenlanders', were assumed to have resided in this region and, like the landscapes they inhabited, these were separated from those in drier areas (e.g. Hall and Coles 1994). More recent Fenland studies argued against such 'constant wet identities' and recognise that those in the former Fens did not live in isolation (Evans and Hodder 2006a, 1). Several scholars have considered past people's social life in more detail (e.g. Evans 2009, Evans 2013a,b, Evans and Hodder 2006a,b, Evans and Knight 2001, Yates 2007). Yet due to the local site or micro-regional focus of most recent developer-funded archaeology outlined above, most social reconstructions consider social life and organisation within individual communities at particular locales (e.g. Evans 2103a, Evans 1997b). Social reconstructions and Fenland communities' wider relations have also been considered (e.g. Evans and Knight 2000, 2001, Evans 2009, Yates 2007), but most studies are descriptive in nature and assume that identities and social relations are static and unchanging.[15] As a result, it is not clear how those inhabiting the former Fens relate to other communities in the area and how they fit into the wider socio-cultural landscape.

A third and final issue that limits our understanding of past life in the study area is that people and the environment or the landscape they inhabited are often considered as separate entities. The relation between people and the environment has long been studied in Fenland Archaeology and we have a good understanding of how people interacted with the Fens, but there has been little attention to the potential social outcomes of this interaction. Initially, the relation between people and the environment was considered in rather environmentally deterministic ways. The Fenland Research committee for instance, studied how landscape and environmental change dictated past land-use, settlement patterns and economy (e.g. Clark et al. 1935, Clark 1936, Cf. Hall and Coles 1994). From the 1980s onwards, it became common to consider both environmental and social factors in explanations of past cultural change (e.g. Pryor 1984, Evans 1997b, Evans 2015, Knight and Brudenell in prep.). Yet although the environment and past people both play an active role in socio-cultural change in these studies, they remain separate entities.[16] Moreover, the impact of the environment on past social life is not really considered.[17] This is problematic, as people and the landscape are in fact intimately connected and cannot be separated. Their relation is not a one-way process, but a two-way interaction, during which people give meaning to the landscape at the same time as the landscape shapes people's social lives (cf. section 1.4.1) (cf. Van de Noort 2011b, Van de Noort and O'Sullivan 2006). Given the varied nature of the environments within the study area, it is important to consider how people's interaction with different landscapes, particularly the dynamic Fenland one, may have influenced their lifeways, identities, relations and thus their role within the wider region.

[15] Brudenell (2012) is one of few scholars who provide a more detailed and dynamic model of society, which emphasises the complexity of identities and relations playing out at multiple integrated scales within the study area. Evans and Hodder's (2006b) model for the Iron Age is also more sensitive to people's identities but remains somewhat static.

[16] This separation between nature and culture, people and the landscape is reflected in most archaeological publications as well. The norm is to have a chapter or section on the environment, which is generally treated as the background to human action, discussed in the 'archaeological' sections.

[17] Evans and Hodder (2006a,b) and Sturt (2006) do consider the link between the dynamic Fenland landscape and past people's social life in more depth, considering how 'wetland' identities may have developed as the Fenland landscape became increasingly wet.

2.4.1 The approach – The social outcomes of human-environment interaction in and around the Fens

The divide between the Fens and drier areas, the absence of people in our narratives and the omission of the environment from social reconstructions are problematic as it is unclear how the later prehistoric Fens and their inhabitants fitted into the wider socio-cultural landscape; like many other wetland(er)s, they remain isolated, somehow divorced from this wider context. Yet evidence from sites like must Farm clearly demonstrates that this region was connected to the wider landscape through the people using, interacting or inhabiting this area. Therefore, developments in the Fens are likely to have influenced those in nearby dryland areas, and vice versa. Separating the two landscapes and their people prevents us from fully understanding these links and the variability and complexity of the archaeological record now recognised in the study area. It therefore limits our understanding of past life in both the former Fens and nearby drylands. Instead, we need to study the role and place of both wetland and dryland landscapes and their inhabitants within the wider socio-cultural landscape by examining how they related.

This thesis proposes to do so through an in-depth analysis of people's interaction with different environments and its social outcomes at multiple, integrated scales. It will study how people gave various landscapes their meaning through the different ways in which they interacted with these landscapes, whilst equally considering how the landscape shaped their identities and social relations. Thus, it recognises the important influence that the dynamic environment had on past life, but equally emphasises the importance of past people in our narratives. Considering human-environment interaction in this way will allow us to study how the wet Fens and those inhabiting this area related to (those in) drier areas around it, providing a more integrated and detailed view of past life within the various landscapes within the study area.

Originality of the approach

The proposed approach differs from previous and current studies in the area in several ways. In contrast to most current studies, it acknowledges past people as individual, active agents whose activities and experiences in different landscapes gave meaning to these environments. At the same time however, this research explicitly recognises the variable nature of the physical landscape in both wetland and dryland areas, considering the impact of environmental change in the Fens on past life. Thus, rather than separating people and landscape/environment, this research will examine the intimate link between humans and their environments at multiple scales, considering how social and environmental change may have related. In doing so, it uses a traditional strength of wetland Archaeology (i.e. rich and well-understood environmental and archaeological records) in combination with social theories more common in mainstream Archaeology.

This research, comparing sites across the region in three different environments and from the Neolithic to the Early Roman period, has a much broader scope in space and time than existing studies. It will move beyond current local or micro-regional site narratives and examine how the various wetter and drier parts of the landscape and those inhabiting them related on the (inter-)regional scale. This large-scale comparative approach allows us to examine developments in one area or period in relation to those in others. By contextualising localised variability and complexity in a broader narrative and by focussing on past people and their social lives, this research aims to explain and understand these differences, rather than just describe them.

In summary, by integrating and comparing data at multiple spatial and temporal scales and by considering the Fens' rich archaeological and environmental record within a critical theoretical framework that focusses on human-environment *interaction* (rather than one-way impact), this study will offer a new perspective on the well-researched Fenland region and its inhabitants, which challenges modern preconceptions and dichotomies, including the divide between wetland(er)s and dryland(er)s, people and the landscape, or society and the environment.

2.5 Summary

Despite its seemingly uncomplicated, flat and unassuming landscape, the Fenland hides much complexity. In the later prehistoric period this dynamic landscape varied hugely from one area to the next and over time, mostly due to a series of marine incursions which changed this landscape from a dryland basin into the UK's largest wetland area. The surrounding drylands, whilst more stable, are also more varied than they may seem at first, including lower-lying areas with lighter soils and heavier clayland areas further inland. In both the Fens and these inland areas, issues of visibility have long caused problems for Archaeology. Yet with the advent of large-scale developer-funded projects, we are gaining access to previously inaccessible areas and our knowledge of both landscapes has developed significantly.

Many excellent studies which focus on the former Fens have greatly advanced our understanding of both the environmental changes and archaeology in this area. The well-preserved environmental records mean that the relation between people and the dynamic, changing landscape has been a major research concern since the start of Fenland Archaeology. The increasing amount of archaeological evidence, in many cases equally well preserved, meant that region-wide narratives of mobile pastoralism were replaced by more nuanced and detailed local interpretations emphasising the significant variety in landscape and human-environment interaction within this region. Pastoralism was indeed important, but there was also arable agriculture. Hunting, fishing, and the extraction of non-food resources like salt and peat are also evidenced. The true wet Fens long remained just beyond reach, but recent excavations in 'deep fen' spaces demonstrate people's intimate relation with this vast wetland, which was not only used sporadically for resource extraction, but apparently inhabited permanently in some periods and places.

Whilst the Fens have been the focus of research within the study area, dryland areas in the region are becoming increasingly important under the influence of developer-funded archaeology. New research in previously under-investigated areas, including the heavy clays, demonstrate that parts of these dryland areas saw significant activity and even settlement (with a mixed farming economy) from a much earlier date than previously thought. Thus, here too, a more general and simplistic narrative covering an entire region has been replaced by an emphasis on more local complexity as our evidence-base has increased.

However, although we now have a good knowledge of the physical landscape of the Fens and the environmental changes in this area, and the way in which people in this region interacted with this changing landscape, there are several interrelated outstanding issues which limit our understanding of past life in the area. Firstly, despite evidence for the links and relations between the Fens and its people and the surrounding dryland(er)s (e.g. at Must Farm), the Fens and their people tend to be studied in isolation, separate from nearby dryland(er)s. Secondly, despite clear interest in past people and their social lives in recent Fenland studies, past Fenland people are somehow absent from many narratives and their relations to nearby drylanders are unclear. Finally, whilst we have a good understanding of how people interacted with the Fens, there has been less attention to the potential social outcomes of this interaction, because people and the environment or the landscape they inhabited are often considered as separate entities, rather than intimately connected agents who influenced each other.

Because of these issues, which are exacerbated by the fragmentation that results from current developer-funded archaeology, it is unclear how the former Fens and the people using and inhabiting this landscape related to and fitted into the wider region, or how developments in this vast wetland related to those in surrounding dryland areas and vice versa. Therefore, this thesis aims to examine the role and place of the former Fens and those inhabiting them within the wider socio-cultural landscape through an in-depth study of human-environment interaction and its social outcomes. It will 1) compare human-environment interaction in wetland and dryland environments, considering how developments in one area may have related to those in the other, and 2) examine how variations in people's use of different environments shaped their individual and group identities and their relations with others. In doing so, it combines a traditional research strength in Fenland Archaeology (the relation between people and the changing environment) with theories and approaches more common in mainstream Archaeology. The large-scale comparative approach proposed requires us to place the many sites now being excavated in a broader context, integrating the large amounts of data that are now available within the study area, both in the former Fens and beyond. The next chapter will describe how this was achieved.

Chapter 3. Creating the database – Site selection, data-organisation and analysis

3.1 Introduction

The last few chapters have argued that a comparative study of human-environment interaction and its social outcomes in wetlands and drier areas may help us to take wetland sites and communities in the former East Anglian Fen out of isolation and evaluate their role and place in the wider socio-cultural and physical landscape. To reconstruct past people's interaction with different environments over time this research aims to conduct a large-scale comparison of food remains, particularly plant and animal remains, from a great number of selected sites in and around the former Fens, covering former wetland, dryland and fen edge environments. Given the number of sites and the large volume of data involved, it was necessary to create a database in which information on past food remains in the three environments could be recorded and organised by site and period, so human-environment interaction and food remains could be analysed both through time and space (in the three environments). This chapter will introduce the custom-built data-base and its structure and outline the types of data collected. [18] It will also discuss the methods used to select, collect and analyse this data.

The chapter is divided into five main sections. The first (section 3.2) will define the spatial and temporal boundaries of this study and outline how relevant sites for this study were selected and mined from databases maintained by Historic Environment Record (HER) offices in counties bordering the former Fens. The second section (3.3) will introduce the types of data collected (plant and animal remains and information on the local environment) and outline how these were entered into a relational Microsoft Access database. The third section of this chapter (3.4) will discuss how this data was grouped and organised into ten different periods and three environments to enable comparative analysis. The fourth section (3.5) then outlines the methods used to analyse the data, explaining the basic approach before detailing the specifics of three main rounds of data-analysis. It also includes a section on the assessment of biases which may have occurred through differential preservation, sampling strategies and/or recovery techniques. The final section of this chapter (3.6) before the summary (3.7) will outline how results were displayed and evaluated by creating distribution maps in ArcGIS.

[18] This database is a major outcome of this research and although it was built for this project, it can easily be expanded or adapted for other projects or further research.

3.2 Site selection and data mining

As outlined in chapter 1, we need to consider past people's daily life and their routine activities to study human-environment interaction. Many daily activities in the past would have revolved around food, and to study all these activities, almost all parts of the archaeological record would have to be considered, from settlement and field system lay-out to various types of material culture and the remains of foodstuffs. However, due to time constraints and the large number of sites under consideration, the physical remains of food itself were chosen as the main data type for this research, i.e. plant and animal remains. It is these categories that are most informative about people's interaction with different environments and each other, as they are likely to be affected by the environment, whilst also being intimately linked with socio-cultural aspects of life. They are practically, culturally and socially embedded (cf. Schulting 2008, S31).

To compare these food remains on sites in and around the former Fens, it was necessary to select suitable sites where such remains were found. This section will outline the spatial and temporal boundaries of the study area and the method by which 145 sites within this area were eventually selected for analysis.[19]

3.2.1 Spatial and temporal boundaries

To assess the effects of the major landscape and environmental changes in the former Fens on past life and the role of the Fens and its inhabitants, it was decided to cover the entire later prehistoric period in which most of these changes took place. Thus, the time period under consideration ranges from c. 4000 BC – 100 AD, which includes the Neolithic, Bronze Age and Iron Age. In some reports the later stages of the Iron Age are referred to as 'Romano-British', or even Roman. Such Roman(o-British) phases were included if they fell within the time range outlined above (i.e. were dated to before or around 100 AD). Earlier Mesolithic, or later Roman, Saxon, medieval or post-medieval phases on selected sites were recorded, but no data was collected for these phases, even if it was present.

As this study aims to compare food remains in different environments (wetlands and drylands), the study area had to encompass both the former East Anglian Fenland and drylands around this area. The former Fens encompass parts of the following counties:

- Lincolnshire
- Peterborough
- Cambridgeshire

[19] See appendix 6 for a list of all 145 sites considered.

- Norfolk
- Suffolk

These were selected as the initial study area. The entirety of Peterborough and Cambridgeshire were considered as these counties had a great number of suitable sites. Peterborough has many Fen and fen edge sites, whereas Cambridgeshire also has a good number of well-researched dryland sites. Lincolnshire is less rich in suitable sites but was included to assess the northern Fens and fen edge. North-Lincolnshire and North-East Lincolnshire were excluded as they are too far removed from the former Fens and border another major wetland area (the Humber estuary).

To investigate the eastern and southern Fens, parts of Norfolk and Suffolk were also considered. However, given the large amount of data already received from other counties only selected districts were considered. For Norfolk it was decided to restrict coverage to the river catchments of the rivers Nar, Wissey, Little Ouse and Great Ouse which flow through the former Fens into the Wash. This covers the King's Lynn and West Norfolk and Breckland Districts. In Suffolk the two districts which border the former Fens, Forest Heath and St. Edmundsbury, were considered. The resulting study area covers the entirety of the former Fens and a variety of drier hinterland environments, including chalk and clay uplands (Figure 25).

Initially the catchment of the river Nene in Northamptonshire was also included to evaluate the role of this major river in communications between Fenland communities and those living further inland. A few individual sites within this county were entered into the database, but the number of sites in the other counties proved so large that Northamptonshire was eventually abandoned due to time constraints.

3.2.2 HER records and ArcGIS

Given the amount of previous research that has taken place in the East Anglian Fens, in combination with the number of pre-development projects after the arrival of PPG16 in 1990 (cf. section 2.3.2) there are many potential sites within the study area that could be considered. To quickly get an overview of all these sites, it was decided to use the Historic Environment Records (HERs) held and managed by HER offices in each of the counties under consideration. Most HERs developed out of Site and Monument Records (SMRs) maintained by local authorities (Lincolnshire Historic Environment Record Information for researchers). They were designed to record the known archaeological sites within the administrative area of the authority (ibid.). Normally, an HER record lists the site location, type

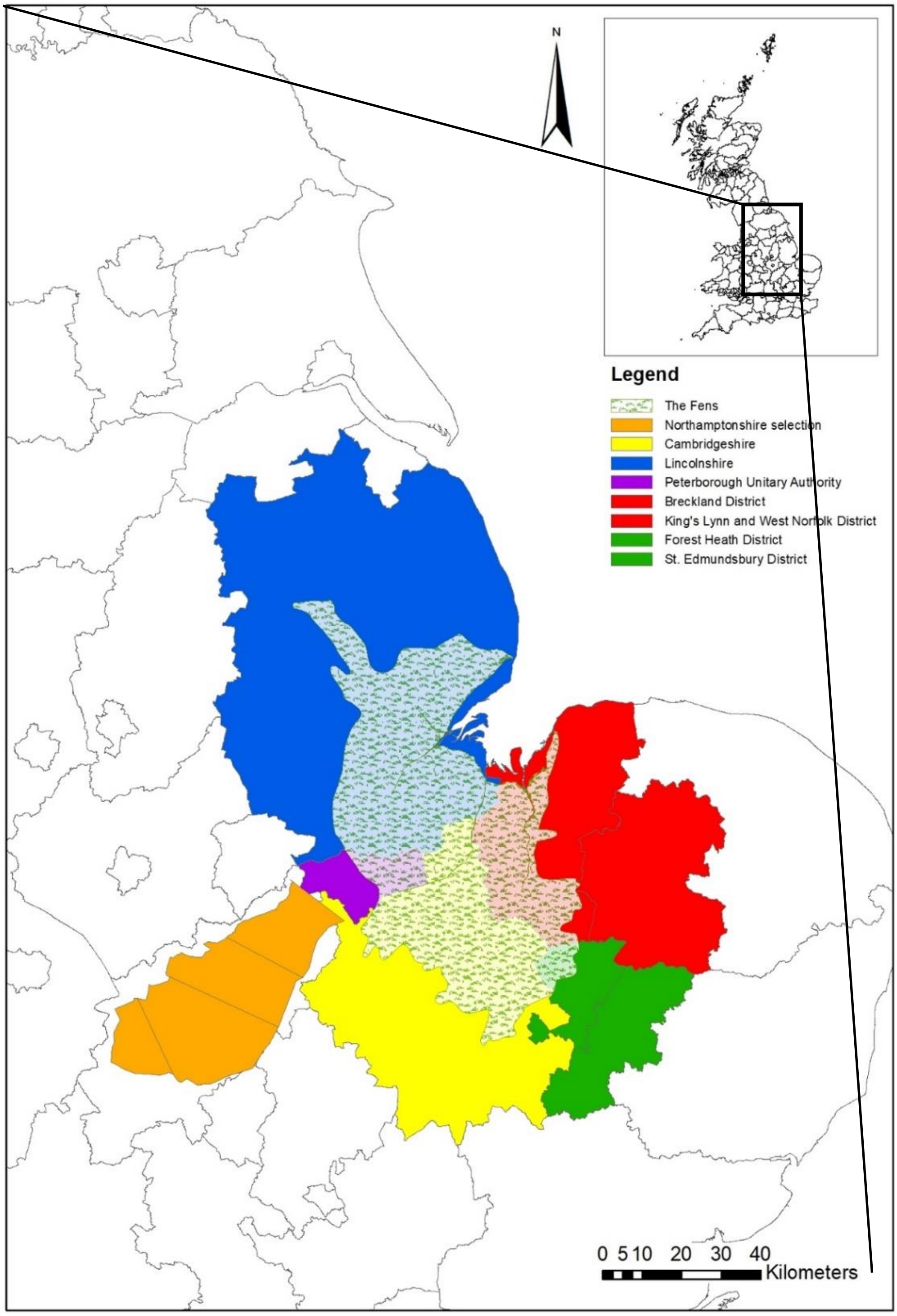


Figure 25: Map of the entire study area showing the four complete counties considered as well as the districts within Norfolk and Suffolk that were included. The Fens' outline represents the current Fenland National Character Area (NCA) as defined by Natural England based on a combination of landscape, biodiversity, geodiversity, history, and cultural and economic activity (cf. <https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making>). Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

and period, and provides a brief description and information on more detailed sources of information including published and unpublished site reports.

Although the primary function of HERs is to provide basic information on the historic environment for local planning authorities so they can manage archaeology and historic buildings through the planning process, it is also a useful tool for researchers wanting to gain a quick overview of sites from a particular period present in a certain area (ibid.). Thus, all later prehistoric data points in the (parts of) the counties mentioned above were requested. All HER offices that were contacted agreed to search their database and share their data on later prehistoric sites for this research. Most HER offices now store their data (previously recorded on maps and catalogue cards) in comprehensive computerised systems, including geographic information systems (GIS). These systems allow for the management, analysis and display of geographic information (such as the location of prehistoric archaeological sites). As the aim of the initial data collection was to get an overview of all later prehistoric remains in the study area, the GIS software programme ArcGIS was used to store and display the sites used in this study as well.[20] Thus, the later prehistoric HER data was requested in 'shapefile' format, which can be imported and displayed in ArcGIS. In some cases (e.g. Peterborough) Microsoft Excel tables were shared. Yet with the Easting and Northing information stored in these tables they could easily be imported into ArcGIS as X/Y data and then turned into shapefiles.

To display all data points on a map of the United Kingdom, several other shapefiles with base maps of the UK and its counties were obtained from the EDINA Digimap Service (https://digimap.edina.ac.uk/). They deliver maps and geospatial data from various sources, including the Ordnance Survey (OS) and the British Geological Survey (BGS) to members of higher and further education in the United Kingdom. Initially, basic OS maps with Great Britain's boundary lines (both the country and the various counties and parishes) and the river system were downloaded from EDINA. With these and the HER data obtained from the various HER Offices in the study area, a map of the UK and its counties with all later prehistoric data points for the study area on it was created (Figure 26).This basic map contained several thousand data points and included a lot of information which was irrelevant to this research, especially in the first three counties under consideration (Peterborough, Lincolnshire and Cambridgeshire). Here, the data contained points for entire sites (e.g. the timber alignment at Flag Fen, but also for each individual surface find, such as a flint arrow

[20] NB: ArcGIS can also be used to record and manipulate data, but for this a more flexible relational Access database was used (see section 3.3.3).

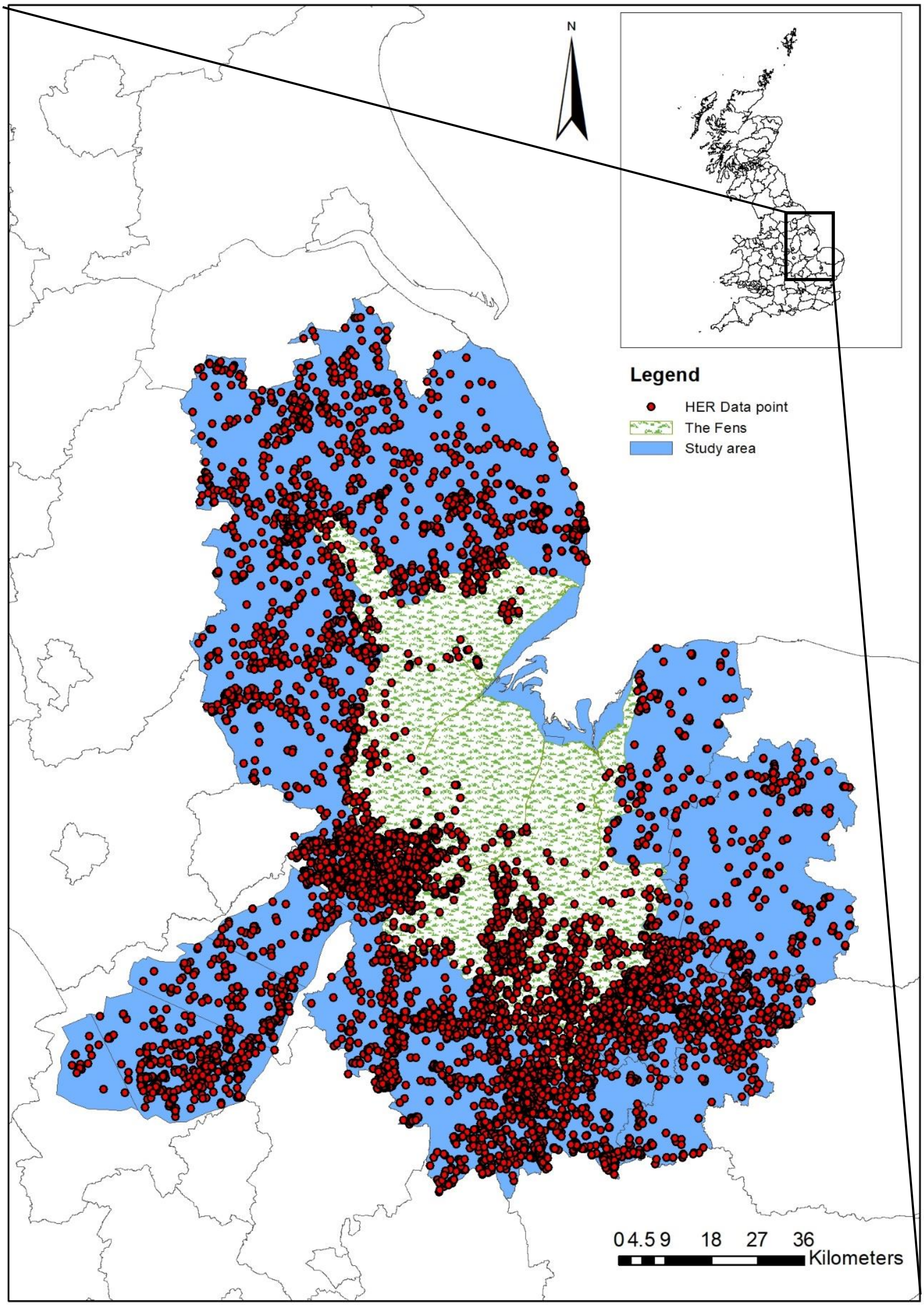


Figure 26: Map of the study area with all later prehistoric data-points received from the various HER offices approached for this study. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

head or a stone axe. Moreover, it contained not only excavated sites, but also cropmarks and monuments which had not yet been investigated. Finally, many data points related to later (historic) sites at which maybe one prehistoric feature was found. Thus, more defined search criteria were used when data was requested from Norfolk and Suffolk. For these counties, a request was made for all excavated sites with sub-surface remains, most of which date to the later prehistoric period, or any period within this (i.e. 4000 BC-100 AD).

The HER data received from the various counties under consideration was very useful for providing a quick overview of potentially relevant sites in the study area. However, it is important to note that there are some limitations to HER data. Because data was migrated from maps and catalogue cards to a digital database, not all HER entries provide the most up to date information (Lincolnshire Historic Environment Record Information for researchers). Moreover, the searches were performed by different people and each HER office organises its data in a slightly different way, which means that the search results may not bring up all relevant sites and that the various HER overviews are not directly comparable. Given this, and the sheer number of data points in the shapefiles received, it was very important to go through the records received and make a further selection, based on more specific selection criteria.

3.2.3 Data mining and site selection

Given the fact that the initial HER searches resulted in several thousand data points, it was necessary to 'mine' the records provided for the sites of interest to this research. When the HER data was requested in ArcGIS shapefile format, a request was also made for a summary of all the HER records that were found during the search. These summaries, generally provided in a PDF format, provide the same information as the data-tables (or shapefiles) in ArcGIS, but they are more readable. Typically, they include the general site information (HER record number, location, National Grid Reference (NGR) number), a short summary and the sources used to compile this record (e.g. grey literature or published books and articles). Using the brief descriptions for each record in combination with these more detailed summaries allowed relevant sites to be selected for this study. The following selection criteria were used during this site selection process:

- Settlement sites
- With sub-surface (excavated) materials
- Dateable (relatively or absolutely) to the later prehistoric period (c. 4000 BC – 100 AD)
- Including (a substantial number of) animal and/or plant remains

In this way, all sites of potential interest for this study were identified amongst the raw HER data, whilst surface scatters found during fieldwalking, cropmarks or monuments identified during aerial photography, sites dating to earlier prehistoric periods or later historic ones and isolated features and finds (rather than settlement sites) were excluded. This initial site selection resulted in 427 selected sites.

All these selected sites were at least partially entered into the relational database created for this project (see next section), recording a minimum of site name and location, HER number, summary and sources (all taken from the HER summaries). However, due to time constraints, the data of only 145 of these sites was eventually entered. When choosing these final sites, priority was given to well excavated, researched and published sites with a lot of detailed information on plant, animal and environmental remains. Whilst such sites were present in all counties, Cambridgeshire and Peterborough were a lot richer in suitable sites than the other counties under consideration due to differences in fieldwork practice and intensity in these various counties, varying levels of development in different areas and issues of visibility related to soil cover and modern land use (cf. section 2.3.1). This is reflected in Figure 27, which shows all the 145 sites eventually fully entered into the database.[21]

Site distribution biases

Figure 27 clearly demonstrates the uneven spatial distribution of sites in the study area. Sites cluster in various zones and particularly in areas of major development, which include the urban centres of Peterborough and Cambridge and large sand, clay and gravel quarries around the fen edge. Here, the very active Cambridge Archaeological Unit (CAU) has conducted many large-scale excavations in advance of quarrying or building developments. Rich in finds, these provide detailed insight into large stretches of the prehistoric landscape (cf. Brudenell 2012), they are often located very close to each other, resulting in large, dense clusters of sites (especially on the fen edge). To balance this site clustering somewhat, several other sites, which were often smaller and more isolated, were also selected and entered. In this way, larger sites located very close to each other in clusters could be compared to smaller more isolated sites, with the larger and well-excavated sites providing a robust data-set against which the other sites could be compared.

Whilst Cambridge and Peterborough are rich in suitable sites, Lincolnshire, Norfolk and Suffolk have far few sites. This is mostly due to lower levels of development and different

[21] Appendix 6 contains a list of all selected sites.

archaeological practices in these counties (cf. section 2.3.1). Much of the study area in Lincolnshire is rural in character and development in Norfolk and Suffolk has not required excavation on the same landscape-scale scale as that in Cambridgeshire (Brudenell 2012).

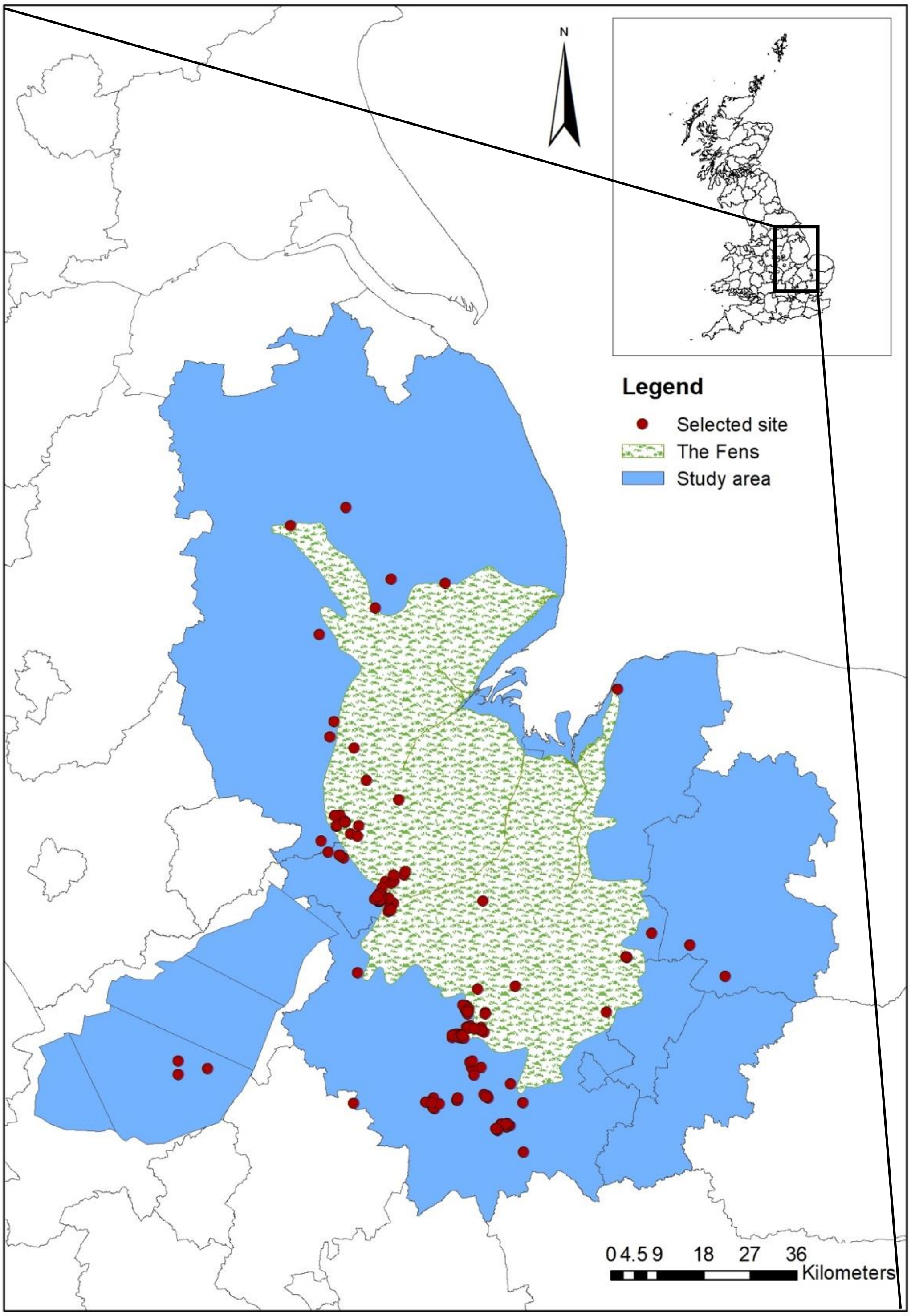


Figure 27: Map of the study area, the Fens NCA and the 145 sites selected for study and entered into the relational database. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

Many sites in these areas are either surface scatters or isolated feature groups found during limited programmes of excavation (ibid.). Unlikely to contain many food remains, these were excluded during the site selection process.

Current land-use, soil cover and topography also affect the number of sites and their distribution pattern, again favouring the fen edge with shallow soils over deeply buried archaeology found in heavy claylands inland (cf. Clay 2002), or in the former Fens east of Peterborough; these areas seem relatively empty. Yet as demonstrated in chapter 2, recent fieldwork in the heavy clays demonstrates that these areas did see activity, possibly as early as the Bronze Age (ibid., Evans et al. 2008) (cf. section 2.3.3). Similarly, the apparent absence of sites in the Fens is not evidence of absence, as demonstrated by several test pits sunk in the Must Farm palaeochannel in the 'deep' Fens by the CAU in 2015. Within a c. 1 m wide slot excavated through the channel, a well-preserved fish trap of a kind very similar to the ones found at Must Farm was found (M. Knight, pers. comm.). Similarly, bones and pottery found during the cleaning of dykes in the deep Fens shows that this Fenland landscape was probably far from pristine in the prehistoric period and the relative absence of sites in the Fens may be more apparent than real (ibid.). This research, however, can only consider the Fenland sites that have been recognised, excavated and recorded. Unsurprisingly, most of these are located on higher gravel islands in the Fens, where sediments are shallower (e.g. Ely island).

Whilst these biases in site distribution cannot be solved very easily, it is important to be aware of them and the possible effects they may have on our understanding of past landscapes and settlement patterns. Therefore, a series of distribution maps, displaying all selected sites in different environments and periods, was made (cf. section 3.4.1). In combination with results from previous studies in the region, this made it possible to assess and control these biases to some extent.

3.3 Data-types, data collection and the relational database

Having selected sites with suitable material in and around the former Fens, they were added to a relational database built for this research project using Microsoft Access.[22] In this database, general information on the sites was recorded, together with detailed information on the plant and animal remains found. As the analysis of this data was aiming to

[22] Although ArcGIS is an advanced database programme and could have been used for all data collection and analysis, it is a notoriously complex programme to work with, whereas Microsoft Access is very user friendly, flexible and much easier to query.

compare sites in different environments, information on the local environment was also recorded. This allowed them to be categorised as wet, dry or fen edge. This section will outline the types of data recorded and the structure of the relational database, as well as the methods for recording data within this.

3.3.1 Data-types – Animals, plants and environmental proxies

The main types of data considered in this research are plant and animal remains, as they provide good insight into human-environment interaction. They are closely linked to the environment, but equally deeply engrained in people's culture and linked to their (group) identities, as many daily routines and practices, crucial in establishing, maintaining and negotiating identities and social relations, relate to food. Therefore, a comparative study of food remains can give us insights into past human-environment interaction as well as possible socio-cultural differences between wetland and dryland communities (cf. section 1.4.2).

For the animal remains, all species of domestic and wild mammals, birds, fish and molluscs present on the selected sites were recorded. For the plant remains charred and waterlogged macro fossils of wild and domesticated plant species of economic value were recorded separately to account for differential preservation in the three environments. Higher levels of preservation may result in the use of different types and intensities of sampling and recovery. To assess the effect of these recovery and sampling biases in the three environments, information on sampling methodology and recovery techniques (whenever this information was present) were also recorded, both for plant and animal remains.

Of course, some of the plants and animals recorded in this thesis may not represent the remains of food. Some domesticated, and especially some wild animals may not have been eaten and the same is true for some domestic and most wild plants. These species either had different uses, or they occur naturally, rather than as a result of human activity. Yet the vast majority of the animal bones and plant remains recorded and analysed for this research likely do relate to human activity.[23] Given the large number of phases considered, those that do not relate to human activity are unlikely to significantly influence the results. Moreover, many groups that may not have been foodstuffs still provide insight how different environments were exploited. Even the few plant and animal remains that are unrelated to human activity (e.g. some of the fish bone or waterlogged fruit) demonstrate what

[23] See appendix 3 for further discussion on the origins of the recorded plant and animal remains.

food was available at or near sites. It was therefore decided to include them in this research.

As this thesis aims to compare food remains in different environments, it was necessary to record information on the local environment in addition to animal and plant remains on the selected sites. Thus, the presence of various environmental proxies and what these tell us about the local environment were also recorded in the database. Although these environmental remains were not analysed themselves, they were crucial for establishing in what kind of environment the selected sites were located. The way in which these various data categories were recorded will be detailed further in the next sections.

3.3.2 Data-collection - Presence/absence vs proportional data

After the basic information (site name, location etc.) for the selected sites had been entered into the database, published and unpublished sources from archaeological units on each of these sites were used to find information on the species of plants and animals found. To enable analysis of changes through time, the presence or absence of these species was recorded not at site level, but for each of the various phases on a site. (e.g. the Late Neolithic, Early Bronze Age and Early Iron Age at Bradley Fen). This increased the number of data points to 440, as all 145 sites contain 440 phases in total.

Within each of these 440 phases the presence or absence of individual domestic and wild plant and animal species was recorded.[24] This method, which uses presence/absence information rather than proportional data, was chosen because the sites under consideration differ in terms of their size, location, past and present environment, mode and level of preservation, methods of excavation and sampling strategies. As a result, their plant and animal assemblages differ too, making it difficult to compare them. Yet by only considering the presence and absence of species, rather than proportional data, on a large number of sites, all sites and the data within them could be standardised (cf. Popper 1988, Bakels and Jacomet 2003). Each time a particular species (e.g. cattle) was encountered on a site, this resulted in a tick in the database, no matter how few or how many of these remains were found. Thus, small sites with only a few cattle bones could be compared to much larger ones with thousands of these remains.

Of course, this standardisation of data does make more detailed analyses impossible. Recording the presence of different species on a large number of selected sites provides an

[24] Appendix 7 contains a list of all 440 phases and the main data groups present within them.

insight into different species' 'ubiquity of presence' in a given environment and/or period, but does not allow us to assess their *absolute* frequencies, or how ubiquitous they are in relation to each other. This is because all that is recorded for each species is their presence on a site and not the number of individual species (NISP) within individual sites. Thus, one pike vertebra and hundreds of cattle bones are both counted as one in the data base. When only considering one or a few sites, this would be problematic, as fish might appear to be more frequent than they really are. Yet by comparing presence/absence data on a large-scale across many sites and phases (as this research has done) these biases are levelled out (as fish are encountered far less frequently than cattle). Thus, the assessment of presence/absence data across many sites allows for real patterns to be established.

3.3.3 Relational database structure and components

The information on environmental proxies and the individual plant and animal species contained within the groups introduced above was entered into a large relational database created for this project.[25] In relational databases data is stored in different tables that are related to each other in a logical way, via a unique identifier (e.g. an ID number) that appears in both tables. The advantages of this system over 'flat' databases (trialled at the beginning of this research project) with all data stored in one long text file or table, is that relational databases can be accessed and reassembled in many different ways without the various tables having to be reorganised. They are also easy to navigate and extend, so that new data categories can be added without modifying existing tables. Finally, and most importantly, they allow for a quick evaluation of the relation between various components and types of data within them.

The database constructed for this project consists of various related tables, in which the following information was recorded for each of the selected sites: general site information, phase information, information about food remains, or the presence/absence of wild and domestic animal and plant species, and local environmental information. Figure 28 shows the hierarchical structure of the database. It starts with a first table at the top with the general site information, like the site name and type, the HER record number, site location (NGR number), a description of the underlying geology and geography/landscape, the HER summary/description, a list of primary and secondary sources and space for general notes.

[25] Appendix 3 contains a more detailed discussion of the development and structure of this purpose-built database, which can be found on a disc at the end of this thesis as a resource for future research.

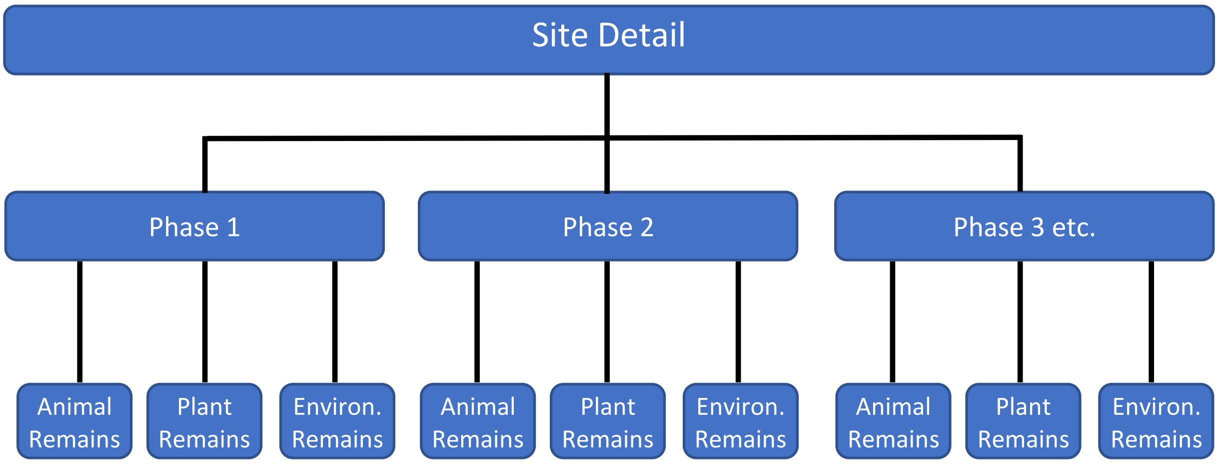


Figure 28: A schematic representation of the relational Access database used in this research. It shows the tables at the three levels, starting with Site information in the Site Detail, table, followed by phase information and finally the data tables in which plant and animal remains were recorded.

At the next level down, the second table records the various phases of activity at the selected sites. The relational structure of the database allows several phases to be recorded for each site, so that one site in the first table might have numerous phases associated with it in the second table. At the third and lowest level of the database general information on the local environment, and past food remains (that is, the presence or absence of a range of plant and animal species) is then recorded in separate tables for each phase on the selected sites. This database structure allows for the recording of food remains and information on the local environment for each phase at a site. Once complete, the database could be queried to compare food remains across time and in different environments.

Appendix 3 provides a detailed description of each of the tables and all fields within them, and a brief description of what kind of information was entered into each of these fields. Below the different tables within the database and their fields and the types of data entered into them are briefly described.

Level 1: Site Detail

The first table contains general site information, including the site name and the HER number, as well as its location and a short description of the underlying geology (taken from the excavation reports). Each site was also given a unique three letter Site Code e.g. the Must Farm Settlement would be MFS) to avoid confusion between sites found near each other and to link the next Phase Details table to the current site. Other general information recorded in this first table are site type, a summary of what was found, a list of primary and secondary sources which include both published and unpublished material, and general notes. Figure 29 shows the main tab of the form that was used during data entry. It shows the main fields in the Site Detail table.

Level 2: Phase Details

Moving to the Phase Details table (the second tab visible in Figure 29), this contains a list of the various phases present at a site, each with a unique name. E.g. the Late Bronze Age phase at the Must Farm settlement site would be: MFS2-LBA. Each of these unique phase names is then assigned a more conventional 'Three Age phase description' as well. In this way, each phase is unique, but can also be compared with phases of the same date at other sites. Although no actual data was entered in the Phase Details table, there are tick boxes for the type of data that was present in each phase (e.g. wild animal remains, environmen-

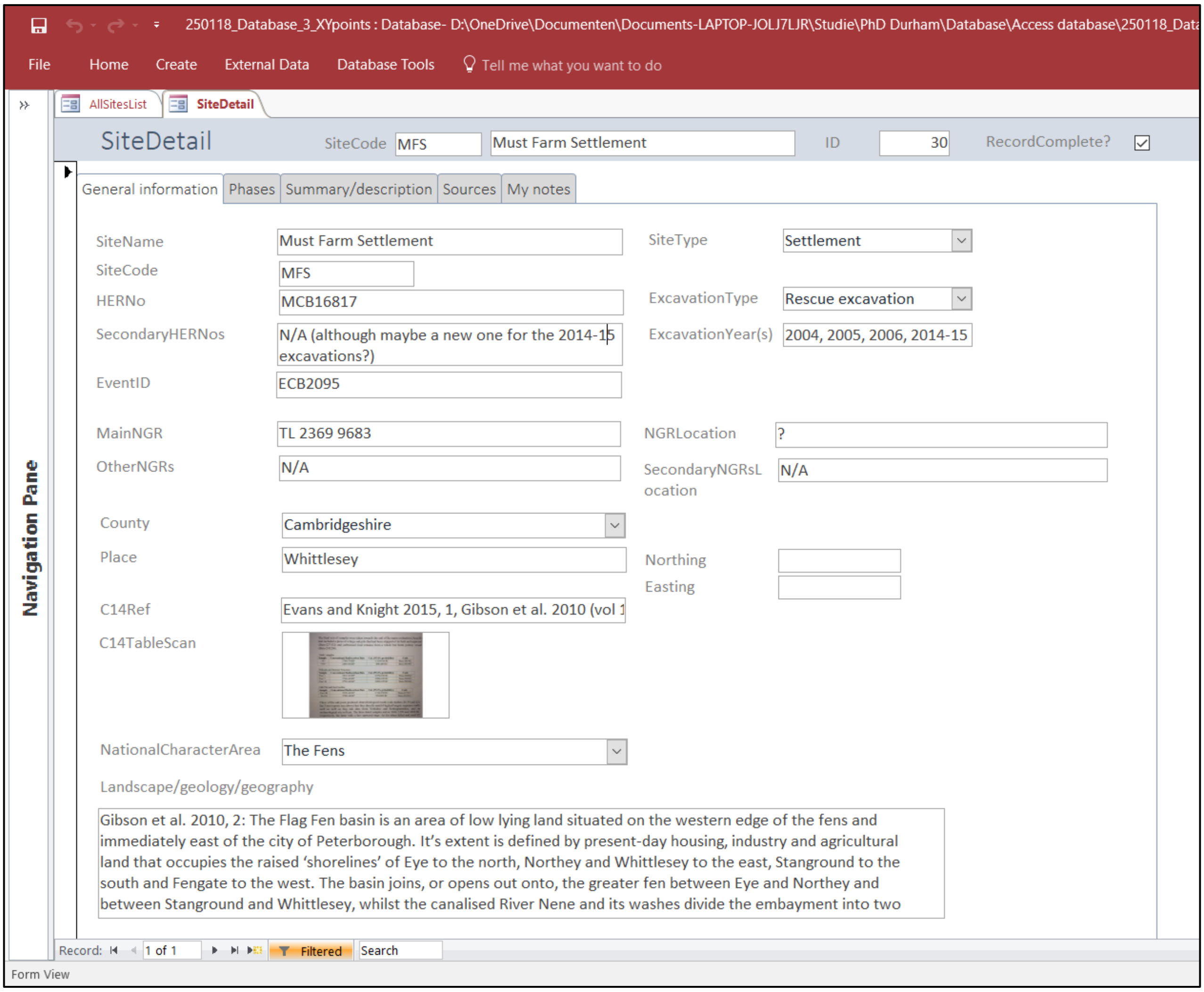


Figure 29: A screen shot of the form that was created based on the Site Detail table. These forms make data entry easier and quicker. This image shows the main tab (General information) in the Site Detail form, where the basic site information is recorded. The next four tabs at the top of the screen contain links to the various phases for this site (and a link to the relevant Phase Detail form), a short summary of the site, a list of the sources used and a field for general notes.

tal remains, domesticated plant remains etc.). During analysis this provided a quick overview of what was present in each phase (cf. Figure 30).

Level 3: Animal, plant and environmental remains

The tables at the lowest level of the database contain the actual data on plant and animal remains and the local environment. All these tables are set up in a similar way, containing a list of tick boxes through which the presence of particular plant and animal species (or environmental remains) can be recorded. Starting with the Animal Remains table (Figure 31), this contains lists of various species of domestic and wild animals, grouped under the categories: domestic mammals, wild mammals, birds, molluscs, and fish.[26] To assess how differences in recovery technique (i.e. the use of sieving or not) affect the presence and absence of various types of animals, there is also a drop-down menu with three options for 'Sieving?': 'yes', 'no' or 'unknown'.

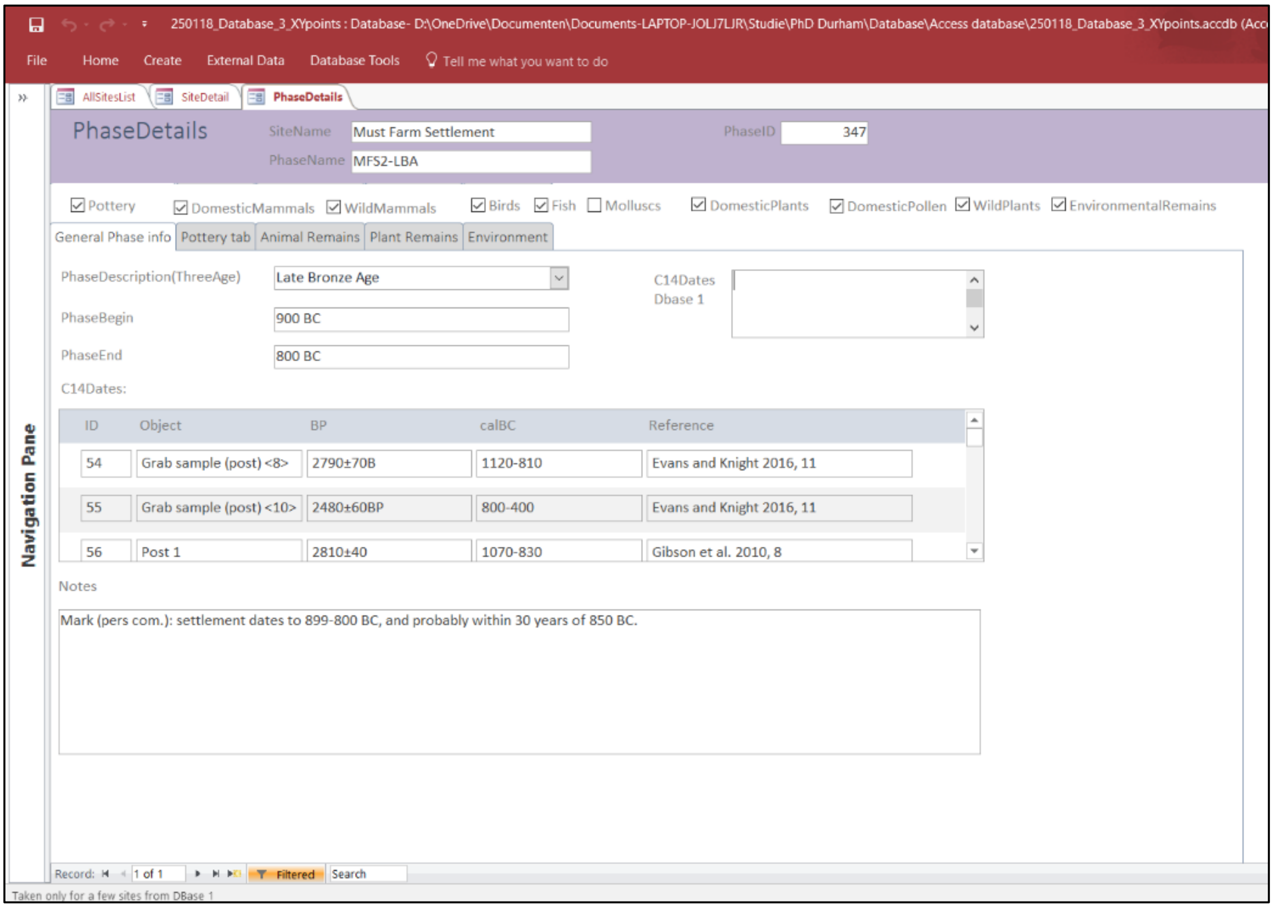


Figure 30: A screen shot of the main tab in the Phase Details table. It shows the information for the second of the three phases for the Must Farm Settlement Site. The tick boxes at the top provide a quick overview of the data present. The other tabs contain forms which are linked to the Data tables (level 3).

[26] A full list of all animal and plant species and the environmental proxies is given in tables 2-8 below.

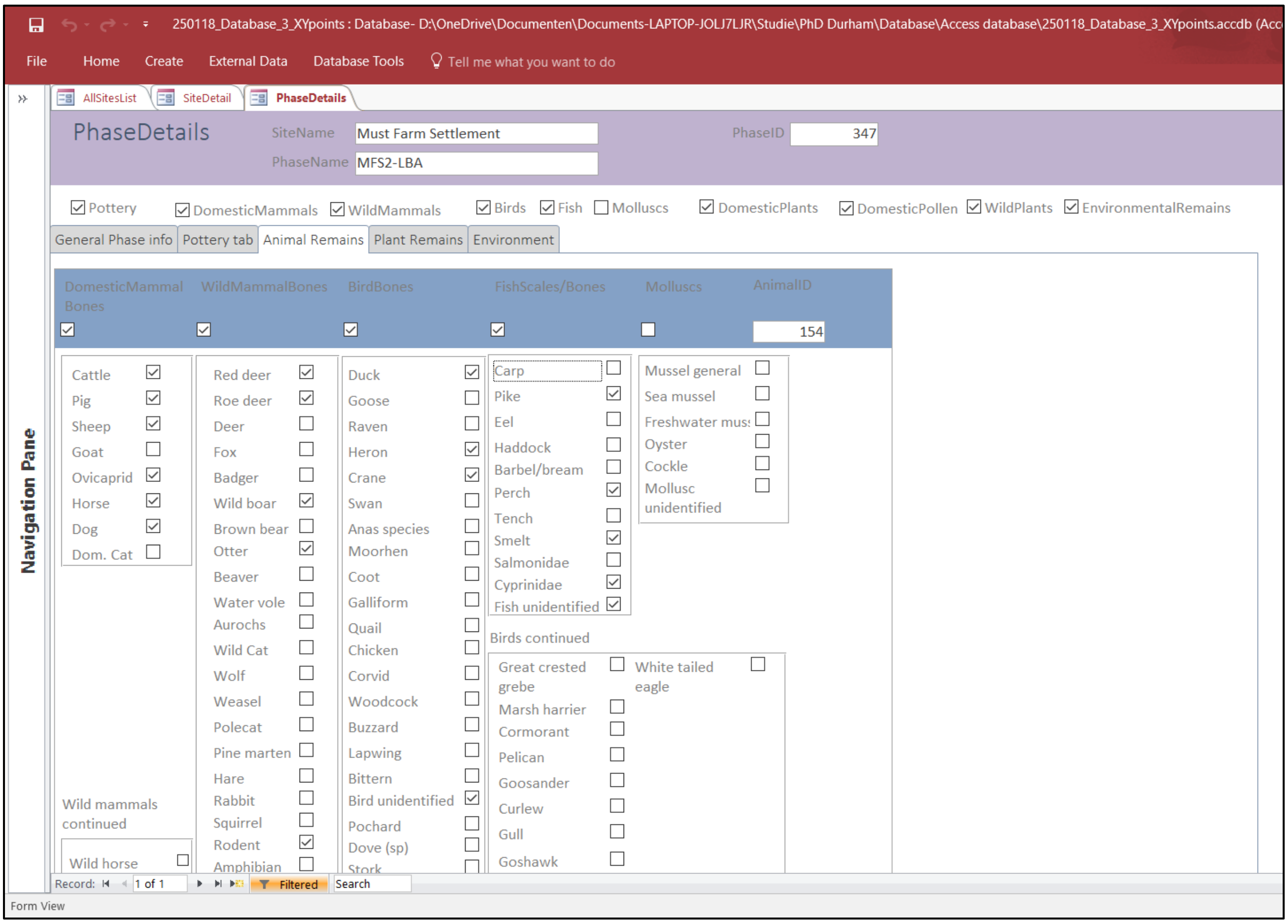


Figure 31: A screen shot of the Animal Remains form, where the presence or absence of a variety of species is recorded under several broad heading. Sieving is recorded further down on this form (not visible in this screen shot).

The Plant Remains table is structured in a similar way as the animal remains table (Figure 32). Basically, plant remains are split in two main categories, domestic plants and wild plants. However, these are recorded under one of five main groups: charred domesticated macro remains, charred wild macro remains, waterlogged domesticated macro remains, waterlogged wild macro remains and domestic plant pollen.[27] This method of recording is important as wetland sites generally contain a lot more waterlogged material than dryland sites, which may lead to biased results during the analysis. Recording charred and waterlogged material separately allowed for a comparison of waterlogged and charred assemblages at various sites. Similarly, different sampling strategies and recovery methods used

[27] Domestic plant pollen (cereals and other domestic plants) were recorded in the database, but cereal pollen are hardly ever identified to species and only flax was identified amongst the other domesticates. It was hoped their frequencies might provide an indicator of levels of arable agriculture, but few meaningful patterns emerged during an initial round of data-analysis in which pollen were considered, so they were excluded hereafter.

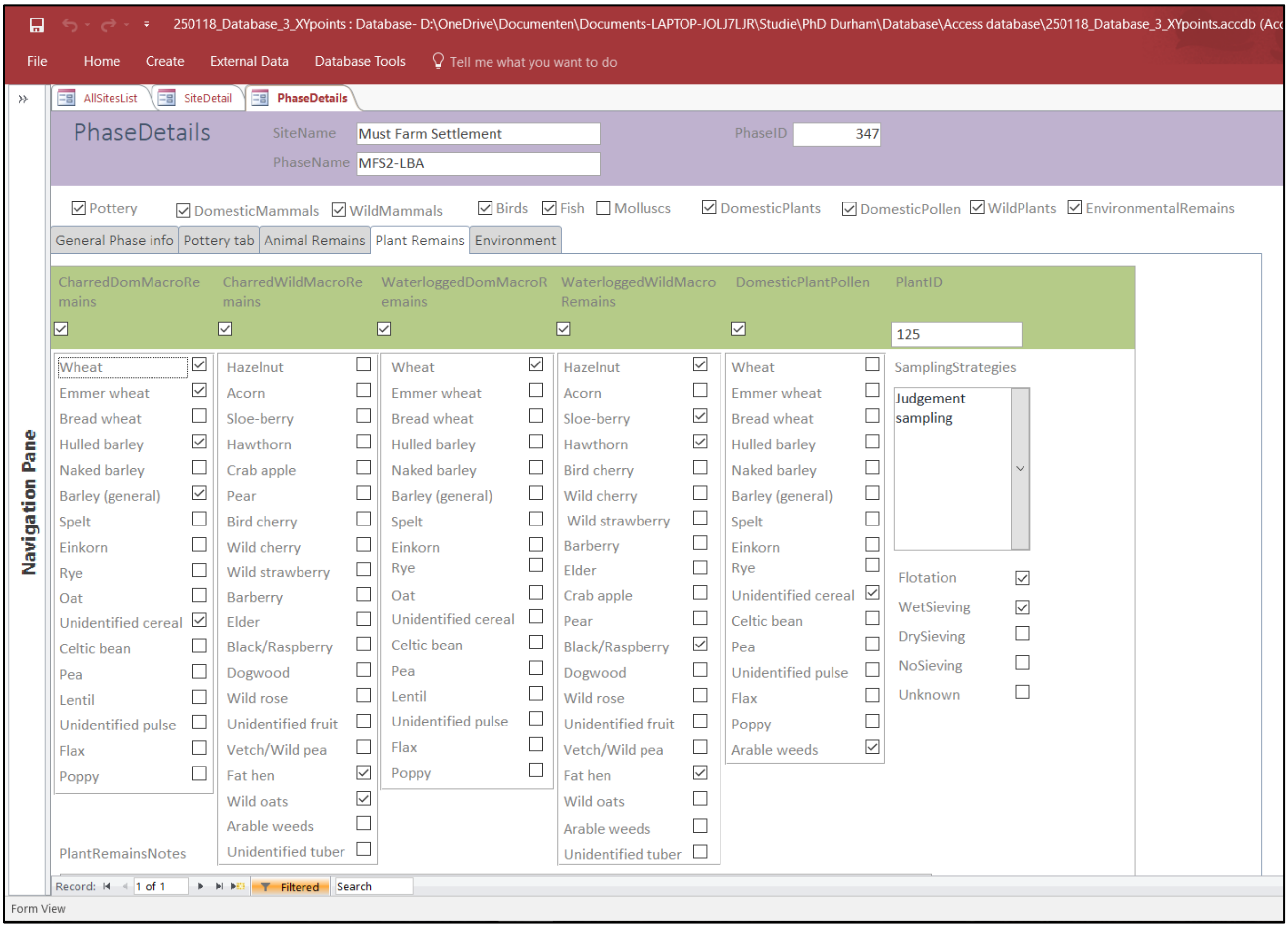


Figure 32: Screen shot of the Plant Remains form, where charred and waterlogged domestic and wild plant remains are recorded under broad headings. To the right sampling strategies and processing techniques are recorded.

on a site may affect the number and types of plant remains recovered. Thus, the Plant Remains table includes a drop-down menu with the following options for 'Sampling Strategies': '100%', 'total, judgement', 'random', 'hand retrieved', 'no sampling' and 'unknown'. These describe various levels of intensity in sampling (cf. Jones 1991). How the samples were then processed is also recorded, with tick boxes for: 'flotation', 'wet sieving', 'no sieving' or 'unknown'.

The Environmental Remains table (Figure 33) differs from the others in that the information recorded here was not itself analysed but provides crucial contextual information on the local environment and landscape in a given phase at the site under consideration. This information could not be recorded at site level (Level 1) because the Fens developed over time. As such, a site could be situated in a relatively dry landscape in the Neolithic, at the fen edge in the Bronze Age, and in the wet Fens in the Iron Age (e.g. Bradley Fen). In short, the environment had to be recorded for each phase at a site to account for any potential changes over time. In the Environmental Remains table, there are two lists of tick boxes, one in which various kinds of environmental proxy can be recorded (e.g. pollen, macro

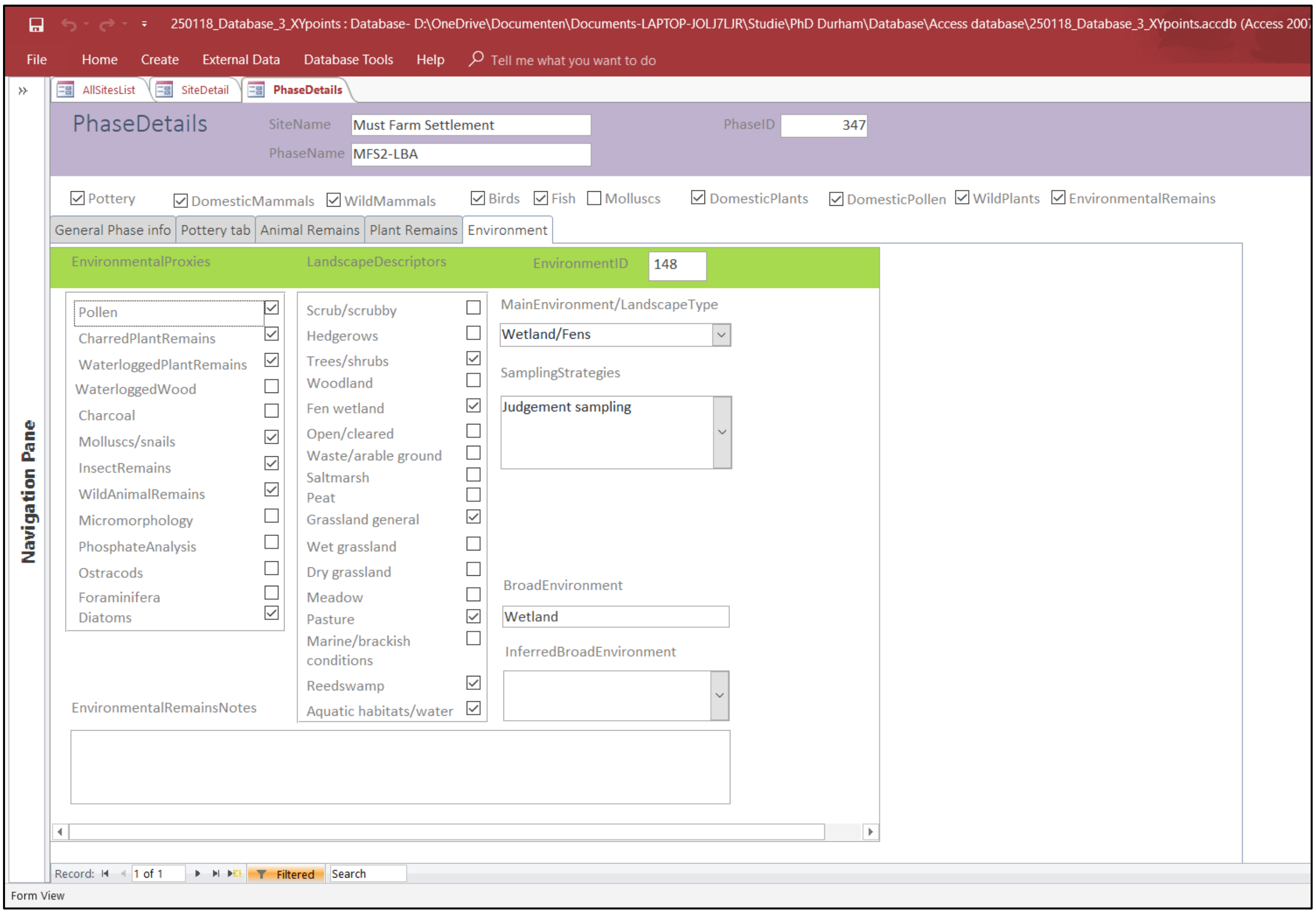


Figure 33: Screen shot of the Environmental Remains form, with tick boxes for the environmental proxies found (left) and the landscape descriptors used in the reports (middle). To the right the main landscape type is recorded, but for analysis, the Broad Environment was used.

plant remains, insect remains, molluscs) and another containing 'landscape descriptors' taken from the excavation reports (e.g. open/cleared ground, waste/arable ground, trees/shrubs woodland, fen wetland, saltmarsh, meadow, pasture, reed swamp) (Figure 33). Based on these, each phase was assigned a 'main environment' from a drop-down box in the final field in this table: wetland, dryland, or fen edge. This method worked well for sites with a good number of environmental remains. However, many individual phases or even whole sites did not have any, or too few environmental remains to be able to reconstruct the local environment. Yet the environment is a crucial variable in the analysis and each phase under consideration must be assigned a main environment. The next section will outline how this was achieved for the sites and phases without environmental remains, so that they could still be included in the analysis.

3.4 Data organisation

Above the process of data mining and site selection were outlined, the data categories and methods for data collection were summarised, and the relational database used for this research was introduced. Once data collection was complete, it was necessary to check and re-organise the data somewhat before the analysis could start. This section will provide an overview of the main variables used during the analysis and the way they were organised to enable food remains to be compared across time and space (in three different environments). These variables are time, space, or the main environment for each phase under consideration, and plant and animal remains.

3.4.1 Variables and data organisation in Access

The 145 selected sites were introduced above. All of these sites have one or more phases and all plant and animal remains are recorded within these phases. The main environment (wet, dry or fen edge) was also assigned to a phase rather than a site, as the Fens developed over time and a site that was initially dry could become wet over time. As a result, the individual phases (440 in total), rather than the selected sites, constitute the data-points in this research. To compare these phases on an equal level and enable the systematic analysis of plant and animal remains through time and space, it was necessary to standardise, re-organise and summarise the variables (time, environment and plant and animal remains).

Time – Phases and periods

In the original database each site phase was given a 'Three Age phase description', based on the periodisation for a site given in the site report(s). As different authors use different names for the phases on their sites, a total of 31 different phase descriptions had been recorded for the 440 phases in the database, with many of them overlapping. For analysis it was necessary to standardise the phases. To this end, 12 main *periods* were defined to which all phases could be assigned using the Three Age phase description. The twelve periods defined are:

- Mesolithic/Early Neolithic
- Earlier Neolithic
- Later Neolithic
- Neolithic/Bronze Age
- Earlier Bronze Age
- Middle/Late Bronze Age
- Late Bronze Age/Early Iron Age
- Earlier Iron Age
- Middle/Late Iron Age
- Late Iron Age/Romano-British

- Roman(o-British)
- Historic period

Thus, an individual (e.g. Middle Bronze Age) *phase* on a site was assigned to the Middle/Late Bronze Age *period*. All phases that were fully Mesolithic, Romano-British or later (Historic) were excluded from data-analysis. Equally, phases dated to as broad a period as the Neolithic, Bronze Age or Iron Age were excluded after an initial round of data exploration (see below). A Mesolithic-Neolithic phase was included to provide a base-line for the rest of the prehistoric periods under consideration. However, as this phase was often only represented by scattered flint and few excavated features, the data from it was not very abundant or representative. Besides, the period is too long (spanning c. 8000 years) to make any meaningful conclusions about Mesolithic or Neolithic food remains. Thus, although they are included, the results for this period are not discussed in-depth.

The above periods were chosen based on the date range given in the excavation reports of the sites investigated, which were based on relative or absolute dating. As many phases could not be precisely dated and were assigned to transitional periods like the Neolithic/Early Bronze Age, the Late Bronze Age/Early Iron Age or the Iron Age/Romano-British period, there is some overlap between these periods. Yet it was decided to consider them as separate periods as they would form a useful means of assessing changes between two periods. Similarly, date ranges for the Middle and Late Bronze Age and the Middle/Late Iron Age overlapped to such an extent that these periods were combined. Finally, when assigning periods, an attempt was made to ensure that each period was of a similar length and had a broadly similar number of phases within it (though there are still some discrepancies). Table 1 provides and overview of the periods, their time range and the number of individual phases within them.

Of course, the narrower a period is defined, the more useful the results will be, yet given the imprecision of relative dating and phasing on most of the selected sites it was impossible to define more clearly demarcated periods. Despite some overlap, the above periods, ten of which were eventually used in the analysis, do allow for an evaluation of changes through time.

Space – The three environments

The second main variable besides time is space. Like time, space, or environment, is crucial to this research, which aims to compare food remains in different environments. As outlined in chapter 2, the later prehistoric East Anglian Fens were subject to major environ-

Three Age Period	Period for analysis	Date-range	Time span in years	Total no. of phases
NEOLITHIC 4000 BC-1600 BC 142 phases 2400 years	Mesolithic/(Early) Neolithic	10.000-3000 BC	7000	27
	Earlier Neolithic	4000-3000 BC	1000	38
	Later Neolithic	3200-2200 BC	1000	28
	Late Neolithic/Early Bronze Age	2600-1600 BC	1000	49
BRONZE AGE 2200 BC-600 BC 161 phases 1600 years	Earlier Bronze Age	2200-1300 BC	900	47
	Middle/Late Bronze Age	1600-800 BC	500	52
	Late Bronze Age/Early Iron Age	1200-300 BC	800	62
IRON AGE 800 BC-100 AD 137 phases 900 years	Earlier Iron Age	800-200 BC	600	33
	Middle/Late Iron Age	400 BC -50 AD	350	71
	Late Iron Age/Romano-British	100 BC-100 AD	200	33

Table 1: An overview of the ten main periods under consideration in this thesis, displaying their date-range, the total time-span covered, and the total number of phases assigned to each period.

mental change, which turned an essentially dry basin into Britain's largest wetland area. Thus, to assign a main environment to a site phase, it was necessary to establish where the site in question was located at the time; in the wet fens, on the fen edge or on dry land.

As outlined above, environmental proxies and general landscape types were recorded in phases for which environmental data was available. From this, one of three 'broad environments' was assigned to a phase: wetland, dryland, or fen edge[28]. The wetland category contains the truly wet landscape types like Fen/wetland and saltmarsh and the dryland category contains true dryland landscape types like clay, chalk and gravel upland. The last category contains sites situated in between these two environments, e.g. on the fen edge, but also sites situated in river valleys or floodplain areas, which are prone to (seasonal) flooding and therefore neither entirely wet or dry.[29]

[28] It is important to note that the 'fen edge' as a true landscape feature did not really develop until the Early or even Middle Bronze Age (Knight and Brudenell in prep.), when large swathes of dryland were lost quite rapidly as the contours of the Fenland Basin were inundated. Before this, the low-lying Fenland landscape could be considered a dryland landscape intersected by river valleys (ibid.).

[29] Originally, the fen edge environment was called 'intermediate', as it encompasses not just fen edge sites, but also other environments which are semi-wet (e.g. river valleys). Yet 'intermediate' implies that an environment that is situated between the wet and dry and therefore is both (which is not the case). As most 'intermediate' sites were indeed located on the fen edge, this label was eventually chosen, even for sites which may be better described as 'riverine'.

This method worked well for the 214 phases (which is 49% of all phases) which contained some environmental remains, but many selected sites did not have any information on the environment. For these, a broad environment had to be inferred. Fortunately, the environmental sequence in the Fens has been studied in much detail, first by Waller (1994) during the Fenland Project and then by French, Scaife and others in the wake of large-scale projects like that at Flag Fen and Bradley Fen (Pryor 2001, French 2001a-d, Scaife 2001, Scaife and French in prep.). Waller created a comprehensive set of maps which model the past Fenland landscape and the way it changed over time (cf. section 2.2.1), The maps were compiled through a detailed lithostratigraphic study of the Flandrian deposits within the Fenland basin, in combination with pollen analysis to study vegetational history, and diatom analysis to study inorganic sedimentation (Waller 1994, 18-27). Moreover, an extensive programme of radiocarbon dating established when major changes in the depositional and vegetational history of the Fens took place (ibid. 27-34). The resulting sediment or deposit maps display “changes in the spatial distribution of Fenland environments (the extent of both marine and freshwater sedimentation) through time” (ibid. 64). Changes in the landscape are visualised for ten different periods between 6400 BP and the medieval period (ibid. 65-80) (Figure 34). Waller’s maps are not available in an ArcGIS format, but could be imported into ArcGIS as JPEG-images. The resulting maps cannot be manipulated but do provide a period by period visualisation of changes in the extent of marine and freshwater sedimentation within the study area.

By displaying Waller’s sediment map for the correct period, as well as the relevant site on the ArcGIS map, it was possible to assign a site an ‘inferred broad environment’ (e.g. Figure 35 and Figure 36). These inferred environments were the same as the broad environment categories above: wetland, dryland and fen edge. Wetland sites are those that fell within the extent of freshwater or marine deposits on Waller’s map in a given period. Dryland sites are those sites that are situated beyond the extent of these Fenland deposits in a given period. Sites situated on the edge or on the dryland within 500 m of the wetland edge in any given period were assigned a fen edge status. Some sites, although technically dryland sites according to Waller’s maps, were assigned a wetland environment as they were located on one of the fen islands, surrounded by Fenland on all sides (e.g. Whitmoor sidings). Assigning all phases with a broad environment or an inferred broad environment allowed all phases to be compared at the level of the broad environment.

Of course, Waller’s maps, despite modelling environmental change, are rather static, with each map covering a rather long period and not accounting for the dynamic reality, with the

Figure 34: Nine of eleven maps in Waller's map series, which map the extent of marine (in blue) and freshwater (brown) deposits throughout the period 6400 BP (map 2) to 1800 BP (map 11). By importing these into ArcGIS, changes in the extent of marine and freshwater sedimentation within the study area could be modelled and each selected site could be provided with a 'main environment'. (Maps from Waller 1994, reproduced with kind permission of Ordnance Survey and Cambridgeshire County Council.) NB: map 1, which displays the pre-Flandrian surface of the Fenland Basin and map 3, which is essentially the same as map 2 because palaeographic reconstruction for the period between that on map 2 and map 4 (6400-5600 BP) was not possible (Waller 1994, 66), are not shown here.

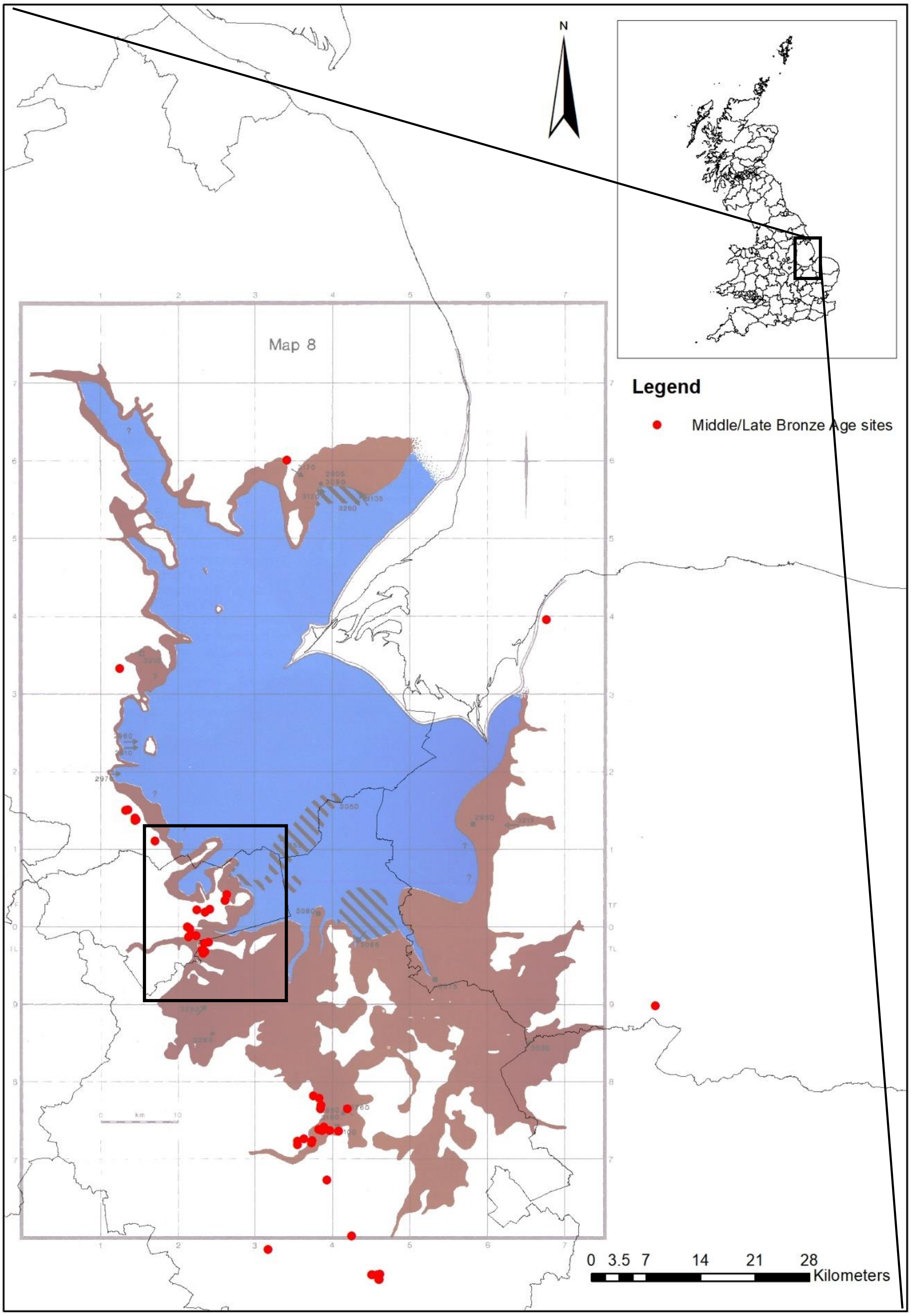


Figure 35: An example of how displaying Waller's map (in blue and brown) with the sites in a particular period (the Middle/Late Bronze Age in this case) allowed the sites without environmental information to be assigned a main environment. See Figure 36 as well. (Map 8 from Waller 1994, 74 reproduced with kind permission of Ordnance Survey and Cambridgeshire County Council)

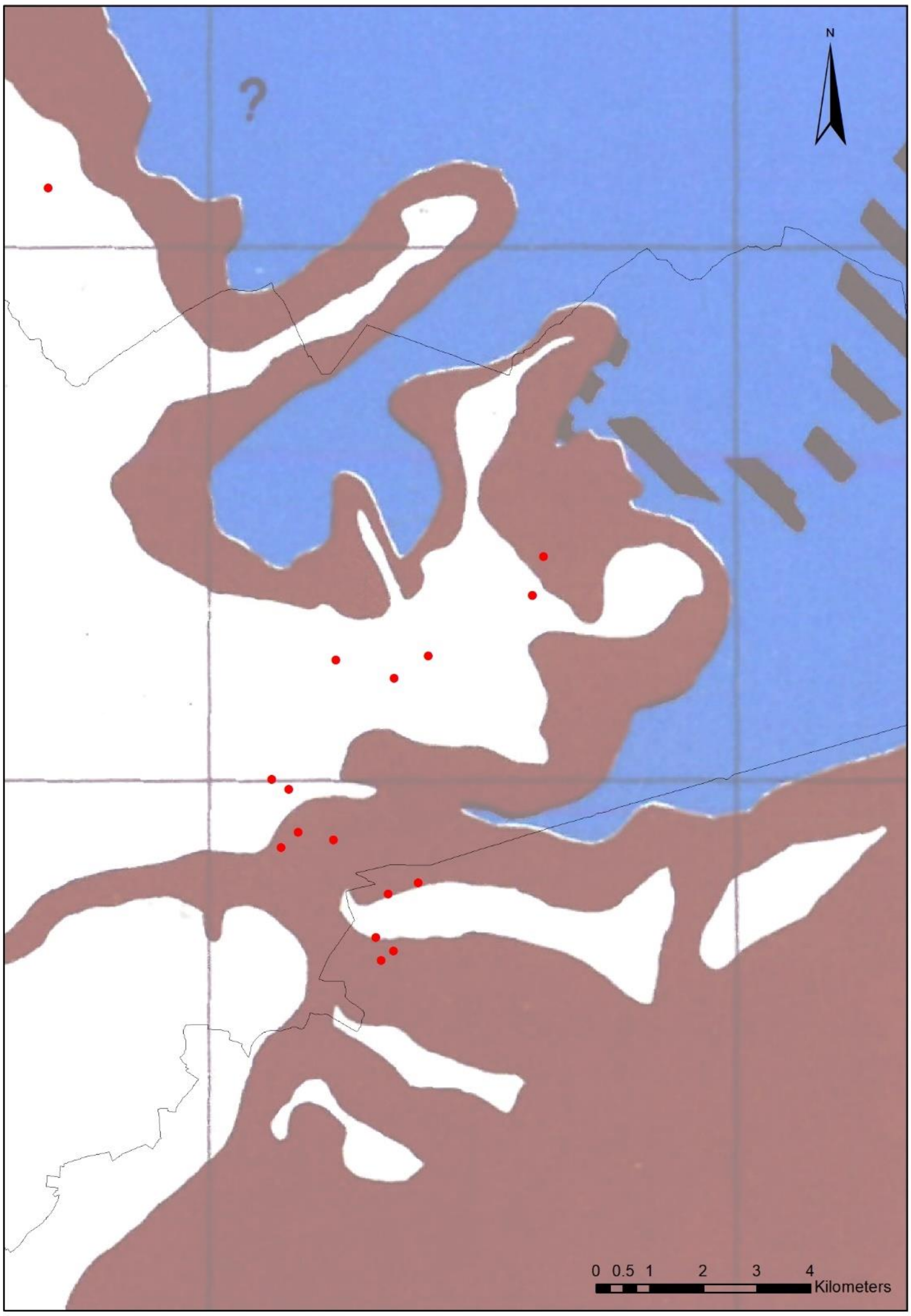


Figure 36: A close-up of Figure 35, showing individual sites on the fen edge near Peterborough projected onto Waller's Middle/Late Bronze Age map displaying the extent of fenland deposits (freshwater in brown and marine in blue). (Map 8 from Waller 1994, 74 reproduced with kind permission of Ordnance Survey and Cambridgeshire County Council)

fen edge slowly creeping up, and perhaps also seasonally retreating. Moreover, these maps only model sea level rise and peat growth, not changes in vegetation. Yet as heuristic tools, and in combination with the data on local environment as recorded in the Access database, these maps do provide a good indication of the environment in various periods, which was essential for those sites and areas that had not seen more recent environmental assessments. They were equally crucial to visualise the results of the analysis in space (see section 3.6.3).

Animal remains

The final set of variables in this research consist of the plant and animal remains recorded for each phase. As outlined above, this data was grouped into a number of broad data categories, such as domestic animals, wild animals, fish, domestic plants, wild plants etc. Though useful, it was decided to reorganise the data somewhat so that different broad subgroups of plants and animals could be analysed. Below, these various categories are specified.

Because this project aims to compare food remains in different environments it was decided to group individual species of wild animals according to the habitat they normally inhabit. Three main groups were defined for the wild mammals:

- Woodland mammals
- Wetland mammals
- Open country/field mammals

Table 2 lists the species within each group. A fourth group, 'Other wild animals', contained species often encountered in environmental samples, including rodents, amphibians and reptiles. Because these are unlikely to have been of economic value, these were excluded from analysis.

Main group	Individual species
Woodland mammals	Aurochs Badger Brown Bear Deer Fox Pine Marten Polecat Red Deer Roe Deer Squirrel Weasel Wild Boar Wild Cat Wolf
Open country/field mammals	Hare
Wetland mammals	Beaver Otter Water vole

Table 2: An overview of the mammal species contained within the three wild mammal subgroups.

Domestic mammals are less habitat specific and all species were simply grouped under the heading domestic animals. Table 3 lists the species within this category.

Birds are more mobile and therefore less easy to categorise according to habitat. However, it is possible to distinguish between species that are normally associated with wetlands (whether salt or freshwater) and those that inhabit drier areas. Thus, the bird species encountered were divided into three groups:

- Wetland birds
- Dryland birds
- Other birds

Table 4 lists the species within the wetland and dryland groups. The 'Other bird' category was created for unidentified bird remains.

Van Amerongen (2015) has demonstrated that fish remains can be used to demonstrate the presence of particular aquatic habitats and human fishing practices through a study of fish species' salt tolerance and behaviour in terms of spawning and migration.

Of course, people may have moved fish for processing or storage, which means that they may not always be an accurate indicator of local environments, but they

Main group	Individual species
Domestic animals	Cattle Chicken Dog Goat Horse Ovicaprid Pig Sheep

Table 3: An overview of the domestic animals recorded for this research. Most of these are mammals, but chicken, which occurs a few times in the later Iron Age, was also added here (rather than with the birds).

Main group	Individual species
Wetland birds	Duck/Anas sp. Bittern Cormorant Coot Crane Curlew Goosander Goose Great crested grebe Gull Heron Marsh harrier Moorhen Pelican Pochard Swan White tailed eagle
Dryland birds	Buzzard Corvid Crow Galliform Lapwing Quail Raven Woodcock
Other birds	Bird unidentified

Table 4: An overview of the various bird species contained within the wet and dryland subgroups. Of course, birds are mobile and some of the wetland species are occasionally found in drylands.

do demonstrate the types of environments exploited by the people fishing for these species. Thus, to evaluate such fishing practices and people's exploitation of various types of wetlands, the fish remains encountered were divided into four groups:

- Freshwater fish
- Saltwater fish
- Migrating fish
- Other fish

Table 5 lists the species in each of these groups. The migrating group contains those species that spend part of their lives in the sea and part of their lives in freshwater environments, like eel and salmon. In the medieval Fens, these species, and particularly eels, were a very important resource (cf. Silvester 1991, 93) and they may provide insight into seasonal exploitation. 'Other fish' was used for unidentified fish remains.

Main group	Individual species
Freshwater fish	Carp Barbel/bream Cyprinidae Perch Pike Smelt Tench
Saltwater fish	Haddock
Migrating fish	Eel Salmonidae
Other fish	Fish unidentified

Table 5: An overview of the individual fish species contained within the three fish groups considered in this research.

Like the fish, molluscs were divided into saltwater, freshwater and 'other' categories, to explore the types of habitat exploited by people in the Fens:

- Saltwater molluscs
- Freshwater molluscs
- Other molluscs

Main group	Individual species
Marine molluscs	Cockle Oyster Sea Mussel
Freshwater molluscs	Freshwater Mussel
Other molluscs	Mollusc unidentified Mussel unknown

Table 6: An overview of the individual species contained within the freshwater and marine molluscs sub-groups.

Table 6 lists the various species within these groups. In several cases it was not known whether the mussels found were of the freshwater or saltwater species. In this case 'unknown mussel' was added to the 'Other molluscs' group, which also contained all unidentified molluscs.

Plant remains

The plant remains could not be divided into environmental categories as easily as the wild animals as many species are not very habitat specific and occur both in wetter and drier environments. Therefore, it was decided to group the plant remains according to broad type. For the domesticates, the following groups were defined:

- Cereals
- Pulses
- Others

Table 7 lists the various species within these groups. 'Others' include flax and domestic poppy.

Main group	Individual species
Cereals	Barley general Bread wheat Einkorn Emmer Wheat Hulled barley Naked barley Oat Rye Spelt Unidentified cereal Wheat
Pulses	Celtic bean Lentil Pea Unidentified pulse
Other domesticate plants	Flax Poppy

Table 7: An overview of the domestic plant species divided into three main groups.

Wild plants of economic value were grouped as follows:

- Fruits
- Nuts
- Other wild plants

Table 8 lists the species contained within each category. Although vetch/wild pea (*Vicia sp.*) were recorded in the database, they were excluded for analysis as there are many types of vetches, many of which contain toxic compounds which make them inedible (Melamed et al. 2008, 31). The large number of burnt

Main group	Individual species
Fruits	Barberry Bird cherry Black/raspberry Crab apple Dogwood Elder Hawthorn Pear Sloe-berry Unidentified fruit Wild cherry Wild rose Wild strawberry
Nuts	Acorn Hazelnut
Other wild plants	Fat hen Unidentified tuber Wild oat

Table 8: An overview of all wild plant species divided into three main groups.

vetches found on the selected sites probably represent arable weeds. Fat hen (*Chenopodium album*), though possibly an arable weed as well, is found at large numbers in later prehistoric sites across Europe, indicating that the plant was deliberately collected and perhaps even cultivated (Stokes and Rowley-Conwy 2002). For this reason, it was included as an 'Other wild plant'. Wild and domestic oats are notoriously difficult to tell apart and it was only recorded as domestic if the specialist report explicitly specified it as such. All other oats were recorded as wild.

Because plant remains can be preserved either through charring or through waterlogging, each of the above groups above were considered three times. Firstly, in a 'combined' group, which contains all charred or waterlogged plants within a group (e.g. all cereals). This is referred to as 'total' (e.g. cereal total). This total group is then split up in a 'charred' and 'waterlogged' group, to gain an insight into how particular plant types tend to get preserved and how waterlogged assemblages compare to charred ones. Of course, waterlogged wild plant remains may be naturally occurring plant remains rather than food remains. However, as they do not occur very frequently in charred state (unlike cereals) it is important to consider both waterlogged and charred assemblages.

3.4.2 Data checks and cleaning

Once the data had been summarised and reorganised, all data for the relevant phases (Mesolithic/Early Neolithic to Late Iron Age/Romano-British) was checked by targeted querying of all tables, to ensure that all the right boxes in the various tables were ticked and none had been forgotten. For instance, if wild animals were ticked in the Phase detail table, it was checked that there were indeed wild animals present in the Animal table at level 3 and vice versa.

Once this process was completed, the database was 'cleaned' by deleting any superfluous records in the various tables. Often these related to accidental entries, which had already been marked for removal. At this stage the database still held all 427 sites originally selected, only 145 of which were completed (see section 3.2.3 above). Moreover, the selected sites often included irrelevant phases (dating to the Mesolithic, or the Roman and historic period). Rather than deleting all this information, query parameters were set up in Access which ensured that only the completed records and relevant phases were included in queries. Thus, only the 145 sites for which information was entered, and the 440 relevant phases within these were considered during analysis.

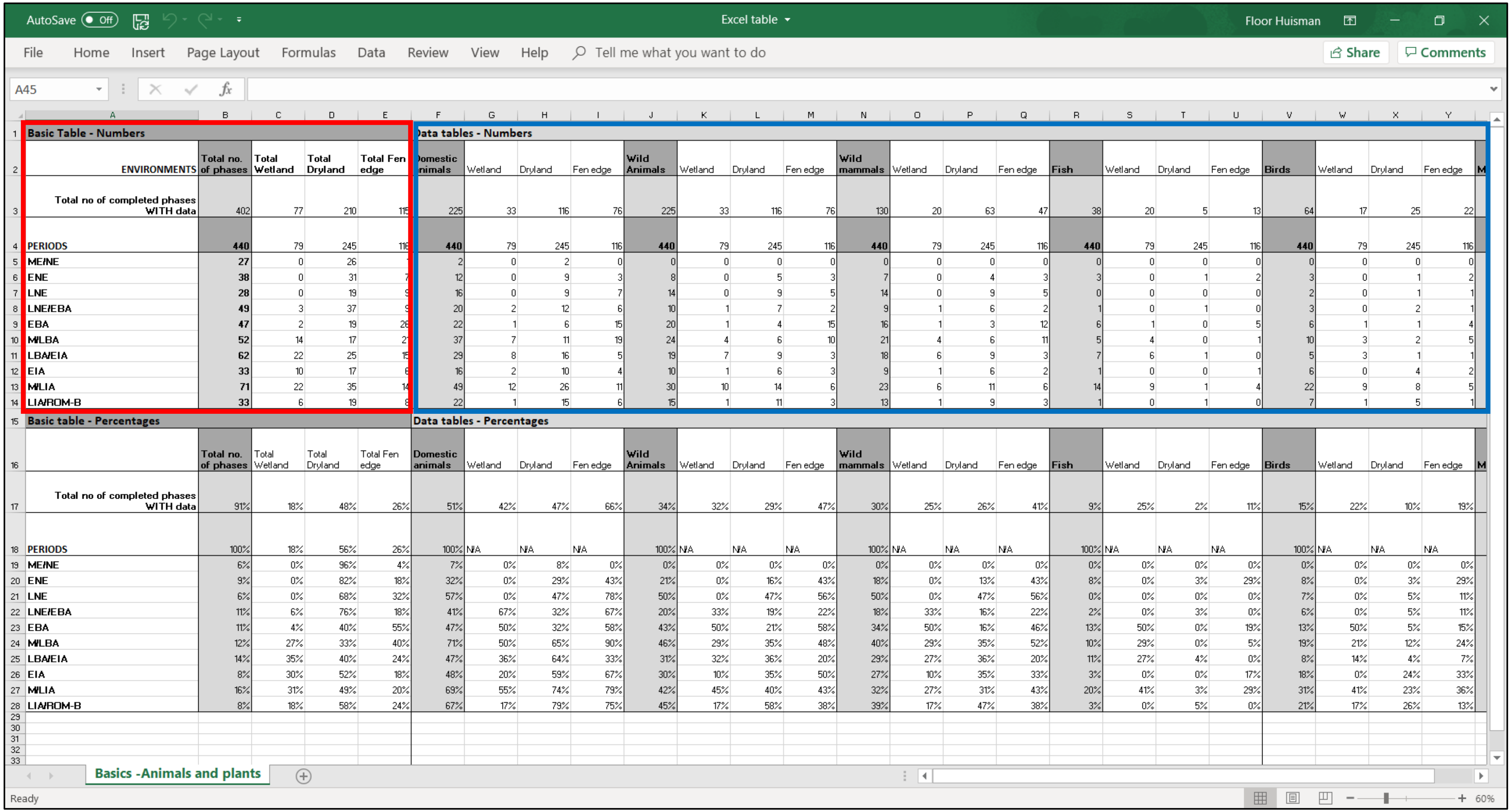
3.5 Data-analysis

Once all data had been cleaned, checked and reorganised a large number of queries was run in Access to compare the presence and absence of different groups of plants and animals across time and in different environments. The data-analysis was approached systematically, starting with a preliminary round of data exploration in which different approaches to querying and data-analysis were tested. After this, and once the best method had been established, more in-depth data-analysis took place. This started by running more general queries at the topmost levels of the database (at site and phase level), followed by more in-depth queries about data sub-groups and individual plant and animal species. Finally, to assess how the observed patterns may have been influenced by differential preservation, sampling strategies and recovery techniques, the effects of these on the various main plant and animal groups were analysed in a brief pilot study (cf. appendix 4). This section will outline the methods for data-analysis in each of the rounds of analysis, describing the general approach taken within each of these, and briefly introduce the pilot study.

3.5.1 Access queries and Excel tables

The basis of all data-analysis in this project are series of queries run in Access. These queries are a strong tool to summarise large amounts of data as they can pull information from several related database tables. They can be very simple, only pulling in two fields from one or more tables, but by adding more fields from various tables, they can become more complex and combine and display a large amount of information in a new table. By setting certain criteria when designing the query, it is possible to filter out and display particular information very precisely. In this way it was possible to get an overview of all phases with a particular environment and belonging to one of the ten periods outlined above which held a particular group of data, whether this be all wild animals, all wild mammals, all woodland mammals or all red deer. Several data groups can also be displayed together (e.g. all Earlier Bronze Age phases with domestic mammals, wild mammals, fish, birds and molluscs), allowing direct comparisons to be made.

Although Access queries, once run, can be saved, it was decided to copy the numbers from Access into an Excel table for a more readable overview and to create graphs that visualise the results. Yet before analysis of specific groups of plants and animals could start, basic information on the number of completed phases within the ten periods under consideration and within each of the three environments had to be listed. For this an Excel table was created. Figure 37 shows a screen shot of this table. The first five columns (A-E) and 14 rows in



Basic Table - Numbers					Data tables - Numbers																			
ENVIRONMENTS	Total no. of phases	Total Wetland	Total Dryland	Total Fen edge	Domestic animals	Wetland	Dryland	Fen edge	Wild Animals	Wetland	Dryland	Fen edge	Wild mammals	Wetland	Dryland	Fen edge	Fish	Wetland	Dryland	Fen edge	Birds	Wetland	Dryland	Fen edge
Total no of completed phases WITH data	402	77	210	115	225	33	116	76	225	33	116	76	130	20	63	47	38	20	5	13	64	17	25	22
PERIODS	440	79	245	116	440	79	245	116	440	79	245	116	440	79	245	116	440	79	245	116	440	79	245	116
ME/NE	27	0	26	1	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENE	38	0	31	7	12	0	9	3	8	0	5	3	7	0	4	3	3	0	1	2	3	0	1	2
LNE	28	0	19	9	16	0	9	7	14	0	9	5	14	0	9	5	0	0	0	0	2	0	1	1
LNE/EBA	49	3	37	9	20	2	12	6	10	1	7	2	9	1	6	2	1	0	1	0	3	0	2	1
EBA	47	2	19	26	22	1	6	15	20	1	4	15	16	1	3	12	6	1	0	5	6	1	1	4
M/LBA	52	14	17	21	37	7	11	19	24	4	6	10	21	4	6	11	5	4	0	1	10	3	2	5
LBA/EIA	62	22	25	15	29	8	16	5	19	7	9	3	18	6	9	3	7	6	1	0	5	3	1	1
EIA	33	10	17	6	16	2	10	4	10	1	6	3	9	1	6	2	1	0	0	1	6	0	4	2
M/LIA	71	22	35	14	49	12	26	11	30	10	14	6	23	6	11	6	14	9	1	4	22	9	8	5
LIA/ROM-B	33	6	19	8	22	1	15	6	15	1	11	3	13	1	9	3	1	0	1	0	7	1	5	1

Basic table - Percentages					Data tables - Percentages																			
	Total no. of phases	Total Wetland	Total Dryland	Total Fen edge	Domestic animals	Wetland	Dryland	Fen edge	Wild Animals	Wetland	Dryland	Fen edge	Wild mammals	Wetland	Dryland	Fen edge	Fish	Wetland	Dryland	Fen edge	Birds	Wetland	Dryland	Fen edge
Total no of completed phases WITH data	91%	18%	48%	26%	51%	42%	47%	66%	34%	32%	29%	47%	30%	25%	26%	41%	9%	25%	2%	11%	15%	22%	10%	19%
PERIODS	100%	18%	56%	26%	100%	N/A	N/A	N/A	100%	N/A	N/A	N/A	100%	N/A	N/A	N/A	100%	N/A	N/A	N/A	100%	N/A	N/A	N/A
ME/NE	6%	0%	96%	4%	7%	0%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
ENE	9%	0%	82%	18%	32%	0%	29%	43%	21%	0%	16%	43%	18%	0%	13%	43%	8%	0%	3%	29%	8%	0%	3%	29%
LNE	6%	0%	68%	32%	57%	0%	47%	78%	50%	0%	47%	56%	50%	0%	47%	56%	0%	0%	0%	0%	7%	0%	5%	11%
LNE/EBA	11%	6%	76%	18%	41%	67%	32%	67%	20%	33%	19%	22%	18%	33%	16%	22%	2%	0%	3%	0%	6%	0%	5%	11%
EBA	11%	4%	40%	55%	47%	50%	32%	58%	43%	50%	21%	58%	34%	50%	16%	46%	13%	50%	0%	19%	13%	50%	5%	15%
M/LBA	12%	27%	33%	40%	71%	50%	65%	90%	46%	29%	35%	48%	40%	29%	35%	52%	10%	29%	0%	5%	19%	21%	12%	24%
LBA/EIA	14%	35%	40%	24%	47%	36%	64%	33%	31%	32%	36%	20%	29%	27%	36%	20%	11%	27%	4%	0%	8%	14%	4%	7%
EIA	8%	30%	52%	18%	48%	20%	59%	67%	30%	10%	35%	50%	27%	10%	35%	33%	3%	0%	0%	17%	18%	0%	24%	33%
M/LIA	16%	31%	49%	20%	69%	55%	74%	79%	42%	45%	40%	43%	32%	27%	31%	43%	20%	41%	3%	29%	31%	41%	23%	36%
LIA/ROM-B	8%	18%	58%	24%	67%	17%	79%	75%	45%	17%	58%	38%	39%	17%	47%	38%	3%	0%	5%	0%	21%	17%	26%	13%

Figure 37: A screen shot of the Excel table used in the data-analysis. The Core table is marked in red, the Data-tables, in this case containing the data for the various broad animal groups, in blue. The percentages in the lower half of the table are those calculated for the corresponding values in the top half.

the top half of the table list the total number of phases (B4) and shows how these are divided across the ten different periods (B5-14) and the three environments (C-E3). In column C-E, rows 5-14, the phases have been further sub-divided according to both period *and* environment. This three-fold division allowed for the data to be analysed through time (irrespective of environment), by environment (irrespective of time) and both time and environment (see next section). This 'Core table' contains the total numbers for each period and environment and was used in all percentage calculations (cf. below).

After the Core table in column A-E, follow the Data tables for all data groups considered in a particular round of analysis (column F onwards). Here, the number of phases with data of this particular group in it are listed by period, environment, and both period and environment for each data group in the same way as in the Core table. The values displayed here are obtained from Access queries. A limitless number of groups, each represented by four columns and 12 rows can be added to this table, but generally animal and plant groups were given their own table to maintain a better overview.

Because the total number of phases per environment and period differs (cf. Core table column C-E, rows 5-14), the values in these Data tables cannot be directly compared. To standardise the data, the percentage of the total number of phases (either overall, within a particular environment, a period, or period *and* environment) was calculated in each instance, using the total phase numbers in the Core table. The percentages per period, environment and both were then listed in the lower half of the table (e.g. Columns F-I, rows 18-28 for domestic animals). Although this allowed different periods and environments to be compared on a more equal basis, it should be noted that in some instances, where there was a very low number of phases in total, this led to percentages that will appear too high. This is especially true for the percentages calculated per period and environment. Table 9 reproduces the Core table, with the problematic periods and environments colour-coded in red. The data in these is unlikely to be representative of a period and environment and this was noted in the discussion of the results (cf. section 4.2).

The large Excel table that resulted held all information. To enable the comparative analysis, smaller, derived tables were created that displayed particular information (e.g. the percentages of domestic animals through time, per environment or through time and per environment). These derived tables were then used to create graphs in Excel which displayed the

ENVIRONMENTS		Wetland	Dryland	Fen edge
PERIODS	**Phases**	Phases	Phases	Phases
ME/NE	**27**	0	26	1
ENE	**38**	0	31	7
LNE	**28**	0	19	9
LNE/EBA	**49**	3	37	9
EBA	**47**	2	19	26
M/LBA	**52**	14	17	21
LBA/EIA	**62**	22	25	15
EIA	**33**	10	17	6
M/LIA	**71**	22	35	14
LIA/ROM-B	**33**	6	19	8
TOTAL	**440**	**79**	**245**	**116**

Table 9: The Core table with the low total phase numbers for some periods and environments marked in red. These low values skew percentages when calculated and are not wholly representative of the period or environment.

results for all groups under consideration. By using the filter function in these graphs, it was possible to display and describe trends for particular data groups, periods and/or environments.

3.5.2 Data-analysis round 1: data-exploration and developing an approach to data-analysis

The above methods and tools, using the Basic Excel table and various Data tables, were developed during the first round of data-analysis, which was of an exploratory nature. After these methods had been devised and the Core table had been filled with the total number of completed phases divided by period, environment, and period *and* environment, this basic information was analysed by creating a number of graphs displaying how the phases were divided across the ten periods, the three environments and both.

Once these basics had been analysed, the values for the following groups were added to the Data table:

- All domestic animals
- All wild animals
  - All wild mammals
  - All fish
  - All birds
  - All molluscs
- All domestic plants
- All wild plants
- Environmental remains

Although these groups are rather 'coarse', including a wide variety of species, their analysis provided a good insight into some major trends that were investigated in more detail in subsequent rounds of analysis. Environmental remains were included here to gain an insight into how many phases had such data present and how preservation of such remains differs per environment and through time.

To assess the ubiquity of presence for a particular data group regardless of both time and environment, the total number of phases with that particular group present was first listed in row 3 of the Data table (e.g. 225 of the 440 phases have domestic animal remains). The percentage was calculated by dividing this total number of phases with a particular data type by the total number of phases (440). A derived table listing the percentages for each group was made as well as a graph to display the results (Figure 38). This showed which data categories occurred most frequently across the entire data-set.

The next step was to consider how the total number of phases with data of a particular kind (e.g. domestic animals) was divided across the three environments. The total number of phases within one environment in which data of a particular category was found were listed in row 3 of the Data table (e.g. 3G-I for domestic animals). The percentages were calculated by dividing these values by the total number of phases within a particular environment, listed in row 4. Once all groups were added, a derived table was created that showed the three environments and the various data groups. A graph was plotted displaying all environments and groups. By using the filter function in Excel, individual groups were considered before their frequencies of presence were compared to each other (Figure 39). Thus, the occurrence of different groups in various environments (regardless of period) could be assessed.

Having dealt with the three environments, the distribution of phases over the ten different periods was considered next. These values were listed in the Data table under the total number of phases with data (e.g. in column F for domestic animals). The percentages were calculated by dividing these values by the total number of phases in a period, listed in column B5-14. Once all data categories were added a derived table was created which only showed the percentages per period for each data category. A graph was plotted from this. Given the number of data groups and periods involved, the filter function in Excel was used to first consider each group individually (e.g. domestic animals through time). After this their relative frequencies of presence were compared to each other (e.g. domestic animals

	Domestic animals	Wild animals total	Wild mammals	Fish	Birds	Molluscs	Domestic plants	Wild plants
Main data groups' frequency in all 440 phases	51%	34%	30%	9%	15%	6%	41%	38%

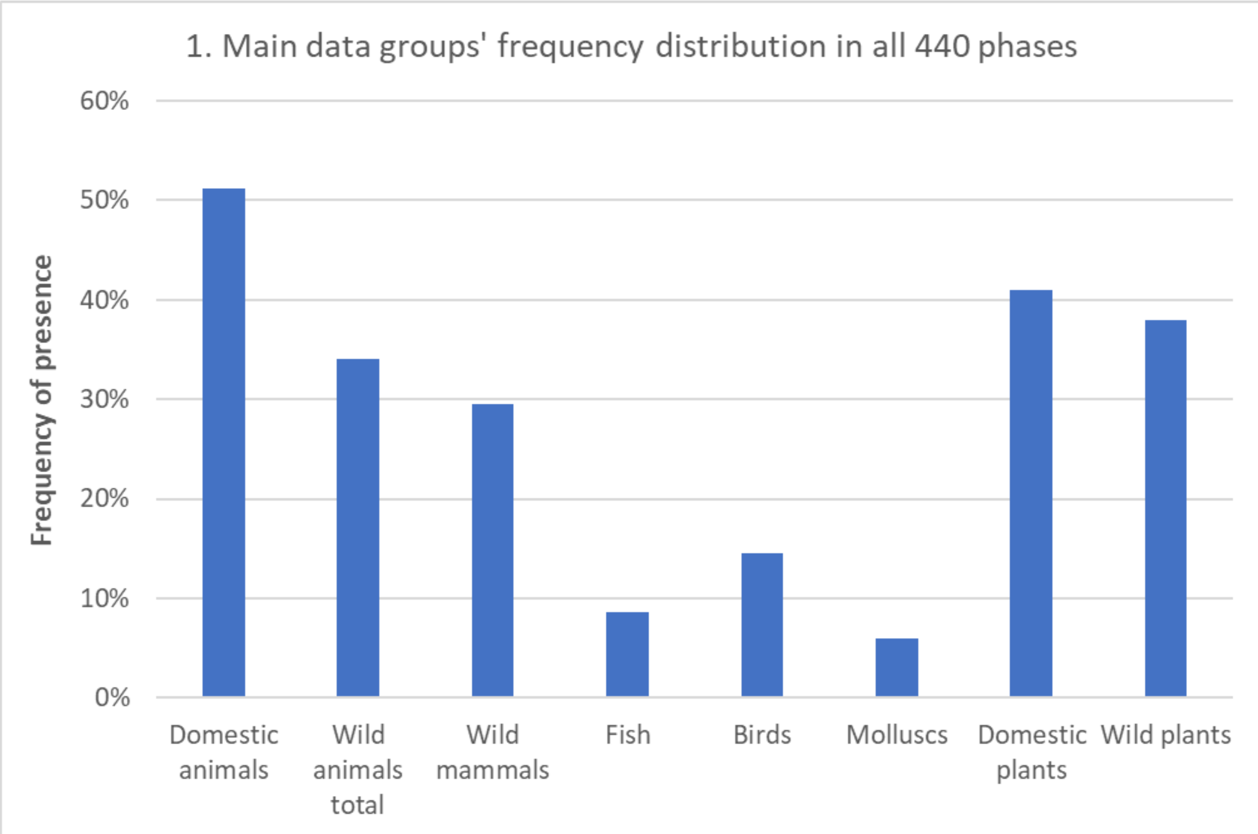


Figure 38: An example of a derived table and the graph created from it. This graph shows the frequency of the various data-groups in percentages across all 440 phases (regardless of period or environment).

Main data groups' frequency across environments	Wetland	Dryland	Intermediate
Domestic animals	42%	47%	66%
Wild animals total	32%	29%	47%
Wild mammals	25%	26%	41%
Fish	25%	2%	11%
Birds	22%	10%	19%
Molluscs	8%	4%	8%
Domestic plants	34%	38%	53%
Wild plants	29%	31%	59%

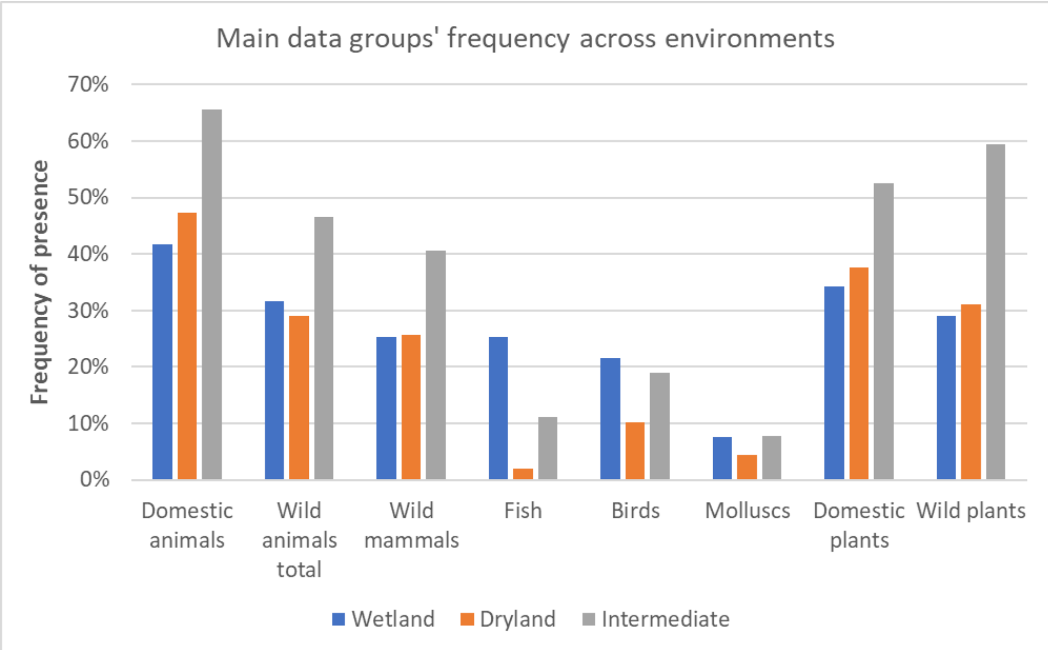


Figure 39: An example of a derived table and graph displaying the frequency of the various data-groups distributed across the three environments. It shows clear differences in frequencies between the three environments and for the various groups.

vs. wild animals, plants etc.) (Figure 40). Thus, changes through time for each could be evaluated.

Finally, time and environment were combined. Like before, the total number of phases within a certain period and within one of the three environments that held a particular data-category were listed in the Excel table, below the total values for the environment listed in row 4 and behind the total number of phases per period (e.g. in columns G-I5-14 for domestic animals). The percentages were calculated by dividing the total number of phases with a particular data type in a given environment and period by the total number of phases in that environment and period as listed in columns C-E5-14.

Main groups' data frequency through time	Domestic animals	Wild animals total	Wild mammals	Fish	Birds	Molluscs	Domestic plants	Wild plants
ME/NE	7%	0%	0%	0%	0%	0%	7%	15%
ENE	32%	21%	18%	8%	8%	0%	29%	32%
LNE	57%	50%	50%	0%	7%	0%	36%	50%
LNE/EBA	41%	20%	18%	2%	6%	2%	24%	33%
EBA	47%	43%	34%	13%	13%	11%	45%	53%
M/LBA	71%	46%	40%	10%	19%	15%	56%	56%
LBA/EIA	47%	31%	29%	11%	8%	3%	47%	27%
EIA	48%	30%	27%	3%	18%	0%	36%	33%
M/LIA	69%	42%	32%	20%	31%	10%	51%	39%
LIA/ROM-B	67%	45%	39%	3%	21%	9%	55%	36%

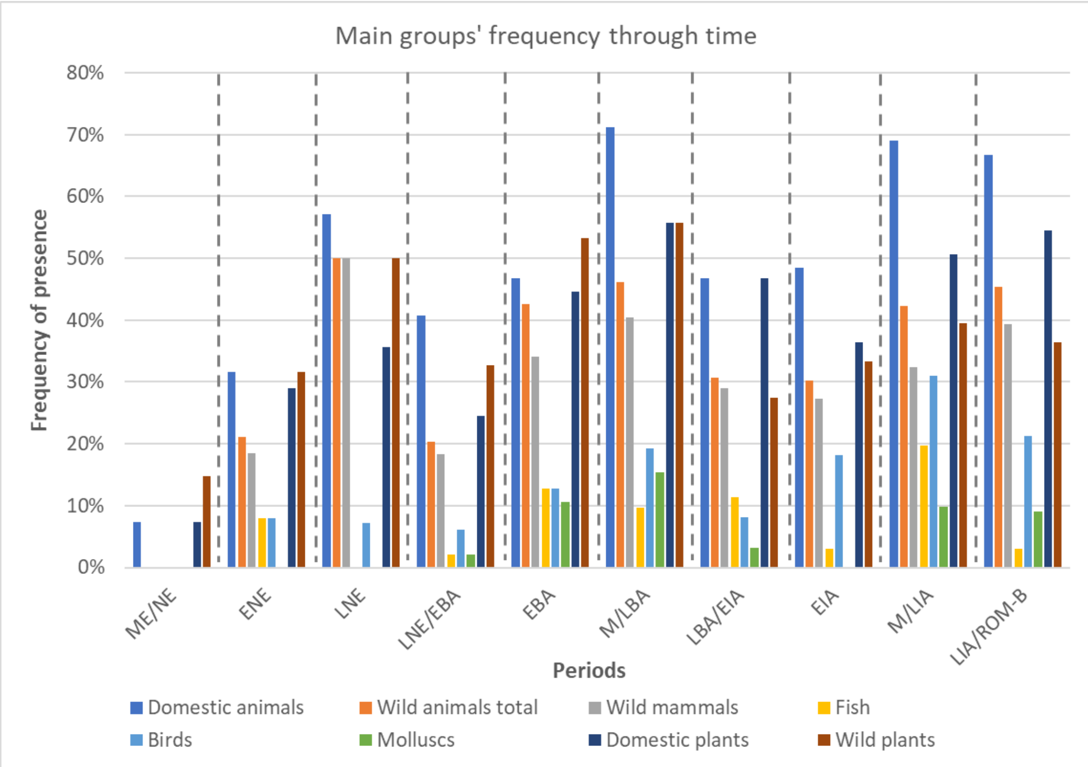


Figure 40: An example of a derived table and graph displaying the frequency of the various data-groups distributed through time. Excel's filter function was used to display the differences in frequencies between the various groups and periods.

At this stage there were too many variables (time, environment and data categories) to display in one two-dimensional table. Thus, three derived tables were made: one displaying all groups through time in wetlands, one displaying all groups through time in drylands and a final one doing the same for the fen edge (Figure 41 presents the fen edge as an example). By putting these next to each other and ensuring that the Y-axis with percentages was of the same height in all three, all groups could now be compared both across time and environment. Once again, the filter function was indispensable to evaluate trends through time for each group and environment, before a comparison of all groups and environments was made. The four main plant and animal groups were considered first, before the wild mammals were further sub-divided, creating a total of seven groups.

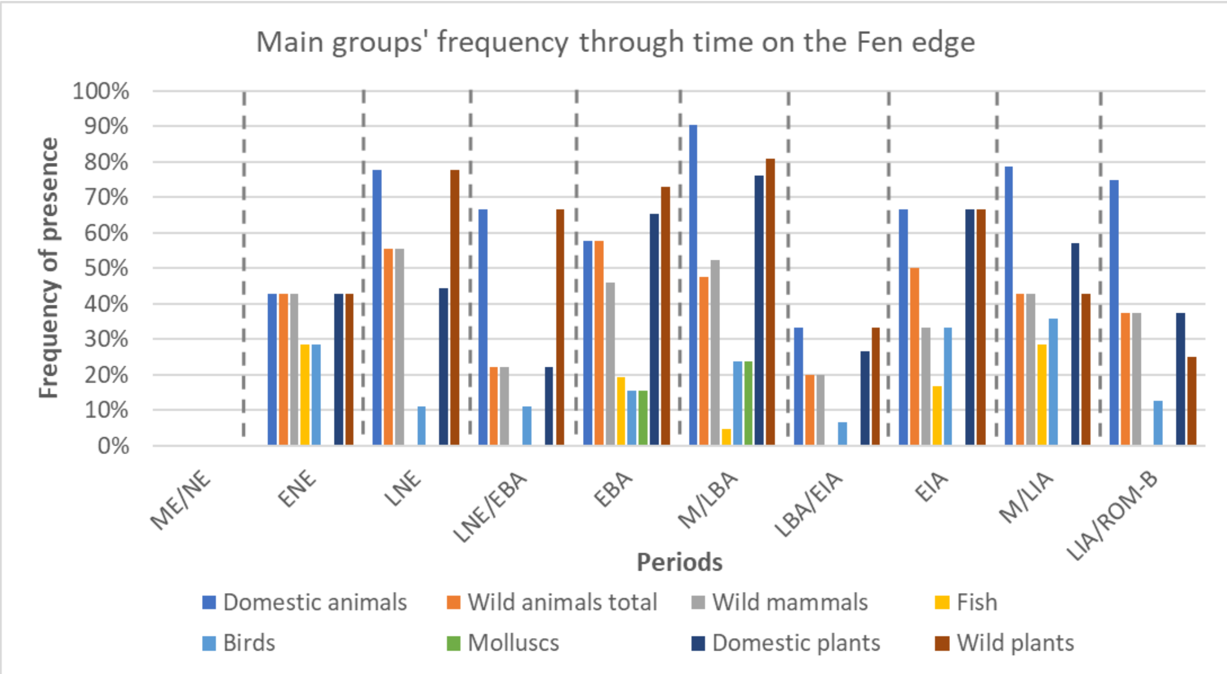


Figure 41: An example of one of the three derived graphs (one for each environment) made to compare data-group frequencies through time and in the three different environments. This Fen edge graph was aligned with similar graphs for the Drylands and the Wetlands by ensuring the Y-axes were of the same height. Given the number of data-groups and periods involved, it was necessary to use Excel's filter function during the analysis.

The approach outlined above was developed during the first round of analysis and became the basis of all further analyses. The Core table, which displays the total number of phases overall, the total number of phases within each of the ten periods, the total number of wet, dry and fen edge phases, and finally the total number of phases in each period with a given environment was the most important outcome of this first exploratory round of analysis.

Yet the general approach, in which data groups are first considered in their totality (regardless of period or environment), then divided up according to period, then according to environment and finally according to both period and environment is also important as it became the standard for all further analysis. Similarly, the description of individual data groups before comparisons between various groups was continued in the next rounds to maintain an overview of all data and to ensure no important patterns were missed.

Beside these more general outcomes in terms of the basic approach, the inclusion of some data groups (albeit at a very coarse, general level), was interesting as it already demonstrated clear differences between the various environments and through time. In the next round of analysis, these patterns were explored further by looking at the various groups in more detail.

3.5.3 Data-analysis round 2: broad species groups

After the data exploration and the development of the methods for data-analysis, the true data-analysis could start. All basic information (the ten periods and three environments) remained the same. However, the main find groups as outlined above were now further subdivided into various sub-groups (cf. data organisation above). This created many more find groups to work with. To maintain a good overview, the animals and plants were analysed separately before they were considered together.

Animals

The five groups of animals considered in the last round were further subdivided into the categories shown in Table 10 (cf. section 3.4.1):

Main group	Sub-group
Domestic animals	N/A
Wild mammals	Woodland mammals Open country/field mammals Wetland mammals
Fish	Saltwater fish Freshwater fish Migrating fish Other fish
Birds	Wetland birds Dryland birds Other birds
Molluscs	Saltwater molluscs Freshwater molluscs Other molluscs

Table 10: The sub-division of the main animal groups for data-analysis round 2. Please see tables 2-6 for the individual species within each sub-group.

Like in the last round of analysis, the occurrence of these groups overall (regardless of period and environment) was first considered to gain an idea of which groups occur most and least frequently. After this, the distribution of the various groups across different environments (regardless of period) was considered to see whether particular groups occurred more or less often in one of the three environments given. Then, the occurrence of the various groups through time (regardless of environment) was considered to see if and how the ubiquity trends changed over time for each group. Finally, the groups were considered both across time and environment.

For each of the above analyses, queries were run in Access to get the total numbers, which were then transferred to the Data tables in the Excel table. Here percentages were calculated for each group in the manner described above. Like in the previous round of analysis, the tables with percentages were then used to create derived tables and graphs which ena bled a description of the trends for the various groups through time, per environment and across time and space combined. Each time, the trends for individual sub-groups were described first, before all groups were compared to each other.

Plants

After the animal groups had been analysed and described, the plant groups were considered. The two plant groups considered in the last round of analysis were sub-divided as shown in Table 11. As the macro remains considered in this research were preserved in charred or waterlogged state, the above groups were each further sub-divided into a charred and waterlogged group, resulting in a total of 12 sub-groups.[30]

Main group	Sub-group
Domestic plants	Cereals
	Pulses
	Other domestic plants (flax and poppy)
Wild plants	Fruits
	Nuts
	Other wild plants (fat hen, wild oat and unidentified tuber)

Table 11: The sub-division of the main plant groups for data-analysis round 2. Please see tables 2-6 for the individual species within each sub-group.

[30] In addition to the charred and waterlogged macro remains, cereal and non-cereal (or other) pollen were also recorded. However, pollen are very mobile and can enter sites from other areas, so they are not a reliable indicator of the intensity of arable agriculture. Moreover, as there were no meaningful patterns in the pollen data they were excluded from analysis.

The analysis of the plant remains followed the same general approach as that of the animals, with overall frequencies, time and environment trends for the various groups considered separately before time and environment were combined. Each time, the six plant groups listed above were first considered in their totality (so including both charred and waterlogged remains). After each individual group had been considered they were all compared. Then the charred and waterlogged groups were considered separately to see how much of the total numbers in the assemblage were preserved in charred or waterlogged state and how waterlogging and charring for the various groups was distributed across environments and time. This gave an important insight into how levels of preservation may affect patterns for the six main plant remains groups. Here too individual groups were considered before they were all compared.

Plants and animals

So far, the animal and plant groups had been considered separately. To gain a more in-depth understanding of past food remains through time and space, the final stage in this round of analysis considered the various animal and plant groups in relation to each other. The general approach was the same again, considering the overall frequencies of the various groups before their ubiquity in various environments and across time, and then finally combining periods and environments. As the trends for the individual groups had already been described and all animal groups and all plant groups had already been compared to each other, the analysis focussed on a comparison of the various plant and animal groups, looking at how their relative frequencies of presence related to each other both within a given period and/or environment and between different periods and environments. No new queries were run, but the various animal and plant tables were combined, and new graphs created in Excel, so the groups could be compared. As the total number of plant and animal groups had become rather large, the totals of each of the individual animal and plant groups were considered before the sub-groups were added. Thus, domestic animal, fish, bird, mollusc and mammal totals were compared with cereal, pulse, other domesticate, fruit, nut and other wild plant totals, before (e.g.) saltwater fish, wetland birds, woodland mammals, freshwater molluscs, charred cereals, waterlogged fruits etc. were compared. The filter function in Excel was used to only display a few periods or groups at a time, making comparison easier.

3.5.4 Data-analysis round 3: individual species

After the second round of data-analysis, in which various sub-groups of animals and plants had been compared, a third and final round considered the various individual animal and plant species within the groups outlined above. The basic information on phase, environment and period totals in the Excel table remained the same, but as a large number of individual animal and plant groups had to be added, each main group from the last round of analysis was given its own separate table in Excel which listed the total numbers and percentages (found in the last round) together with the numbers and percentages for the individual species' groups.

Animals

The sub-groups considered in the last round of analysis were sub-divided into individual species in this round of analysis. Table 2 to Table 7 above list all these species. These individual species were considered under the sub-group that they belong to and in the same way as before. Numbers for each species were gained from queries run in Access and percentages calculated in the manner described above. Derived tables and graphs were made to enable analysis.

The first group to be considered was that of domestic animals. Like before, the overall frequencies for each species was looked at first. Then their occurrence in different environments was analysed. The trends through time were studied next and finally time and environment were combined. In each case, the trends for an individual species was considered first, before all species were compared.

After domestic animals, wild mammal, fish, bird and finally mollusc species were analysed in the same way. Because of the large number of groups at this level and because many species (apart from domestic and woodland mammals) only occur once or twice, it was decided not to compare all individual species from the different sub-groups together (in the same way as the sub-groups had in the last round of analysis), although individual species were considered to each other under each sub-group (e.g. all individual woodland species).

Plants

The individual plant species were grouped and analysed in a very similar way as the animal species, although, like before, they were further sub-divided into charred and waterlogged plant groups. Like the animals, the individual plant species were grouped and analysed under the following headings to maintain an overview:

- Cereals
- Pulses and other domestic plants
- Fruits
- Nuts and other wild plants

For each individual species within these groups, the trends were considered for both the charred and waterlogged remains. Due to time constraints the totals (of charred and waterlogged remains together) for each species could not be considered, but when these totals of charred and waterlogged remains as seen in a graph significantly changed a pattern, they were noted. Generally, charred remains were considered a surer indicator of human activity whilst waterlogged remains provided useful information on the level of preservation.[31] As many of the individual species from the various wild plant sub-groups did not occur more than once or twice, and given the number of plant species recorded, the plant remains were not all compared to each other, although they were compared to each other under each heading (e.g. all individual cereals under 'cereals').

At this most detailed level of analysis the number of data groups included in the analysis was so large that it was difficult to maintain a clear overview of all variables (the various groups, time and space) and compare each group to the others. Moreover, as many of the individual plant and animal species only occurred once or twice, it was difficult and sometimes impossible to see clear patterns in the same way as in data-analysis round 2. However, for those species that were better represented, including most domestic animals, larger wild birds and mammals, cereals and various fruit species, this round of analysis provided a more detailed insight into some of the patterns recognised in round 1 and 2, thus enriching the results.

3.5.5 Assessing preservation, sampling and recovery bias

In chapter 1.2, it was argued that the continuing divide between wetlands and drylands is partly due to the very different nature of these two landscapes and their environments, which tend to have different levels of preservation. The better preservation in wetland areas tends to result in the use of different sampling and recovery methods in wetland sites, which in turn affect the remains recovered. Thus, it was important to assess the extent to which differential preservation, as well as various methods of sampling and recovery might have affected the results. It was beyond the scope of this research to conduct an in-depth

[31] See the analysis of waterlogged and charred remains and the discussion on differential preservation in appendix 4.

study of these biases, but as charred and waterlogged plant remains and the sampling and recovery techniques used were recorded in the database, it was possible to undertake a small-scale pilot study to assess the effects of the above factors on the data collected on sites in the three environments. This analysis, though not the main focus of this research and limited because only based on presence/absence data, provided insight into how biases resulting from preservation, recovery and sampling affected the recovery of both plant and animal remains in different environments. Due to limited space, the pilot study will not be considered at length here, but the methods used to assess these biases and the findings, which have important implications for the results in chapter 4 (cf. section 4.3), are outlined in appendix 4.

3.6 Displaying and evaluating site distributions and results in ArcGIS

The rounds of data-analysis described above were focussed on describing trends for different groups of plants and animals through time and in different environments. As outlined above, this was achieved by using Excel tables and graphs, to which filters were applied to show the trends for groups, periods and/or environments. This worked well for identifying, analysing and discussing trends in the three environments. Yet although space was accounted for by the creation of different graphs for the three main environments, the spatial variable could be visualised a lot better in ArcGIS, where all selected sites as well as Waller's maps modelling the past environment were included (see section 3.4.1). This section will explain how the Access database and ArcGIS were linked through the creation of a Master shapefile which enabled the mapping of site distributions and the results of selected Access queries in ArcGIS. This allowed for the evaluation of site distribution patterns through time and a clearer visualisation of results, which allowed a number of patterns to be explored in more depth.

3.6.1 Access and ArcGIS – creating a master shapefile

As outlined above, the selected sites for this study are stored in a geospatial data format (shapefiles), which allows them to be mapped in ArcGIS. Yet although this provides a useful overview of site distributions through space, the map did not account for the temporal dimension that is integral to the Access database and crucial in both data recording and analysis. Each site on the map was represented once in space, even though it could have multiple phases and various kinds of data for each of these. Thus, to operationalise the data-analysis and visualise its results both in space *and* time, it was necessary to link the relational database (with phase information) to ArcGIS (with spatial information). This was done by creating a 'Master shapefile' in ArcGIS, which held spatial information for each of the sites in the relational database (in the form of an X and Y coordinate) and a field with a unique identifier which also appeared in the Access database. This unique identifier allowed the X/Y coordinates from the shapefiles to be imported into the Access database, where it was added to the Site Details table. The coordinates could now be included in phase specific queries run in Access. By exporting the results of these queries to ArcGIS they could then be displayed on a map.

3.6.2 Base map creation

To evaluate the spatial distribution of sites in different periods in relation to the different environments under consideration, it was necessary to create a series of base maps which show the extent of marine and freshwater peat deposits in the periods under consideration. In section 3.4.1 Waller's maps were introduced. These ten maps show the extent of marine and freshwater fenland deposits in ten subsequent periods (cf. Waller 1994, 65-80) (Table 12). The date ranges of most of these periods, converted into BC-dates, roughly overlap with those used in this research project (Table 12). However, there are no specific maps for the Earlier Neolithic, the Early Iron Age and the Middle/Late Iron Age amongst Waller's maps. Yet the Fens did not start to truly develop until the Early Bronze Age and no wetland sites were recorded in the database for the entire Neolithic period. Thus, Waller's Mesolithic/Early Neolithic map was used for both this period and the Earlier Neolithic period. The Early Iron Age is covered by Waller's map 9, and map no. 10 also covers two periods (Middle/Late Iron Age and Late Iron Age/Romano-British). This should not be too

Table 12: An overview of Waller's maps (nos. 2-11) and the periods they cover in BP and BC. The corresponding period in this thesis is listed in the last column. Map 1, which shows the pre-Flandrian surface of the Fenland Basin was not included in this table.

Waller Map no.	Periods BP	Periods BC/AD	Corresponding period in this thesis
2	Up to 6400	Up to 4450 BC	Mesolithic
3	6400-5600	4450-3650 BC	Mesolithic/Early Neolithic
4	5600-4600	3650-2650 BC	Later Neolithic
5	4600-4100	2650-2150 BC	Late Neolithic/Early Bronze
6	4100-3700	2150-1750 BC	Earlier Bronze Age
7	3700-3300	1750-1350 BC	Middle Bronze Age
8	3300-2900	1350-950 BC	Middle/Late Bronze Age
9	2900-2500	950-550 BC	Late Bronze Age/Early Iron Age & Earlier Iron Age
10	2500-1800	550 BC -150 AD	Middle/late Iron Age & Romano-British
11	Post-1800	150 AD onwards	Historic

problematic, given the fact that in these later periods the fen edge did not move a great deal (thought the extent of freshwater vs marine deposits did). As the Middle Bronze Age in this study is part of the Middle/Late Bronze Age, Waller's map 7 was not used. Thus, seven of Waller's maps were traced in ArcGIS to create seven base maps of the study area, covering the period under consideration (e.g. Figure 42). As explained before, these maps are rather static and do not account for subtle (local) changes in the extent of the fen edge, but they are suitable for displaying site distributions and the results of the analysis in particular periods.

By linking the two databases and using the base maps it became possible to map the spatial distribution of all sites and in a given period and in relation to the fen edge at the time. [32] It also allowed the results of selected queries including particular data groups to be displayed in time and in space, providing a quick overview of the number of wetland, dryland and fen edge sites on which these particular groups were present (e.g. Figure 43). By using the selection tool in ArcGIS, sites in different environments or periods could be displayed. However, it was unfortunately not possible to display the spatial distribution of different groups in the same map, as, when these groups are both found on the same site, the points for these overlapped. Thus, when comparisons between groups were made, different maps had to be created and compared. Similarly, when different periods were compared, different maps had to be created. Not only because site points would overlap, but also because the extent of the fens would have changed from one period to the next.

3.6.3 Evaluating site distributions and spatial patterns

The mapping of wetland, dryland and fen edge sites in each of the ten periods under consideration provided a quick overview of the number of sites in each environment and the way they were distributed. For each period, all sites were first mapped in relation to the fen edge at the time, providing a coarse indication of the level of activity in the different environments at the time and the number of sites in each of the three environments. By then mapping them in relation to the underlying geology (bedrock and superficial), it became possible to see which settlement locations were favoured in any given period. It allowed different dryland sites to be identified (e.g. dryland sites on gravel, chalk or clay) and (using Waller's original maps) it also gave insight into the type of wetland sites in use (e.g. in

[32] It is important to note that the base maps only display the fen edge at the time, not the extent of freshwater and marine sedimentation, like Waller's (1994) original maps (cf. Figure 34). Thus, Waller's original maps were referred to when assessing the type of wetland environment in which selected wetland sites were located in the ten periods.

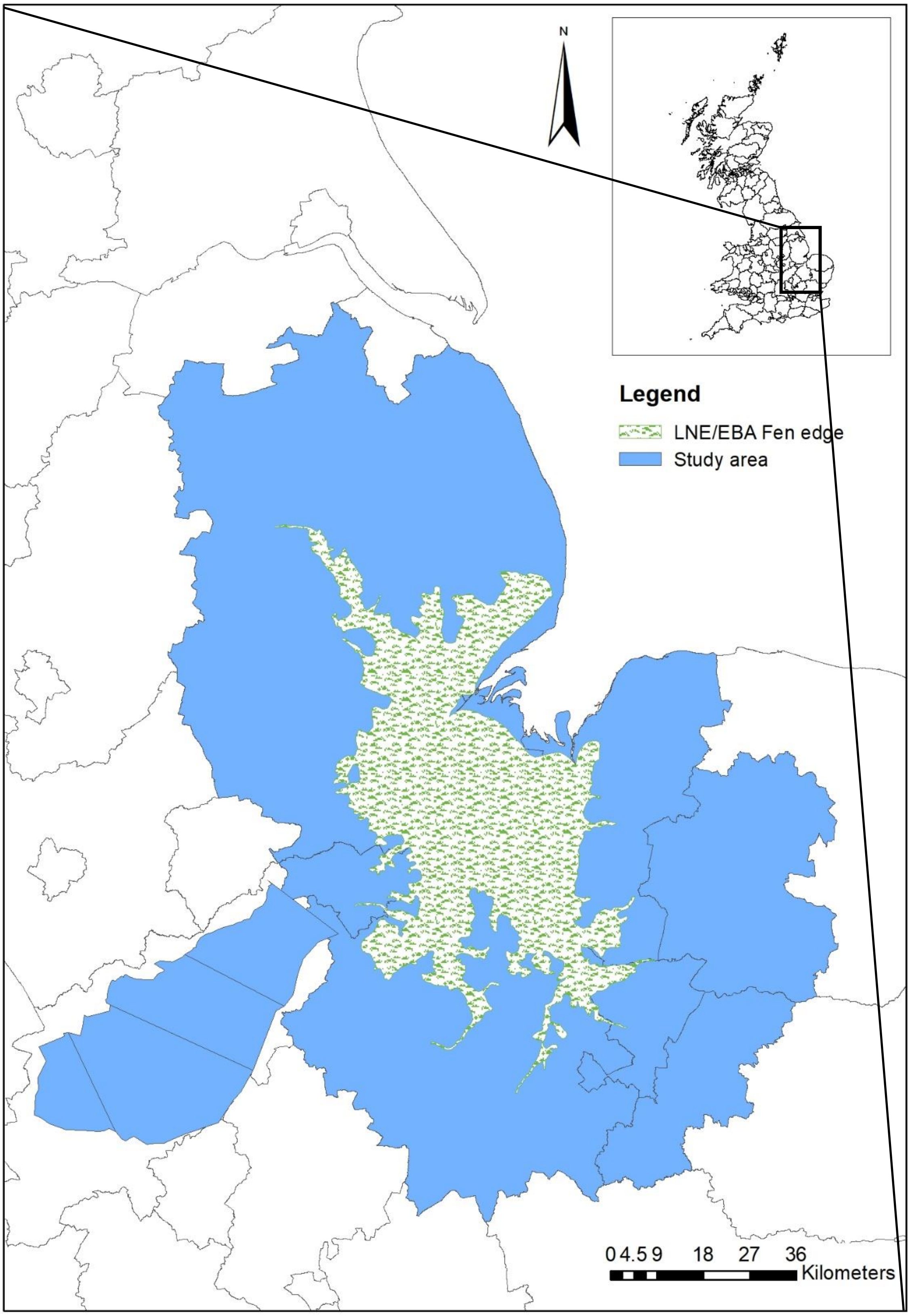


Figure 42: An example of one of the maps traced from Waller's originals, showing the extent of the fen edge in the Later Neolithic/Early Bronze Age. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

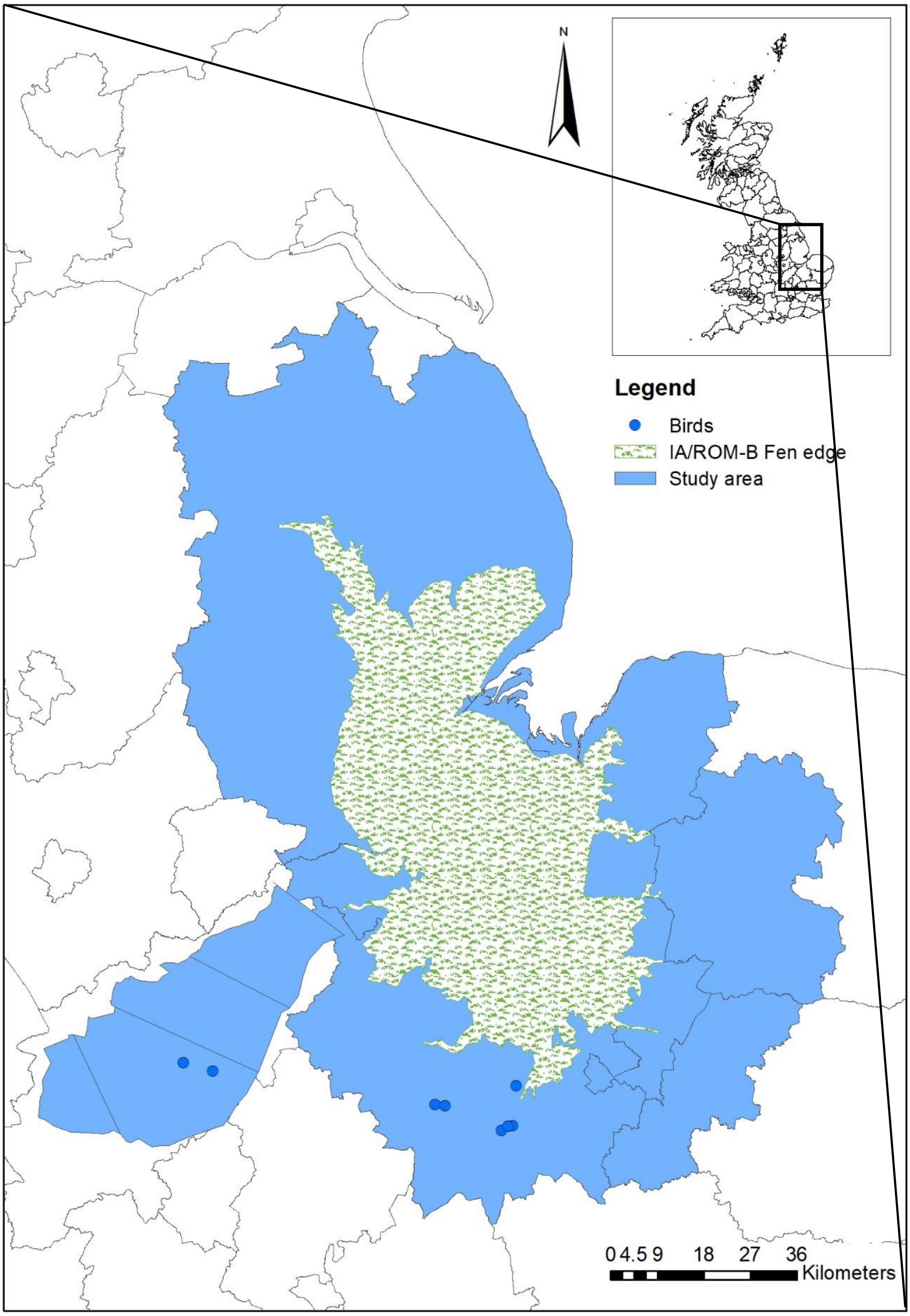


Figure 43: Map showing the distribution of birds on dryland sites in the Middle/Late Iron Age. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

freshwater, fen conditions or saltmarshes). Comparing the ten distribution maps (one for each main period) demonstrated how different kinds of landscape came into use of over time. Besides providing insight into past activity, these period distribution maps also allowed for site distribution biases to be assessed (e.g. the presence of site clusters in wetlands or on the fen edge), so these could be considered during data analysis.

In addition to site distribution maps for each of the ten periods under consideration, maps were created for selected query results. This not only helped visualising the results of the analysis, but also allowed for the further analysis of several patterns noted in analysis round 1-3. For instance, it was noted that a significant number of dryland sites seemed to contain typical wetland species (e.g. molluscs, wetland birds or mammals). This is of interest, particularly if the site is located inland, away from the sea or Fens where these species originate. However, in the Access database, the environmental indicator just states 'dryland' and the given site could be situated relatively close to the Fens, or further away. By mapping the typical wetland groups, it was possible to see the actual location of the sites with wetland species and evaluate these results in more depth, thus enriching the analysis.

3.7 Summary

This chapter has outlined the data and methods used in this research. To compare food remains through time and space (in three different environments), 145 later prehistoric sites (c. 4000 BC – 100 AD) in and around the former East Anglian Fens were selected from HER databases in five counties and added to a purpose-built relational Microsoft Access database. The selected sites contain a total of 440 phases dating between the Mesolithic/Early Neolithic and the Late Iron Age/Romano-British period, within which the presence and absence of individual domestic and wild plant and animal species was recorded.

Once data-collection was complete, the data was reorganised and keyed to enable targeted querying and analysis. The 440 phases were divided across ten periods and the main environment at the time was established for each individual phase, with the options being: wetlands, drylands and fen edge. The individual animal and plant species recorded were grouped into larger data-groups and sub-groups to facilitate easy analysis.

Data-analysis proceeded systematically in three rounds, starting with the larger data-groups, before addressing sub-groups and individual species. Each time, the frequency of presence of certain plant and animal remains were first compared between each of the three environments, then over the ten periods, and finally both through time and space (in the three environments and ten periods). Results were visualised in Excel graphs and in

ArcGIS, where site distribution maps were created, and selected results visualised. Thus, a good insight was gained into how food remains within these environments differ and how the various environments under consideration were used through time. The next chapter will outline the results of this large-scale comparative analysis, demonstrating the clear differences in food remains, subsistence practice and landscape use between the three environments and across time.

Chapter 4. Food remains through time and space – Subsistence practices in and around the former East Anglian Fens between 4000 BC – 100 AD

4.1 Introduction

The aim of this research is to contextualise wetland sites and communities in the former Fens in relation to nearby dryland(er)s by comparing human-environment interaction and its social outcomes through time and space (cf. chapters 1 and 2). To study human-environment interaction, food remains from 145 selected sites in and around the former Fens were recorded in a relational database which was linked to ArcGIS (cf. chapter 3). By analysing the presence and absence of numerous species of wild and domestic plant and animal in ten different periods and three environments in several rounds of analysis, and mapping site and find group distributions in ArcGIS, it was possible to compare food remains in the former wet Fens, on the fen edge and further inland from the Neolithic to the Iron Age, giving a detailed insight into past subsistence practices.

This chapter will outline the results of this large-scale, comparative analysis of food remains and subsistence practices, which provide insights into human-environment interaction in and around the Fens. After a brief note on the effect of various biases on the identified patterns (section 4.2), the results will be presented in a chronological manner, under three main period headings: the Neolithic, Bronze Age and Iron Age (section 4.3). The last section (4.4) summarises the main trends.

4.2 A brief note on biases

This thesis seeks to understand past human behaviour by comparing food remains in different environments through time. Yet several factors other than human behaviour are likely to have affected the presence or absence of the various plant and animal groups, including issues caused by site distribution patterns and the methods of data collection and organisation used in this research. Already touched upon in chapters 2 and 3, several points need to be noted. Firstly, the site selection may be biased towards well-preserved and well-researched fen edge sites, and sites often cluster close together. By including distribution maps displaying the sites in all three environments for each of the ten periods under consideration in the results section below, the effects of these biased site distributions could be assessed and controlled. Secondly, some of the plant and animal remains recorded may not be foodstuffs. Most however, would have been, and those that are not do provide insight into the way people (may have) used different environments. Thirdly, using presence/absence data means that results cannot be discussed quantitatively (cf. sections 3.3.2. and 4.3.1 below). Yet it does allow for all data to be standardised, so different sites may be compared (cf. 3.3.2). Moreover, the large number of sites and phases considered in this research ensures that any skewing is kept to a minimum. Finally, the data-organisation, which divides all phases up into ten periods and three environments, results in frequencies that will appear too high in those periods and environments where the total phase numbers, used to calculate the frequencies of presence for various data-groups, is low (cf. 3.5.1). This will be noted in the results section below each time this happened.

Differential preservation and the use of various sampling and recovery strategies in the three environments may also result in biases in the data patterns. These are considered in more depth in appendix 4, which presents the results of a brief pilot study assessing the effects of differential preservation (waterlogged vs charred plant remains) and various sampling techniques. This study demonstrates that the use of various sampling and recovery techniques does not seem to have a great impact, but that differential preservation of plant remains in wetlands and the fen edge on the one hand and drylands on the other is an issue. However, by considering charred assemblages separately from waterlogged plant remains, 'real' variations between the assemblages in each of the three environments could be detected. The effects of differential preservation and other biases will be considered throughout the discussion of the results below.

4.3 Food remains through time and space

This section presents the results of the analysis of food remains and past landscape use through time and space under three main headings: Neolithic, Bronze Age and Iron Age. For each of these three main periods the trends for the four main data groups (wild and domestic plants and animals) considered in analysis round 1 are first described. This provides a useful overview of the main trends in each period. These patterns are then explored in more detail by presenting the results from analysis rounds 2 and 3, in which the four main data-groups are further sub-divided into sub-groups and individual species (cf. 4.4.1).[33]

To enable trends through time to be evaluated, the results will be discussed under ten headings corresponding to the ten periods under consideration. Each of these ten period

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[33] See section 4.4.1 for an overview of the individual species contained within the main data-groups. Although the consideration of individual species in analysis round 3 was valuable for the species that occur relatively frequently, the results for other species were less informative as they only occur once or twice. Hence, the outline below will mostly focus on the animal and plant sub-groups considered in round 2, adding details for individual species when this is of interest.

sub-sections will start with a brief discussion of the site distribution patterns in that period, considering the location of sites in relation to the fen edge at the time and the underlying bedrock and superficial geology. This allows for the identification of favoured settlement locations and shows the use of different wetland and dryland landscapes as well as biases in site distributions which need to be taken into account. Then, the data-trends for both plants and animals in each of the three environments will be described, finishing with a brief summary of the main trends in each period. Data reliability will be discussed throughout and where necessary distribution maps for various data-groups will be added to the graphs displaying the results.

It will become clear that the developing Fens started to be exploited in the Neolithic and that interaction with this environment seems to have increased throughout the Bronze Age. In this period, from the Earlier Bronze Age onwards, the fen edge seems to be the main focus of activity, with drylands apparently used more transiently. In the Late Bronze Age however, fen edge activity seems to decline, just as both wetlands and drylands seem to see an increase in activity. In the Early Iron Age both the fen edge and wetlands see little activity, the drylands apparently being the focus, but by the Middle/Late Iron Age the Fens and fen edge are clearly intensively exploited again, whilst activity in drylands continues uninterrupted from previous periods.

4.3.1 Reading the results graphs

Before outlining the results, it is necessary to briefly explain what is displayed in the graphs used throughout this chapter.

Periods and percentages – The X and Y-axes

Most graphs are bar charts of the kind displayed in Figure 44. Each of the three graphs in this figure represents one of the three environments under consideration, allowing the three to be compared. Each of the individual environmental graphs displays how frequently various data-groups (each in a different colour) occur within a given period (displayed on the X-axis). Two, three or (like in Figure 44) four periods are represented together, so trends through time may be compared. The transitional periods like the Neolithic/Early Bronze Age or the Late Bronze Age/Early Iron Age overlap with the periods before and after them, but it was decided to consider them as separate periods as they form a useful means of looking at changes between main periods. As for the frequencies displayed in percentages on the Y-axis, it is important to note that do not represent absolute frequencies, but the percentage of all phases in a particular period containing particular data-groups, or

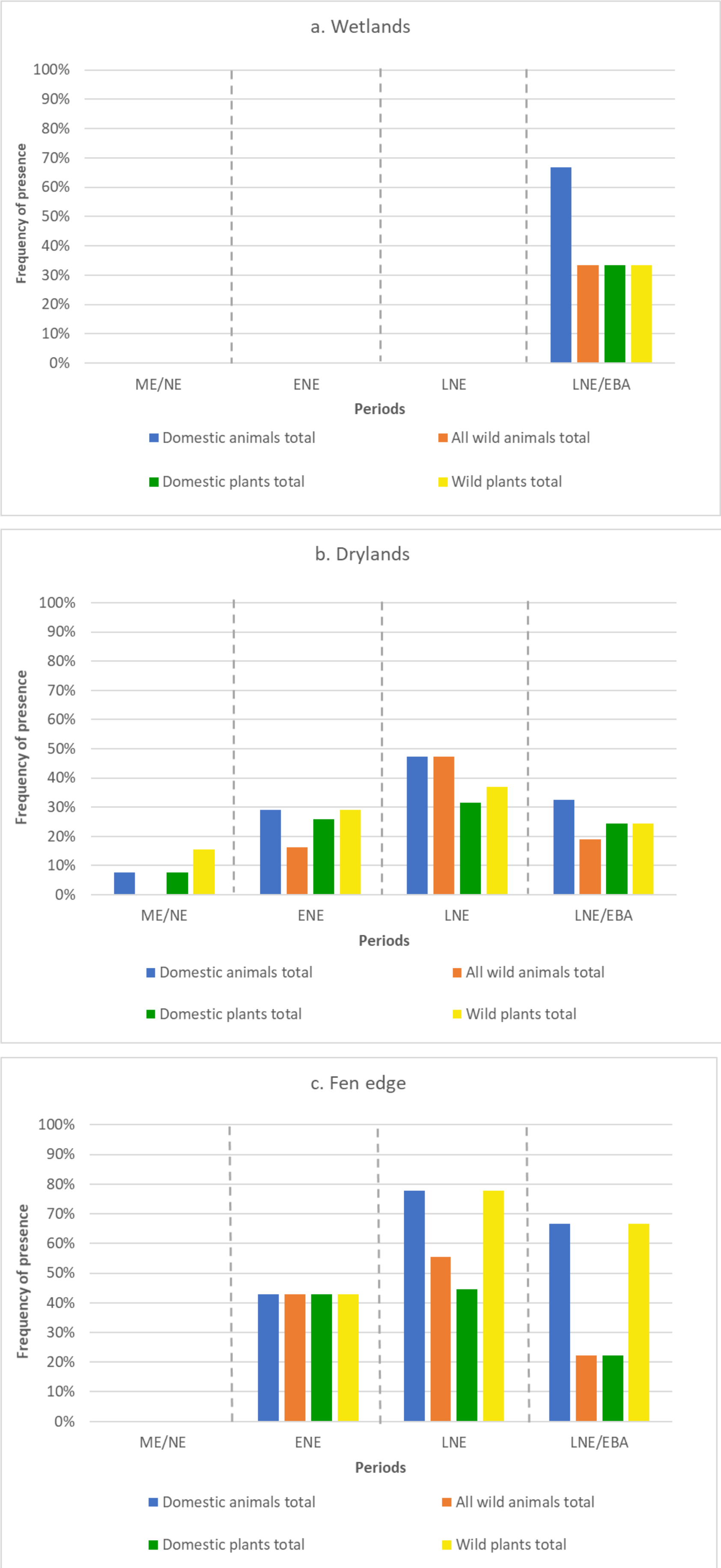


Figure 44: The frequency of presence of the four main data-groups throughout the Neolithic (Mesolithic/Early Neolithic to Late Neolithic/Early Bronze Age). There are no wetland phases until the Late Neolithic/Early Bronze Age and the only fen edge phase in the Mesolithic/Early Neolithic only contained flint). All four groups occurred in three out of the seven Earlier Neolithic fen edge sites, resulting in the same frequency percentage for all groups.

their frequency of presence. The way in which these percentages were calculated will be briefly described below.

In chapter 3.4 and 3.5 the methods for data organisation and analysis were outlined. The 440 phases which contain the presence/absence data were divided across three environments and ten different periods under consideration. As the three environments and ten periods all have a different number of total phases associated with them, it was necessary to standardise the data. This was achieved by calculating the percentages of all phases in a particular environment and period in which a given data category is present. For instance, there are 19 Later Neolithic dryland phases in total, and nine of these contain domestic animals. This means that $\left(\frac{9}{19}\right) \times 100 =$ c. 47% of all Later Neolithic dryland phases had domestic animals in them (cf. Figure 44.b). There are only nine Later Neolithic fen edge phases, seven of which have domestic animals. Thus, on the later Neolithic fen edge the frequency of domestic animals is $\left(\frac{7}{9}\right) \times 100 =$ c. 78% (cf. Figure 44.c). As there were no Later Neolithic wetland phases, the percentage of domesticates here is 0.

Some caveats – Low total phase numbers and ubiquity of presence vs absolute frequencies

The percentages for all data groups were calculated in the way described above. Although this allowed different periods to be compared on a more equal basis, it should be noted that in some instances, where there was a very low number of phases in total, this led to percentages that were too high. There are only three later Neolithic/Early Bronze Age wetland phases for instance, two of which have domestic animals, which results in a percentage of $\left(\frac{2}{3}\right) \times 100 =$ c. 67% (Figure 44 a). This is far higher than the c. 32% displayed for drylands of the same date (Figure 44.b). The problematic periods and phases were highlighted in Table 9 in chapter 3 and whenever a low total phase number resulted in disproportionally high percentages this has been noted in the discussion below.

It is important to keep in mind that the percentages in these graphs do not display the absolute frequency of particular data groups, but the ubiquity of their presence. This is the result of working with presence/absence data, which only record whether particular species are present on a site and not how ubiquitous they are in relation to each other (cf. section 3.3.2). Thus, the frequencies discussed below and presented in the graphs only demonstrate how often particular groups are present on the selected sites in particular periods, not how frequent they are overall. In the Later Neolithic drylands for instance, wild animals are present in as many phases as domestic animals (cf. Figure 44), but this does not mean that wild animals occur as frequently as domestic animals on any given individual Later Neolithic site. On the contrary, it is likely that domestic animal bones are more frequent here (e.g. 500 cattle bones might be found and only one red deer bone, but both result in a tick in the database). Thus, whilst wild animal remains were found on the same number of sites as domestic animals in this period, they are not as frequent as domesticates in absolute terms. Still, the fact that so many Later Neolithic sites apparently seem to contain wild animal remains contrasts with the previous and subsequent period, when domesticates are clearly found on more sites. Wild animals are therefore relatively more frequent in the Later Neolithic than before or after and this is a real pattern, allowing us to compare food remains through time and in space.

Displaying graphs

Given the large amount of data, including many groups and sub-groups distributed across three environments and ten periods, many graphs were needed to display the results. It would be impractical to display all of these in the text below, so only the summary graphs, which contain the main data-groups from analysis rounds 1 and 2, have been included here. The other graphs, which display the results for individual species analysed in round 3, have been moved to appendix 5, where they appear in the correct order under the same period headings used below. To avoid confusion, figures displayed in this chapter are numbered in the normal way (e.g. Figure 44, 45 etc.), whereas those in the appendix are numbered with Roman numerals (e.g. Fig. xxviii etc.). Most graphs (from the Earlier Neolithic onwards) present the results for two periods, so changes through time can be followed.

4.3.2 Neolithic

Figure 44 shows the four main data-groups considered in this research in the three environments in the Neolithic. There are no wetland sites in the Mesolithic/Early Neolithic and only one fen edge one, which means that only drylands can really be considered for this period. Wild plants are present most frequently, but wild animals are lacking, which is somewhat surprising, especially as domesticates are present.

The Earlier Neolithic drylands are richer in all four groups and domestic animals are now present as frequently as wild plants. Domestic plants are frequently present too, and wild animals occur slightly less often. On the fen edge all groups are present equally frequently in this period, yet as there are only seven fen edge phases in total, these frequencies are not particularly informative. Wetland sites still do not occur. In the Later Neolithic drylands, the frequency for each group has increased further and domestic animals are still present most frequently. However, wild animals are present as frequently in this period, a surprising pattern which will be considered in more depth below. On the nine fen edge sites in this period, domestic animals and wild plants are present most frequently. There are still no visible wetland sites.

In the Late Neolithic/Early Bronze Age the first true wetland sites appear. All main groups are present here, but although domestic animals seem to be present most frequently, there are only three sites, which results in disproportionally high frequencies in wetlands. In drylands, frequencies for all groups clearly decline and domestic animals are present most often again. On the nine fen edge sites too, all groups decline, but wild animals and domestic plants more so than domestic animals and wild plants, perhaps suggesting that the focus on domestic animals and wild plants already seen in the previous period became stronger.

Given the absence of wetland phases throughout most of the Neolithic and the generally low phase numbers for the fen edge, it is difficult to compare trends in the two environments that are represented directly. However, the relative frequencies within each environment can be compared, providing insights into the differences between drylands and the fen edge. There seem to be clear differences between drylands and the fen edge sites, which will now be considered in more depth on a period by period basis by introducing the different sub-groups of plants and animals and individual species as considered in analysis rounds 2 and 3. From the Earlier Neolithic onwards graphs will display two periods at a time, to compare trends from one period to the next.

Mesolithic/Early Neolithic (c. 10.000-3000 BC)

Figure 45 displays all 26 Mesolithic/Early Neolithic sites. The majority of these sites are located in drylands of Lincolnshire, Peterborough and Cambridgeshire, with only one site located on the fen edge and no true wetland sites. Although the distribution is not very even, there are no major clusters. Some of the Cambridgeshire sites are located on slightly higher chalk geologies, but most sites in this period are situated in lower lying landscapes on riverine terrace geologies that overlie sandstone (Fig. xxviii). The period covered is very long and the number of finds generally low. Yet it provides a good starting point for the rest of the discussion, which is why the results for the Mesolithic/Neolithic are briefly outlined below.

In the Mesolithic/Early Neolithic only the drylands have data groups present as there are no wetland sites and the one fen edge site recorded for this period does not contain relevant data. Figure 46 shows the main plant and animal groups. The only domestic animal species identified for this period are cattle and pig. There are no wild animals, which is somewhat

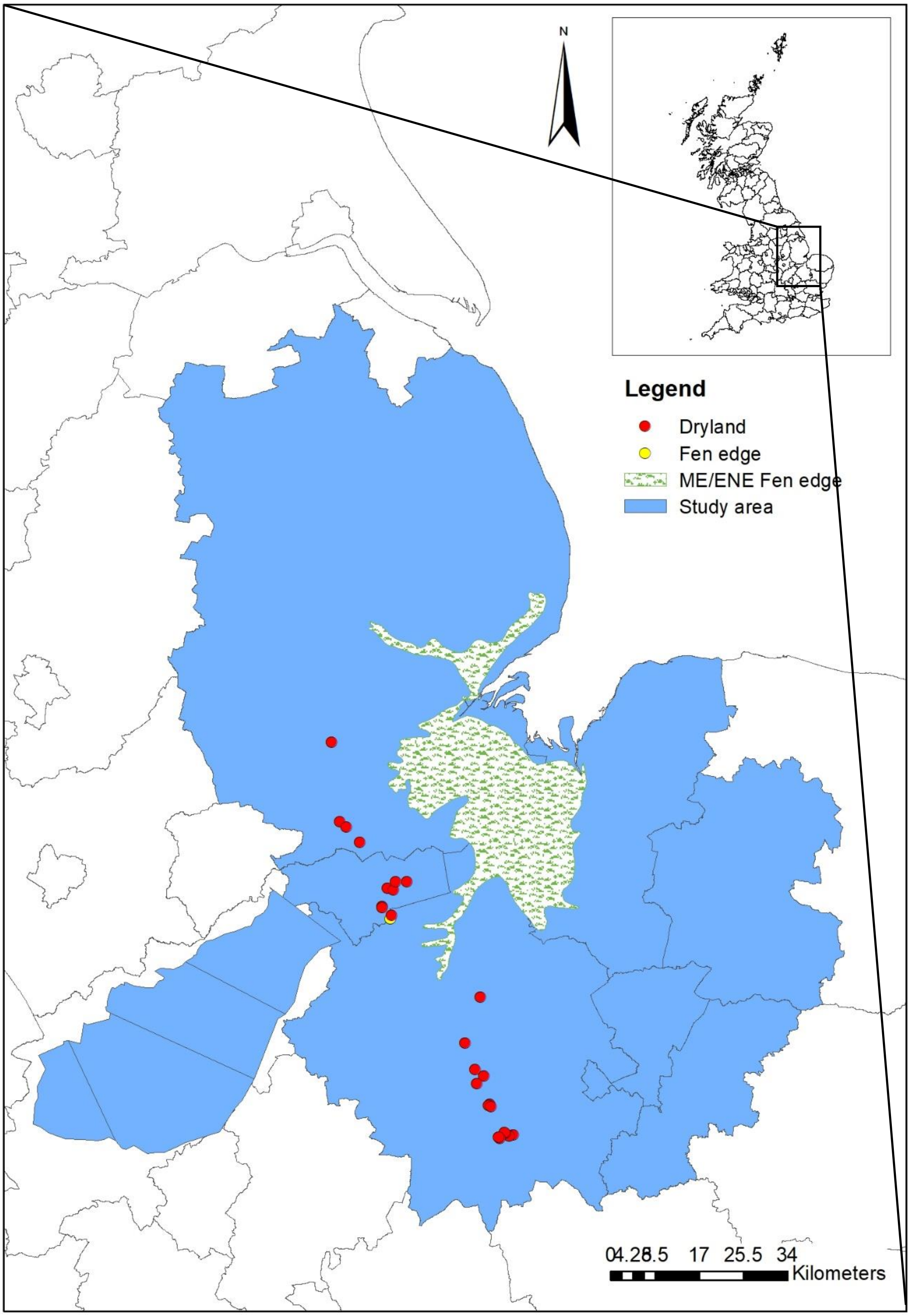


Figure 45: The Mesolithic/Early Neolithic site distribution in relation to the fen edge at this time. There are no true fen edge sites as the Fenland Basin was essentially dry still (the one fen edge site here was located in a low-lying damp river valley, hence its 'intermediate' status). Any wetland/fen edge sites in the deeper part of the Basin are now covered by thick layers of later sediments. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materi-als © NERC (2018).

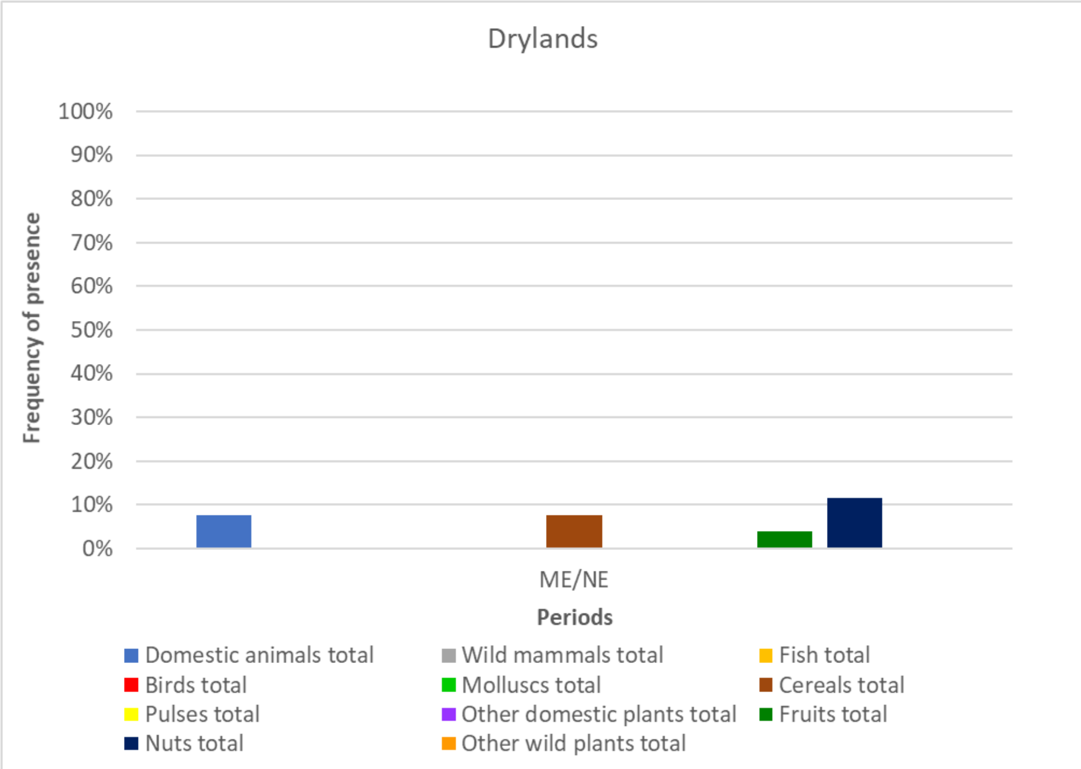


Figure 46: The frequency of presence of the main plant and animal groups in the Mesolithic/Early Neolithic.

surprising as the bones of larger species like red deer should preserve as well as those of domesticates and better than more fragile wild plant remains, which are present.

The plant sub-groups shown in Figure 47 are present at very low frequencies (at less than 10%) in the Mesolithic/Early Neolithic. Nuts (mostly charred, but some waterlogged) are present slightly more frequently, followed by (charred) cereals (only wheat was identified in this period) and a negligible amount of (waterlogged) fruit. The high number of nuts (all hazel in this period) may reflect differential preservation, as hard nut shells are likely to preserve better than more fragile cereals. Yet as cereals are present more frequently than nuts in later periods, high nut counts suggest they were an important food source in this period. This is unsurprising as the Mesolithic/Early Neolithic period spans the introduction of agriculture and the transition of a hunting-gathering lifeway to farming.

In summary, the Mesolithic/Early Neolithic period is too long and the remains are too few to say much with certainty. Unsurprisingly, the groups that are present generally survive well, suggesting that the overall low frequencies of finds in this period are affected by issues of preservation. However, the lack of finds on sites of this period is also likely to reflect the transient nature of Mesolithic/Early Neolithic activity, with most sites dated to this period only containing a scatter of flints and no features like pits in which plant and animal

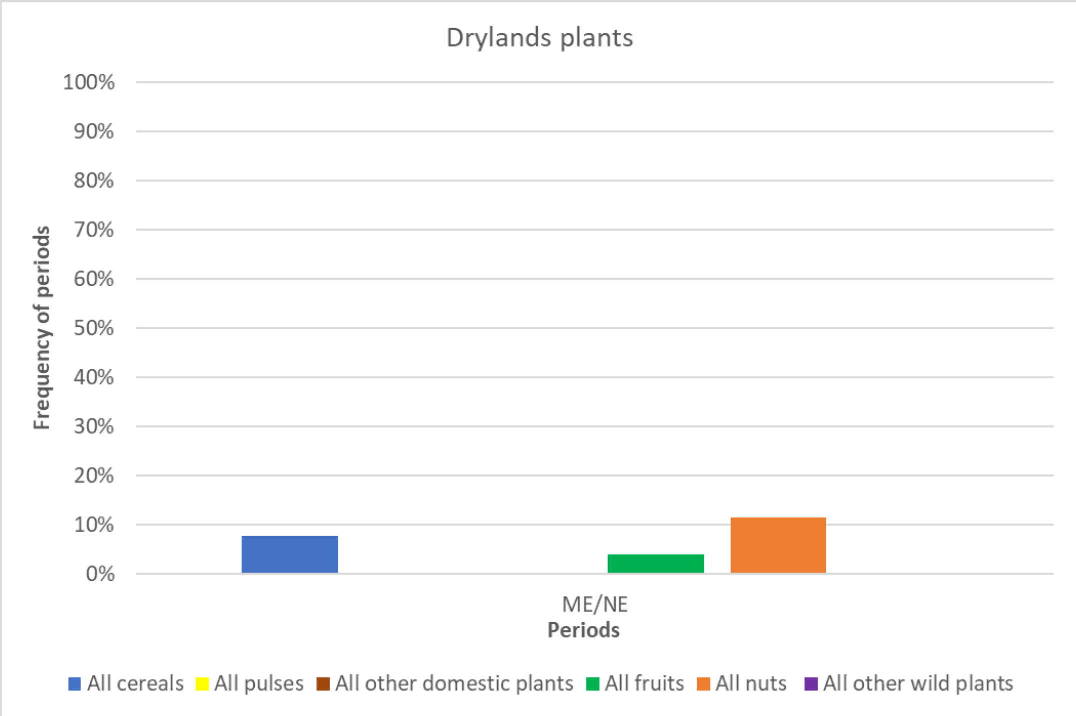


Figure 47: The frequency of presence of the main plant groups in the Mesolithic/Early Neolithic.

remains might be preserved. Almost all sites in this period are dryland ones. This is understandable, because although the low-lying Fenland basin was getting wetter, it was essentially still a dryland landscape crossed by major rivers (cf. Knight and Brudenell in prep). Nonetheless, there may have been fen edge and even true wetland sites in this period, but these early sites are completely obscured from our view, as they are now deeply buried by later fen deposits. It is therefore not possible to evaluate how they may have related to the dryland sites we have for this period.

Earlier Neolithic (c. 4000-3000 BC)

Figure 48 displays all 38 Earlier Neolithic sites or phases. They are more widely spread than in the previous period and located in Lincolnshire, Peterborough, Cambridgeshire, Norfolk and Suffolk. Like before, the majority of these sites are dryland ones, but there are seven fen edge sites. Although they are called 'fen edge' sites, they are not actually located on the fen edge at that time. Most of them (e.g. Over, Etton and Haddenham) are located in the river floodplains of major rivers where the landscape could be seasonally wet and people had access to typical wetland resources like fish and waterfowl. There may have been true fen edge and wetland sites in this period as well, but they are now covered by thick layers of later Fenland deposits. Given the low total phase number for the 'riverside sites', frequencies are much higher here than in drylands, but we can still compare the relative frequencies in both environments. The underlying geologies for the 'fen edge' sites are mostly

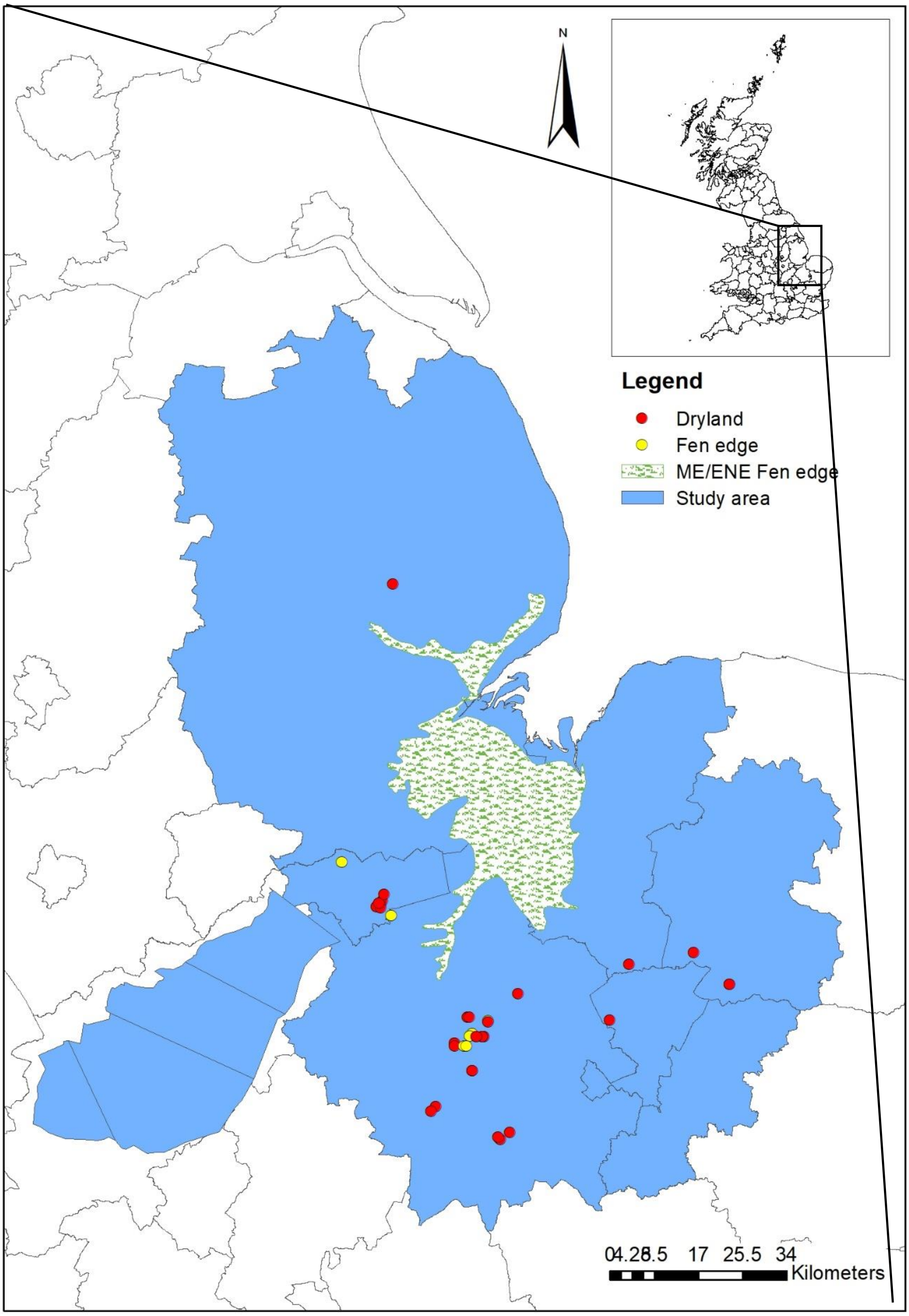


Figure 48: The Earlier Neolithic site distribution in relation to the fen edge at this time. The 'fen edge' sites in this period do not occur on the fen edge but are actually located in low-lying river valleys with a marshy character. Any sites located at the actual fen edge (or indeed the wetlands) are now hidden by later deposits. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

river sand and gravels and many of the dryland sites are also located on these lower-lying geologies. However, the Cambourne sites are located on slightly higher till soils (Fig. xxix). Bedrock geologies include mud, silt and sandstone and chalk (Fig. xxix). Together the Earlier Neolithic sites should provide a good image of subsistence practices and land use in the period.

Figure 49 displays the plant and animal groups in the Mesolithic/Early Neolithic and Earlier Neolithic period in drylands. The domestic animal assemblage has high frequencies of cattle, but ovicaprid (now second) and dog now appear as well (Fig. xxx). Unsurprisingly, woodland mammals (mostly red deer) make up the majority of the wild animals in drylands (Fig. xxxi), but two sites have bird and fish remains as well. Interestingly, both these sites are lo-

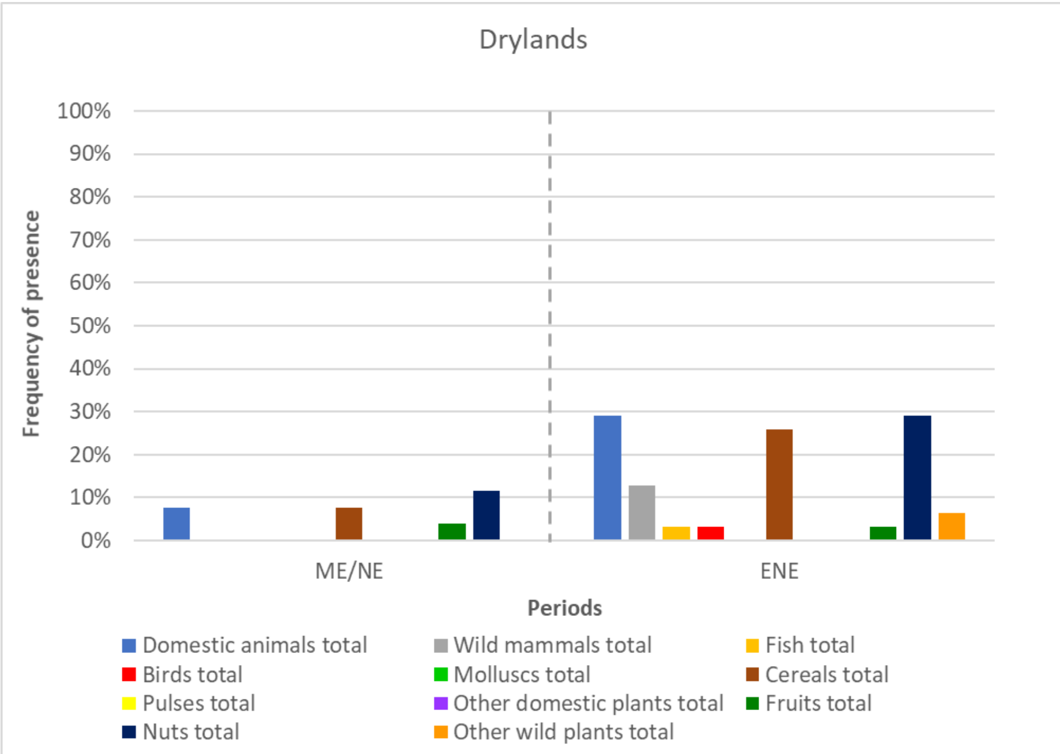


Figure 49: The frequency of presence of the main plant and animal groups in the Mesolithic/Early Neolithic and Earlier Neolithic in drylands, demonstrating an increase in evidence in this period.

cated well inland, at a considerable distance from the contemporary fen edge Figure 50). The species represented are unidentified fish and bird and eel, which is a migrating fish. The unidentified remains may have been natural deaths, but eels could have been caught in rivers in dryland locations. Alternatively, these and other wetland species may have been brought from the contemporary fen or riverside sites to these inland locations.

Nuts and cereals have both increased significantly in drylands. Although the nuts are still only hazel, the variety of cereals (all charred) has increased (Fig. xxxii). Fruit (crab apple)

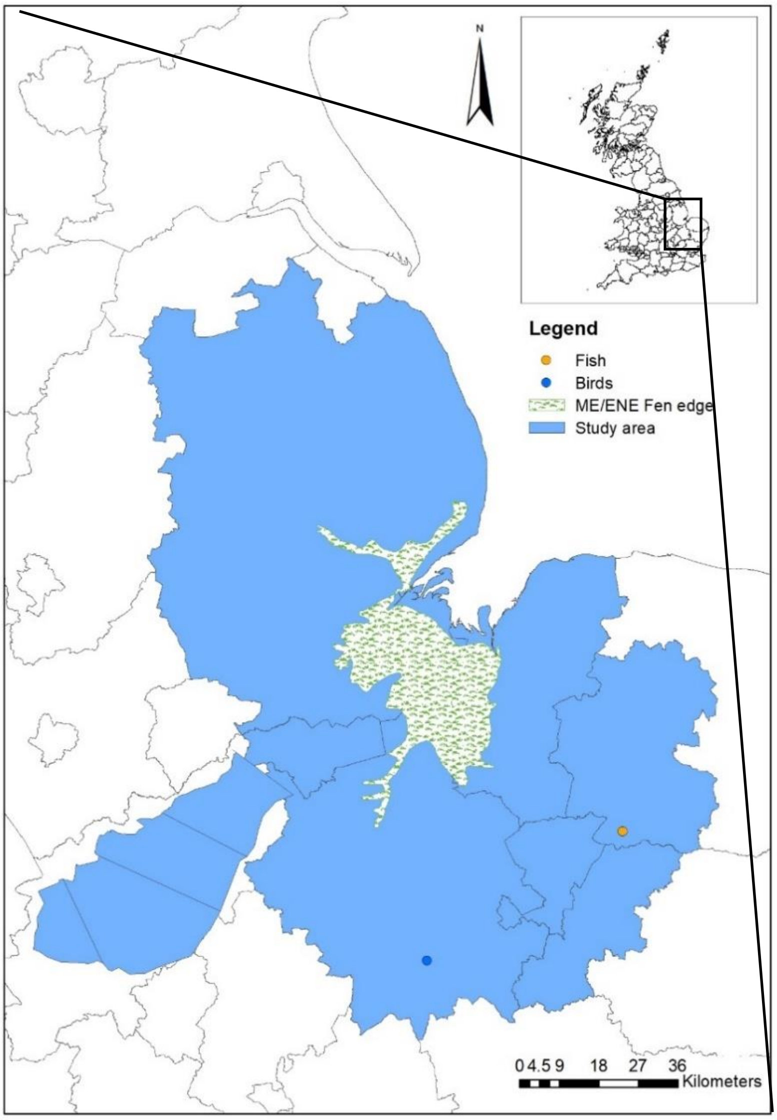


Figure 50: Earlier Neolithic fish and bird distribution. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

and other wild plant (fat hen) frequencies are negligibly low (so not displayed), but their occurrence in charred state suggests they were exploited by people.

On the riverside sites, the domestic animal assemblage seems more balanced than in drylands, with equal numbers of cattle, pigs and ovicaprids (including both sheep and goat) but given low total phase numbers this may not be a true pattern (Fig. xxxiii). Like in drylands, woodland mammals are present most frequently in the wild mammal assemblage and similar species are represented (Fig. xxxiv). However, here they are present as frequently as the domesticates (Figure 51). Unsurprisingly, fish and birds are present more frequently in relation to the other groups on the riverside sites than in drylands (Figure 49 and Figure 51). The fish remains are all pike and the birds are mostly ducks, but also swan and unidentified remains. It is likely that these wild resources, which were easily accessible, were exploited more regularly in 'intermediate' environments with a wetter character than in the contemporary drylands.

Like in drylands, cereals and nuts are present frequently in the plant assemblages in riverside sites, but fruits are present as frequently (Figure 51). Unlike in drylands a great variety is present, ranging from blackberry to sloe and elder (cf. Fig. xxxv). Most of these are waterlogged and so are most nuts, demonstrating that preservation is better on riverside sites at this time. Like in drylands, cereals are the only domestic plant group present, but the variety of cereals is much smaller in riverside sites; only wheat and spelt were identified (Fig.

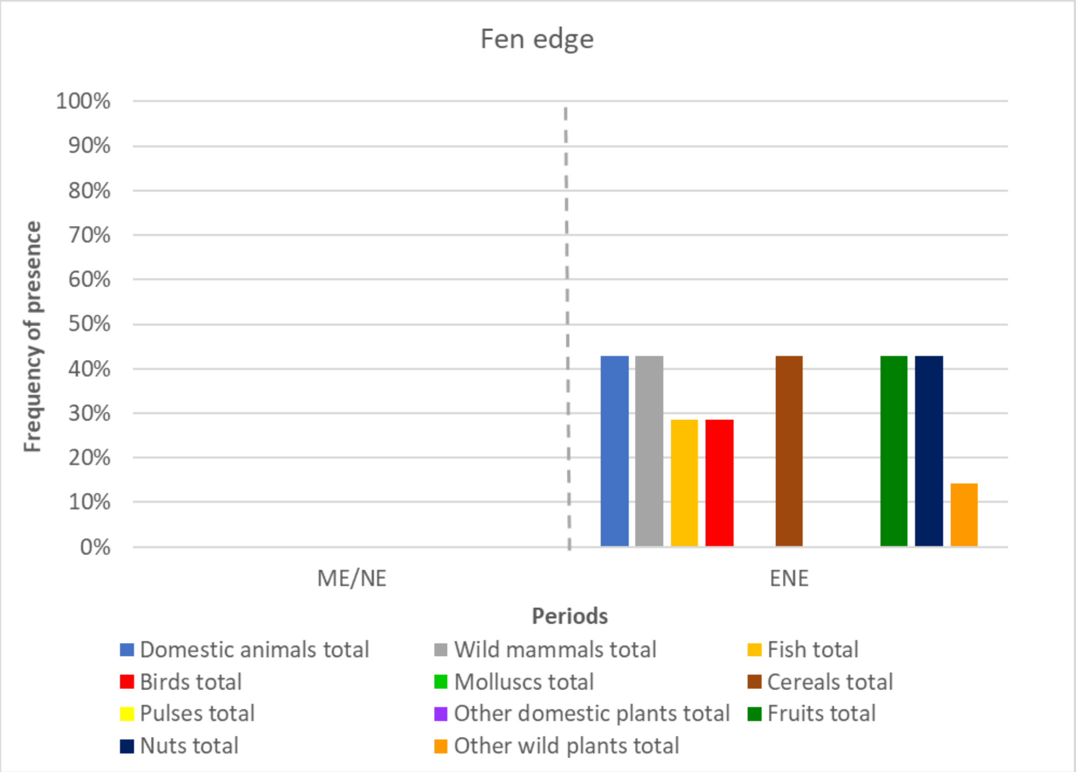


Figure 51: The frequency of presence of the main plant and animal groups in the Mesolithic/Neolithic and Earlier Neolithic on the 'fen edge' (or riverside sites). Frequencies are much higher than in drylands due to a lower number of total phases, but the relative frequencies are of interest.

xxxvi). Other wild plants are represented by fairly high frequencies of charred fat hen, which is present as frequently as charred hazelnut, perhaps suggesting this plant was of some importance in the diet.

In summary, there are some clear differences in the economies of the fen edge and drylands in the Earlier Neolithic. The drylands have a wider range of charred cereals and these, in combination with domestic animals, seem to have been the focus in this environment. The riverside seems richer than the drylands, with more groups represented. The relative frequencies of these groups suggest an emphasis on large mammals (both wild and domestic), in combination with some arable agriculture, fishing, fowling and the gathering of wild plants. Of course, the absence of waterlogged remains in drylands result in a bias towards domestic resources whilst waterlogged plant remains make riverside sites appear more 'wild'. Yet charred other wild plants are also present more frequently on riverside sites and charred cereal variety is lower than in drylands. This, in combination with a greater spectrum of wild animals, suggests that wild resources may truly have been more important than in drylands.

Later Neolithic (c. 3200-2200 BC)

Figure 52 shows the distribution of all 28 sites with Later Neolithic phases in the three environments. There are fewer Later Neolithic than Earlier Neolithic sites. There are still no wetland sites, and although there are now nine fen edge or riverside sites, the majority is located in drylands. The low total phase numbers on the fen edge mean that the frequencies here are too high and cannot be compared directly with those in drylands. The sites in this period are not distributed very evenly across the study area. Many are located in Cambridge and Peterborough and several sites cluster close together (e.g. at Over, Haddenham, Fengate and Pode Hole). Yet, there are a few independent sites (e.g. Barholm, Longstanton, North-western Cambridge) as well. Sites are located in a range of lower and medium height locations on different (bedrock) geologies, including clay, gravel, sand and chalk (cf. Fig. xxxvii). Therefore, they should provide a good indicator of subsistence practices in the different environments in this period.

Figure 53 displays the main plant and animal groups in the Earlier and Later Neolithic in drylands. Domestic animals, cereals and nuts are still present very frequently, but wild mammals have increased the most. They are now counted as frequently as domestic animals. The vast majority of these wild animals is represented by woodland mammals with red deer clearly present most frequently (cf. Fig. xxxviii). In fact, this species is counted more frequently than cattle in this period (cf. Fig. xxxix). The domestic animal assemblages are also of interest as cattle and pig are present at the same frequency, whereas cattle were found more frequently in the previous periods (Fig. xxxix). Dogs also occur more frequently in this period. Besides the domesticates and woodland mammals, a field mammal (hare), wetland mammal (beaver) and unidentified (other) bird each occur once in drylands in this period). The hare is not out of place and the bird could be a dryland species, but the beaver is of some interest. It was found at Barholm, at some distance from the contemporary fen edge

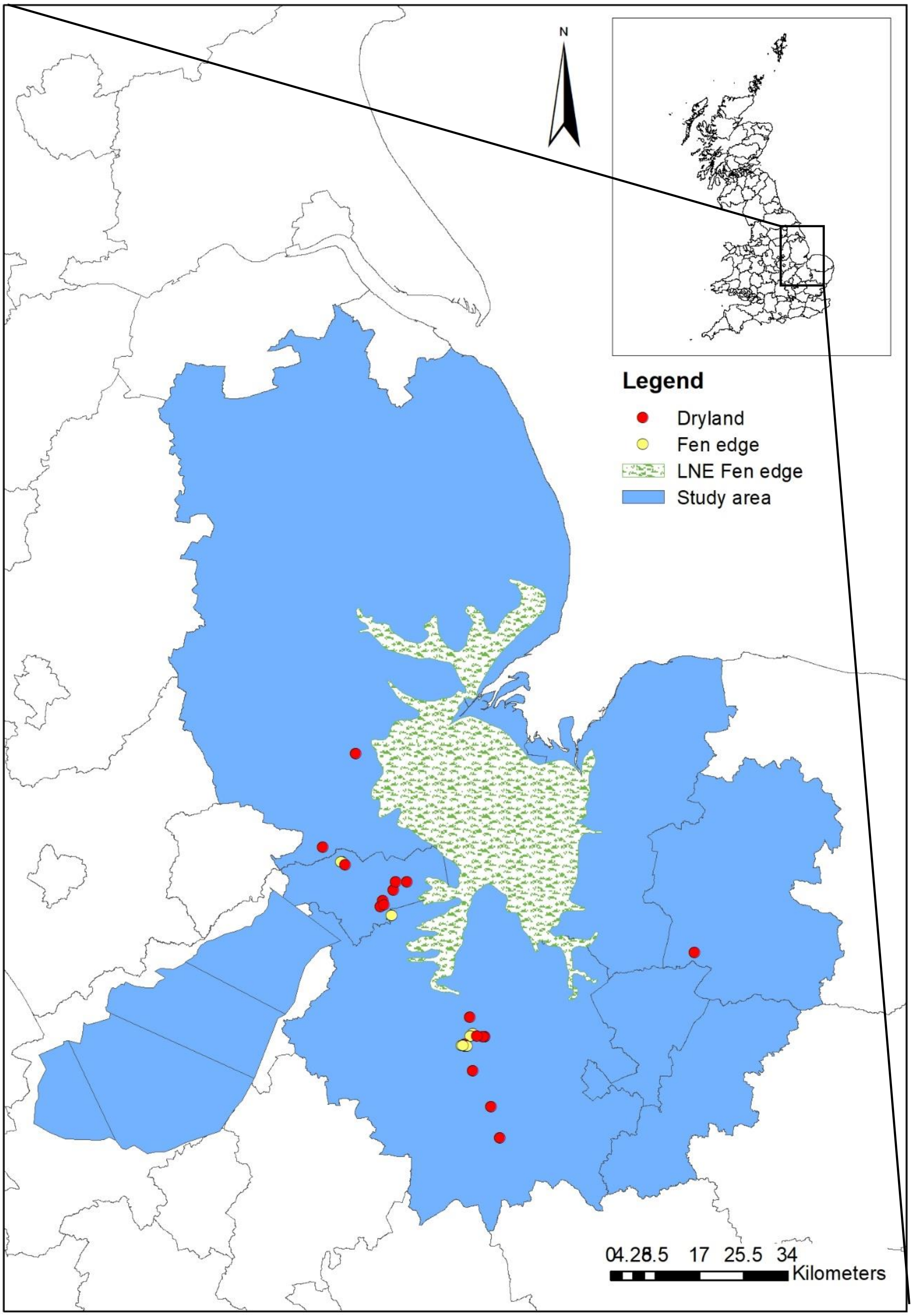


Figure 52: The Later Neolithic site distribution in relation to the fen edge at this time. 'Fen edge' sites should still be characterised as riverside or river valley sites. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

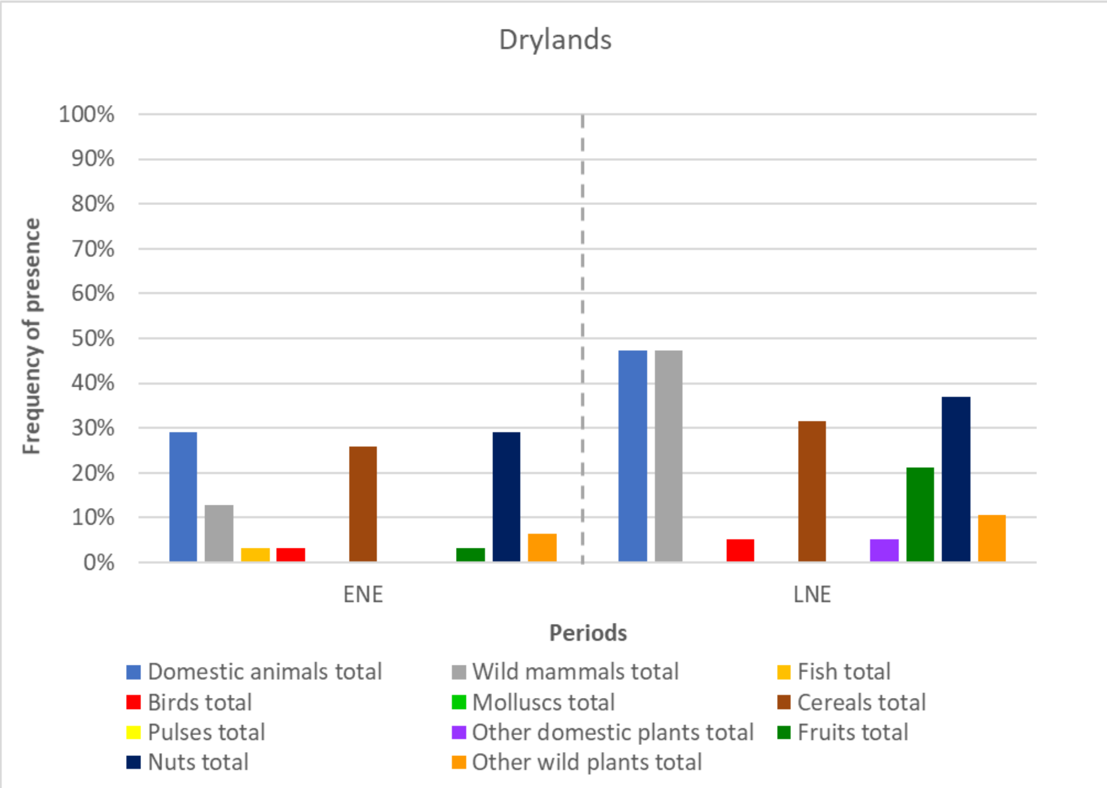


Figure 53: The frequency of presence of the main plant and animal groups in the Earlier and Later Neolithic drylands.

(Figure 54). It may have been caught in a nearby river, or it was caught in, and brought from the expanding Fens to the east, suggesting the movement of people or goods (e.g. pelts) between the two environments.

Cereal frequencies do not increase significantly in the Later Neolithic drylands, and their variety decreases as bread wheat and spelt disappear (Fig. xl). Hazelnuts (mostly charred) stay more or less the same too, but fruits increase a lot in drylands in this period. A much greater variety (including sloe, hawthorn, apple, pear and black/raspberry) is present than in the Earlier Neolithic, albeit at low frequencies (Fig. xli). Most fruits occur in charred state, but sloe, elder and black/raspberry were also found in waterlogged state. These fruits may represent human modification of the landscape (e.g. resulting from clearance and hedge formation). Waterlogged flax and fat hen are also present, but at very low frequencies.

On riverside sites there is also an increase in domestic animals which are now clearly present most frequently (Figure 55). Here too pigs occur as frequently as cattle, but ovicaprids are present equally frequently, so this pattern may be caused by the low total phase numbers (Fig. xlii). Wild mammals also increase, and in contrast to the last period, almost all of these are woodland mammals (Fig. xliii), the only other wild animal being a corvid, which might occur naturally. Interestingly, the wetland animal groups that were present in the last

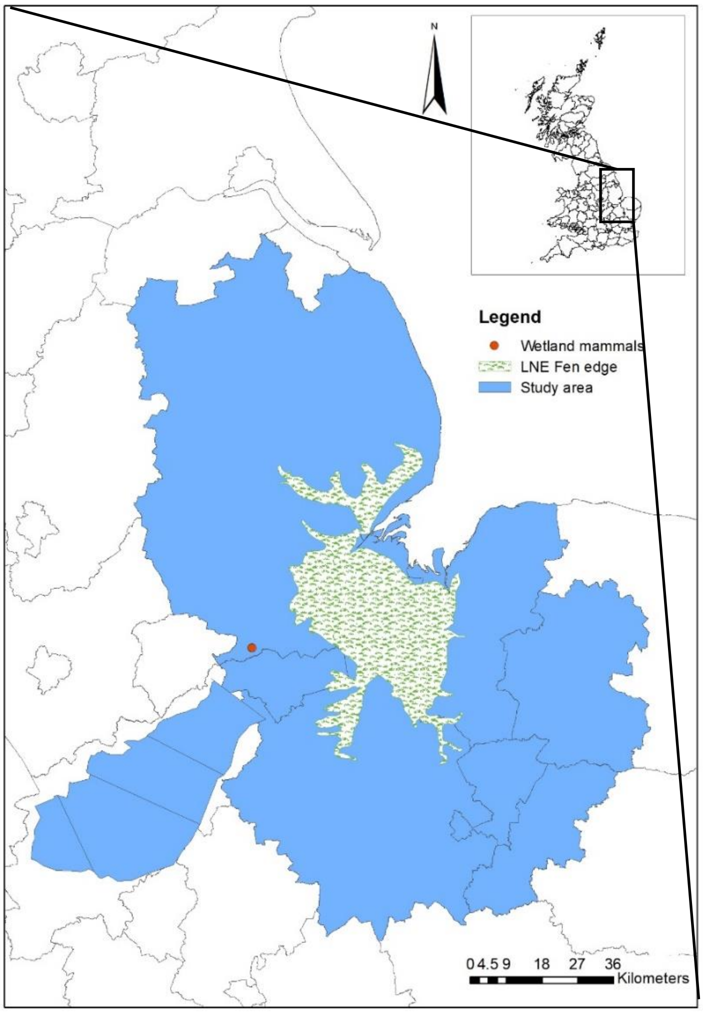


Figure 54: The location of the beaver at Barholm in relation to the fen edge. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

period have now disappeared, although these species could have been easily caught in riverside locations.

Like in drylands charred nuts and cereals have increased (Figure 55), but nuts (both hazelnut and acorn) are present more frequently than cereals on riverside sites. Unlike most groups, cereals do not increase from the last period, although a slightly wider variety is now present (Fig. xliv). Fruits, especially waterlogged elder and black/raspberry, have increased and some are charred (crab apple and sloe-berry) (Fig. xlv). Like in drylands, waterlogged flax is present and other wild plants are represented by charred fat hen.

In summary, unlike in the Earlier Neolithic, when there were more distinct differences, the relative frequencies of many groups in the two environments are quite similar. There is a focus on large mammals (domestic and woodland) in both environments and fruits and

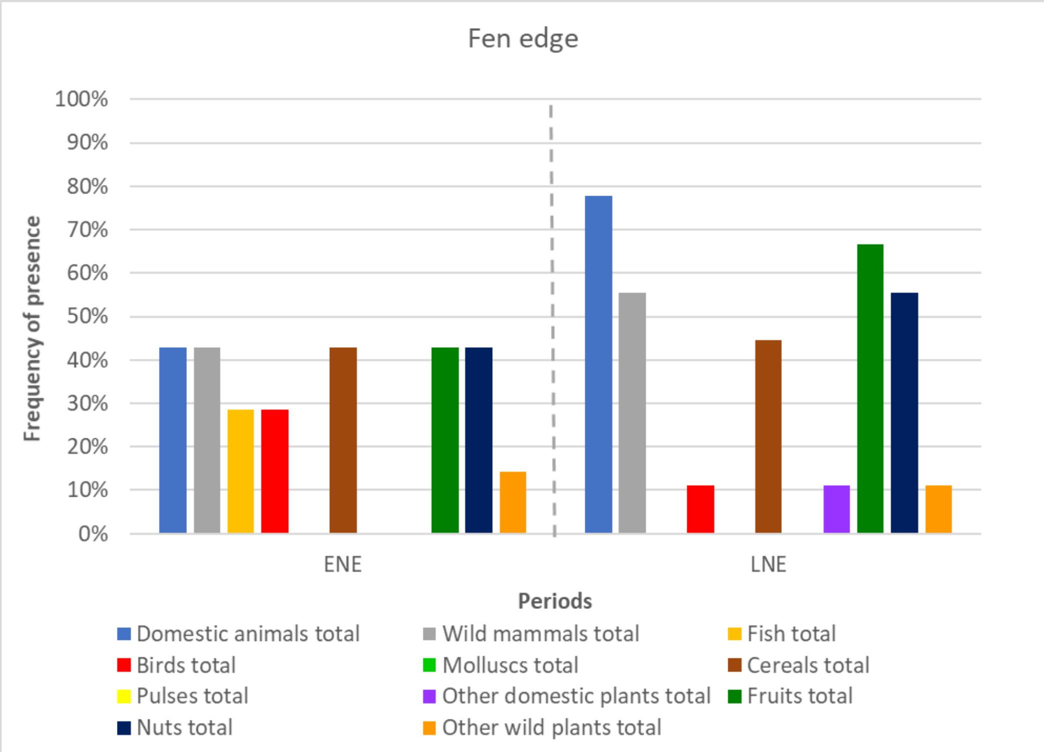


Figure 55: The frequency of presence of the main plant and animal groups on the Earlier and Later Neolithic fen edge.

nuts seem relatively important when compared to cereals. The latter do not completely disappear, but there is not much increase in cereals and only a small variety is present in both environments. Lower frequencies of wetland animals suggest that more environmentally or seasonally specific food types and activities were replaced by a broader, more general set of subsistence practices which could take place in any landscape.

Yet despite overall similarities, there are some differences between the two environments. More waterlogged fruit on riverside sites likely results from better preservation. Relatively high domestic counts in this environment may relate to the presence of good grazing ground, whilst high red deer counts on drylands may indicate the exploitation of more forested areas. Overall though, it seems that the Later Neolithic subsistence practices were quite uniform and that people used the drylands and fen edge in a rather similar way.

Late Neolithic/Early Bronze Age (c. 2600-1600 BC)

Figure 56 shows all 49 Late Neolithic/Early Bronze Age sites in the three environments. There is a clear increase in site numbers in this period and they are distributed more widely across the study area than in any previous period. The majority is still located in drylands, but for the first time, the fen edge sites are located not just along rivers (e.g. the Over subsites), but also along the actual edge of the expanding Fens. Three true wetland sites have

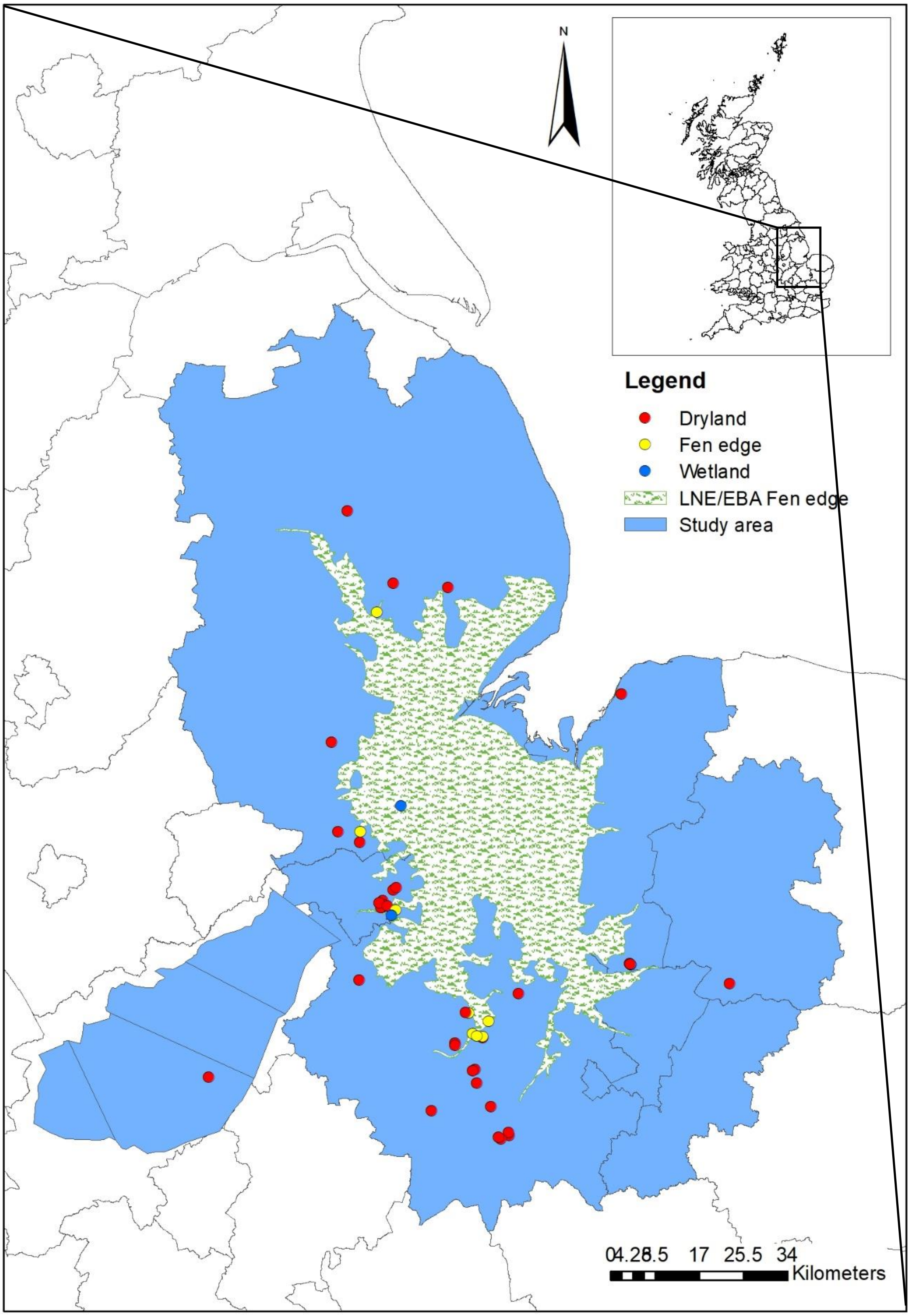


Figure 56: The Late Neolithic/Early Bronze Age site distribution in relation to the fen edge at this time. The first true fen edge sites appear in this period. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

now appeared as well. As there are only three sites, the frequencies will appear too high and are unlikely to be very representative. Yet the presence or absence of particular groups may be of some interest and will be briefly discussed. The low total phase number for the fen edge sites (still nine) means that percentages here are too high as well, but the relative frequencies may still be compared to those in drylands. Most sites are located in lower lying locations on gravel and sand, but a small number occur on higher clay and chalk geologies (Fig. xlvi).

Figure 57 shows the frequency of the main plant and animal groups in the Later Neolithic and Late Neolithic/Early Bronze Age in the three wetland sites. Domestic animals, including cattle, pig, goat, ovicaprid and dog, were found in two of these sites. All other groups only occur once. The wild mammals include red and roe deer but also wetland mammals (otter). The cereals found are all charred and identified as emmer and hulled and naked barley. Other domesticates are represented by charred flax, and other wild plants by charred unidentified tuber. The (hazel)nuts found are both charred and waterlogged but all fruit species (sloe, elder, black/raspberry and dogwood) identified were waterlogged.

In the Late Neolithic/Early Bronze Age drylands, a higher number of phases suggests declines for most groups, but only wild mammals and fruits show a true decline (Figure 58).

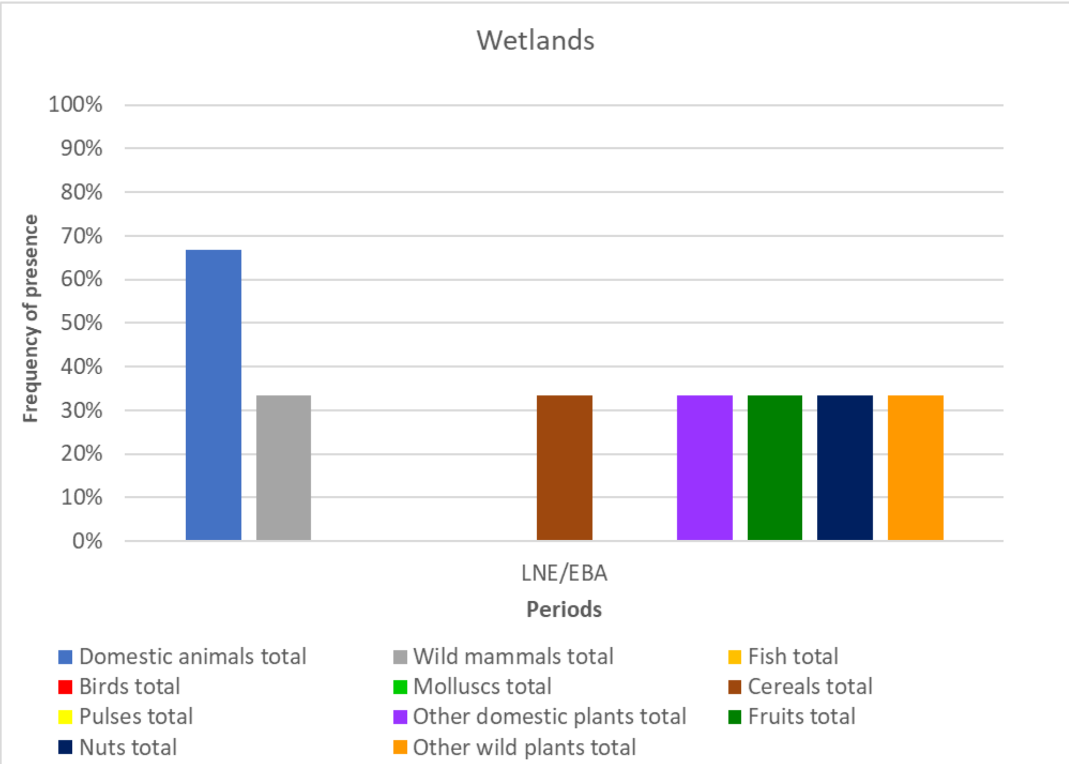


Figure 57: The frequency of presence of the main plant and animal groups in Later Neolithic/Earlier Bronze Age wetlands. Because there are only three sites, most frequencies are at the same level of c. 33%. The sub-groups have therefore not been graphed.

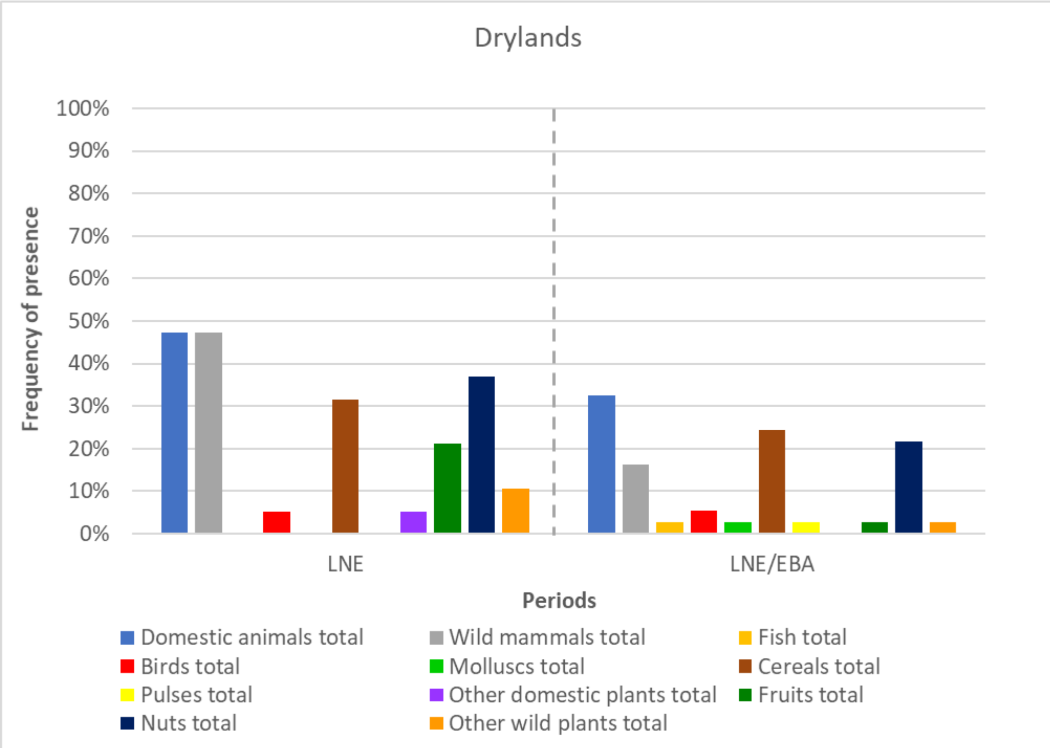


Figure 58: The frequency of presence of the main plant and animal groups in Later Neolithic and Late Neolithic/Earlier Bronze Age drylands.

The domestic animal assemblage still contains the same species, but cattle are present most frequently again as red deer drop steeply (Figs. xlvii and xlviii). Wetland animal groups like wetland mammals (otter and beaver), unidentified fish, wetland and unidentified birds, and (saltwater) molluscs do reappear in this period, albeit at low frequencies (Fig. xlix). Looking at the distribution of the sites where these wetland animal remains were, most of them are located very close to the fen edge (e.g. Hockwold-cum-Wilton), or on the coast (Redgate Hill) (Figure 59). It is not surprising that communities here would have exploited wetland resources. The only exception are the other fish remains, which were found well inland at Wilby Way in Northamptonshire. Here a cremation included fish vertebrae (Thomas and Enright 2003, 20). These remains may represent food remains or may have a symbolic meaning. In any case, the fish vertebrae demonstrate that fish were exploited in this period, potentially even in dryland settings.

There is a slightly wider variety of cereals (all charred) again in this period (Fig. l). Nuts, still mostly charred hazelnuts, do not decline significantly, but fruits, relatively high in the Later Neolithic, almost disappear (Figure 58). In contrast to the wide variety in the Later Neolithic, only one species (charred wild rose) was found. The only other plant remains are negligible amounts of charred unidentified pulse, charred acorn and charred fat hen.

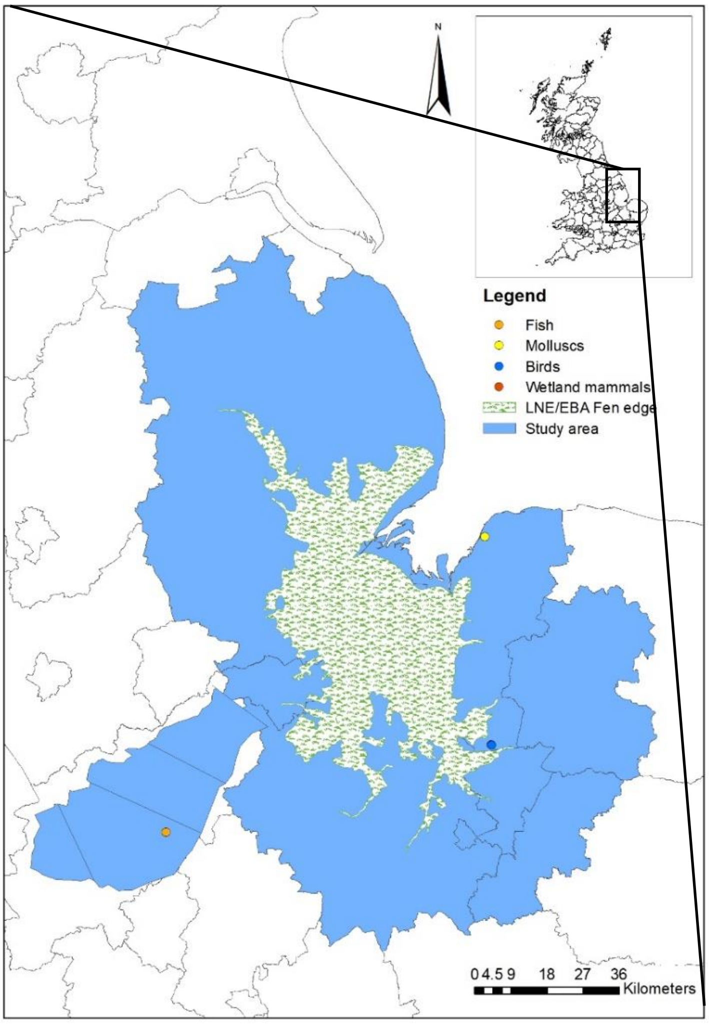


Figure 59: The distribution of wetland animals in the Later Neolithic/Early Bronze Age. Otter and beaver were found on Hockwold-cum-wilton, where birds also appeared, so the dot is hidden below that of the birds on this map. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

Figure 60 shows the main plant and animal groups on the fen edge in the Late Neolithic/Early Bronze Age. Like in drylands, many groups decline. The domestic animal assemblage differs significantly from that in drylands, with cattle most frequent and ovicaprids, not pigs, in second place (Fig. li). The wild mammal assemblage is reduced to red deer and beaver in this period, so in this respect too the fen edge is less varied than drylands. Yet the occurrence of a wetland mammal and wetland birds (swan) in combination with typical wetland groups on several dryland sites and the first appearance of true wetland sites, suggests there is increasing interest in the Fens' resources in this period (Fig. lii).

The decline in cereals on the fen edge is marked (Fig. liii). Only charred wheat was found. In contrast to drylands, charred (hazel)nuts and charred fruits increase; they are now counted

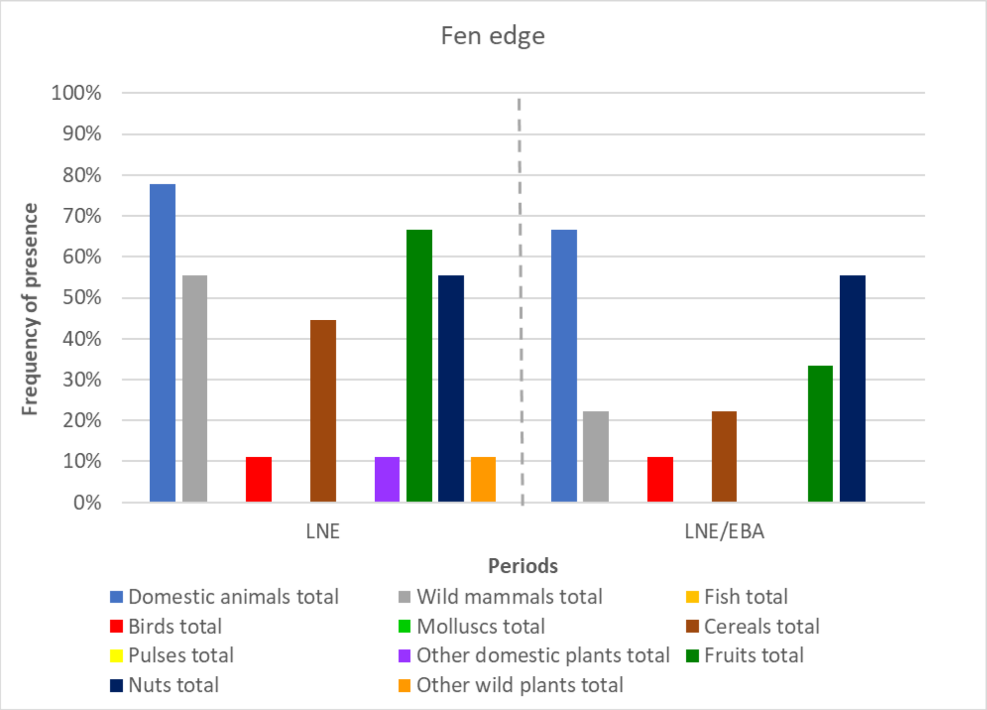


Figure 60: The frequency of presence of the main plant and animal groups on the Late Neolithic and Later Neolithic/Earlier Bronze Age fen edge.

more frequently than cereals and include a number of species (Fig. liv). The low frequency and variety of cereals on the fen edge in combination with an absence of other domesticates and high charred nut and fruit counts (Figure 60 and liv) suggests that domestic plants did not play a very important role in this environment, whilst wild plants did.

In summary, unlike in the last period, there are a few clear differences between the drylands and the fen edge in this period. Despite declines for most groups in the Late Neolithic/Early Bronze Age, drylands have a greater variety of species present. Domestic animals and cereals were clearly exploited and so were woodland mammals and several other wild animals, including wetland (though they only occur at very low frequencies). Charred fruits decline, perhaps suggesting less interest in wild plant resources. On the fen edge domestic animals occur relatively more frequent than the other groups, with cattle being particularly frequent. Here charred fruits and nuts increase, but only one species of cereal was identified on the fen edge, perhaps indicating that cereals may not have been grown here in this period. Perhaps these true fen edge sites were less stable and more prone to flooding than the riverside sites in the Earlier and Later Neolithic. Alternatively, the low cereal and high domestic animal counts on the fen edge could indicate that fen edge sites were used in a pastoral manner.

The total number of sites in Late Neolithic/Early Bronze Age wetlands is too low to say much about human-environment interaction in this environment, but the groups present indicate that both domestic and wild plants and animals were used. The presence of otter alongside red deer and roe deer demonstrates that wetland species were exploited.

4.3.3 Bronze Age

Figure 61 shows the four main groups in the three environments throughout the Bronze Age. In the Earlier Bronze Age, there are only two wetland sites, which means the percentages calculated seem rather high (cf. section 4.3.1). All main groups apart from domestic plants are represented. In drylands, the Late Neolithic/Early Bronze Age trend seems to continue, with similar low frequencies for all groups, and domestic animals counted most frequently. The fen edge in contrast, previously containing high numbers of domestic animals and wild plants, now has very high frequencies for all main groups with significant increases for wild animals and especially domestic plants. Domestic and wild animals occur only slightly less frequently. This 'wealth' of remains on the fen edge, in combination with a large increase in the total number of total phases (from nine in the Late Neolithic/Early Bronze Age to 26 in the Earlier Bronze Age) suggests that the fen edge was in focus in this period.

In the Middle/Late Bronze Age, wetland sites finally become visible and there are a good number of phases in each of the three environments. Domestic animals and plants are the most frequent groups, followed by wild plants and wild animals. This pattern resembles that on the fen edge, although the frequencies for all groups are much higher in the latter environment, presumably because there was more space to grow crops and keep domestic animals here. Domesticates are clearly present most frequently, now occurring in 90% of all phases in this period and domestic plants also appear very frequently, at 76%. It seems then, that the fen edge continued to be of interest in the Middle/Late Bronze Age. Finally, in drylands there is some increase in all groups, but most significantly in domestic animals, which are present twice as often as the other groups. This, in combination with a relatively low domestic plant count, suggests that dryland sites fulfilled a different function than the fen edge ones.

In the Late Bronze Age/Early Iron Age, wetland site numbers increase from 14 to 22. The domestic groups and wild plants decline in wetlands whilst wild animals increase a little. A much more pronounced decline is visible on the fen edge, where all groups suddenly drop,

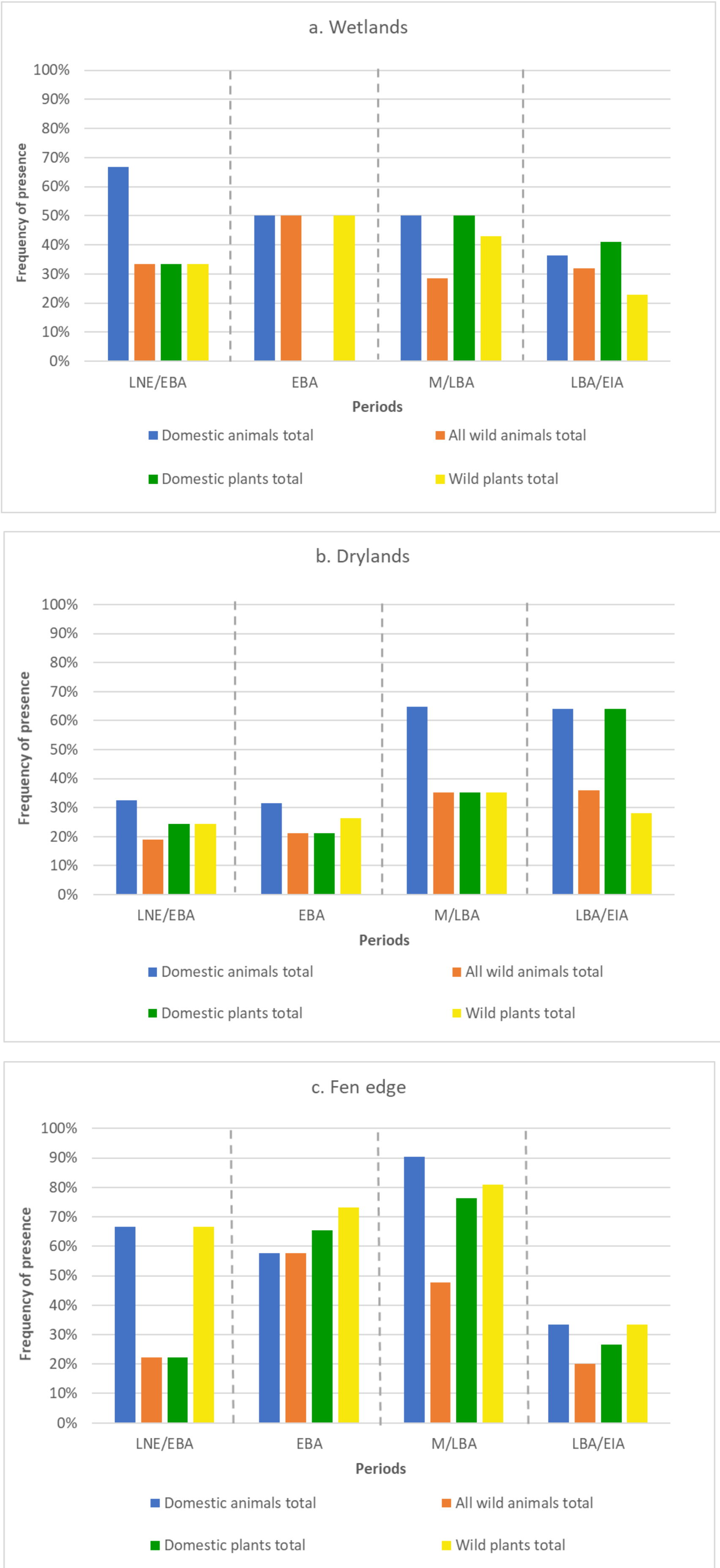


Figure 61: The frequency of presence of the four main data-groups throughout the Bronze Age (the Late Neolithic/Early Bronze Age has been included to show the changes between this period and the Earlier Bronze Age). Given the low total phase numbers in the Late Neolithic/Early Bronze Age and Earlier Bronze Age wetlands, the frequencies are unreliable, but the presence absence data is still useful.

although there are still 15 sites. Domestic animals are present only slightly more frequently than domestic and wild plants. In the drylands meanwhile, domestic and wild animals continue as they were, but domestic plants suddenly increase to about twice their Middle/Late Bronze Age frequency. As a result, for the first time domesticates clearly occur more

frequently than wild resources in this environment. Moreover, the drylands are seemingly richer in these remains than the other two environments. It seems then, that there was a shift in focus in this period, away from the fen edge and towards the dryland, and the wetlands, where activity seems to have increased.

Throughout most of the Bronze Age (apart from the Early Bronze Age where wetlands only have two phases) each environment has a good number of phases, which means that the trends discussed above are quite robust and can be compared both directly and indirectly. They suggest clear differences in subsistence practices between the environments and significant change over time. Of course, with the increase in wetland and fen edge sites, issues of differential preservation become more important in this period. These will be taken into account as patterns will be explored in more depth by considering the various sub-groups in the period by period discussions below.

Earlier Bronze Age (c. 2200-1300 BC)

Figure 62 shows all 47 Earlier Bronze Age sites or phases. They are not as evenly and as widely spread across the study areas as the Late Neolithic/Early Bronze Age sites. Instead, there are several clusters of sites along the southern and western fen edge. However, as there are several of these clusters as well as a few individual sites, the results should still be representative of the different environments considered. The number of fen edge sites has increased a lot since the last period, from nine to 26, and there are 19 dryland sites. The latter are generally located near the fen edge, although there are a few sites further inland (e.g. the Addenbrooke and Trumpington sites in Cambridgeshire or Grimes Graves in Norfolk). Despite increased activity on the fen edge, there are only two real wetland sites, similarly located near those on the fen edge. Any that might have been located further out in the wet Fens are now covered under metres of later marine and freshwater deposits. Most Earlier Bronze Age sites are located on river sands and gravels in relatively low-lying positions, though a few are on chalk (Fig. lv).

Figure 63 shows the main plant and animal groups in wetlands in the Late Neolithic/Early Bronze Age and Earlier Bronze Age. The frequencies are unreliable as there are only two sites in this environment, but most groups, apart from domestic plants, are represented,

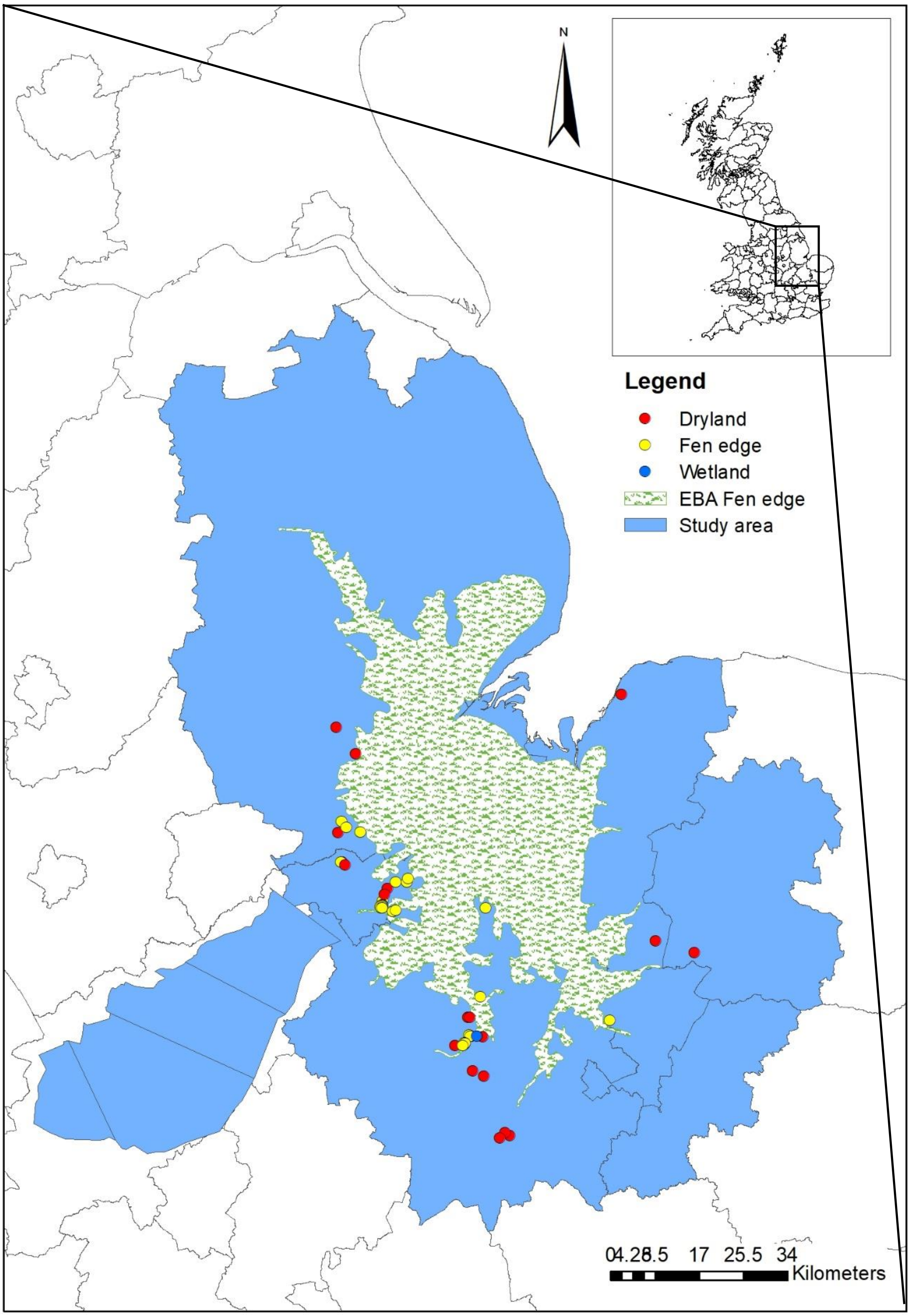


Figure 62: The Earlier Bronze Age site distribution in relation to the fen edge at the time. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

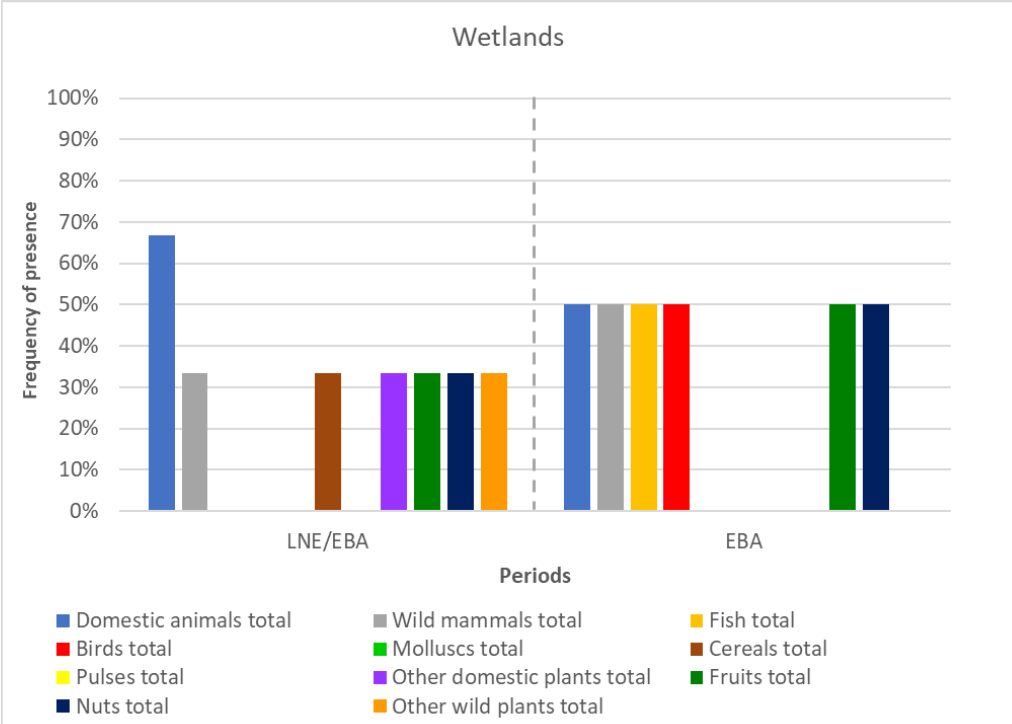


Figure 63: The frequency of presence of the main plant and animal groups in Late Neolithic/Early Bronze Age and Earlier Bronze Age wetlands. There are only two sites, so frequencies are unreliable, but the graph does show what plant and animal groups are present.

perhaps suggesting activity on these two sites was not settlement related. The domesticates are represented by cattle, pigs and ovicaprids in this period. As expected, most wild groups in wetlands are typical for this environment; freshwater fish and wetland birds could be caught locally, and other birds may represent unidentified wetland species (Fig. lvi). The woodland mammals (red deer, fox and badger) seem out of place here and may have been brought to the sites from elsewhere. Domestic plants are absent, but charred and waterlogged fruits and charred nuts were found (Fig. lvii). The charred remains are hazelnut and black/raspberry, neither of which would grow in the wetlands themselves, but both could be found in wooded dryland areas. They may also have grown in areas close to human habitation, such as hedges, which may have occurred on the fen edge in this period.

In drylands, the Late Neolithic/Early Bronze Age trend seems to continue, with very similar (low) frequencies for all groups and domestic animals present most frequently (Figure 64). This group still has high cattle counts, but ovicaprids are now present more frequently as well, whilst horses disappear (Fig. lviii). The wild animals group mostly contains woodland mammals, whilst birds and molluscs occur once, and fish have disappeared (Fig. lix). Overall, the wetland groups are not well represented in drylands with negligible numbers of wetland birds (one duck) and marine molluscs (oyster and mussel) from the coastal site of

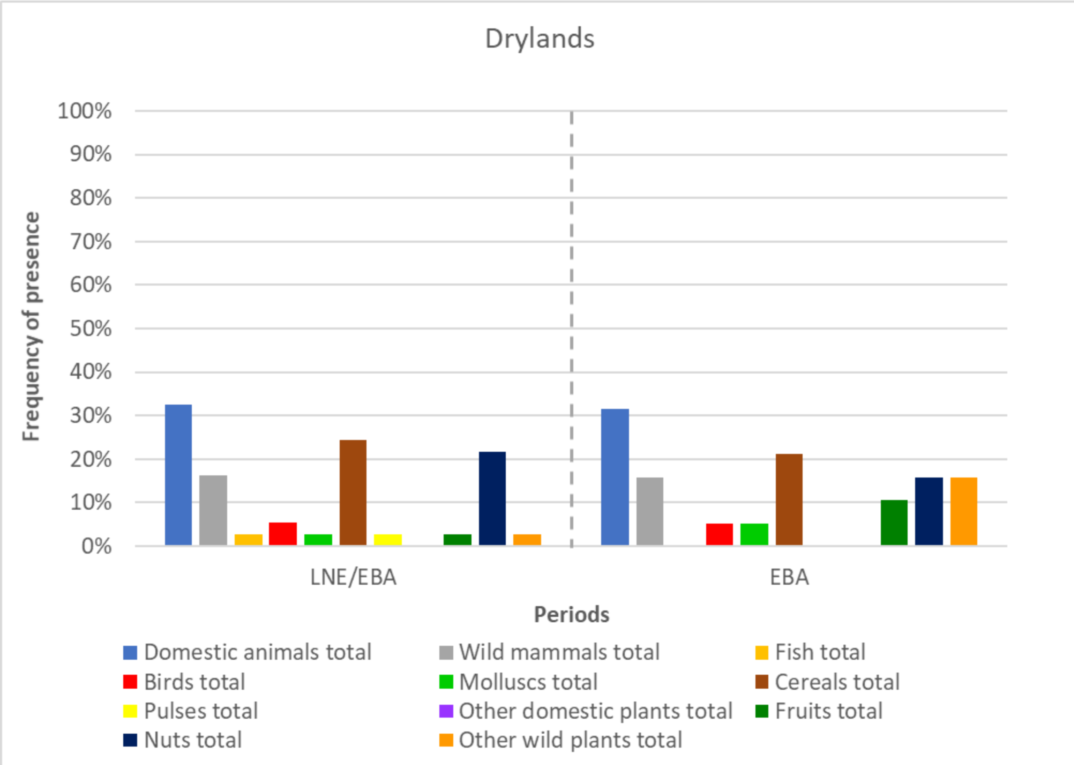


Figure 64: The frequency of presence of the main plant and animal groups in the in Late Neolithic/Early Bronze Age and Earlier Bronze Age drylands.

Redgate Hill. Only red deer are represented in the woodland mammal assemblage, which contrasts markedly with the Late Neolithic/Early Bronze Age, when a much greater variety of species is present (Fig. lx). It seems that hunting woodland mammals no longer took place, possibly because the focus shifted to the fen edge rather than wooded areas further inland. The Earlier Bronze age site distribution which is more clustered around the edge supports this (Figure 62). The reason that red deer continue to be exploited may relate to the use of red deer bone and antler for tool production.

Dryland plant assemblages have high frequencies of charred cereals, but nuts, other wild plants and some fruits are also present relatively frequently. Fruits and other wild plants have increased a little since the last period, whilst nuts and cereals decline further. Present in only 20% of all phases in this period (Figure 64) cereals have high frequencies of wheat and barley, with negligible amounts of emmer, bread wheat and spelt (Fig. lxi). Wheat and barley are also found most frequently on the fen edge, possibly suggesting a link between the two environments. The wild plant assemblage includes charred hazelnuts, other wild plants and some fruits (charred sloe and elderberry). Fat hen is the other wild plant found and unlike most groups, it increases, now present as frequently as charred nuts (Fig. lxii). Fat hen is a crop weed and its seeds may have been charred when cereals were processed. Alternatively, fat hen may have been collected and eaten (cf. Stokes and Rowley-Conwy

2002). The fact that this group increases quite significantly since the last period whilst cereals decrease may support the use of fat hen as food rather than processing waste.

Figure 65 shows the main groups on the fen edge in the Earlier Bronze Age. Whereas domestic animals and wild plants were counted most frequently before, this environment now has very high frequencies for all main groups with significant increases for wild animals and especially domestic plants. In contrast to the previous period, the fen edge now contains all domestic animals. The Late Neolithic/Early Bronze Age cattle focus is replaced by a more balanced reliance on the three main groups (cattle, pigs and ovicaprids), with smaller numbers of horses, dogs, sheep and goats (Fig. lxiii). This more balanced assemblage in combination with high cereal counts may indicate that the fen edge sites in this period represent settlement rather than more transient visits. Like in drylands wild mammals are present most frequently in the wild animal assemblage, and only red deer is represented. However, there are some wetland mammals (beaver) and there is a greater variety of other wetland species than in the previous period, including freshwater (pike and cyprinidae) and other fish, unidentified and wetland birds (duck and goose) (Fig. lxiv). These are all present at low frequencies, but the wider range of wetland animals present suggests that people started to exploit what the Fens had to offer more intensively than in the previous period. If communities did settle on the fen edge, they would have had easy access to these

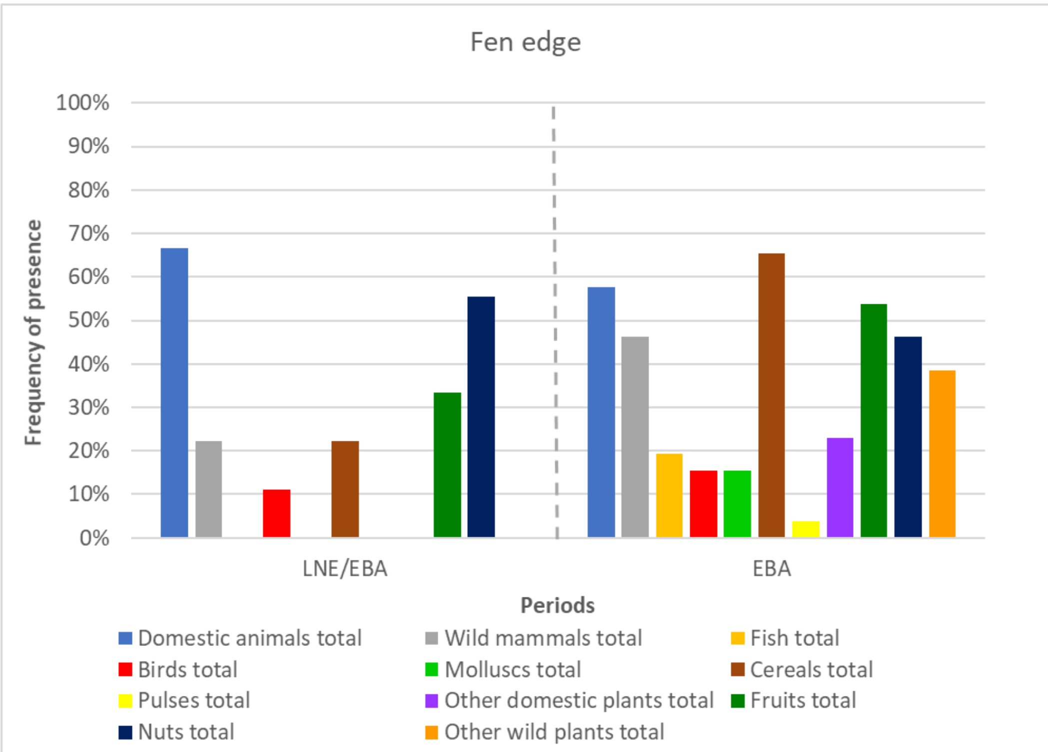


Figure 65: The frequency of presence of the main plant and animal groups in the Late Neolithic/Early Bronze Age and Earlier Bronze Age fen edge.

resources. Molluscs are either unidentified or a saltwater species (cockle and oyster). Unlike birds and fish, the marine molluscs found on different fen edge sites located at some distance from the coast would not have occurred locally (Figure 66). Their numbers are very low, and they are unlikely to have been food remains, but their presence suggests that fen edge people exploited the coasts, or were trading with coastal communities. The only saltwater molluscs (oyster and mussel) found in a 'dryland' setting in this period comes from the Redgate Hill site. Located on Norfolk's coast, it demonstrates that coastal communities did indeed exploit marine resources. Movement and trade between the fen edge and those elsewhere must have been easy along the major rivers and waterways in the expanding Fens.

A wide variety of domestic and wild plants were also exploited on the fen edge (Fig. lxv). There are far more cereals on the fen edge than in drylands and this group is present most

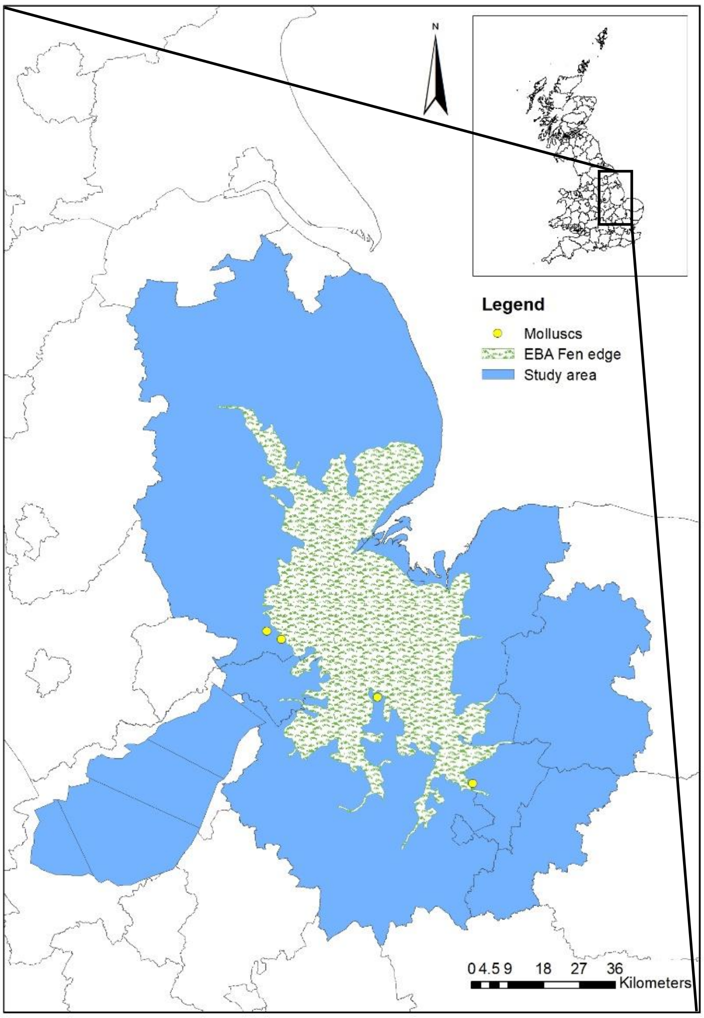


Figure 66: The distribution of molluscs on the Earlier Bronze Age fen edge. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

frequently, having increased significantly from the Late Neolithic/Early Bronze Age. Moreover, whereas the Late Neolithic/Early Bronze Age only has a small amount of charred wheat, the Earlier Bronze Age fen edge sites contain wheat, emmer and hulled and naked barley (Fig. lxvi). Besides much cereal, there are charred (unidentified) pulses and charred and waterlogged other domestic plants (flax and poppy) in the domestic plant assemblage, with flax present most frequently. Flax was a traditional Fenland crop in the medieval period as it is drought sensitive and a lot of water is needed to ret it (Murphy 1988). It may be that prehistoric communities also favoured fen edge locations to grow this crop (cf. Lane and Trimble 2010). Its presence on the fen edge in combination with that of charred pulses and many cereals demonstrates that a range of crops was now grown on the fen edge and suggest that people settled down in this environment.

The wild plant assemblage on the fen edge is as varied as the domestic one. Nuts have decreased a little but are still present frequently, just like fruits and other wild plants (Figure 65). Nuts, previously only represented by charred hazelnuts, now also contain charred acorn and waterlogged hazelnut and acorn. Other wild plants, absent in the Late Neolithic/Early Bronze Age, have increased significantly as well, with charred and waterlogged fat hen present most frequently, but some wild oats too (Fig. lxvii). The fruit assemblage becomes even more varied now. Charred sloe, hawthorn, black/raspberry and elder are relatively frequent, and as waterlogged elder and black/raspberry are also particularly frequent, it seems likely that these fruits were eaten on the fen edge (Fig. lxvii). These species, as well as many others represented in the fruit assemblage, may have grown in hedges around fields on the fen edge and could be collected easily. Unlike in the previous period, many of the plant remains now occur in both charred and waterlogged state, indicating good levels of preservation. This could suggest that there are more deep features like pits and ditches which may be associated with more permanent settlement. This too suggests the fen edge may have been settled in this period.

In summary, in the Earlier Bronze Age there are clear differences between the three environments. The fen edge is very clearly the richest environment, both in terms of ubiquity and variety of groups. The range of species present is much wider than in the previous period or than in drylands. Like before, domestic animals occur frequently on the fen edge, but they now seem to be combined with arable agriculture, as reflected in the presence of a wide range of cereals, pulses and flax. In addition to these domestic resources several wild (wetland) animals and different kinds of fruits, nuts and fat hen were gathered on the fen edge. The varied wild plant assemblage in combination with a similarly wide range of domestic animals, cereals and wild animals provides an overall impression of the fen edge subsistence practices as very diverse. A broad-spectrum economy may be the best way to describe these patterns.

This contrasts with patterns in contemporary dryland sites, where less variety and much lower frequencies for most plant and animal remains seem to represent different and more restricted subsistence practices. Of course, differential preservation may be a factor for waterlogged plant remains, but as charred frequencies are also much lower, it seems drylands were used in a different and possibly more transient way than the fen edge. Lower domestic and wild animal counts equally demonstrate that there are true differences between drylands and the fen edge. However, despite these differences, there are some similarities in terms of the species in the domestic plant and animal and woodland mammal groups in drylands and on the fen edge. This, in combination with the location of many dryland sites close to the fen edge, may suggest they were used by the same (fen edge) communities.

The few wetland sites in the Earlier Bronze Age, similarity located close to the fen edge, might also have been exploited from the fen edge. Given the very low number of phases for wetlands, it is very difficult to say anything with certainty about the patterns in this environment. However, the absence of domestic plants of any kind could suggest that activity in the true wetlands was restricted to seasonal grazing or the hunting and gathering of wild resources.

Middle/Late Bronze Age (c. 1600-800 BC)

Figure 67 shows all 52 Middle/Late Bronze Age sites. For the first time a significant number of these (14) can be classified as wetland. This increase may reflect a greater interest in wetlands at this time. Alternatively, Fenland sites from this period onwards become visible due to peat shrinkage after the Fens were drained in the historic period, whereas any older sites remain buried. However, given the location of all wetland sites close to the fen edge ones, the most likely explanation is that previous fen edge sites became wetland ones as they became engulfed by the growing Fens, possibly changing nature and function. In addition to the wetland sites, there are 21 fen edge sites and 17 dryland ones. Several of the dryland sites are located closely to the fen edge, but there are a few which are located in true inland positions in Norfolk and Cambridgeshire. Most sites are located in low-lying positions on sand and gravel, but one (Cambourne) is located on slightly higher till soils (Fig. lxviii).

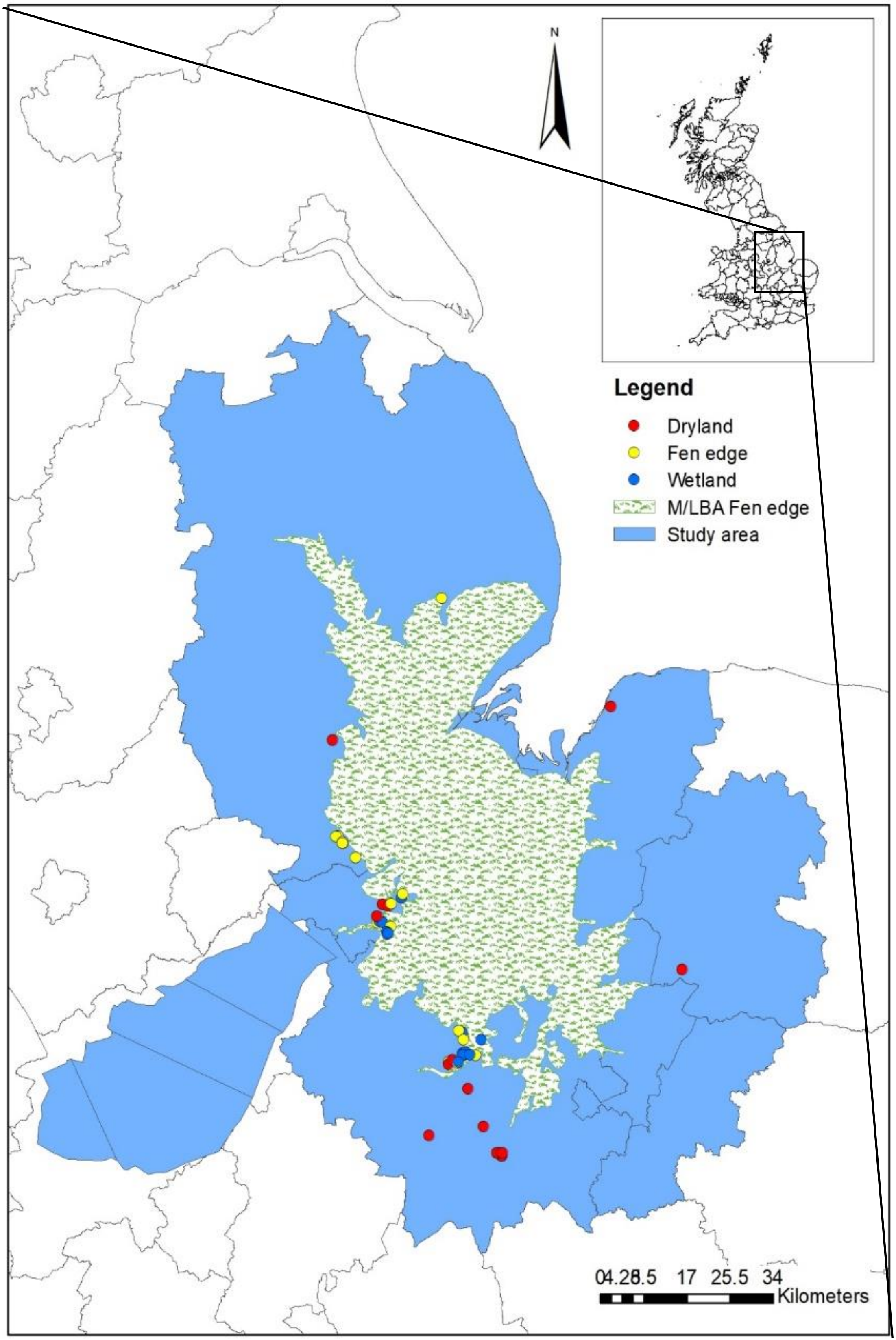


Figure 67: The Middle/Late Bronze Age site distribution in relation to the fen edge at the time. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

Site clustering is an even bigger problem in this period than the last, particularly for wetland and fen edge sites. Most of these are located either on the western fen edge, in or around the Flag Fen Basin near Peterborough, or in the south-western Fens, near Over and Haddenham. These areas have both seen extensive research, which may explain the clustering. This restricted distribution means that patterns described may not be representative for the entire area or the three environments. Moreover, the 'cluster areas' differ significantly.

The south-western fen edge can be described as a riverine landscape, with sites located on the higher terraces of the Great River Ouse, which flows into the Fens at this point (Evans 2016). In the Flag Fen Basin most sites are located on the interface between the lower lying fen edge created by the growth of peat in the basin (Evans 2009). Although these differences make it difficult to generalise patterns for the fen edge, they equally ensure that different site types are represented.

Figure 68 displays the main plant and animal groups in the Earlier and Middle/Late Bronze Age in the wetlands. Unlike in the previous period, all main groups are now present in wetlands. Besides the three main domestic animals, horse, dog and sheep are now also present (Fig. lxix) The wild mammal assemblage has also become more varied. Woodland species include red and roe deer, but several smaller woodland animals, perhaps trapped for pelts, are also present (e.g. fox, weasel, polecat, pine marter) (Fig. lxx). As these species normally inhabit drier areas, there must have been movement or contact between the wetter and

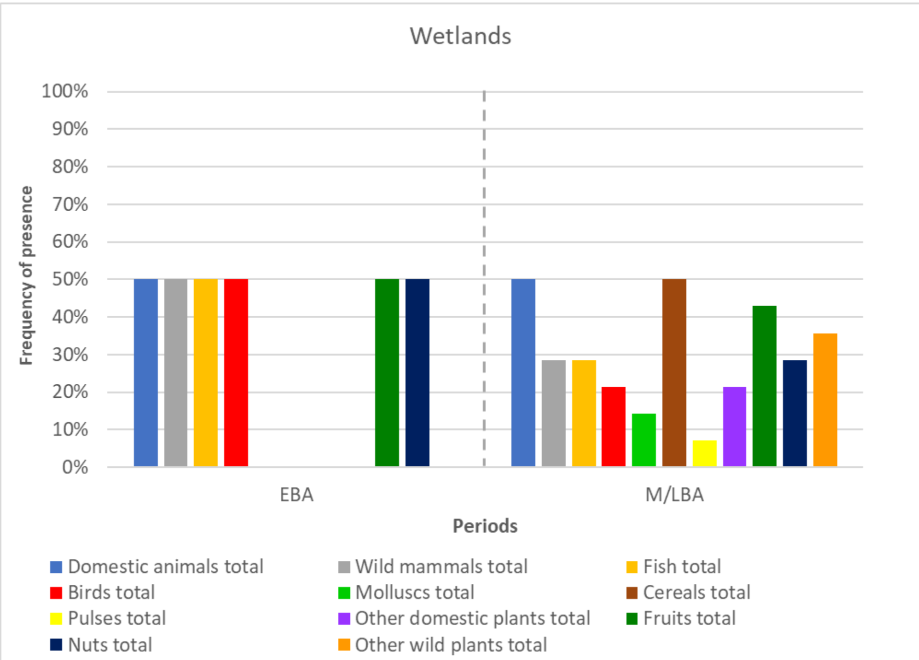


Figure 68: The frequency of presence of the main plant and animal groups in wetlands in the Earlier Bronze Age and Middle/Late Bronze Age wetlands.

drier areas of the landscape. Previously absent, wetland animals (otter and beaver) are now present as well and wetlands in this period are very rich in fish, which are present as frequently as wild mammals. Unidentified (other) and migrating fish (all eel) are present most frequently, but freshwater species like pike and perch are also present (Fig. lxxi). Birds are slightly less frequent than fish but still occur in about 20% of all wetland phases. Like fish, most are unidentified, but some ducks were identified. Saltwater molluscs (oyster and mussel) were found on two sites that are not located near the coast, suggesting movement to or interaction with coastal landscapes and communities.

Unlike in the previous period, wetlands now contain a range of domestic plants. Charred cereals are present most frequently, with other domesticates (charred flax) relatively frequent as well and lower numbers of waterlogged cereals and unidentified pulses (Fig. lxxii). These plants are unlikely to have been grown within the true wetlands themselves but may have been grown on the raised areas near Over or the nearby fen edge. Wild plants and fruits are present very frequently in wetlands and a much greater variety is present in this period (Fig. lxxiii). Sloe-berry, hawthorn, black/raspberry and elder are present most frequently in waterlogged state, and it is these species that are also found charred, suggesting they were gathered and eaten. The nut assemblage mostly contains hazelnuts which appear in charred and waterlogged state. Yet other wild plants, mostly fat hen, are present even more frequently (Fig. lxxiv). They may represent crop weeds or processing waste but could equally have been gathered and eaten. The same is true for the charred oat found in wetlands.

In contemporary drylands, the pattern is different (Figure 69). In many ways it reflects the previous period, but there are a few noticeable differences. Firstly, there is a significant increase in domestic animals, which now clearly are present more frequently than the other groups in this environment. The assemblage is of considerable interest as ovicaprids (mostly sheep) are present more frequently than cattle (Fig. lxxv). This is unusual as cattle counts are normally higher but could perhaps be explained by ovicaprids' susceptibility to hoof rot in lower lying, wet environments (Higham 1964). Cattle do not suffer from this, which would make them more suitable for wetland and fen edge sites. The cattle vs ovicaprid ratio on the fen edge does suggest that these considerations may have been important in the Bronze Age as well (Figure lxxix).

Unlike in the previous period, when only red deer were present amongst wild animals, the Middle/Late Bronze Age has a greater variety of species. Most are woodland species and

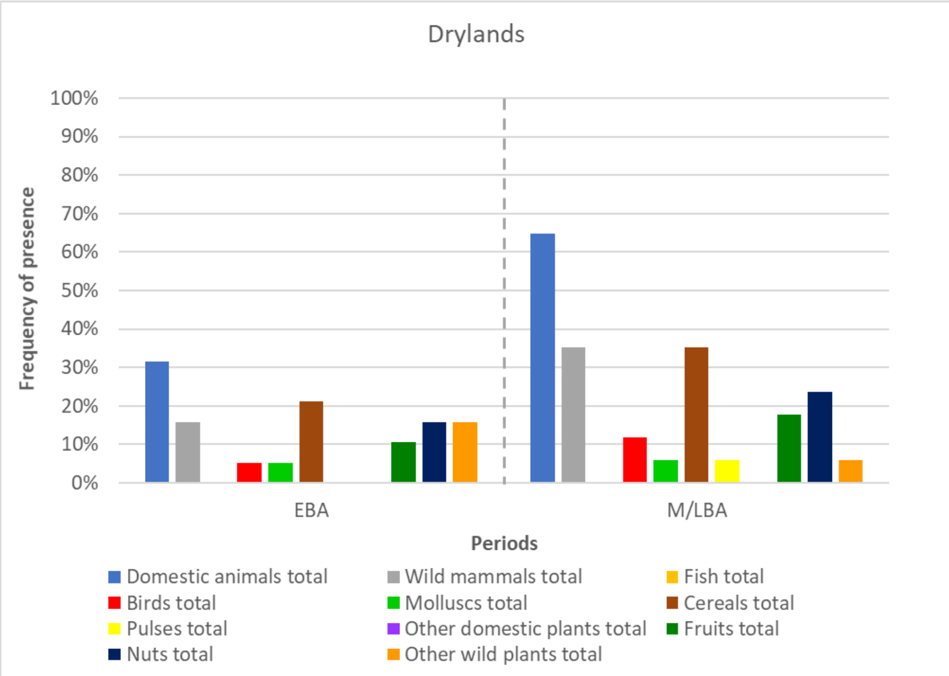


Figure 69: The frequency of presence of the main plant and animal groups in the Earlier Bronze Age and Middle/Late Bronze Age drylands.

various deer occur especially frequently (Fig. lxxvi). However, like in wetlands, smaller pelt species like fox, wild and pole cat are also found and so are the field mammals rabbit and hare. Fish still do not occur, but unidentified bird and a duck were identified, both on sites at some distance from the fen edge (Figure 70). The other bird may have been a naturally occurring bird, and the one duck at Grimes Graves may have been caught there rather than having been brought from the Fens. The marine mollusc (oyster) found at the inland Astrazeneca site is harder to explain, as this species would not have been present here naturally. It indicates movement to and from the coast and demonstrates that even the dryland communities further inland were connected to those closer to the sea.

Most domestic plants are charred cereals, but charred pea was also found (Figs. lxxvii and lxxviii). Nuts (all charred hazel) increase a little, but charred fat hen almost disappears. Fruits increase a little, with charred elder present most frequently. Charred sloe and hawthorn also occur, but only once. For the first time a few plant remains (domestic oat and some fruits) occur in waterlogged state, suggesting that some dryland sites now have deeper features. This may indicate that they were in use for a longer period than in the previous Earlier Bronze Age.

Like in the previous period, the fen edge has the highest frequencies for almost all groups. All major plant and animal groups are present and almost all groups, apart from fish, have increased (Figure 71). Like in drylands, domestic animals are present most frequently.

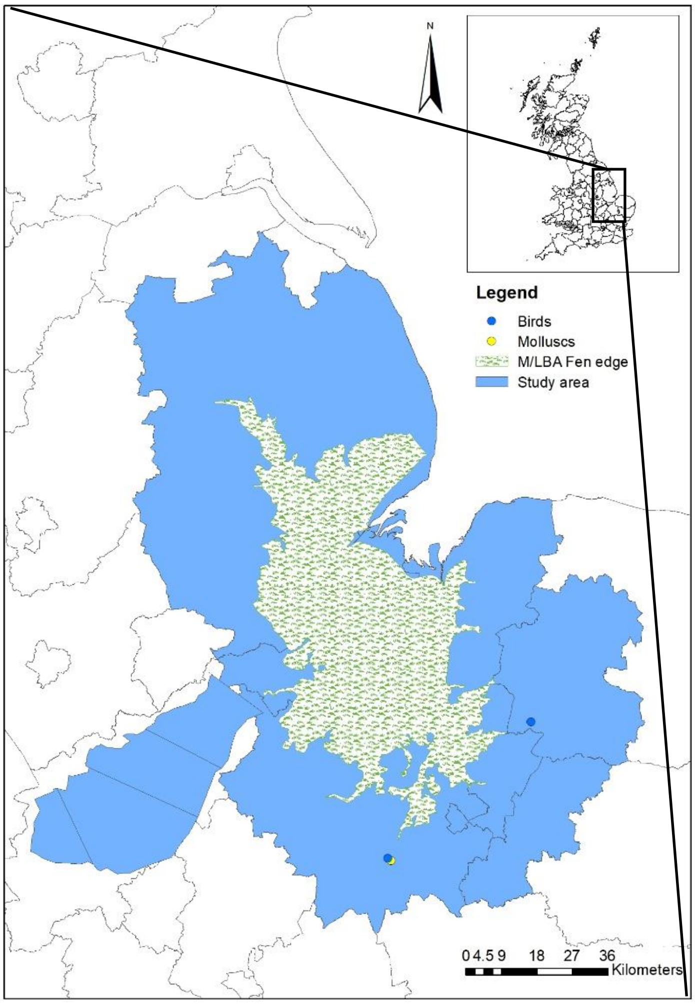


Figure 70: The distribution of wetland animals in Middle/Late Bronze Age drylands. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

Cattle is still present most frequently, but pigs, horses and dogs have increased significantly too (Fig. lxxix). The wild mammal assemblage has become less varied in this period. Although fox and badger are present, there are no other small pelt animals on the fen edge (Fig. lxxx). Fish (unidentified) only occur once, but birds increase. Unfortunately, the majority is unidentified, with only one duck present. All molluscs found are saltwater species. The relatively high presence of marine molluscs on the fen edge and in wetlands in this period may indicate increasing contact with or exploitation of coastal areas.

Charred cereals are still present most frequently in domestic plant assemblage on the fen edge and most species are present (Fig. lxxxi). Other domestic plants still include flax in charred and waterlogged state. Pulse presence increases with the occurrence of unidentified pulse and Celtic beans and poppy seeds are found in waterlogged state. Like in the Earlier Bronze Age, the domestic plant assemblage is rich and varied and several groups

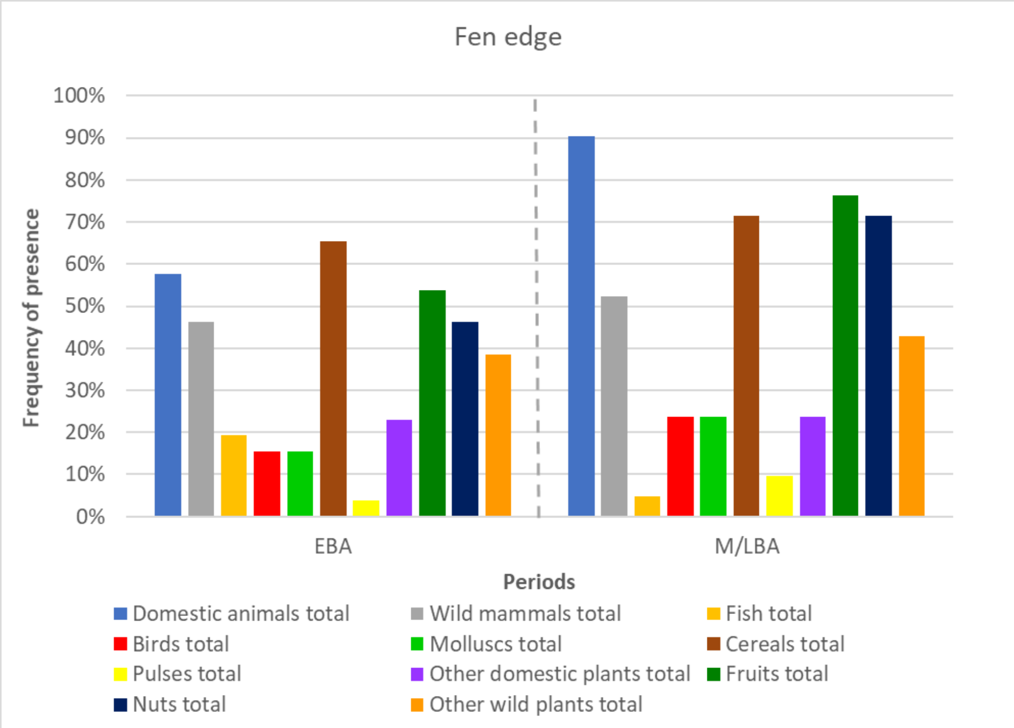


Figure 71: The frequency of presence of the main plant and animal groups on the Earlier Bronze Age and Middle/Late Bronze Age fen edge.

increase (Fig. lxxxii). However, wild plants increase even more (Figure 71). Hazelnuts are present most frequently, both in charred and waterlogged state, but fat hen clearly appears frequently too. Fruit numbers increase significantly on the fen edge. This is mostly caused by large numbers of waterlogged sloe-berry, hawthorn, elder and black/raspberry (Fig. lxxxiii). Yet these groups are also most frequent in wetlands and all of them are present in charred state as well, probably indicating their use as food. Many of the fruit species, including the four that are present most frequently, thrive in hedgerows. They may have grown in hedges around the field systems that appeared on the fen edge in this period. If these were planted along ditches, this may explain their high frequency in waterlogged state.

In summary, the Middle/Late Bronze Age is the first period with a good number of sites in each of the three environments. Like in the previous period, there are clear differences between the plant and animal assemblages in each of the three environments, suggesting they fulfilled different functions. Of course, some differences (especially the lower levels of waterlogging on dryland sites) are related to differential preservation, but there are also major differences between groups that are less affected by preservation (e.g. mammal bones and charred plant remains), suggesting that there are true differences between the three environments.[34]

Just like in the previous period, the fen edge seems to be the most diverse environment. People still relied on a broad spectrum of food types, including both domestic and wild plants and animals. There seems to have been a greater emphasis on domestic animals than plants, a trend also seen on dryland sites. Wild plants, some perhaps growing around fields, were still gathered and mammals and birds continued to be hunted, but fishing may have decreased, maybe because these were now caught and processed at true wetland sites.

In wetlands the economy seems to be well-balanced, with no group present much more frequently than others. Although domestic resources are present most frequently, their numbers are not as high as on the fen edge, presumably because space for cereal cultivation and keeping animals was limited. These issues may explain why wild animal foods occur relatively frequently on the wetland sites at this time. Like on the fen edge, the economy seems to have been a broad spectrum one, in which domestic plants and animals were supplemented by a range of wild foodstuffs, some of which came from the Fens, whilst others probably originated on the fen edge or in drier areas further inland. Some of the domesticates may equally have come from nearby fen edge or dryland sites.

Whilst drylands at this time are richer than in the previous period, with higher frequencies for many groups and a greater range of domestic and wild animals, their food remains differ from that in the other two environments, in that cereals are still not particularly frequent. Even in wetlands cereals occur relatively more frequently (in 50% of all phases, vs 35% in drylands), which suggests that the level of arable agriculture in dryland sites may have been low. Instead, domestic animals seem to be the focus. The dryland domestic animal assemblage differs markedly from that in wetlands and on the fen edge, with a very high proportion of ovicaprids. Given these patterns, these drier areas may have been used temporarily, possibly in a pastoral manner. However, the increase for many groups, the generally greater variety of species and a bit more waterlogging in drylands could suggest that at least some sites were in use for slightly longer periods of time than in the previous period.

[34] Cf. Appendix 4.

Thus, people clearly continued to have an interest in the wetter parts of the landscape in the Middle/Late Bronze Age. The fen edge still seems to have been the focus, but people engaged with wetlands on a large scale as well. Whilst the wetter parts of the landscape were of interest, drylands locations, where the food remains reflect a more pastoral character, were used too. Overall, there seems to be an increase in environmentally specific landscape use in this period, with clearer differences between the three environments. These patterns and their implications will be explored further in the next chapter.

Late Bronze Age/Early Iron Age (c. 1200-300 BC)

Figure 72 shows the distribution of the 62 Late Bronze Age/Early Iron Age sites. Unlike in the previous period, most of these (25) are dryland, not fen edge sites. True wetland sites have increased to 22, but fen edge sites decrease to 15 in this period. The same site clusters occur, with many wetland and fen edge sites in the Flag Fen Basin and near Over. Whereas marine sediments dominated in both areas in the previous period, the Over cluster is now located in a freshwater peat environment, whereas the Flag Fen Basin sites are still located relatively close to areas with marine influences (Figure 15.B). As a result, there may have been considerable differences between the various sites within the fen edge and wetland environment, making it difficult to generalise about these environments. However, at the same time, this variety ensures that patterns will not just represent one site type, but instead reflect the various ways in which people interacted with different wetland environments. In combination with an increase in the number of dryland sites in Cambridgeshire, the Late Bronze Age/Early Iron Age sites should provide a good insight into human-environment interaction in the three landscapes. Many sites are located in low-lying locations on river gravels or sands, although the bedrock geology for the Cambridgeshire sites is chalk (Fig. lxxxiv).

Figure 73 shows the main plant and animal groups in Middle/Late Bronze Age and Late Bronze Age/Early Iron Age wetlands. Domestic plants and animals are present most frequently, but wild mammals and fish still seem to occur relatively frequent well. The domestic animal assemblage is very similar to that in the last period, though sheep and goat are now identified amongst the ovicaprids (Fig. lxxxv). The wild animal assemblage mostly contains woodland mammals, although wetland species (otter and beaver) are still present as well. (Red) deer are present most frequently, with single occurrences of several other species (Fig. lxxxvi). Although the variety of fish increases in this period, it seems that pike occurs most frequently (Fig. lxxxvii). The bird assemblage has a clear wetland character, with

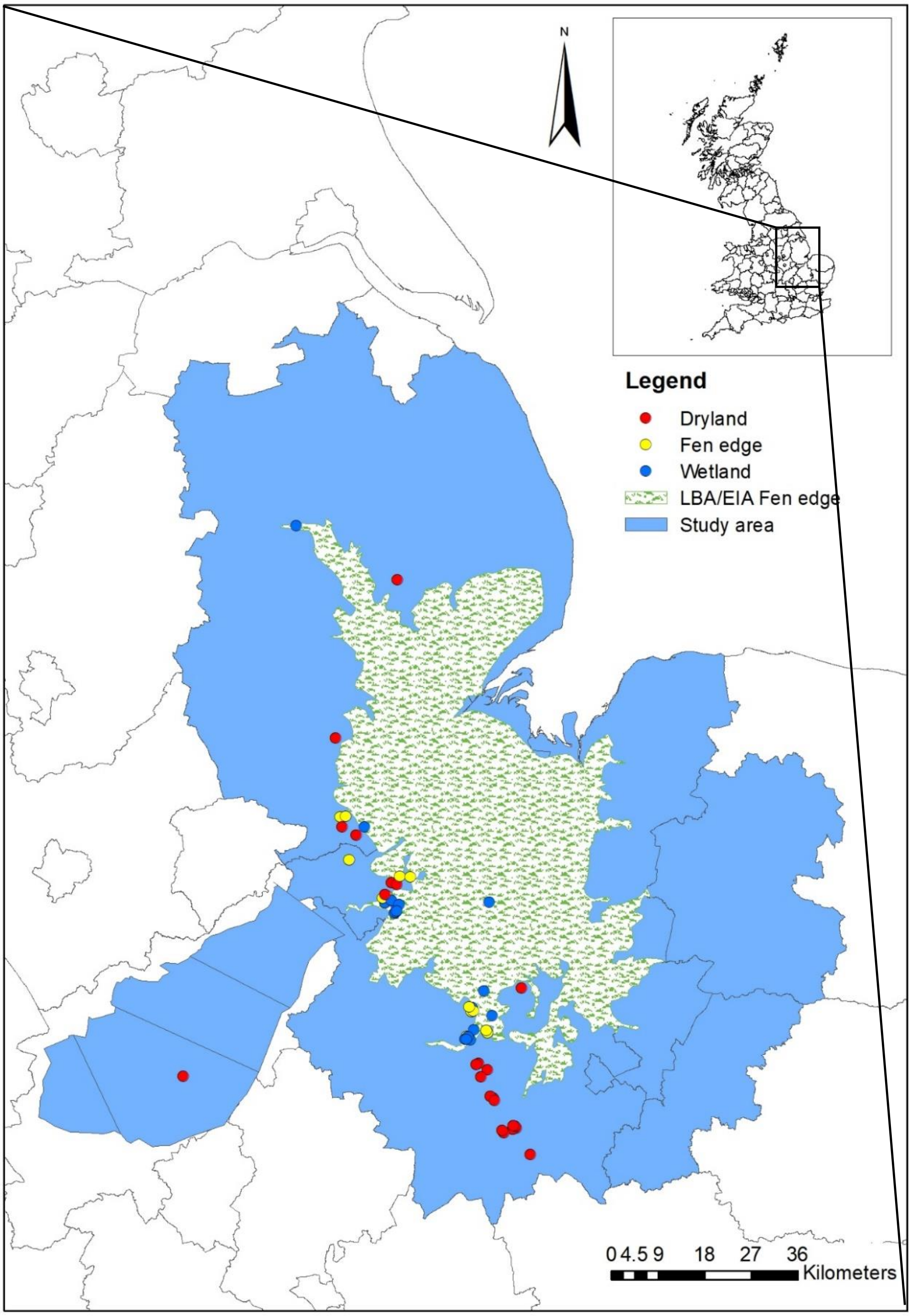


Figure 72: The Late Bronze Age/Early Iron Age site distribution in relation to the fen edge at the time. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

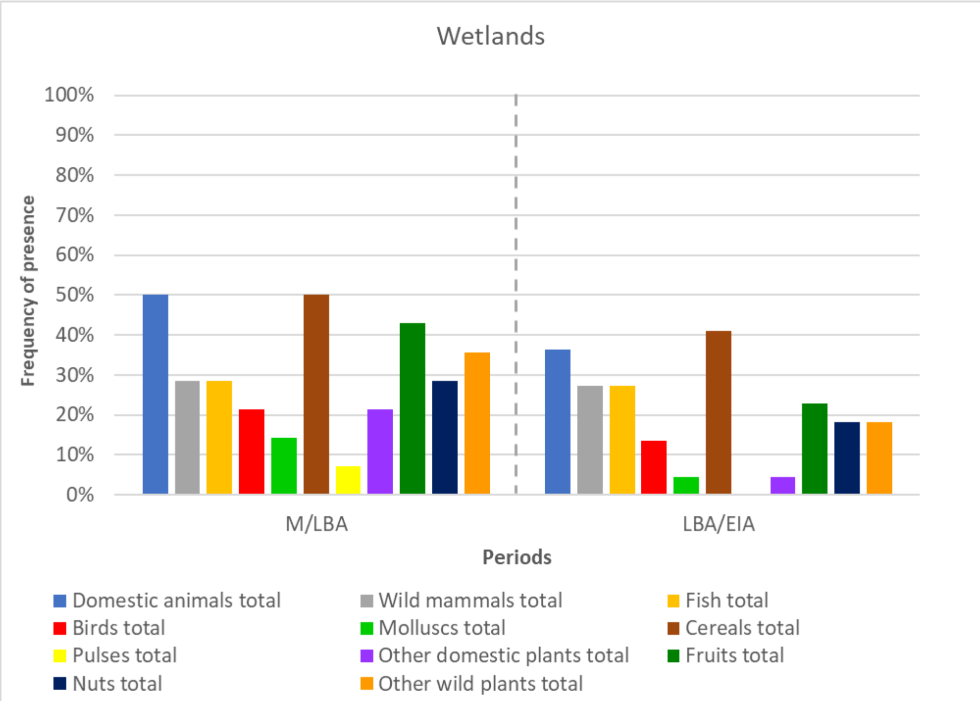


Figure 73: The frequency of presence of the main plant and animal groups in the Middle/Late Bronze Age and Late Bronze Age/Early Iron Age wetlands.

duck, goose, heron, crane and swan present (Fig. lxxxviii). It is likely that these few remains reflect more extensive fishing and fowling in this environment. The many fish traps and weirs in the river near the Must Farm settlement provide important circumstantial evidence for such activities (Knight and Brudenell in prep.). Unidentified molluscs in this period represent naturally occurring freshwater species.

Interestingly, cereals are the most frequently occurring group in wetlands in this period and a great variety of species is present (Fig. lxxxix). The presence of so many cereals in wetland sites is of considerable interest, as they were presumably not grown locally, or, if they were, only in small numbers. Perhaps many cereals in this period came from the nearby fen edge or dryland sites. Only waterlogged poppy was found in the other domestic plant category. Wild plant foods seem to have decreased quite significantly in this period. Only the four main fruit species (sloe, hawthorn, elder and black/raspberry) were identified and most are present at low frequencies. Apart from a few unidentified charred remains, all this fruit is waterlogged (Fig. xc). Nuts and other wild plants equally decline. Waterlogged fat hen is now the only wild plant group present in more than 10% of all phases and charred hazelnut only occurs once. Fewer charred remains in combination with lower frequencies of the various wild plant groups may suggest that these plant foods became less important as a food resource in the Late Bronze Age/Early Iron Age wetlands.

The small, apparent declines for most wetland groups are caused by the larger number of phases in the Later Bronze Age/Early Iron Age, but on the fen edge we see steep drops for all groups (Figure 74). After two periods of 'wealth', this environment now enters a period of decline. Only domestic animals are present in more than 30% of all phases and wild animals equally decline. It is not only the frequency of domestic animals that decreases drastically, their variety is also affected (Fig. xci). Cattle is the only species present in more than 30% of phases in this period and this species is clearly more frequent than pigs and ovicaprids, the only other species present. Wild mammal assemblages are equally poor. Red deer and wild boar are the only species identified. Fish and molluscs are now absent, and the only bird present was duck (identified once) (Fig. xcii).

Like the animal assemblages the fen edge cereal assemblage is very poor, both in terms of frequency and variety (Fig. xciii). Whereas almost all species of cereals were present in the Middle/Late Bronze Age, the Late Bronze Age/Early Iron Age only has some charred wheat

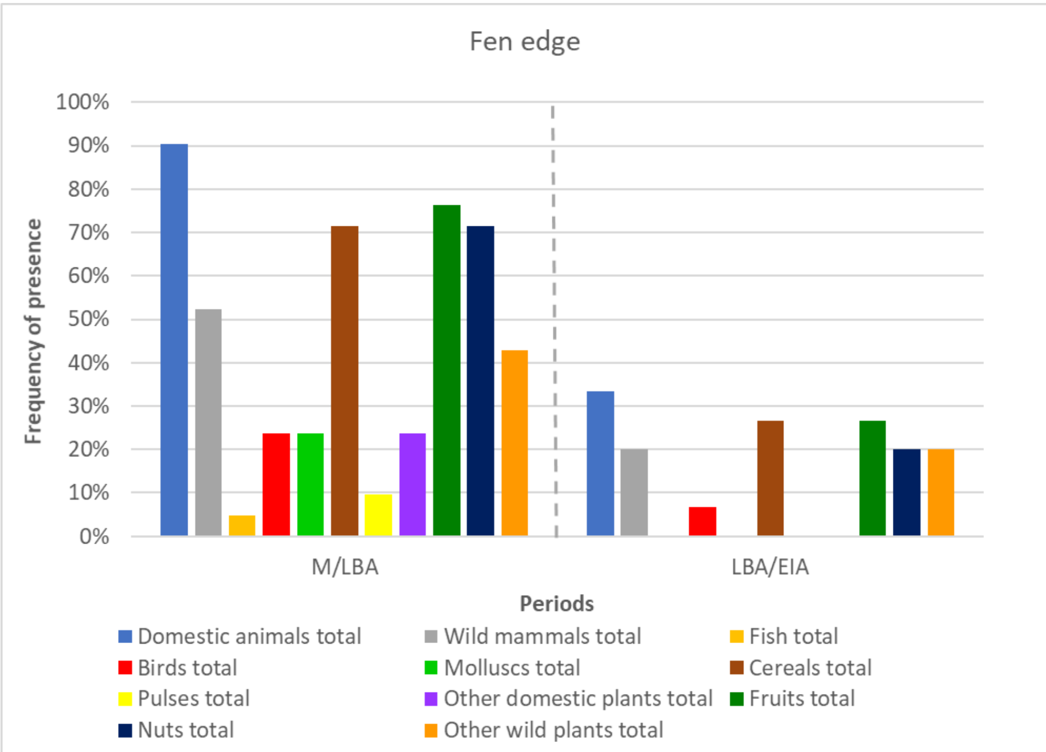


Figure 74: The frequency of presence of the main plant and animal groups on the Middle/Late Bronze Age and Late Bronze Age/Early Iron Age fen edge.

and charred and waterlogged barley. Pulses and other domestic plants disappear completely. Fruits too decline significantly and apart from some charred wild rose all groups are present in waterlogged state only (Fig. xciv). Charred nuts drop from around 40% to only c. 5% and charred fat hen disappears, as do wild oats and unidentified tubers. Like in wetlands, it seems that wild plant foods have suddenly decreased in importance. The broad-spectrum economy, in place since the Earlier Bronze Age on the fen edge, seems to have disintegrated in this period.

The Late Bronze Age/Early Iron Age pattern in drylands is similar to that in the Middle/Late Bronze Age, with similar levels of domestic and wild animals, and wild plants (Figure 75). However, cereals have suddenly increased, now present as frequently as domestic animals.

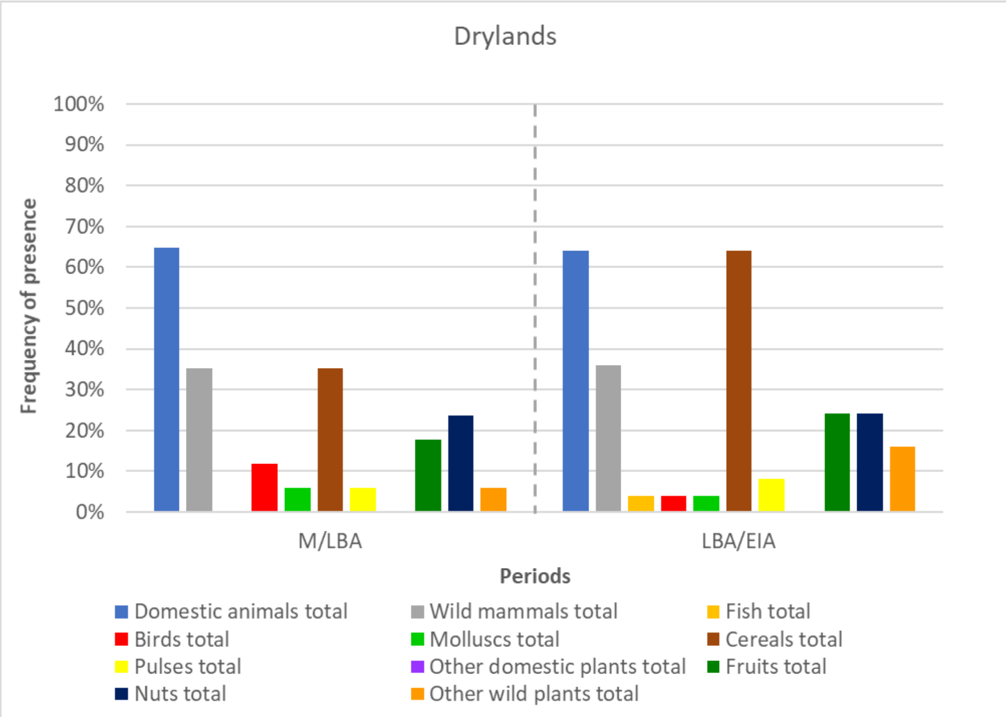


Figure 75: The frequency of presence of the main plant and animal groups in the Middle/Late Bronze Age and Late Bronze Age/Early Iron Age drylands.

This reflects an important change in the character and use of these dryland sites. Whereas ovicaprids were the most frequent domestic animal species before, cattle and pigs are present more frequently again in this period (Fig. xcv). Wild mammal counts have also increased, but the variety of species represented is reduced to red and roe deer (which is clearly present most frequently) and some wild boar (Fig. xcvi). There are single occurrences of fish (pike), birds (duck) and molluscs (freshwater mussel). The bird was found on a dryland site close to the Fens and the molluscs were pierced and found in a clutch (Evans and Patten 2011, 32-33) (Figure 76). Inhabitants of running freshwater habitats, they must have been brought to the site from a river (ibid.). The pike bone recovered from one of the North-west Cambridge sites is more puzzling, and could suggest contact with the Fens, where this fish is present more frequently than all other fish in this period.

For the first time, cereals are now counted as frequently as domestic animals. Wheat, (hulled) barley, spelt, emmer and bread wheat were identified (Fig. xcvii). Most remains are charred, but some waterlogging occurs. Several charred unidentified pulses also occur, but no other domestic plants are present. Most of the fruits are waterlogged and could therefore be natural. However, these waterlogged remains in drylands are of some interest, as it may reflect the presence of ditches and pits associated with settlement. The four main species (sloe, hawthorn, elder and black/raspberry) already recognised on the fen edge and in wetlands in previous periods are present most frequently (Fig xcviii). Perhaps these grew in hedges aligning field ditches. Like fruits, (hazel)nuts now also occur in waterlogged state and in charred state they are still present in 20% of all phases (Figure 75). This is much more than in wetlands or on the fen edge and suggests that some nuts were still added to the diet in drylands. Charred fat hen and wild oat only occur once and waterlogged fat hen,

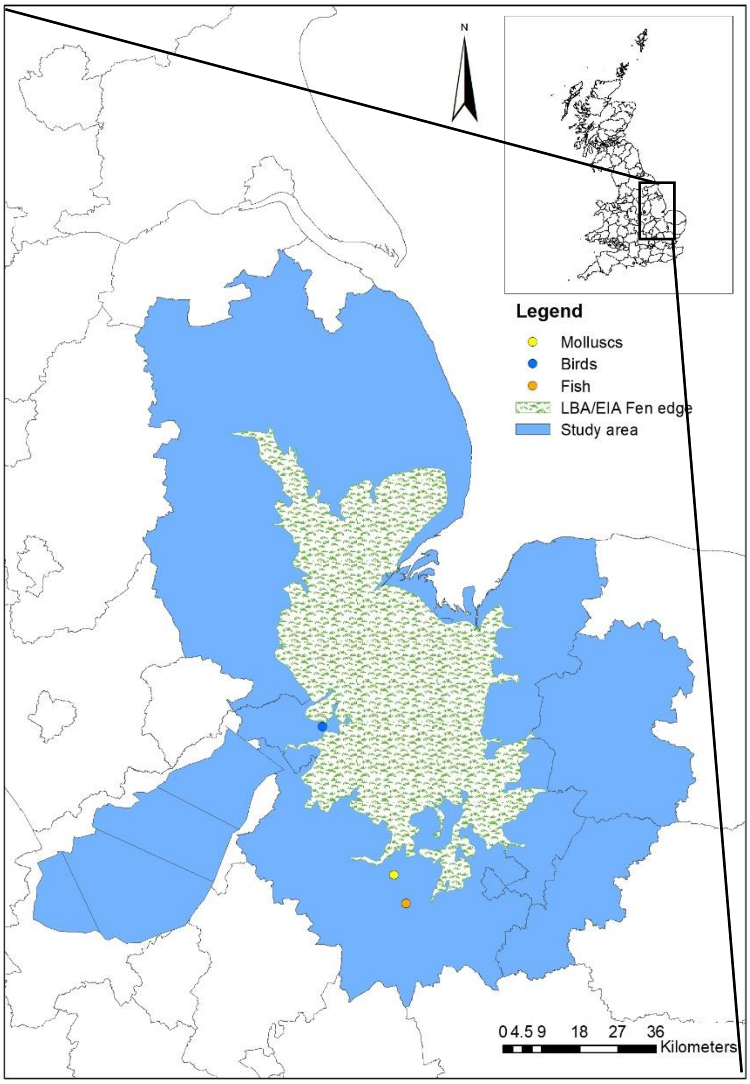


Figure 76: Wetland animal distribution in the Late Bronze Age/Early Iron Age drylands. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

which is more frequent, may occur naturally. Overall then, wild plant foods, perhaps apart from nuts, do not seem particularly frequent.

In summary, the Late Bronze Age/Early Iron Age period seems to be a period of major change in the way the three environments were used. The fen edge decline in the Late Bronze Age/Early Iron Age means that drylands, for the first time, are the richest environment for many groups. Only typical fenland animals, like fish and birds are found more frequently in wetlands. The dryland sites have high numbers of domestic animals and now plants as well. Wetland sites have lower frequencies of domesticates and higher wild animal counts. This may be due to differential preservation or the use of sieving on wetland sites (cf. appendix 4), but a lack of space to keep many domestic animals and the greater availability of fish and birds in wetlands are more likely explanations. Yet the presence of woodland species and domestic plants and animals clearly demonstrate that wetland communities were using and interacting with drier areas nearby. On the fen edge meanwhile, activity does not cease, but it is of a very different nature than in previous periods. Fen edge site numbers drop, and so do the frequencies of all plant and animal groups, and the variety of species within them. Several groups disappear altogether. The remains present suggest a much more restricted set of subsistence practices which may imply that fen edge sites were not inhabited for extended periods of time. The reasons for these remarkable changes will be considered in more depth in the next chapter.

4.3.4 Iron Age

Figure 77 shows the four main groups in the three environments in the Iron Age. Wetland site numbers drop from 22 to 10 in the Earlier Iron Age and these sites are very poor. All groups have dropped and although domesticates are present most frequently, they only occur in 20% of all phases. It seems that after the fen edge decline in the Late Bronze Age/Early Iron Age, the wetlands are now no longer in focus either. On the fen edge there seems to be a significant increase in all groups, but given the fact there are only six phases in total, these frequencies are unreliable. The decline in fen edge sites (from 15 to only six) suggests that the decline in this environment continues. In drylands there are declines as well, both for domestic animals and plants. The wild groups on the other hand do not show much change. Despite these declines, overall the drylands seem to be the main focus of activity in this period.

This changes in the Middle/Late Iron Age, when we see a clear increase in activity in the wetlands as reflected in an increase in the total site numbers (from ten to 22) and an

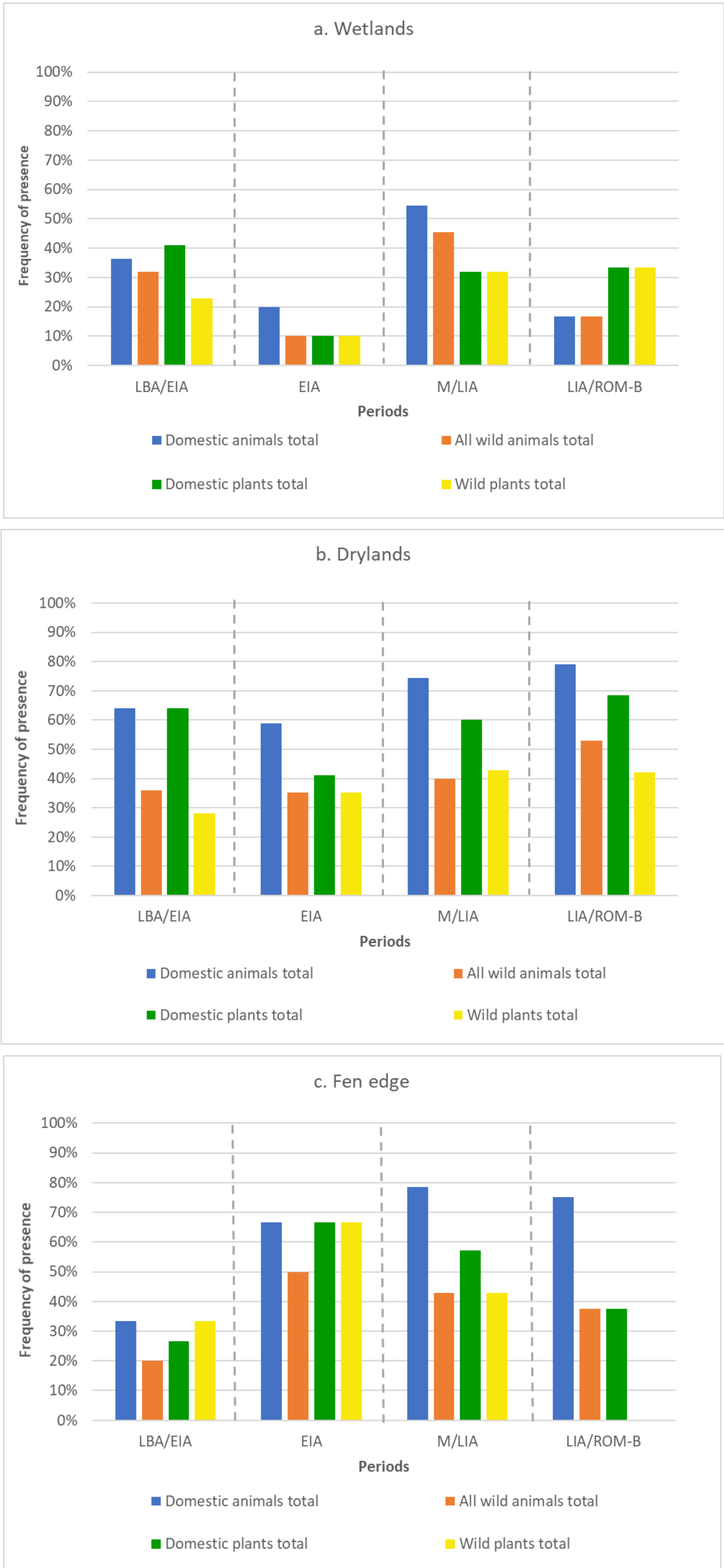


Figure 77: The frequency of presence of the four main data-groups throughout the Iron Age (the Late Bronze Age/Early Iron Age has been included to show the changes between this period and the Iron Age). Given the low total phase numbers in the Late Iron Age/Early Romano-British period in wetlands and on the fen edge, the frequencies in this period are unlikely to be representative for these two environments.

increase in the frequencies of the various groups. Domestic animals are present most frequently, but wild ones clearly occur frequently as well. Domestic and wild plants are present less frequently, particularly when compared to the fen edge, represented by 14 sites. Here domestic animals are present most frequently, and domestic plants follow, but wild animals and plants are relatively frequent as well. The fen edge pattern is similar to that in drylands (35 sites), where the frequencies of the four groups are very similar, though domestic animals and the wild groups are present a little more frequently on the fen edge. This pattern suggests that drylands and the fen edge may have been used in a similar manner, with a focus on domestic plants and animals with some wild resources, whilst the focus in wetlands is more on domestic and wild animals.

In the Late Iron Age/Romano-British period, the wetlands and fen edge seem to be less rich again. The total number of sites in both environments is low (six and eight respectively) though this may be due to the site selection process, which excluded Roman sites. Most groups decline in frequency, especially in wetlands. The animal groups drop quite significantly, and domestic and wild plant remains were only found in two of the six phases in this period. On the fen edge domestic animals continue to be very frequent at 75%, but domestic and wild plants decrease quite significantly. Wild animals also decrease, which means domestic animals are clearly present most frequently. These patterns suggest different use of wetlands and the fen edge, but given the low site number, they are not very representative. The drylands (19 sites) continue much the same as in the Middle/Late Iron Age, with a focus on domestic plants and animals, both of which have increased. Wild animals increase somewhat as well. Overall, it seems that the drylands were the main focus in this period.

Whilst drylands have a good number of phases in each of the three Iron Age periods, the fen edge is not well represented in the Earlier Iron Age and the Late Iron Age/Romano-British period. Wetlands also have fewer phases in these periods, making it difficult to compare trends in the different environments in these periods directly. Yet like before, there seem to be important developments in subsistence practices through time and variations between the three environments. By considering the frequencies of the various sub-groups of plants and animals within each environment it is possible to evaluate the above patterns in more depth.

Earlier Iron Age (c. 800-200 BC)

Figure 78 maps all 33 Earlier Iron Age sites. The number of sites in this period is only about half that of the former period, but this is not entirely unsurprising as the previous period

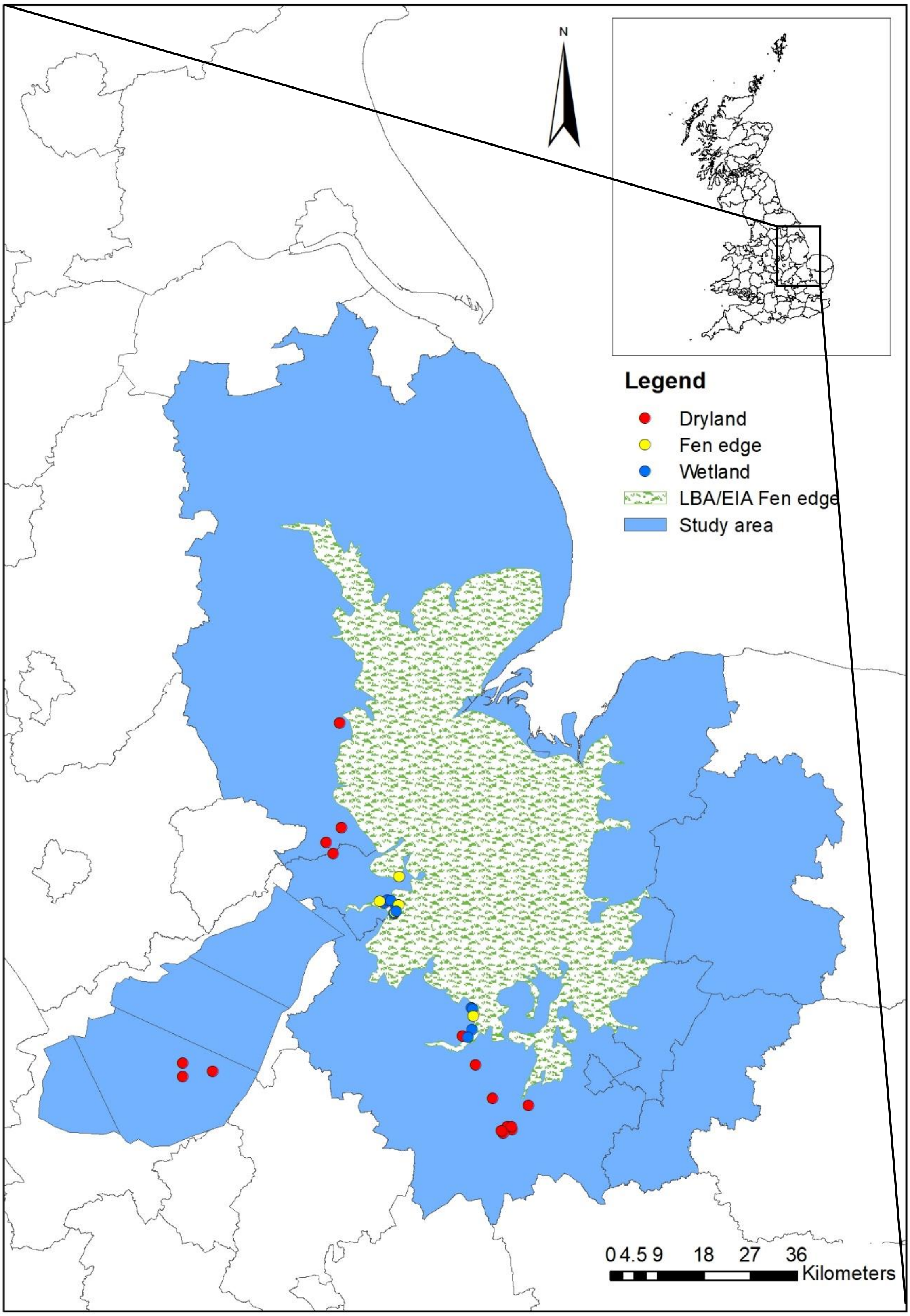


Figure 78: The Earlier Iron Age site distribution in relation to the fen edge at the time. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

covers a longer time span and any sites labelled 'Roman' (even if they may have contained Early Iron Age material) were excluded during the initial site selection. Like before, the wetland sites (ten in total) cluster in the Flag Fen Basin and near Over/Colne Fen in the south-western Fens. There are only six fen edge sites, which can be found in the same areas. This low total phase number means that frequencies appear too high in this environment. The clustering is also problematic, as this means that the patterns described only cover two areas. Dryland sites are more evenly spread than the wetland and fen edge ones, although, like before, there is a cluster near modern Cambridge. Almost all sites are located in low-lying positions on sandy and gravelly soil overlying clay, apart from three sites in Northamptonshire, which are located in a medium to high locations on till soils overlying sand and limestone (Fig. xcix). Unlike in the previous periods, there are very few dryland sites that are located near the contemporary fen edge; the majority is located at some distance from it. This may suggest drylands were a greater focus than the wetter environments.

Figure 79 shows the main plant and animal groups in the Late Bronze Age/Early Iron Age and Earlier Iron Age in wetlands. It is immediately clear that the wetland assemblages are very poor. Only domestic animals are present in more than 10% of all phases, that is on more than one site. All other groups only occur once. All main domestic animals are identified (Fig. c). Wild mammals are present, but the variety of species found has been reduced to red deer and badger (Fig. ci). Typical wetland groups like fish, birds or molluscs do not occur at all.

The domestic plant assemblage in wetlands is equally poor. Only some charred and waterlogged emmer and charred hulled barley were identified amongst the cereals, and other domestic plants are absent (Fig. cii). Fruits, already much reduced since the Middle/Late Bronze Age are present even less frequently now. Only charred and waterlogged elder and waterlogged black/raspberry were found. The only wild plant foods found are waterlogged hazelnut and fat hen.

Figure 80 shows the frequencies of the main plant and animal groups in the Late Bronze Age/Early Iron Age and Earlier Iron Age drylands. Here there is some decline as well, but most groups are still found relatively frequently. Like in the previous period, domestic plants and animals are present most frequently. The domestic animal assemblage is quite similar to that in the Late Bronze Age/Early Iron Age, but whilst cattle have decreased a little, ovicaprids and horses are now counted as frequently as pigs (Fig. ciii). In contrast to the previous period, the wild mammal assemblage is quite varied, although most species only

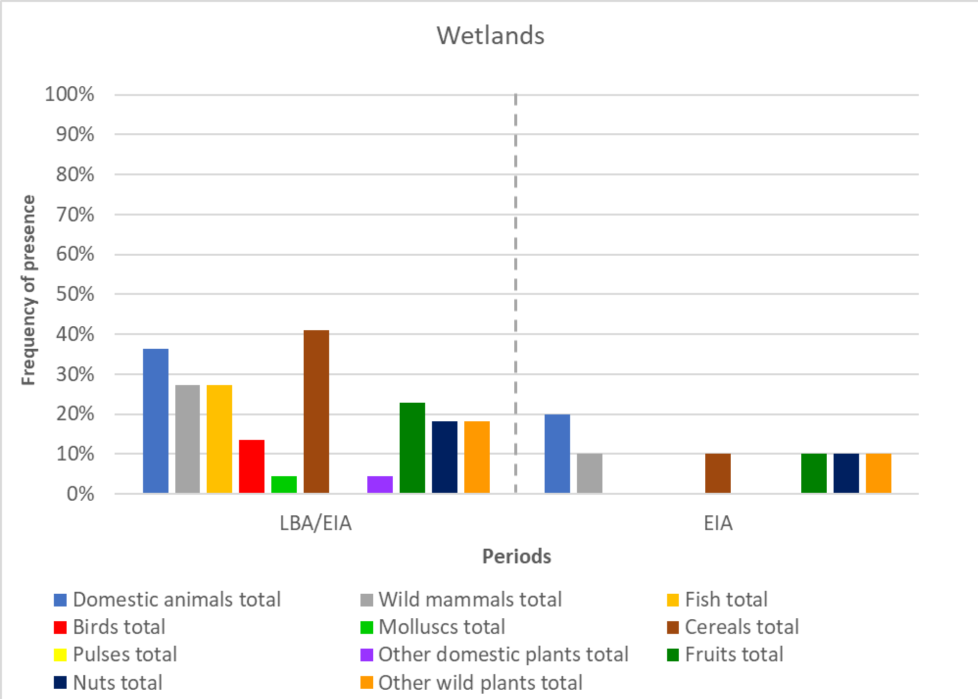


Figure 79: The frequency of presence of the main plant and animal groups in the Late Bronze Age/Early Iron Age and Earlier Iron Age wetlands. There are only 10 wetland sites in this period, and few had any food remains present, hence the low frequency (mostly 10%).

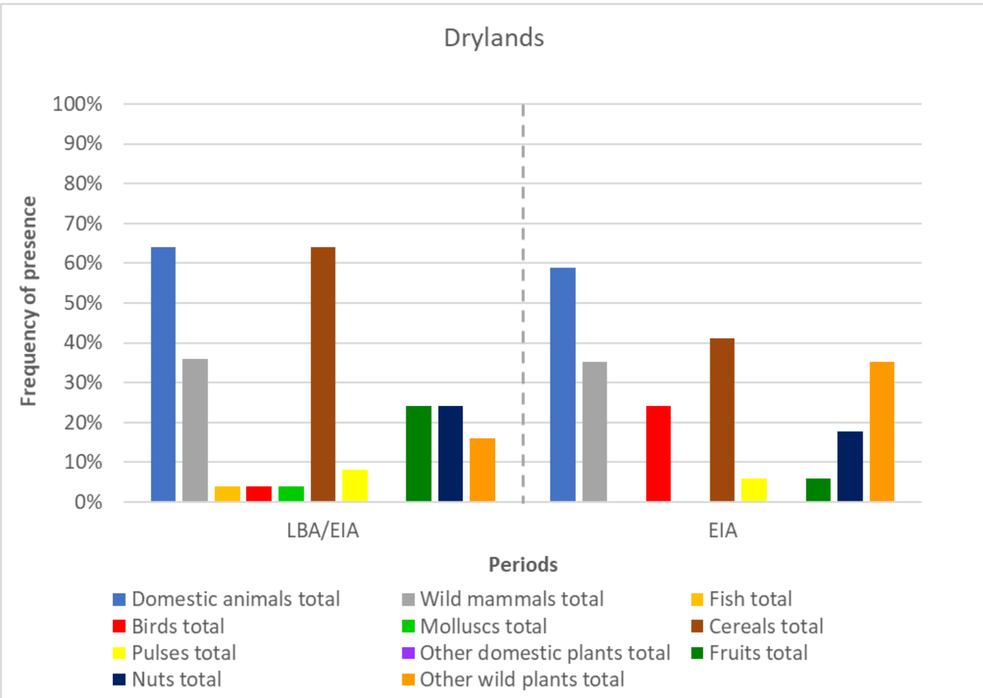


Figure 80: The frequency of presence of the main plant and animal groups in the Late Bronze Age/Early Iron Age and Earlier Iron Age wetlands.

occur once. Interestingly, despite their absence in the Fens, both otter and beaver also occur (Fig. civ). Both were found at the Trumpington Meadows site near modern day Cambridge, at a considerable distance from the contemporary fen edge (Figure 81). Either these wetland mammals were caught there, or they may have come from the Fens, which despite apparently no longer being inhabited, may still have been exploited intermittently (e.g. during trapping forays). The marked increase in birds in this period equally suggest that the wetlands were still exploited (Figure 80). The same Trumpington site contained wetland (duck), dryland (buzzard) and unidentified bird bones. Two of the other three sites with bird remains are located relatively close to the contemporary fen edge, which may explain the presence of wetland (duck and goose) and unidentified (possibly also wetland) birds (Figure 81). The corvid at Wilby Way in Northamptonshire may be a natural occurrence.

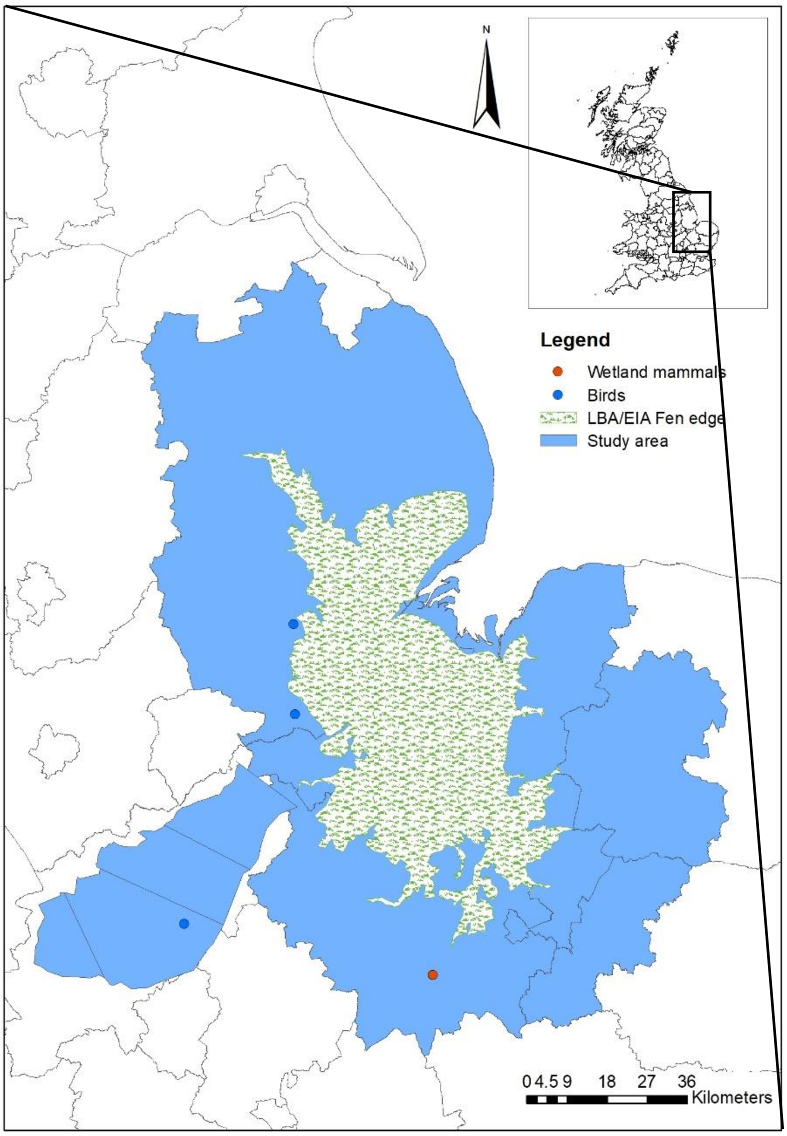


Figure 81: Wetland animal distribution in the Earlier Iron Age drylands. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

The cereal assemblage contains the same species as before, with the addition of (charred) rye (Fig. cv). Waterlogging seems to have become more frequent, with both wheat and spelt found. Only Celtic bean is identified in the other domestic plants group. The fruits have clearly declined further, and only four species were found once in waterlogged state. The fact we do not find them in charred state may suggest that these fruits were of less importance in the diet. Nuts on the other hand, continue to be present at around 20% and wild plants, represented by charred fat hen and wild oats, increase (Fig. cvi). These species may have been growing in cereal fields and could have been added to the diet.

Figure 82 shows the fen edge patterns for the main plant and animal groups. There seems to be an increase for most groups, but as there are only six fen edge sites, this could be more apparent than real. It is difficult to evaluate group frequencies given the low total phase number, but domestic plants and animals are clearly present most frequently. The domestic animal assemblage is relatively similar to that in drylands (Fig. cvii). The wild mammal assemblage is still very poor and only red deer and otter are present (Fig. cviii).

Pike, crane and an unidentified bird were all found only once but given the low total number of sites this is of some significance. These wetland mammals, birds and fish demonstrates that the Fens continued to be exploited occasionally. The cereal assemblage is more varied than in the previous period, with wheat, emmer, barley and spelt present (Fig. cix),

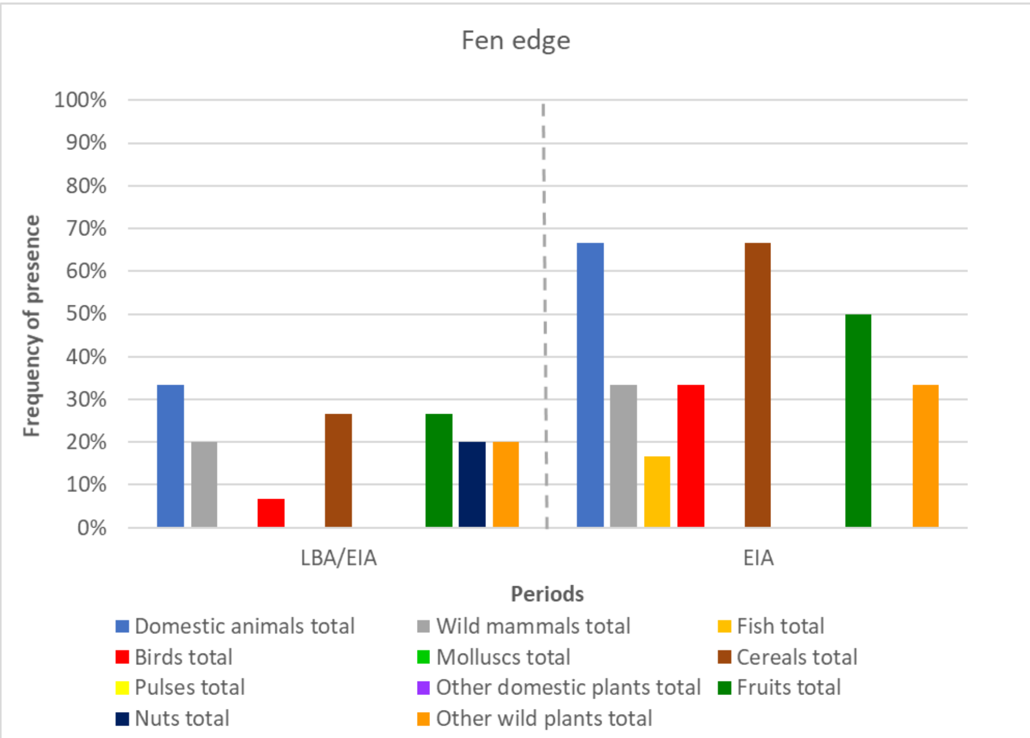


Figure 82: The frequency of presence of the main domestic plant and animal groups in Late Bronze Age/Early Iron Age and Earlier Iron Age drylands.

possibly suggesting that the few fen edge sites we do have are settlement related again. There are still no other domesticates, but fruits do appear. Bird cherry and unidentified fruit are also present in charred state. The waterlogged assemblage is similar to that in drylands (Fig. cx). Nuts, which had already declined in the previous period, have now disappeared altogether, but like in drylands, charred fat hen is present relatively frequently, and some charred unidentified tuber was also found (Fig. cxi).

In summary, Earlier Iron Age food remains in the three environments clearly differ from each other, suggesting changes in the way people interacted with the three environments. It seems that activity in the wetlands, which were still actively exploited and even inhabited in the previous period, has declined significantly. There are far fewer Earlier Iron Age sites and very few food remains were found on the majority of these sites, most of which only contain a few sherds of Early Iron Age pottery. Perhaps these remains represent temporary visits to the wetlands rather than longer term settlement. The presence of wetland species on the fen edge (and even in drylands) demonstrates that wetlands were still exploited. Yet given the possibly more transient nature of wetland sites, the generally low number of fen edge sites, and the location of many dryland sites away from the fen edge, it seems that drylands were the focus in this period. Despite some declines, they are characterised by an economy mostly reliant on domestic resources. Some wild animals and plants were used, but these are not present at very high frequencies. Birds *are* rather frequent and their presence, as well as that of wetland mammals, in inland locations may suggest connections with fen edge communities. Indeed, despite the number of Earlier Iron Age fen edge sites being low, food remains do not differ much from those in drylands, possibly suggesting that these fen edge sites were related to those further inland. The greater range of food types and species present on the fen edge in this period suggests that they were relatively 'normal' settlements, in contrast to the last period, when activity on the fen edge seems to have been more transient.

Middle/Late Iron Age (c. 400 BC -50 AD)

Figure 83 shows the distribution of Middle/Late Iron Age sites. There is a clear increase in the number of sites in this period and they are more widely spread than in the preceding Earlier Iron Age. Wetland sites still mainly occur in the Flag Fen Basin and near Colne Fen/Over in the south-western Fens, but a few isolated ones now appear in Lincolnshire as well. Whilst most sites are located in freshwater fens, two (Cowbit Wash and Fen Farm) are located in a saltmarsh. The Wardy Hill Ringwork, though located in a higher position, is

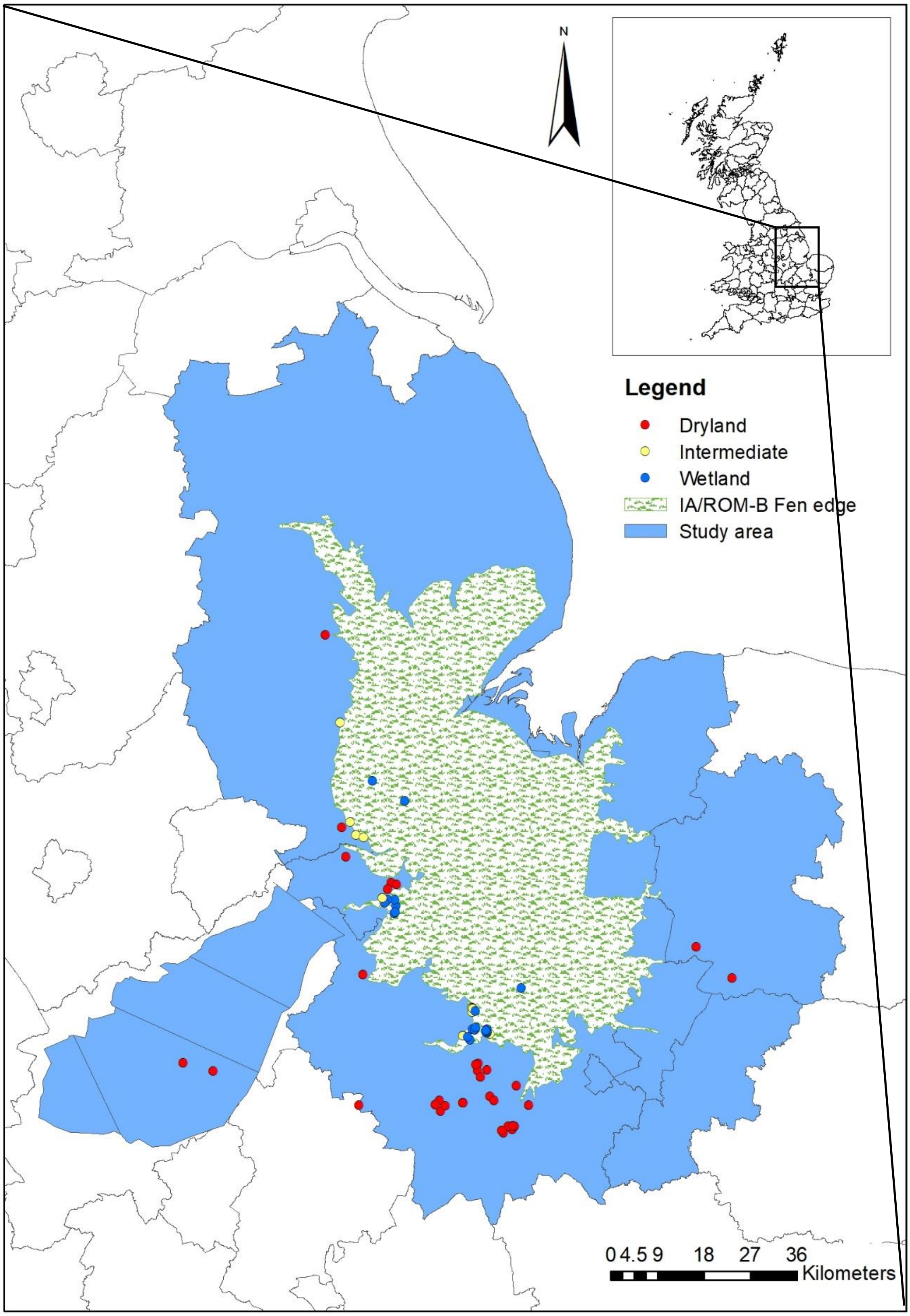


Figure 83: The Middle/Late Iron Age site distribution in relation to the fen edge at the time. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

situated on an island and is therefore considered a wetland site as well. The number of fen edge sites has increased too and although there are clusters in the same locations as the wetland sites, there are more isolated examples along the Lincolnshire fen edge as well. Dryland sites are most widely distributed and although there still are a few clusters, many others occur by themselves. The increase in site numbers and this wide distribution demonstrate a clear expansion in this period. A great variety of sites is present in each of the three periods, which makes generalisation more difficult, but equally ensures that the patterns described are representative for the period. Whereas sites were mostly located in lower-lying positions on riverine deposits in earlier periods, several of the dryland sites can now be found on slightly higher till ground as well (Fig. cxii).

Figure 84 demonstrates the patterns for the main animal and plant groups in the Earlier and Middle/Late Iron Age in wetlands. It seems that this environment, where activity was very low in the previous period, is back in focus. The whole spectrum of food resources is present again, with domestic animals present most frequently, but high frequencies for fish and birds as well. The domestic assemblage in this period contains all species and is of interest as horses seem to appear as frequently as pigs (Fig. cxiii). Although red deer are present most frequently in the wild mammal assemblage, pelt species like fox, badger and wild cat also occur and all three wetland mammals are present, with beaver counted most frequently (Fig. cxiv). After their apparent absence in the Earlier Iron Age, fish return in the

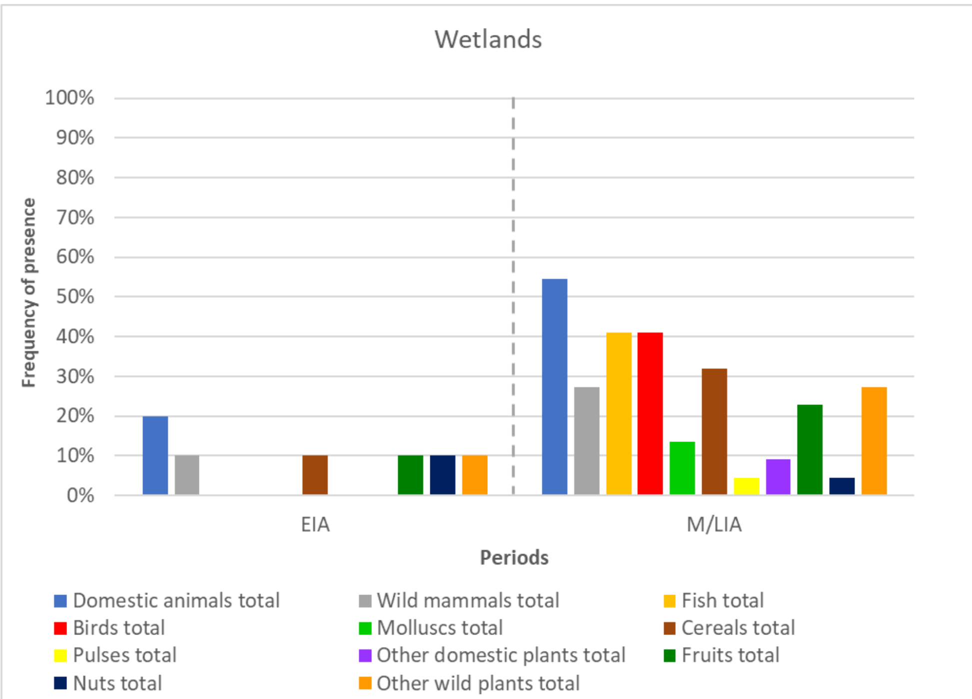


Figure 84: The frequency of presence of the main plant and animal groups in the Earlier and Middle/Late Iron Age wetlands.

Middle/Late Iron Age. Indeed, they are counted more frequently than cereals, suggesting they were of considerable interest. Pike and unidentified fish are present most frequently, but a range of other species was identified (Fig. cxv). Though only occurring once each time, this variety too suggests that fish were of some importance in wetlands. Birds also return, at equally high frequencies. The range of species present is quite astonishing (Fig. cxvi). Although unidentified birds are most frequent, a large number of birds fall in the wetland category, with ducks and swans counted very frequently. It is likely these were caught for their meat rather than feathers. Interestingly, ravens/corvids were identified four times as well, possibly suggesting that these birds, which are less likely to have been eaten, may have been of special interest. Many birds only occur once, and the majority comes from the sites near Haddenham but birds do also occur at Wardy Hill, in Lincolnshire and the Flag Fen Basin, suggesting that birds truly were an important resource in wetlands of this period (Figure 85). Two freshwater mussels may occur naturally, but oyster and cockle were identified as well. The cockle at Fen Farm is not entirely unexpected as the site was located in a tidal saltmarsh environment at the time and may have been deposited naturally, or locally available. Haddenham, where the oyster was found, is located, in a freshwater fen environment in this period (cf. Figure 15.C). It may indicate contact with, or the exploitation of, tidal or coastal areas further east.

Cereals and other domestic plants are clearly present less frequently than domestic and wild animals in wetlands in this period. However, the variety of cereals has increased again (Fig. cxvii). Charred unidentified pulses are present, as well as charred flax and poppy. Fruit counts have increased a little but only occur a few time. Sloe-berry, hawthorn and wild rose occur in charred state, whilst elder and black/raspberry only occur in waterlogged state (Fig. cxviii). Fruits were presumably still added to the diet but compared to the wild animal foods they seem to have been of marginal importance. The same is true for nuts, with charred hazelnut only identified once (Fig. cxix). Charred wild oat was found twice but fat hen (charred and waterlogged) is present more frequently. These wild seeds may have been added to the diet.

Perhaps unsurprisingly given the activity in wetlands, the fen edge is back in focus as well. Site numbers increase from six to fourteen and most data-groups are present at relatively high frequencies. Like in wetlands, domestic animals are present most frequently (Figure 86). Cattle and pig are present most frequently, but ovicaprid, horse and dog are present very frequently as well (Fig. cxx). Like in wetlands, wild animals occur quite frequently, and

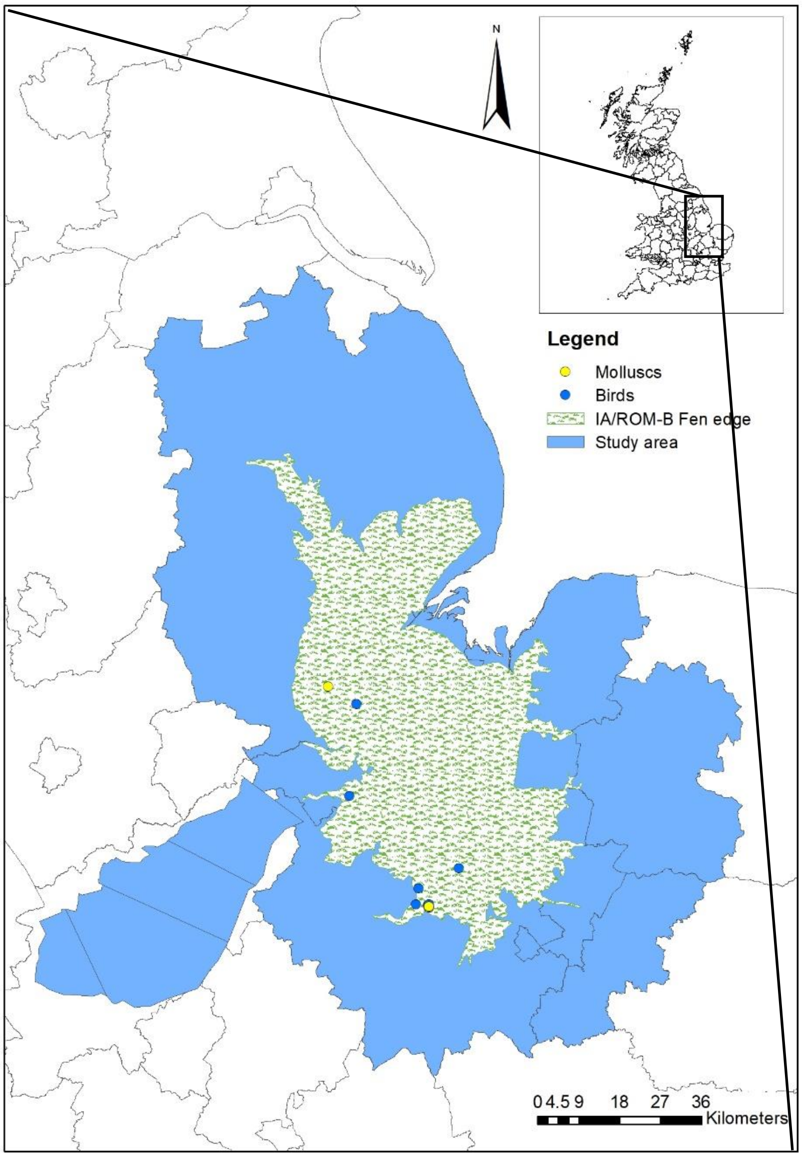


Figure 85: Birds and molluscs distribution in the Earlier and Middle/Late Iron Age wetlands. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

the assemblage is more varied again in this period (Fig. cxxi). Red deer clearly are present most frequently, but like in wetlands, beaver and otter also occur, demonstrating that wetland mammals were of some importance in this period. Though not as frequent as in wetlands, fish were found on some fen edge sites. Pike is present most frequently, but unidentified fish and even a haddock bone were found as well. The saltwater haddock was found at Billingborough, which is located close to the saltmarsh in Lincolnshire, but not near the coast. It's presence on this site suggests that sea fishing also took place in this period. Despite this interaction with the sea, marine molluscs do not occur on the fen edge. Birds, however, are present. The assemblage is not as rich and varied as in wetlands, but here too

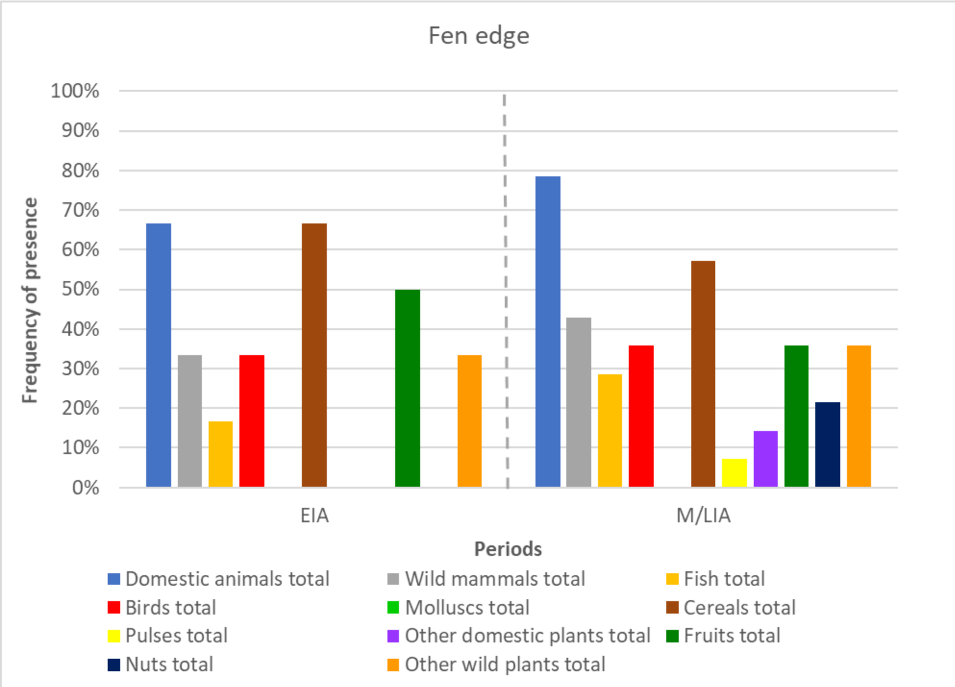


Figure 86: The frequency of presence of the main plant and animal groups on the Earlier Iron Age and Middle/Late Iron Age fen edge.

there are relatively high frequencies for duck and swan, suggesting these species were targeted specifically (Fig. cxxii). Goose, crane and coot were also identified amongst the wetland birds, whilst raven and corvids are present in the dryland assemblage. As these species are also present relatively frequently in wetlands and even drylands, this is of considerable interest.

Cereals are present more frequently on the fen edge than in wetlands and a variety of species is identified (Fig. cxxiii). Other domestic plants are present again as well (charred and waterlogged poppy and unidentified pulses). Like in wetlands, fruit counts are low in this period and no charred remains occur, possibly suggesting that fruits were not frequently eaten. The relatively high frequency of fat hen on the other hand, found not only waterlogged, but also charred, and already frequent in the Earlier Iron Age, suggests that this species may have been part of the diet (Fig. cxxiv). Hazelnuts, both charred and waterlogged, also occur on the fen edge and even wild oats occur in charred and waterlogged state. Thus, wild plant foods seem to be of greater interest on the fen edge than in wetlands, where wild animals seem to be the focus.

Figure 87 shows the dryland patterns in the Earlier and Middle/Late Iron Age. Both domestic animals and cereals have clearly increased, whilst most other groups either stay level or decline a little. The domestic animal assemblage is similar to that in the previous period and the whole spectrum of species is present (Fig. cxxv). All wild mammal groups are

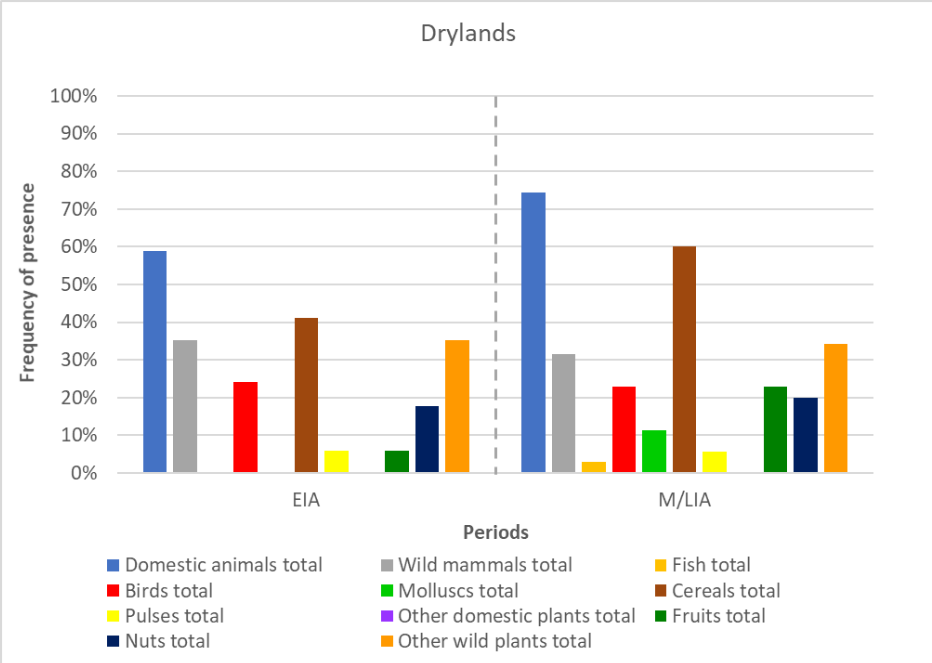


Figure 87: The frequency of presence of the main plant and animal groups in Earlier Iron Age and Middle/Late Iron drylands.

represented with woodland mammals particularly strongly represented. The assemblage includes larger deer species and wild boar and a range of smaller animals which may have been hunted for pelts (Fig. cxxvi). Beaver was identified on a site near the fen edge, suggesting that people here may have occasionally exploited the Fens, or traded resources with fen edge and wetland people. Water vole in true inland locations in Cambridgeshire were probably not eaten and may represent natural deaths. The one fish identified was an eel. It was found at one of the Cambourne sites, which is of considerable interest, as this is located in a truly inland location (Figure 88). It could have been caught locally, but may equally have come from the Fens, where fish clearly occur frequently. The relatively high frequency of birds in drylands of this period equally suggest that such contact between drylands and wetland may have existed. Although frequencies in drylands are much lower than those in wetlands, the same species seem to be present, with duck, geese and swan in the wetland bird group and raven, crow and corvid in the dryland assemblage (Fig. cxxvii). Interestingly, the sites where these bird remains were found are all located at some distance from the contemporary fen edge. Of course, birds are highly mobile, and ducks, geese and swan may move to inland locations. Yet the fact that they and various corvids are present in all three environments at this time is remarkable and suggest that these tree environments were related in some way. Connections between different environments are also suggested by the occurrence of saltwater molluscs (oyster mostly) on various inland locations in Cambridgeshire (Figure 88).

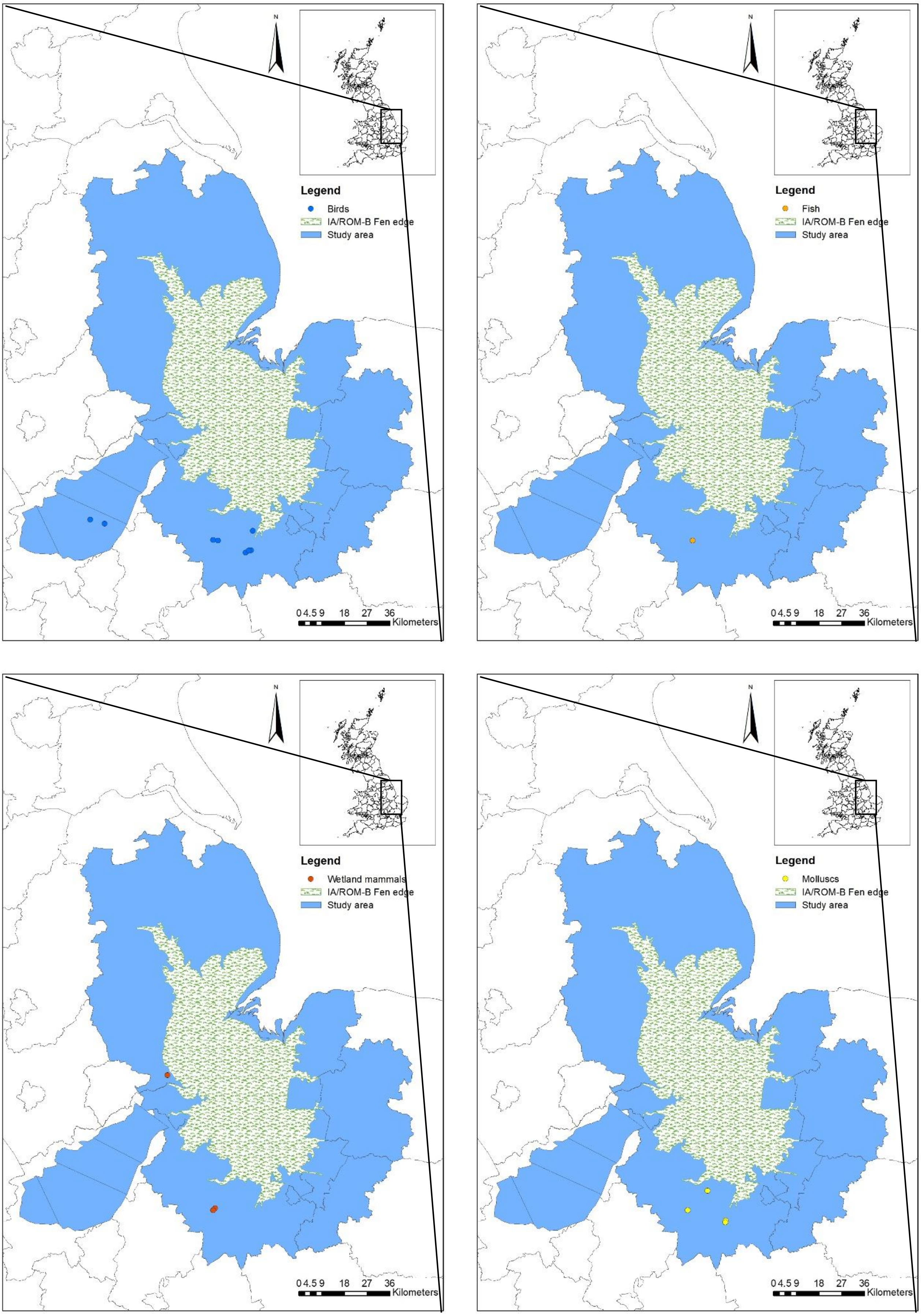


Figure 88: Wetland animal distribution in Middle/Late Iron Age drylands. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

Like on the fen edge, a wide variety of cereals occurs, mostly in charred state (Fig. cxxviii). Charred unidentified pulse is the only species in the other domesticates group in this period. Fruit counts are still very low, but some species occur in charred state, suggesting that fruits may have been part of the diet in this period (Fig. cxxix). The patterns for nuts and other wild plants have changed little since the Earlier Iron Age, with charred fat hen present most frequently, but charred hazelnut and wild oat also occurring. Hazelnuts and fat hen also appear in waterlogged state (Fig. cxxx).

In summary, after lower levels of activity in the Earlier Iron Age, it seems that there is a renewed interest in the wetter parts of the landscape and its resources the Middle/Late Iron Age period. Just like in the Bronze Age, people relied on a wide range of foodstuffs in wetlands, including domestic and wild resources. However, whereas cereals and wild plant foods seem to have played a relatively important role in the Middle/Late Bronze Age still, domestic and wild animals seem to be the focus in the Middle/Late Iron Age. Birds and fish are present particularly frequently (even more so than wild mammals), and wetland mammals are also represented in the wild mammal assemblage. This may suggest a more targeted and potentially more specialised exploitation of Fenland resources in this period. The fen edge sites, though few in number, also have typical wetland species, but domesticates are present more frequently. In this respect the fen edge resembles the dryland pattern, which still seems to reflect a mixed agricultural economy in this period, although domestic animals and ovicaprids may have become more important within this. Wild animals do occur as well, but at lower frequencies than in the wetland and on fen edge. Still, their presence, and especially the high bird counts, may suggest wetland exploitation, or contact with fen edge and/or wetland communities.

Late Iron Age/Romano-British (c. 100 BC-100 AD)

Figure 89 shows the 33 Late Iron Age/Romano-British sites. The much lower site number is probably a result of the site selection process; Roman sites were not the focus in this research. However, many Later Iron Age sites seem to continue into the Romano-British period, which is why these sites were included. The majority of sites (19 in total) are located in dryland areas. Most are located in Cambridgeshire, continuing from the previous period. Six wetland sites can be found in the Flag Fen Basin. As three of these only contain environmental data, there are only three real wetland sites in this period. This makes percentages unreliable and many groups are present at the same frequency. Eight sites can be characterised as fen edge in this period. They cluster in the south-western Fens and east of

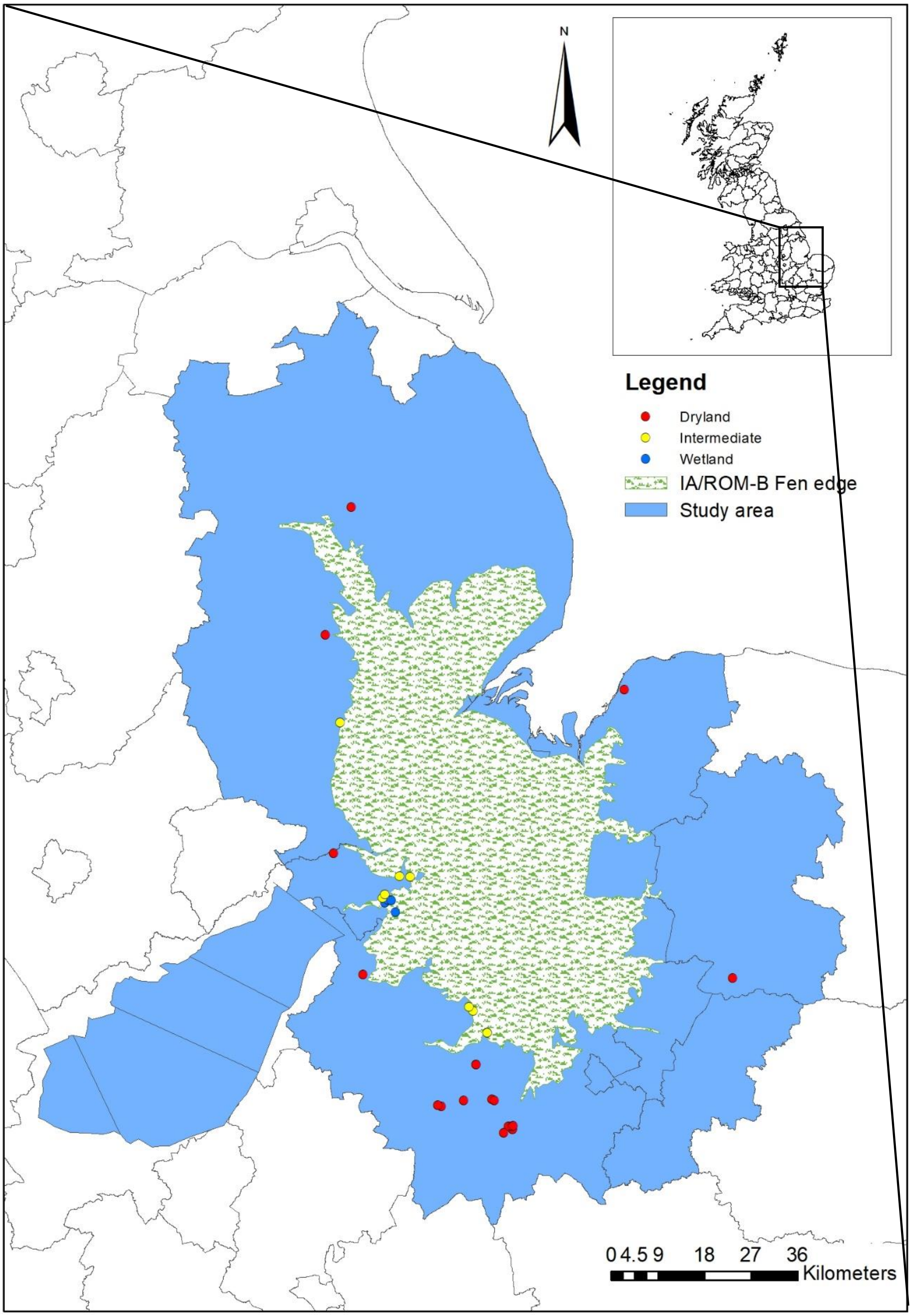


Figure 89: The Late Iron Age/Romano-British site distribution in relation to the fen edge at the time. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

Peterborough, with only one site (Billingborough) in Lincolnshire. Like in the previous period, most sites are located in lower lying terrain on lighter soils, but occupation of heavier clay and till soils in Cambridgeshire continues as well (Fig. cxxxi).

Figure 90 shows the trends for the main plant and animal groups in the Middle/Late Iron Age and Late Iron Age/Romano-British period in wetlands. There are only six real wetland sites, and these are rather poor in finds (only three contain relevant data). Frequencies cannot be compared, which means there is little we can say about wetland food remains in this period. Despite apparently low levels of activity in wetlands at this time, the domesticated animal assemblage includes all major species and only lacks cat and chicken (Fig. cxxxii).

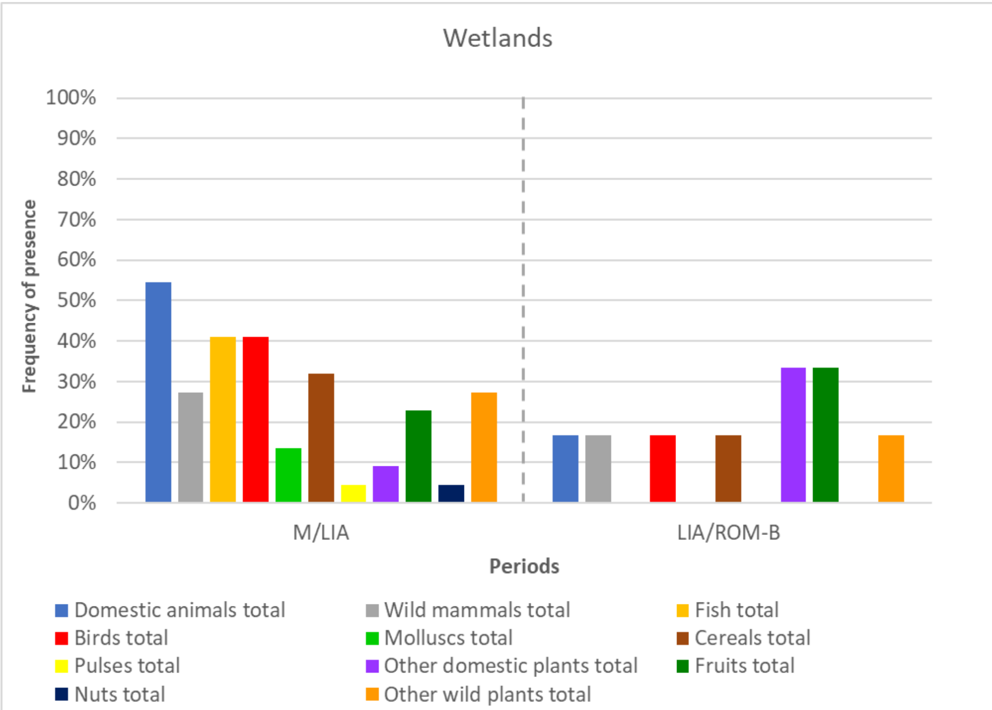


Figure 90: The frequency of presence of the main plant and animal groups in the Middle/Late Iron Age and Late Iron Age/Romano-British wetlands.

However, all of these animals were found on only one of the three sites (Haddenham V and XI). The wild animal assemblage is relatively varied and includes woodland, wetland and field animals as well as many different birds (Fig. cxxxiii). Species include red and roe deer, fox, badger, squirrel, hare and beaver (Fig. cxxxiv). The presence of the latter, in combination with a wide range of bird remains, demonstrates that the Fens were still exploited in this period. The absence of fish may be more apparent than real given the low site number. The bird assemblage in this period is as varied as it was in the last, including many wetland species, as well as dryland ones and unidentified remains (Fig. cxxxv). As they all occur once it is not possible to say which species is most frequent, but the number of wetland species is higher than the dryland ones. All these bird remains were found at Haddenham V and XI, which seems to have been a highly specialised wetland settlement, where beaver hunting and wildfowling were of great importance (Evans and Serjeantson 1988).

The cereal assemblage, also recovered at the Haddenham site, includes most major groups, apart from wheat (Fig. cxxxvi). Other domesticates only include charred and waterlogged poppy seeds in this period. Given the wetland location of Haddenham, some domestic plants may have been grown on the nearby fen edge. Fruits are represented by charred apple and waterlogged elder and blackberry. The charred apple may indicate that fruit continued to be part of the diet, but nuts, consistently low in wetlands, have now disappeared altogether. Charred fat hen and unidentified tuber are still present, perhaps suggesting these were eaten (Fig. cxxxvii).

Like wetlands, the fen edge seems to be poorer than before in terms of the variety of remains present (Figure 91). Yet the relative frequencies of the domestic animals that are present are very similar to that in the last period (Fig. cxxxviii). The wild mammal assemblage is less varied than before, and all species only occur once (Fig. cxxxix). Only woodland species were identified, and they include red deer, deer, fox, wild cat and wolf. Fish no longer occur, and one unidentified bird was found. The cereal assemblage in this period is also less varied than before and no other domestic plants were found (Fig. cxl). Fruits are present at low frequencies and only in waterlogged state. Charred hazelnut and wild oat were identified once, and fat hen only occurs in waterlogged state, so these too were not displayed.

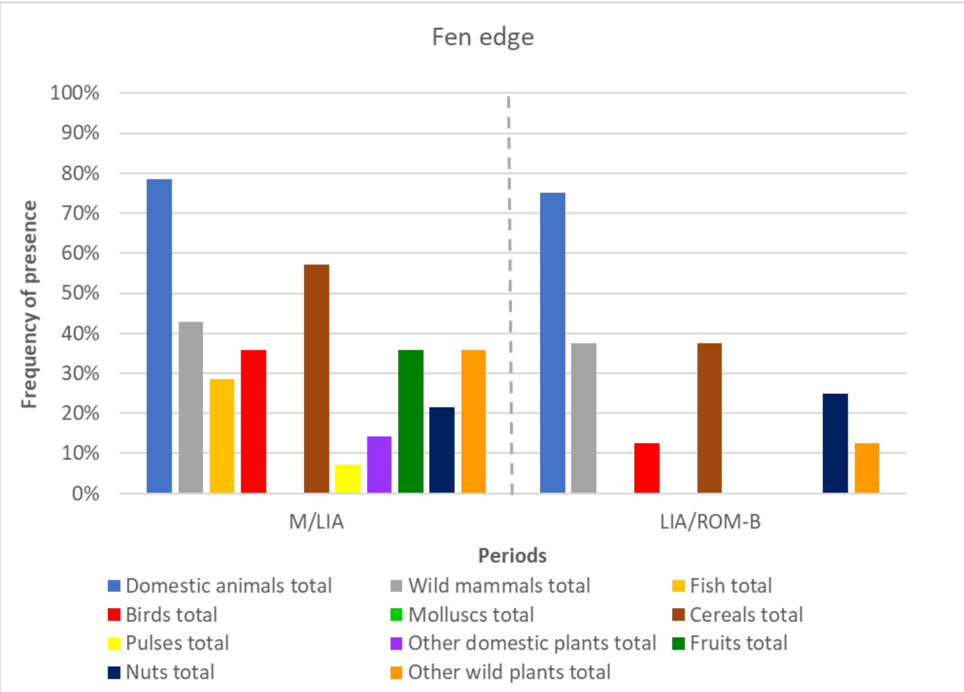


Figure 91: The frequency of presence of the main plant and animal group frequencies on the Middle/Late Iron Age and Late Iron Age/Romano-British fen edge.

Drylands are a lot richer than the fen edge and wetlands in this period, with all major group apart from pulses present. Domestic animals are present most frequently, and the assemblage is almost identical to that in the last period (Figure 92). Despite a clear focus on domestic animals, some wild mammals still occur as well, with woodland, field and even wetland species (a beaver) identified (Fig. cxli). Most species only occur once or twice, but red deer are present very frequently in this period. They may have been hunted for their antler and bone as much as their meat, but the steep increase in this period is of some interest.

The beaver found at Ruskington in Lincolnshire, was presumably caught in the Fens (Figure 93). Unidentified fish and birds and cockle shell were also found on this site, which may suggest that this community, located relatively closely to the fen edge, occasionally exploited wetland resources. Alternatively, they traded these resources with groups on the fen edge or true wetland communities like those at Haddenham. Marine molluscs (oyster

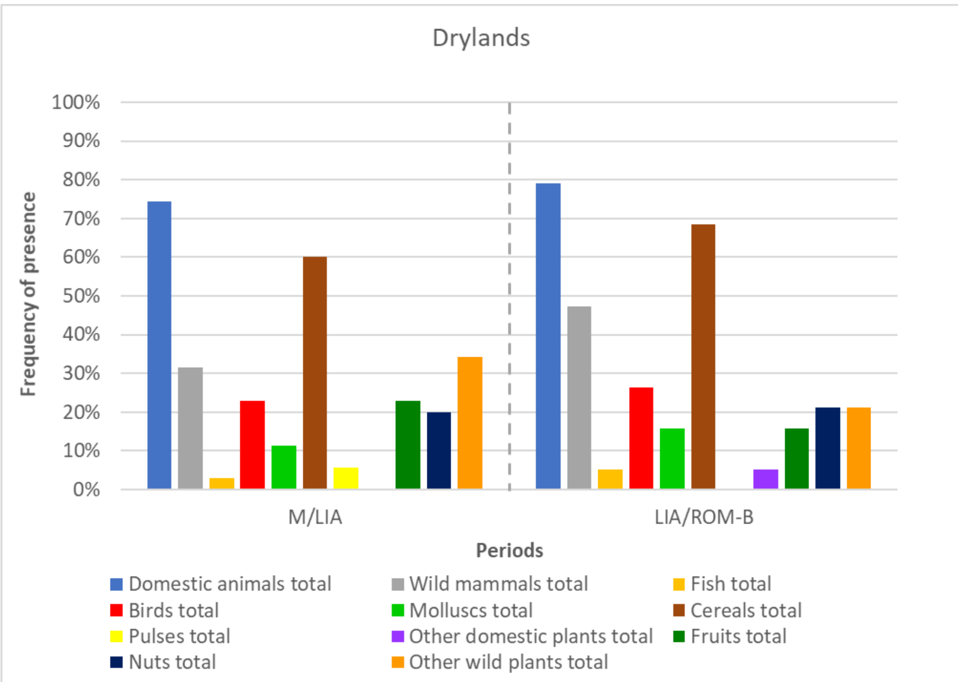


Figure 92: The frequency of presence of the main plant and animal groups in the Middle/Late Iron Age and Late Iron Age/Romano-British drylands.

and cockle) occur in two more dryland locations, both at some distance from the contemporary fen edge, perhaps indicating contact with coastal communities, or the exploitation of the saltmarshes in Lincolnshire (Figure 93). Birds are also found in several other dryland locations (Figure 93). Unfortunately, the majority is unidentified, and most that are identified are dryland species (including quail, corvid and lapwing), some of which may occur naturally rather than as food. However, duck was recovered at the Addenbrooke Clay Farm site near modern day Cambridgeshire. It could have been caught here, but may equally have

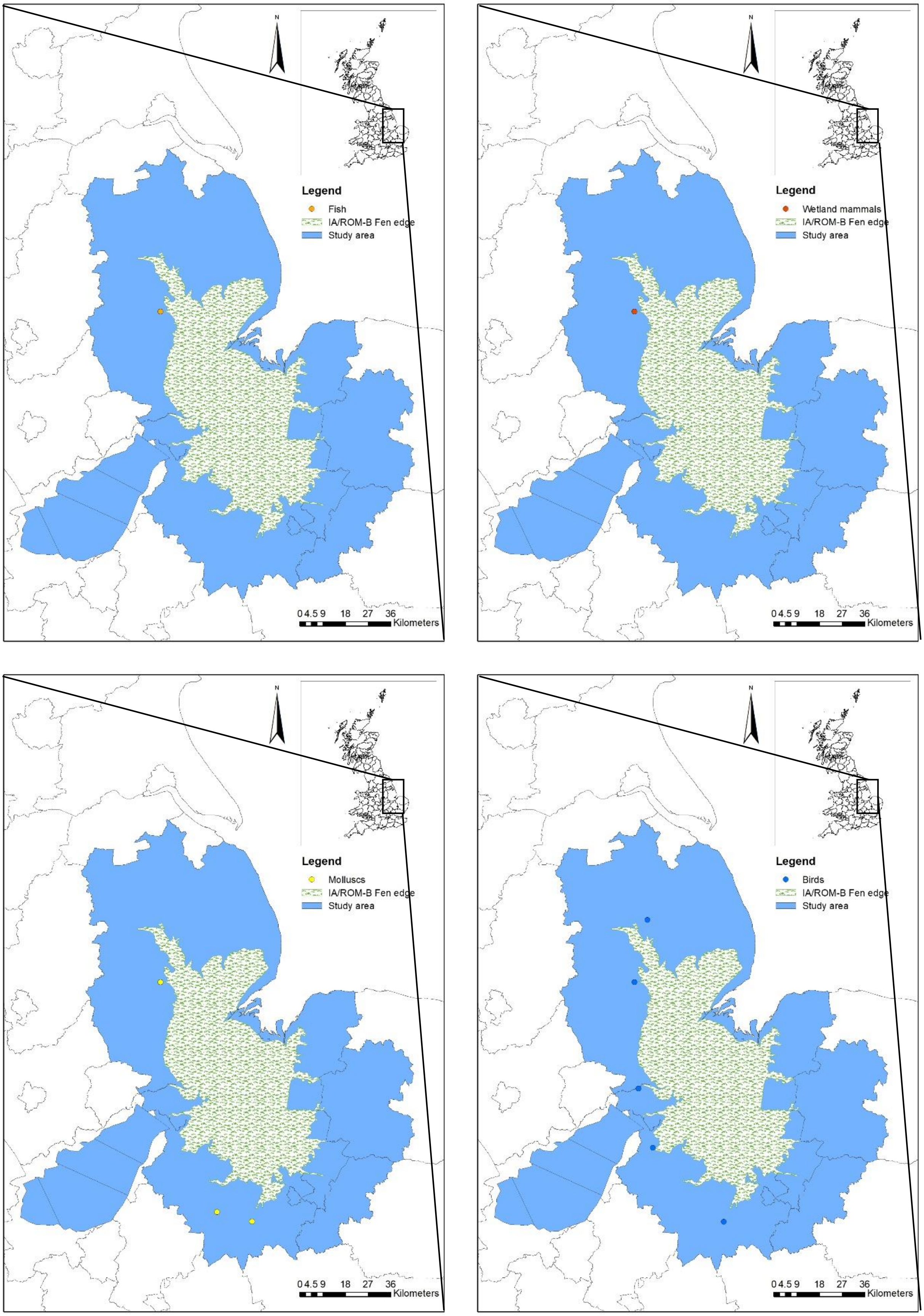


Figure 93: Distribution of wetland animals in the Late Iron Age/Romano-British drylands. Map contains OS data © Crown copyright and database right (2018) and British Geological Survey materials © NERC (2018).

come from the Fens where it could have been caught by wetland communities like those at Haddenham. Unidentified bird bones found at other sites also belonged to wetland species, supporting the argument for such trade and interaction, but this must remain speculative. Still, the wide distribution of bird remains on dryland sites suggests that birds continued to be of interest in this period, which may explain the presence of highly specialised fowling communities at sites like Haddenham V and XI.

The cereal assemblage in drylands at this time is as varied as it was before (Fig. cxlii), but charred flax is the only other domestic plant found. The fruit assemblage is poor. Only sloeberry and elder were identified in charred state once. Charred hazelnuts still occur and so do charred fat hen and wild oat, suggesting that these were still occasionally added to the diet (Fig. cxliii).

In summary, it is difficult to evaluate the Late Iron Age/Roman-British food remains due to low total phase numbers in wetlands and on the fen edge, but the remains present indicate that there were different subsistence practices in each of the three environments, suggesting each had a different role in the overall landscape. The low wetland and fen edge site numbers suggest that wetlands and the fen edge were no longer in focus in this period, but may equally relate to the site selection process (in which 'Roman' sites were excluded, even if they may have contained Later Iron Age finds). In drylands communities continued to rely mostly on domestic plants and animals, with the addition of some hunted woodland mammals, and a few wild plant foods. Birds also seem to have been of interest, though perhaps not for food. This interest in birds suggests that there is indeed activity in the wetlands still. This is supported by the assemblage at the Haddenham V site. Located in the Fens, but close to the edge, it contains many wild animals, including beaver, otter and a wide variety of birds. This suggests specialised wetland hunting activity. Yet the presence of wide variety of domestic resources indicates that there were links with fen edge or dryland areas. The lower frequencies and variety of remains in combination with high domestic animal counts on the recorded fen edge sites in this period may indicate a focus on pastoralism.

4.4 Summary

The aim of this research is to contextualise later prehistoric wetland landscapes, sites and communities in the larger socio-cultural landscape by considering human-environment interaction through time in three different environments. To do so, food remains, i.e. plant and animal remains, from later prehistoric wetland, dryland and fen edge sites in and around the former East Anglian Fens were analysed. This chapter has described the results of this large-scale comparative analysis of food remains through time and space. By comparing the frequencies of various plant and animal categories in ten periods in the three environments it was possible to reconstruct past subsistence practices within the three different environments over time. Despite the influence of differential preservation, various sampling and recovery methods used during excavation and issues with the data organisation (cf. section 4.2), there are true patterns, which demonstrate that food remains differ between the three environments and that they change through time. The main trends are summarised below.

In the Neolithic (cf. Figure 44), both drylands and fen edge or riverside sites were exploited. It is difficult to evaluate the use of the two environments in much depth, as a low total phase number on the fen edge in most Neolithic periods means that relative frequencies are hard to compare. However, from different relative group frequencies in drylands and on the fen edge in the Earlier Neolithic it seems these two landscapes were used in a different way, with more wild plants and animals on riverside sites. In the Later Neolithic on the other hand, the plant and animal assemblages in both environments seem similar, with very high wild animal counts and fewer plants. In the Late Neolithic/Early Bronze Age there are differences again. Drylands seem characterised by mixed agriculture, whilst fen edge sites may have been used in a more pastoral manner.

From the Earlier Bronze Age onwards the fen edge seems to come into focus (cf. Figure 61). The very high frequencies of domestic plants and animals suggests that people settled down on the fen edge. Relatively high frequencies and the presence of a great variety of various wild animals and plants indicate a broad-spectrum economy in this landscape at the time. This contrasts with the much poorer assemblages in drylands, where frequency and variety resemble Neolithic patterns in this period. In wetlands, we cannot assess activity until the Middle/Late Bronze Age. Whilst domesticates are present most frequently here, wild animals are also exploited, suggesting a similar broad-spectrum economy to that on the fen edge, where Earlier Bronze Age patterns persist. In drylands there seems to be a focus on domestic animals (especially ovicaprids) in the Middle/Late Bronze Age, perhaps indicating pastoral use of this landscape at the time. It is not until the Late Bronze Age/Early Iron Age that domestic plant counts increase in this environment. This growth in drylands coincides with a great decline in activity on the fen edge, where frequencies for all groups decrease and activity seems to become much more transient. In wetlands too there is some decline, but a greater number of sites and higher frequencies than the fen edge for several groups suggest this landscape is still in use in this transitional period.

This changes in the Earlier Iron Age as frequencies drop in wetlands and no typical fenland resources are found anymore (cf. Figure 77). The fen edge, with only six phases, is not particularly rich either and even drylands show some decline. Thus, the drier parts of the landscape seem to become the focus in this period. Domestic animals and plants are clearly present most frequently here. In the Middle/Late Iron Age there seems to be a renewed interest in the wetlands, with a particular focus on domestic and wild animals, especially typical fenland species like fish and birds, which may have been specifically targeted. On the fen edge there also seems to be more activity again, and here too wild animals are frequent, but domesticates are present most frequently, just like in drylands, which seem characterised by a mixed economy. The presence of wild fenland species, particularly birds, in dryland locations and domesticates in wetlands suggests links between different environments despite there potentially being more 'environmental specialism'. In the Later Iron Age/Roman-British period, the dryland mixed economy pattern is very similar, though wild mammals have increased. Birds also continue to be frequent, possibly suggesting that decreases in site numbers and data groups in wetlands and on the fen edge are more apparent than real.

In conclusion, the above analysis of plant and animal remains provides a good overview of subsistence practices in each of the three environments and through time. This overview forms the basis for the next two chapters, which contain an in-depth discussion on how the three environments were used, in what way they may have been related and what implications this has for people's identities and social relations. Here, the period by period narrative presented above will be considered in the context of other evidence from the selected sites and wider socio-cultural developments within the Fens and south-eastern England.

Chapter 5. Wetlands, drylands and the fen edge – Reconstructing human-environment interaction

5.1 Introduction – Food remains and human-environment interaction

The previous chapter has presented the results of the analysis of food remains through time in the three different environments: wetlands, drylands and the fen edge. This demonstrated two things: 1) subsistence practices change significantly through time, and 2) there are important variations between the subsistence practices in these three main environments. This suggests that the three landscapes were used in different ways and that the way people interacted with them changed significantly over time.

This chapter aims to examine this human-environment interaction in more detail, by placing the results presented in chapter 4 in a wider context. It will highlight the key findings and explain the patterns identified by discussing them in relation to the site distributions (also presented in chapter 4) and the nature and character of the selected and recorded sites. Of course, this site distribution is incomplete, and the number of selected sites is relatively small, which is why other evidence from the study area and the results from relevant previous projects and investigations will also be drawn upon. The aim is to characterise subsistence practices and human-environment interaction through time in each of the three environments, which will provide the basis for the second discussion chapter 6. Chapter 6 will address the main research question by reconstructing the role and place of wetland(er)s in relation to dryland(er)s throughout the period under consideration.

This chapter, like the last, is structured chronologically, as this allows for the comparison of developments from one period to the next and between the three environments under consideration. Within the next section (5.2) there are three main headings, corresponding to the three main periods (5.2.1-3), and ten sub-sections, corresponding to the ten periods. Summaries for each main period outline the key findings in terms of human-environment interaction, demonstrating that people's interaction with the three environments changed significantly through time as a result of both social and environmental factors. Yet despite these differences the three environments were clearly connected (cf. the summary in 5.3).

5.2 Changing human-environment interaction in and around the later prehistoric East Anglian Fens

This section will explore the changing ways in which people interacted with wetlands, drylands and the fen edge over time, discussing the results presented in chapter 4 in relation to site distribution patterns and the nature and character of the recorded sites, as well as further evidence from the study area. It will refer back to the patterns and graphs described in the previous chapter throughout.

5.2.1 Neolithic - Forest pastoralism, hunting, gathering and farming

Of the three main periods, Neolithic food remains and human-environment interaction are most difficult to study for several reasons. Firstly, because most of the recorded Neolithic sites are of an insubstantial nature, often consisting of surface scatters of flint and pottery. Little if any food waste is preserved at these sites. More substantial pit settlements found throughout the study area tend to provide more remains, but although generally related to occupation of some kind, what these sites represent is far from clear (cf. Garrow 2006). Consequently, the nature of Neolithic settlement is not very well understood (ibid.).

Another difficulty, pertaining to the data in this research, is that most recorded Neolithic sites are dryland sites, with almost no wetland sites. Fen edge sites, which should really be classified as riverside sites rather than true fen edge ones until the Late Neolithic/Early Bronze Age, are equally few in number. The lack of wetland and fen edge sites is caused by the dynamic nature of the Fenland landscape; many early sites in the Fenland Basin which may have been wetland sites are now covered by thick layers of later marine and freshwater deposits, making them invisible (Hall and Coles 1994, Waller 1994, French and Pryor 1993).

These issues make characterising and comparing economies in the three environments difficult. However, the remains present on the recorded sites do provide some insight into Neolithic subsistence and the way that people interacted with drylands and the riverside or fen edge through time. At first, when the Fens only just started to develop, there do not seem to have been major differences between the two environments, but once the Fens expanded, the ways in which people interact with the drier and wetter parts of the landscapes starts to vary.

Mesolithic – Riverine hunter-gatherers

Although there is a considerable amount of evidence for the Earlier Neolithic (see below), the Mesolithic is only sparsely represented in the study area. All Mesolithic/Early Neolithic sites recorded in the database are of the same general character, generally only containing (residual) flint and pottery.[35] Features are rare and so are food remains, so there is little we

[35] The first period defined for this research also covers the very start of the Neolithic, but for the purpose of this discussion the Mesolithic is considered separately from the Early Neolithic, discussed in the second period (see below).

can say about subsistence practices (cf. Hall and Coles 1994, 36, Myers 2006). For these reasons, the patterns in this period are far from robust and do not warrant any in-depth discussion.

It is enough to note that the scatters of material probably represent temporary encampments or areas of activity only occupied for a short while by communities before they moved on. Most sites seem to be located in river valleys on gravel terraces (Figure 45) and these riparian environments indeed seem to have been the focus in the Mesolithic, with the wooded uplands only rarely being visited (e.g. Waller 1994, 66, Silvester 1991, Hall and Coles 1994, Sturt 2006, Clay 2002, 46). As riverine environments provide rich hunting and gathering grounds, this may partly explain the Mesolithic focus on these environments (Hall and Coles 1994, 28, 36). However, their role as routeways through a heavily wooded landscape must have been equally important for highly mobile Mesolithic communities (ibid.). Any true wetland sites that may have existed, would have been located much closer to the coastline at the time, as the Fenland Basin was essentially still dry. Such sites, located in highly productive estuarine habitats, may have been inhabited semi-permanently on a seasonal basis (cf. Mesolithic Ertebølle sites in Denmark). However, any such sites around the Wash are now covered by thick layers of later deposits, limiting our understanding of how these may have been used (French and Pryor 1993, 102).

Earlier Neolithic – Riverside farming, hunting and gathering

The Fens were only just starting to develop in this period, but it seems that Earlier Neolithic communities did interact with the increasingly wet Fenland landscape. Despite the introduction of domestic plants and animals during the transition from the Mesolithic to the Neolithic, the presence of wetland resources in both environments in this period (cf. Figures 49 and 51) suggests that people exploited wild resources in the various wetland environments that became established along the Wash' margins and in the river valleys, which came under the influence of a tidal regime as sea levels rose (cf. Waller 1994). Although any true wetland sites are now invisible, the riverside in or near the Fenland Basin seem to have slightly higher frequencies of fish and birds than dryland sites, but these differences may reflect differences in site character rather than a true difference in the way people interacted with the environment.

There is a lot of debate about the role of indigenous hunter-gatherers vs. colonist farmers from continental Europe during the Mesolithic/Early Neolithic transition (cf. Cummings and Harris 2011, Sheridan 2010, Rowley-Conwy 2011, Thomas 2004). Within this debate, the reliance on wild vs domestic foods is a contested issue, with some arguing that wild foodstuffs were quickly becoming less important (e.g. Serjeantson 2014, Sheridan 2010, Rowley-Conwy 2011, Jones and Rowley-Conwy 2007, Schulting 2008), whilst others suggest they continued to be important in Neolithic subsistence (e.g. Stevens 2007, Thomas 2004, Fairbairn 2000, Edmonds 1999, Whittle 2003 in Cummings and Harris 2011). Recent ancient DNA studies suggest that colonist farmers from Europe must indeed have played a significant role in the introduction of Neolithic practices and domesticates in Britain, with little evidence of Mesolithic admixture (Brace et al. in prep.). Yet the food remains recorded for this study demonstrate that wild resources continued to be used (cf. Figures 49 and 51). Whilst cereals and domestic animals occur most frequently in Earlier Neolithic dryland assemblages, nuts are clearly still exploited as well. Of course, nut shell tends to be better preserved (because they are burnt as waste) and more visible than cereals (cf. Stevens and Fuller 2012, Jones and Rowley-Conwy 2007), but they occur much more frequently in the Neolithic periods than in later ones (cf. Figures 44, 61 and 77), suggesting they were indeed of considerable importance still (cf. Jones 1980, Moffett et al. 1989, Cummings and Harris 2011, 371). The food remains on the few recorded fen edge (or rather riverside) sites are even richer in these wild remains (cf. Figure 51). Although differential preservation may have affected this pattern to some extent, the greater frequency of wild animals suggests that the recorded riverside sites truly have higher wild counts, possibly demonstrating a different way of interacting with this environment (cf. Figs. xxxi and xxxiv).

It has been argued that in some areas (e.g. Denmark and the Lower Rhine area), the wealth of wild resources in wetlands delayed or slowed down the transition to farming (cf. Amkreutz 2013) and Sturt (2006) notes that people in the Fenland Basin would have interacted with the increasingly wet and dynamic landscape differently than those further inland. Yet the Fens were only just starting to develop and although sites located further out in the Fenland Basin may have been affected more strongly by tidal influences, the landscape of the lower-lying riverside sites in the Lower Ouse region was not under this influence yet (Evans and Hodder 2006a). Still, greater flood risks and restrictions in space may have made these riverside sites less suitable for arable agriculture, whilst they did provide good grazing and hunting grounds. Some resources, like wetland animals, fish and wildfowl may also have been more easily available on the lower-lying riverside sites close to the developing Fens than in dryland river valleys. Yet we also need to consider the nature of the recorded sites in both environments.

The majority of dryland sites are surface scatters similar to those in the Mesolithic, or pit settlements (Figure 94), which typify the settlement record in this period (Garrow 2006, Evans and Hodder 2006a, 231). Characterised by pits filled with domestic debris and with few other features or structural evidence and located in similar riparian locations as Mesolithic scatters, it is likely that these sites are settlement sites, but what kind of settlement they represent is debated. Some interpret these sites, with few features and finds, as short-term settlement locations, used by communities that continued to be highly mobile, possibly on a seasonal basis (Garrow 2006, 8ff., Thomas 1991, Edmonds 1997, Whittle 1997, Hall and Coles 1994, 58). Others argue that a Neolithic way of life, based on arable agriculture and domestic animals, requires permanent settlement (e.g. Rowley-Conwy 2003, 2004, 2011). It is in fact likely that a “spectrum of settlement mobilities and short-term sedentism” existed in this period (cf. Evans et al. 1999, cf. Thomas 2013, 411, 418). Even if early Neolithic farmers were indeed fully sedentary, they will have moved around the landscape to access resources and to remain connected to and interact with others. Thus, pit settlements may represent short-lived permanent settlement sites, inhabited for a few years before communities moved on, whilst more flimsy scatters represent transient visits by individual members or small sub-groups of the community (e.g. for hunting or resource procurement).

Figure 94: Two Grooved Ware pits at Over site 2 and their contents. Although this site is of Later Neolithic date, Early Neolithic pits contain a similar range of materials, including (burnt) flint, pottery, animal bones and plant remains (e.g. hazelnut). (Photo by M. Knight, reproduced with his kind permission)

Most riverside sites are of a very similar nature to the dryland ones, but there are two monuments as well (the Etton causewayed enclosure and Foulmire Fen long barrow) and it seems that almost all food remains were discovered in these monuments (only one other recorded fen edge site contained food remains). Much more visible than settlement sites in the Neolithic, such monuments may have been used for communal gatherings aimed at renewing and strengthening social bonds (Edmonds 1997, 106-8, Evans and Hodder 2006a, Pryor 2002). Mostly located along rivers, which continued to act as routeways in this period (cf. Evans et al. 2018), it is likely that larger groups of people gathered at these monuments periodically, which probably explains the wider variety of food types present.

A final possibility is that the differences between the two environments could relate to seasonal use of the different site types, or even movement between the two environments on a seasonal basis. Several of the wild resources recorded in the riverside monuments would be available in autumn and winter and it is possible that riverside sites like those in the lower Ouse region and/or true wetland sites further out in the Fenland basin were preferred settlement locations in these seasons. Alternatively, all monuments, whether in wetter or drier parts of the landscape, could have been used in those seasons in which domestic resources (crops in particular) were less plentiful. To test this hypothesis, we would have to study assemblages from dryland monuments, but, although many are present in the valleys of major rivers like the Great Ouse (cf. Malim 2000), none were recorded for this research (which focusses on settlement sites), so they cannot be compared to the fen edge monuments to see if there were true differences between the ways in which people interacted with drylands and the fen edge.[36]

Late Neolithic - Forest pastoralism

The Later Neolithic evidence is richer than the Earlier Neolithic, allowing us to say more about subsistence practices and human-environment interaction in this period. It seems that wild resources become even more important, whilst differences between the two environments become less clear (cf. Figures 53 and 55). Interestingly, evidence for the interaction with wetlands disappears in this period, but large woodland mammals, fruits and nuts occur frequently alongside domestic animals, whilst cereals do not increase much in either environment and only a few species are present. It has been argued that the increasing reliance on wild (woodland) foods in this period, which has been recognised widely (e.g. Jones 1980, Wainwright and Longworth 1975) may have been part of a coping strategy resulting from climate change (Stevens and Fuller 2012, 2015, Bevan et al. 2017) (Figure 95). The transition from the Early to the Middle Neolithic, it is argued, saw rapid changes, resulting in more unstable conditions (ibid.), which negatively affected cereal yields and may have led to coping strategies (Stevens and Fuller 2015). In some areas this might be an increased

[36] Some monuments were included in this study because they contained evidence for settlement and had well-preserved plant and animal assemblages (in contrast to many Neolithic settlement sites).

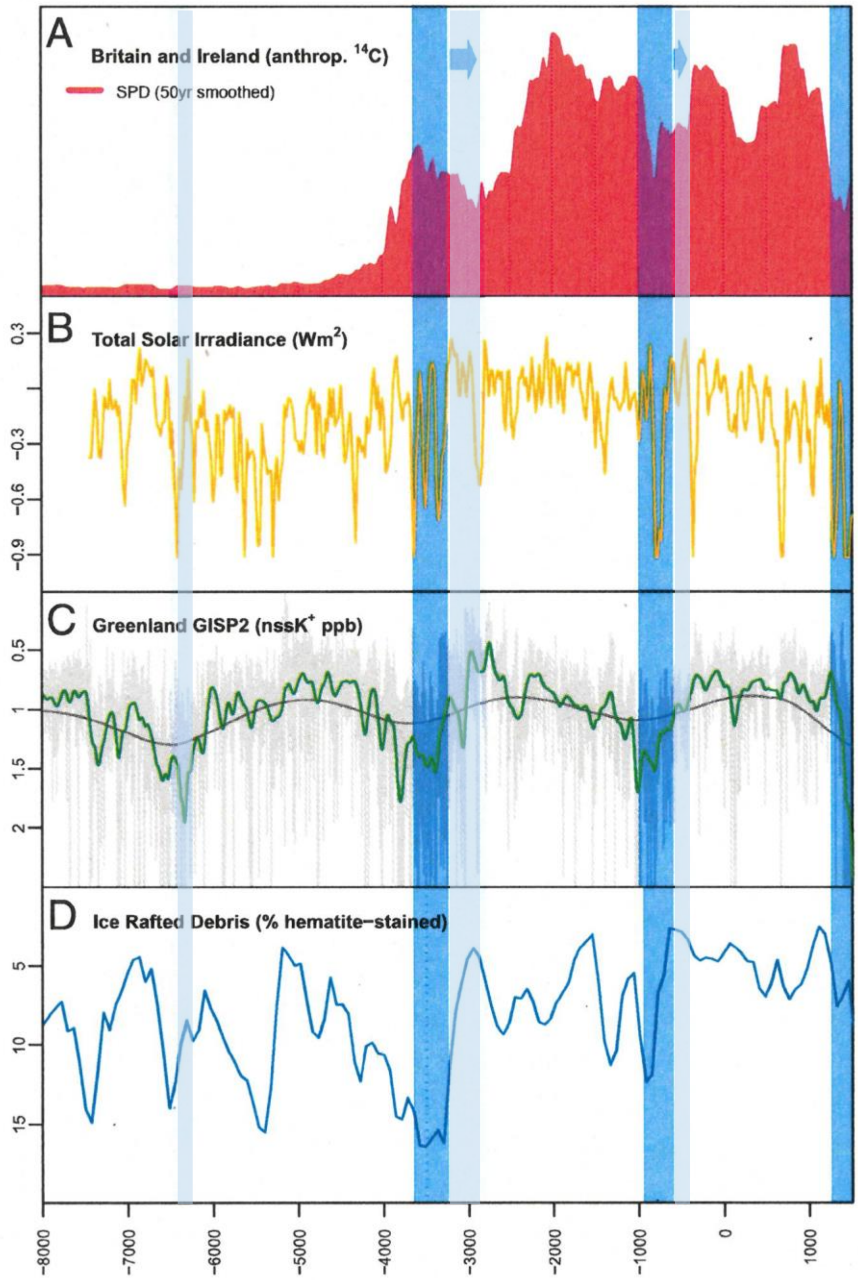


Figure 95: Radiocarbon inferred population (A) in relation to North Atlantic climate proxies (B-D) according to Bevan et al. 2017. The dark blue zones indicate the suggested onset and duration of colder, wetter periods (ibid.). The first is the downturn at the end of the Early Neolithic, the second is that during the Late Bronze Age/Early Iron Age and the third represents the late Medieval decline (bid.). The lightly shaded area between 7000 and 6000 BC represents the '8.2 ky event' (before the Neolithic) (ibid.). (Image adapted from Bevan et al. 2017)

reliance on more resistant cereals, whilst other areas, like southern England, seem to be characterised by the increasing diversity of food remains and a greater reliance on pastoralism, foraging, hunting and fishing (ibid.). Some authors even argue that cereal cultivation was temporarily abandoned in this period, as communities became more pastoral and mobile (e.g. Stevens and Fuller 2012, 2015). This model however, has been criticised for being too general and not taking into account local and regional differences (cf. Bishop 2015a,b). Indeed, the continued presence of cereals on both dryland and fen edge sites makes a complete abandonment of cereals unlikely.

However, it is clear that there are major social and environmental changes in this period which affected subsistence and the way people interacted with the landscape. There seems to have been a decline in population in Britain at this time and the pollen records suggest that, after the initial Early Neolithic pioneering phase in which the later Neolithic forest started to be opened up, there was significant reforestation (Woodbridge et al. 2014). At the same time, activity seems to have expanded into previously unoccupied parts of the landscape in several parts of Britain (Gardiner 1984, 26, Edmonds 1987, 170-3, Richards 1990, 271 in Garrow 2006, 151, Thomas 1991, 19). Although recorded site numbers are too low to demonstrate this, Late Neolithic pit sites in the study region do indeed seem to be more widely distributed in the landscape (cf. Garrow 2006) and some of the heavier claylands in the region are argued to have been used more intensively than previously, some perhaps for mobile stock herding (cf. Clay 2002, 118, Paul and Hunt 2015, 55). Perhaps the higher woodland animal, nut and fruit counts in this period reflect the use of previously unexploited wooded areas, or the return of woodland in some previously cleared parts of the landscape. And although cereal cultivation may not have been abandoned, a greater emphasis on pastoralism may explain the lower variety of cereal species, high red deer, cattle, dog and charred fruit counts (cf. Figs. xxxviii, xxxix and xli).

The high pig numbers in the Later Neolithic, a pattern which has also been widely recognised (cf. Grigson 1981, Viner 2010 in Rowley-Conwy and Owen 2011, Albarella and Serjeantson 2002), do not fit well into this pastoralist narrative, but they do indicate more reliance on this species (cf. Figs. xxxix and xlii). As pigs only provide meat (no secondary products) it is possible that they were bred for feasts (Rowley-Conwy and Owen 2011, Albarella and Serjeantson 2002). If life was indeed more difficult during the climatic downturn in this period and communities more dispersed, contact with other people who could help in times of need may have been important and feasting at communal gatherings may have been an important way to strengthen social bonds (cf. Hayden 1996). This may explain the continued use and importance of Early Neolithic monuments (Edmonds 1997, 106-8, Evans and Hodder 2006a, Pryor 2002, Clay 2006).

Although people were expanding into new landscapes and broadening their subsistence base, it seems that the wild wetland resources available in the developing fens and along rivers were of little interest. It is possible that Neolithic communities in the Fenland Basin were affected by the increasing wetness in the 3rd millennium BC (Lane 1993, Hall and Coles 1994, Evans and Hodder 2006a). It has been noted that although Grooved Ware settlement related sites do occur, monuments are no longer found in the Lower reaches of the Ouse, as monument construction apparently shifts up-river (Evans and Hodder 2006a, 365). The expanding Fens may have been considered a "landscape of risk". Perhaps unable to cope with the flooding of this landscape, people may have been forced to abandon their sites (ibid.). Alternatively, wetland resources, many of which are seasonally abundant (cf. Serjeantson 1998), became less interesting to more pastoral Later Neolithic communities, who were less able to invest time and effort in the technology (nets, traps etc.), skills and knowledge necessary to catch wetland resources than Earlier Neolithic communities who may have occupied riverside sites for longer periods. Yet higher domestic animal counts on riverside sites in this period may suggest that (seasonal) grazing was of some importance, even if the increasingly wet Fenland Basin was no longer inhabited (cf. Figure 55). It would be difficult to identify such grazing grounds, especially if they were located further out in the Fens and therefore invisible now. Unfortunately, the evidence does not allow us to 'test' between these various options. Overall, it seems that this period is characterised by fewer environmentally or seasonally specific food types and a broader, more general set of subsistence practices, with a greater focus on pastoralism and wild resources, which could be practised both in drier upland and wetter lowland landscapes.

Late Neolithic/Early Bronze Age – Fen edge pastoralism and dryland farming

During the transition to the Bronze Age, subsistence and settlement evidence in both environments change. Clear differences emerge between dryland sites and the true fen edge sites that we now see appearing, which demonstrates that the two landscapes were used in different ways (cf. Figures 58 and 60). The frequency of presence for many data groups declines, and the wild woodland influence seems to lessen, at the same time as site numbers increase and sites become more evenly distributed throughout the study area (cf. Figures 52 and 56). The general declines for many groups (including the domesticates) in this period may relate to the lower number of pits dug in this period; more material is now deposited outside pits (cf. Garrow 2006). Moreover, a relatively large number of recorded dryland sites is represented by (residual) scatters of flint and/or pottery without associated features, resulting in fewer food remains being preserved and recovered.

This period sees other subtle changes in site character and the nature of settlement too. At several sites, many of which are located on the fen edge, there are hints for more substantial occupation. At Eyebury Quarry for instance, some Beaker and Collared urn pits may represent watering holes or wells associated with a small-scale settlement, and a Beaker period roundhouse was found at King's Dyke (Patten 2009, Knight and Brudenell in prep.). At Deeping St. James, a Beaker associated settlement consisting of circular structures, pits and postholes which also contained a deep waterlogged pit was found, and at Dogdyke there was evidence for arable agriculture dating to the Late Neolithic/Early Bronze Age (Hall and Coles 1994, 73, Lane and Trimble 2010, 31). Charred plant assemblages on some fen edge sites, like the ones at Over, indicate episodes of crop processing through to food consumption, in contrast to earlier periods, when we only see food preparation and consumption (Evans 2016, 577). In combination with slightly more substantial settlement remains, this suggests changes in storage practices and may reflect longer stays, or repeated visitation of particular fen edge locations (cf. ibid.).

Despite these hints for changing and possibly longer-term settlement patterns, there seems to be more focus on wild plants and domestic animals than on cereal cultivation on the fen edge, perhaps suggesting a continued pastoral focus (cf. Figure 60). In contrast, the seemingly more insubstantial dryland sites have a wider range of wild animals (including wetland ones) and greater variety of cereals present (cf. Figs. xlviii, l, liii). Thus, subsistence practices seem to have become more landscape and environment specific again. Yet given the patterns in both environments (domestic animals and wild plants in one and domestic plants and wild animals in the other) and the close proximity of many dryland sites to the fen edge, these two landscapes may have been used in a complementary manner, rather than representing two different ways of life (one agricultural and one pastoral) (cf. Figures 58 and 60). Dryland sites further inland are still mostly located in river valleys (cf. Garrow 2006). Perhaps communities here continued to use the uplands as pastoral grounds, whereas those near the Fens became increasingly focussed on the expanding wetlands.

Unfortunately, the very low number of true wetland sites and the low number of wetland resources recorded in this period still prevent us from fully understanding how the developing Fens were interacted with. Low wild wetland animal counts on fen edge sites could indicate that people were not yet very interested in these resources (cf. Figure 60), or that they were butchered and processed further out in the true wet Fens. The presence of otter at one of the wetland sites and the occurrence of some wetland animals in dryland locations (cf. Figures 57 and 59), demonstrates that wetland resources were indeed exploited, and it is certainly possible that hunting and fishing took place alongside pastoral and farming activities. The fact that wetland animals occur in drylands, albeit at low frequencies, also hint at links and the movement of people or resources between environments.

The explanation for some of the above patterns may lie in the substantial environmental changes taking place in the Fenland Basin at this time. Landscape change was speeding up in this period as sea levels rose and many areas (including the Flag Fen basin and the Lower Ouse region, where most fen edge sites are located) were becoming much wetter (cf. Waller 1994). Many of the former riverside sites are now located at the true fen edge (cf. Figure 56). Whilst the increasing wetness in these areas may have resulted in less available land for arable agriculture on the fen edge, the expanding Fens provided good (seasonal) grazing for domesticates and useful wild plants may have thrived in the increasingly open fen edge landscape (cf. Evans 2016). A return to low intensity cereal cultivation in drylands may be related to a temporary amelioration of the climate between c. 2300-1900 BC, which saw more stable, warmer and drier conditions (Stevens and Fuller 2015).

Yet whilst environmental changes are likely to have influenced some of the patterns recorded here, this period is also marked by important social changes related to the spread of Beakers in Britain (cf. Needham 2005). Characterised by distinctive material culture, new monument types and burial practices, it seems that in Britain the expansion of this cultural complex was driven to a large extent by migration from continental Europe, as evidenced by a demographic transformation in which 90% of Neolithic populations' gene pool was eventually replaced by that of incomers with a steppe-related ancestry (Olalde et al. 2018). Some of the changes in mobility, the settlement record and subsistence practices outlined above may relate to the arrival of continental 'Beaker folk'.

Neolithic summary

It is quite difficult to evaluate subsistence and human-environment interaction in The Neolithic period because any true wetland sites that may have existed are now covered by later Fenland deposits. Being the oldest, it has suffered greater destruction and truncation of sites due to subsequent cultivation and land-use than the later periods. Moreover, this period, more so than the Bronze and Iron Ages, suffers from biases created by uneven total site numbers in the three environments. Only the drylands have a good number of sites with fewer sites located in or near the Fenland Basin due to issues of visibility. The Basin was essentially dry to start with, but gradually became more wet and this may have started to influence people living in the lower lying areas from the Later Neolithic onwards.

Although their landscape setting may not have differed much initially, the comparison of plant and animal remains on inland dryland sites and those on sites in or near the Basin has provided some insight into Neolithic subsistence and human-environment interaction. Communities seem to have used both drylands and riverside or fen edge sites, though how they interacted with these landscapes differs from one period to the next.

In the Earlier Neolithic we mostly have riverine sites, some located further inland, and others on the edge of the Fenland Basin. In these 'fen edge' locations, landscape changes resulting from a rising sea level may not have been felt yet; most of the Basin was essentially dry still (cf. Waller 1994). Yet whilst the landscape context of the inland sites and these nearer the Basin does not differ much, there are some differences between the economies of the lower-lying sites and those in drier locations, which probably relate to site character and/or the seasonal use of different site types (settlements vs monuments). In the Later Neolithic, a climatic downturn may have resulted in a move towards a more pastoral lifestyle and a broadening of the subsistence base, with fewer differences between the dryland and riverine sites closer to or in the Basin. The absence of wetland resources in this period may indicate that the Fens were abandoned, perhaps because they became too wet, but they may still have been entered for grazing. By the time of the Late Neolithic/Early Bronze Age evidence for such pastoralism becomes clearer as we see the first true wetland and fen edge sites appearing on the margins of the continuously expanding Fens. There are a few clear differences between the fen edge and dryland sites in this period indicating subtle changes in the way that people interacted with these landscapes. Yet the three environments may have been connected, as they seem to have been used in a complementary manner.

These differences between the environments and the changes through time likely resulted from a combination of climatic/environmental and socio-cultural factors, such as the arrival of immigrants from the continent. Issues of site visibility prevent us from fully understanding how people interacted with the developing wetlands, but wetland resources are present at low frequencies in both the Earlier Neolithic and Beaker period, demonstrating people's interest in and interaction with this environment, although the scale of this interaction remains unknown.

5.2.2 Bronze Age – Broad-spectrum economies, opportunistic wetland use and dryland pastoralism

From the Earlier Bronze Age onwards, food remains and evidence for human-environment interaction increase, particularly on the fen edge, which is very rich in this period. Wetland sites become more numerous from the Middle/Late Bronze Age onwards. Although most of these occur in two clusters (the Flag Fen Basin and the Lower Ouse region), this finally allows us to compare the three environments. As in the Neolithic, there are changes through time and important variations between the environments. Dryland economies and site character differ significantly from those on the fen edge and in wetlands in all three sub-periods. The fen edge is very rich in food and settlement remains and may have been the focus throughout most of this period (cf. Figure 61). However, in the Late Bronze Age/Early Iron Age there are marked shifts in subsistence and settlement patterns in all three environments which indicate major changes in how people engaged with these environments.

The Earlier Bronze Age – Fen edge farming and settlement

The Early Bronze Age is often lumped together with the Late Neolithic, as settlement evidence continues to be relatively insubstantial (e.g. Cooper 2006). It is generally assumed that there was a lot of continuity between Later Neolithic and Early Bronze Age lifestyles, with relatively high levels of mobility and short-term occupation of settlement sites (e.g. Brück 2000, Barrett 1994). Conventionally, the Middle Bronze Age has been recognised as the period in which people started to settle down and organise the landscape along formal boundaries, suggesting a considerable intensification in farming activities (cf. Barrett 1994, Bradley 2007, Yates 2007). Several scholars argue that by this time, the climate had improved, resulting in a second agricultural revolution after the temporary abandonment of cereal cultivation in favour of more pastoral lifeways and an increasing reliance on wild foods in the later Neolithic (e.g. Bevan et al 2017, Stevens and Fuller 2012) (cf. Figure 95).

The site character and food remains recorded for drylands in this research seems to support the general image of continuity between the Neolithic and Early Bronze Age. Many Earlier Bronze Age sites are only represented by a few (Collared Urn) pot sherds, some flints and a few pits or postholes, thus resembling earlier, Neolithic scatter and pit sites and suggesting low levels of transient activity. In line with this, the plant and animal remain frequencies are very similar to those in the previous period. They are generally low and whilst fruit frequencies increase somewhat, wild animal variety decreases significantly, and cereals decline (cf. Figure 64).

The fen edge patterns however, contrast markedly with those in drylands. As outlined above, the Late Neolithic/Early Bronze Age was characterised by subtle changes in settlement patterns, which hints at longer-lasting occupation or the revisiting of the same locations on the fen edge. In the Earlier Bronze Age, these patterns become stronger. There are several lines of evidence that suggest that activity on the fen edge intensified in this period and that occupation may have become more enduring. Firstly, the number of recorded fen edge sites increases significantly, whilst dryland site numbers decrease. Site distribution patterns demonstrate that most sites, including the dryland ones, are found on or around the edges of the contemporary fen, with only a few dryland sites occurring further inland (cf. Figure 62). The increase in fen edge sites may reflect site selection biases and the greater visibility of these sites in this period, which may now be located high enough on the 'slopes' of the Fenland Basin to be exposed by peat wastage resulting from drainage (cf. Hall and Coles 1994). However, the record on fen edge sites seems to be a lot richer than that on contemporary dryland sites as well, suggesting the increase in sites reflect a true interest in this environment.

This is also reflected in the features and structural evidence associated with more durable settlement now found in several locations along the fen edge (e.g. at West Row fen, Baston Quarry, Over, North Fen Island, King's Dyke and nearby Bradley Fen) (Knight and Brudenell in prep., Brittain 2013, Martin and Murphy 1988, Hall and Coles 1994, 87, Webley and Hiller 2009, Evans 2016, 102) (Figure 96). 'Burnt mounds' or 'potboilers' were found at several of these sites, adding to the many that were identified on the eastern fen edge during the Fenland Survey (Hall and Coles 1994, 60-61, Knight and Brudenell in prep). Although their exact meaning is unknown, they attest to ubiquitous activity and 'cumulative or reiterative practice' on the fen edge at this time (Knight and Brudenell in prep., Silvester 1991) (Figure 97).

Another pattern which has long been recognised is the construction of many round barrows and ring ditch monuments, typical of this period, in fen edge locations, including several of the recorded sites (e.g. Bradley Fen/King's Dyke, Barleycroft Farm/Over and Little Duke Farm) (Knight and Brudenell in prep., Evans 2016) (Figure 103). These monuments probably had multiple roles, including ceremonial and funerary ones, but also seem to have played a role in the block parcelling of landscapes or staking rights to the land (Evans and Knight 2000, Evans 2009, 89, cf. Cooper 2016). This is of considerable interest given the evidence for the pre-field system land boundaries (ditches or stake-lines delineating small pad-

Figure 96: The pre-field system landscape at Bradley Fen (top left) and King's Dyke (top right) in relation to the topography (bottom). It shows burnt mounds (BM1-4), two structures (S.1, Beaker-associated and S.2, Collared urn) and the Late Neolithic/ Early Bronze Age monument complex at King's Dyke, consisting of a Class II henge with internal pit-circle, two round barrows (RB 1 and RB2) and a diminutive ring-ditch (Knight and Brudenell in prep.). (Image from ibid., reproduced with kind permission of CAU)

Figure 97: Excavation of one of the 'burnt mounds found in the Must Farm environs. These features are found in many locations along the fen edge in the Late Neolithic/Early Bronze Age. (Photo from Knight et al. 2014, reproduced with kind permission of CAU)

docks) that have now been found in several fen edge locations (e.g. at Must Farm, Over and Pode Hole) (Knight and Brudenell in prep., Evans 2016, Daniel 2009). Indeed, many of the well-known later Middle Bronze Age field systems were probably laid out between 1900-1400 BC, starting in the Earlier Bronze Age Collared Urn phase and moving into the Deverell-Rimbury Middle Bronze Age (Evans 2009, 254-55). All of this evidence points to increasingly close ties between people and the land, and particular locales on the fen edge in this period, long before the conventional Middle Bronze Age date.[37]

Food remains on the fen edge also reflect an increase in activity and closer ties to particular places in the landscape. In stark contrast to the drylands, the fen edge is very rich in remains (cf. Figures 64 and 65). Domestic animals occur frequently, but cereals are equally abundant. These domestic foods are most frequent in the assemblages, but wild plant and animal counts are relatively high as well. The variety of species within all these groups is remarkable and contrasts sharply with the poorer dryland assemblages (cf. Figs lviii-lxvii). To some extent, these differences between drylands and the fen edge relate to issues of preservation, but the frequencies of large mammal bones and charred plant remains, which are less affected by differential preservation, also differ significantly between the two

[37] It is possible that this development also reflects the gradual increase in population in this landscape, which may have necessitated clearer visible statements about who owns what.

environments. Moreover, environmental studies in the fen edge areas where most recorded sites are located demonstrate that the increase in cereals evidenced in this study coincides with indicators for increases in land clearance resulting in a more open landscape, and the establishment of arable agriculture at a level of some significance (Evans 2016, Hall and Coles 1994, 72). This, in combination with the above evidence for increasingly intensive land-use and more enduring occupation, suggests that differences between Earlier Bronze Age dryland and fen edge economies are real.

The wide range of food remains on the fen edge in this period suggests that the economy may be characterised as a broad-spectrum one. It seems a wide variety of wild resources may have been occasionally added to a mostly domestic diet. It is possible that this was a coping strategy related to climatic conditions that were still adverse in this period (cf. Bevan et al. 2017). Wild resources can provide a good buffer in cases of crop failure, and people may have used them to spread risk (cf. Halstead and O'Shea 1989). Local environmental change within the Fens probably played a significant role as well. The Earlier Bronze Age saw the maximum extent of a major marine incursion, bringing highly productive wetland landscapes very close to the fen edge (cf. Waller 1994) (cf. Figure 14D). Perhaps by now, the Fens had developed to the extent that their many wild resources were becoming increasingly attractive. The ecotonal location of the fen edge, between the continuously developing true wet fens and the higher, drier ground around it, became a good settlement location, where people could grow crops and keep animals, as well as gather and hunt wild resources. Although wetland sites remain mostly invisible in this period, it is very likely that people ventured out into the ever-expanding wetlands on their doorstep, where they caught fish, birds and wetland mammals and gathered reed and other wild plant resources. The presence of wetland animals on the fen edge and in the few wetland sites we do have suggests this is indeed the case (cf. Figures 63 and 65). The repeated visits or longer-term stays of pastoralists on the fen edge in the previous period may have allowed people to get to know the wetland landscape more intimately and develop the knowledge, skill and experience necessary to exploit this environment. This 'coming into the land' (cf. Evans and Hodder 2006b, 473) may explain the more intensive activity on the fen edge in the Earlier Bronze Age.

However, we also need to consider the influence of larger-scale social factors. In contrast to what most narratives suggest, the transition between the Neolithic and Bronze Age in Britain may not be characterised by continuity. The apparent population replacement in the Beaker period as reflected in DNA evidence, suggests that many people from continental

Europe came to Britain at this time (Olalde et al. 2018). It seems that a number of people came from what is now the Netherlands, where we also see a decrease in residential mobility during the Beaker period (ibid., Louwe Kooijmans 1993, 95). Yet whilst the focus shifted to initial mixed farming at this time, wetlands continued to be exploited on a seasonal basis (ibid. 104). Perhaps then, some of the Earlier Bronze Age patterns outlined above reflect the activity of incoming migrants, establishing a way of life similar to the one they were used to at home. Alternatively, the combination of more permanent settlement with a broad-spectrum subsistence base is the result of interactions between those already present and incoming migrants. Unfortunately, the data considered in this research is not detailed enough to assess the effects of continental migration. These intriguing possibilities require further research, comparing food remains, settlement patterns, material culture and other aspects of the archaeological record (both in the Fens and the Netherlands) in more depth.

The clear contrasts between drylands and the fen edge settlement and food remains described above are of considerable interest. They demonstrate that people's interaction with the fen edge environment differed significantly from that with drylands. Whilst dryland patterns conform to expected patterns, people's interaction with the fen edge environment seems to pre-empt developments normally associated with subsequent periods. It is certainly true that structural settlement remains are rare, but this does not necessarily mean that the fen edge was not permanently inhabited. Indeed, the evidence described above suggest that there already was a focus on specific locales, and a long-term attachment to particular places in the Earlier Bronze Age on the fen edge. Field boundaries were already starting to be laid out, and cereal cultivation, which requires relatively permanent settlement, seems to have been of considerable importance, despite a bad climate. At the same time however, wild resources were exploited, resulting in a broad-spectrum economy more commonly associated with the Neolithic (cf. Stevens 2007). These developments may reflect people's responses to climate change and local landscape change, but it is also possible that incoming migrants from continental Europe influenced lifeways around the Fens in this period.

Thus, the fen edge data supports critiques of the Stevens and Fuller model, which is too general and does not take into account local and regional differences (cf. Bishop 2015a,b). It also demonstrates the importance of considering different landscapes and environments when discussing past food remains and subsistence practices and large-scale social developments. Finally, although the actual wetland data is limited, it seems likely that the developments on the fen edge are closely related to the presence of the developing Fens, demonstrating the importance of this expanding wetland.

Middle/Late Bronze Age - Wetland exploitation, dryland pastoralism and field system economies

By the Middle/Late Bronze Age, wetland sites finally appear in slightly higher numbers, allowing us to compare people's interaction with the three environments for the first time (cf. Figure 67).[38] Clear differences in subsistence practices and settlement patterns between the three landscapes indicate that various parts of the landscape were used in different ways. As in the last period, the evidence from the three landscapes only partially supports established narratives for this period, which is conventionally argued to be characterised by the increasing visibility of settlements inhabited by sedentary farming societies and the development of large areas of enclosed land, or field systems, related to a shift from long-fallow cultivation to short-fallow with fixed plots (cf. Yates 2007, Barrett 1994).

Some wetland sites in the western Fens are indeed characterised by the presence of field systems laid out in damp or seasonally wet meadows (Daniel 2009, Pryor 2001). Yet contrary to expectations, they do not seem to contain much evidence for settlement. Too wet to be inhabited or grow crops, they were maybe used in a pastoral manner. Many of these wetland sites may have been used by nearby fen edge communities. The wetland sites in the Lower Ouse region, located in a slightly raised position on gravel islands surrounded by meanders of the Ouse, are of a different character. Here we do find settlement in field systems, but the remains mostly date to the Late Bronze Age (Evans 2016). In many ways, these sites resemble fen edge sites.

In addition to the use of wetlands in more practical or economic ways, ritual engagement with this landscape becomes clear, as reflected by the deposition of hoards and single finds of metalwork in various locations in the Fens, sometimes along timber structures like the alignment at Flag Fen (Pryor 2001, Yates and Bradley 2010) (Figure 98). These sites too may have been used by nearby fen edge communities, though Flag Fen may have drawn people from further distances (Pryor 2001).

[38] It is likely that the increase in wetland sites reflects increased visibility rather than an increased interest in the Fens. Sites of this date, in contrast to earlier ones, are located high enough in the Fenland Basin for us to reach them, or for them to be exposed as peat continues to waste away.

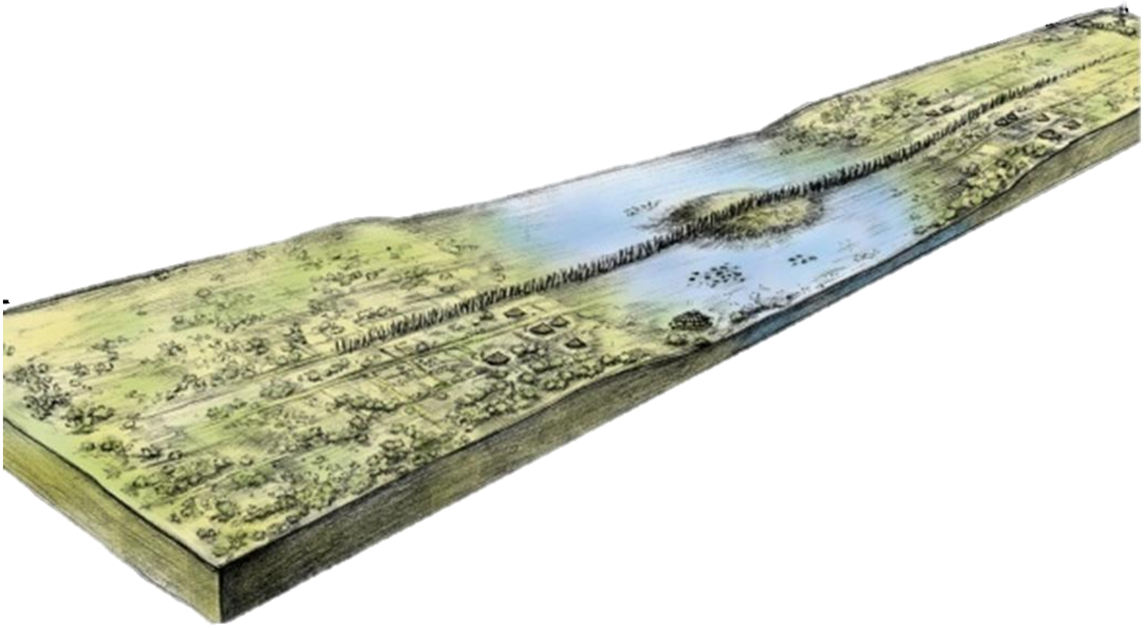


Figure 98: Reconstruction drawing of the Flag Fen alignment and platform (middle) linking the Fengate field systems and settlement (left) to those at Northey (right). (Image copyright Vivacity Flag Fen)

Domestic foods occur most frequently in the wetlands, but they do not dominate so clearly over other groups in this environment (cf. Figure 68) This is not surprising, given the fact that cereal cultivation was probably limited to slightly raised, drier areas. Space for domestic animals must have been equally limited. These space limitations may explain why wild animal foods seem to occur relatively frequently in wetland sites at this time (cf. Figure 68) The many log boats, fish traps and weirs found in a palaeochannel of the River Nene at Must Farm demonstrated that these wild animal resources were indeed taken in this period (Robinson et al. 2015) (Figure 99). In the Bronze Age of West Frisia (the Netherlands), the use of traps and weirs, in combination with high migrating fish counts suggest a 'passive' (using traps), concentrated form of hunting (during specific periods), undertaken in combination with farming activities (Van Amerongen 2014). The available evidence for the Fens, with a clear emphasis on domesticates, high migrating fish counts and the Must Farm traps and weirs, suggests that very similar practices occurred here. These sites could be managed by communities inhabiting the nearby fen edge, where most of the domestic plants and animals found in wetland locations may have originated.

Clearly the richest environment in terms of site numbers and food remains (cf. Figures 68, 69 and 71), the fen edge continued to be a focus in the Middle/Late Bronze Age. Earlier Bronze Age pre-field system land divisions seem to have become formalised in the large field systems that were laid out in many locations (cf. Evans 2009, Yates 2007). Of varying size and with different lay-outs, these systems demonstrate the importance of land management and may relate to the widespread intensification in farming seen in this period (cf. Yates 2007, Barrett 1994, Bradley 2007) (Figure 100). Yet as in the Earlier Bronze Age, evidence for settlement, in the form of structural remains, is relatively sparse (at least in the Middle Bronze Age) (Evans 2009, Brudenell 2012, Medlycott 2011). This absence of structural remains may be one of the reasons that the fen edge field systems have often been connected to seasonal pastoralism or the transhumant use of the Fens by inland communities (e.g. Pryor 1996, Yates 2007, cf. Evans 1988, 30). Yet whilst the large droves in systems like that at Fengate or Colne Fen suggest that dryland communities may indeed have used the Fens on a seasonal basis, it is likely that these systems were occupied more permanently (cf. Evans 2009, 2013) (Figure 101). The lack of clear Middle Bronze Age settlement remains (in the form of structures) is common throughout the study area (cf. Brudenell 2012), not just on the fen edge. Whilst field systems and cemeteries are found everywhere, most settlements in the

Figure 99: One of series of V-shaped barriers or weirs that crossed the course of the palaeochannel at Must Farm (top), c. 1300-800 BC, one of 18 traps from the same palaeochannel (middle), c. 1250-800 cal BC, and a transom-built boat in the UK found at the bottom of the channel. c.1300-1250 cal BC. These finds demonstrate Bronze Age people's intensive interaction with the wetlands. (Photos from Must Farm 2018, courtesy of CAU)

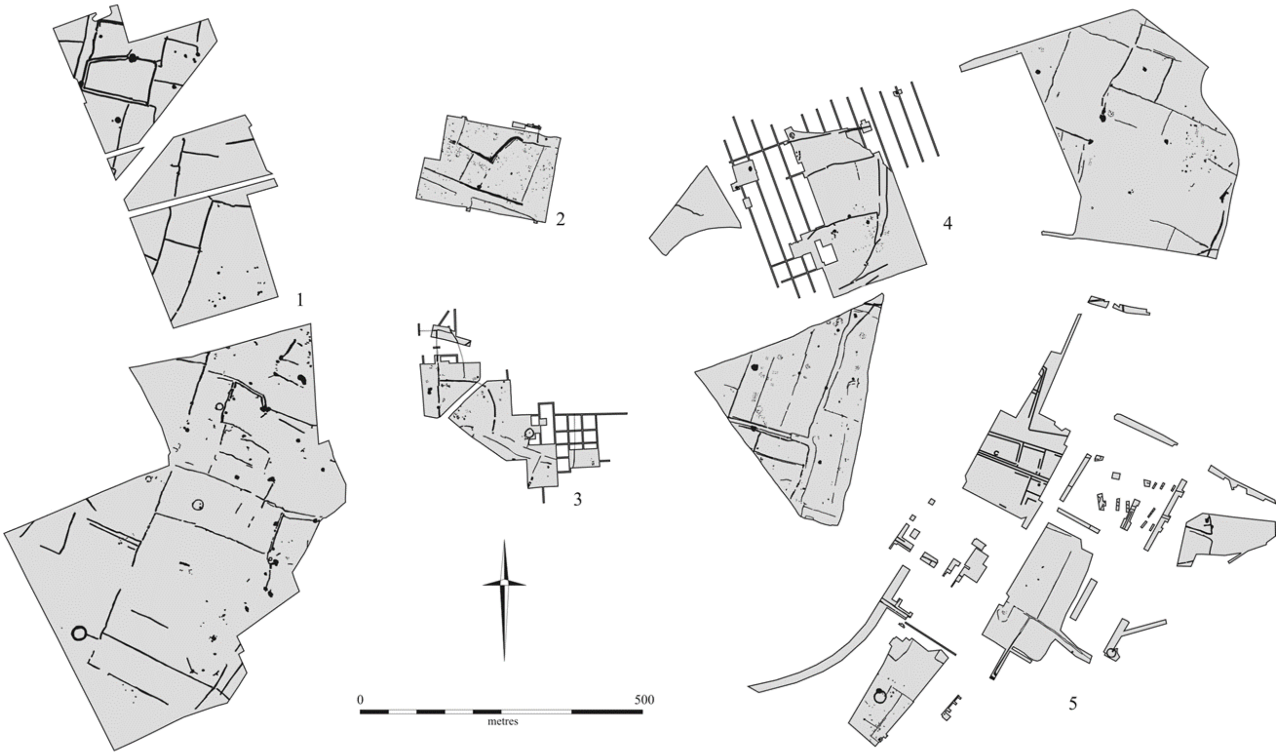


Figure 100: Examples of Bronze Age field systems at several of the selected sites in the study area. 1. Pode Hall/Tower Fen, Thorney, 2. The Holme, Earith, 3. Rhee Lakeside South, Earith, 4. Tanholt Farm, Eye, 5. Fengate, Peterborough. (Image from Brudenell 2012, 78, reproduced with kind permission of CAU and M. Brudenell)

region are characterised by isolated pits, waterholes, postholes and a little fragmentary material culture (ibid. 85). Yet this apparent settlement invisibility does not mean that there was no permanent settlement at the time (ibid.). Structures may have been constructed in a way that leaves no archaeological traces and refuse may not have been deposited in dug features on a regular basis (ibid.). Moreover, the investment in field systems and wells suggests a more "grounded existence" at this time (ibid.). Finally, on the fen edge, the numerous monuments and wealth of food remains found (which contrasts sharply with dryland sites) suggests continued intensive activity and more enduring settlement in this environment (cf. Figures 69 and 71).

These fen edge food remains moreover, suggest that pastoralism seems to be over-emphasised and that arable agriculture was probably important too (cf. Evans 1988, 2009). The growth in domestic data groups on the fen edge does indeed suggest that productivity increased in this period, but both domestic animals and plants occur very frequently (cf. Figure 71). It is true that domestic animals seem to occur more frequently than plants, possibly because the nearby Fens offered very good grazing. Cattle are particularly frequent on the fen edge (cf. Fig. lxxix) (cf. Silvester 1991, Evans 2016), reflecting a general pattern in southern Britain and north-western Europe (cf. Brusgaard 2014, 13, Hambleton 2008). Indeed, this species dominate Middle Bronze Age zooarchaeological assemblages in the Nether-

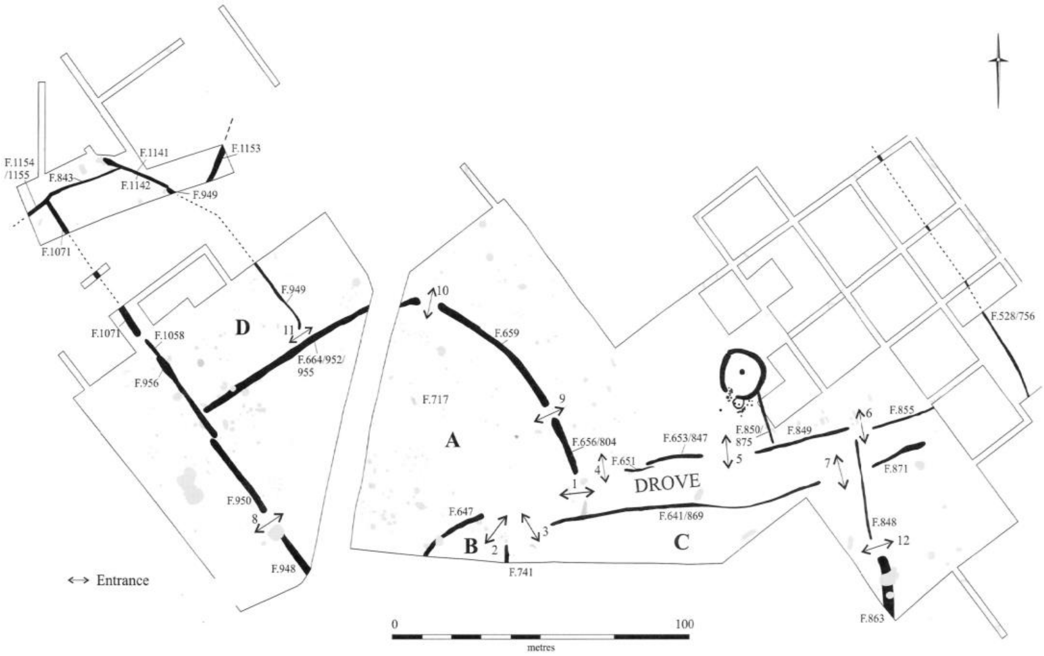


Figure 101: The Bronze Age field system at Rhee Lakeside South (Colne Fen), demonstrating paddocks A-D, the main droveway and entranceways. (Image from Evans 2013a, 129, reproduced with kind permission of CAU)

lands, northern Germany and Denmark (Brusgaard 2014, 13, Fokkens 2009, Vretemark et al. 2010, IJzereef 1981). Besides playing an important role in the subsistence economy, these animals may also have played an important socio-ideological role in the Bronze Age (Brusgaard 2014, Kristiansen and Rowlands 1998). It has been argued that these animals may have been an important source of wealth, exchanged as part of gift exchanges (e.g. ibid.). Yates (2007) argues that cattle were vital for newly emerging Bronze Age elites who used field systems to accumulate large quantities of wealth. Yet Middle Bronze Age elite are quite difficult to identify in the settlement and burial record (cf. Evans 2009, 259). Moreover, despite arable intensification and the clear emphasis on domestic animals and plants, wild resources clearly continued to be of some importance on the fen edge (cf. Figure 71). A wide variety is present; fenland animals were probably caught in the Fens (cf. the wetland evidence described above) whilst nuts and fruits may have grown near settlements and along the Middle Bronze Age field system ditches, and probably formed a welcome addition to the diet, which can still be characterised as broad-spectrum in this period. The focus clearly was on domesticates, but wild plants and animals were added to the diet, probably in a mostly opportunistic way.

The wealth of evidence in wetlands and on the fen edge contrasts markedly with that in drylands. Like the fen edge, most dryland sites in this period are characterised by field systems and enclosures of various kinds and although related settlement and occupation features (pits, gullies, hearths, post holes etc.) occur, evidence for structures is relatively sparse (cf. Clay 2006, Medlycottt 2011, Brudenell 2012). However, as discussed above, this does not necessarily mean that there was no permanent settlement in these dryland areas. Some of the fen edge sites are larger than many dryland ones and may therefore appear richer than smaller dryland ones (cf. Brudenell 2012). Moreover, preservation in drylands is less good than on the fen edge and this will certainly have affected patterns as well. On the other hand however, even some of the larger dryland sites that now appear further inland (e.g. those near modern day Cambridge) only indicate fairly modest levels of activity in the Middle Bronze Age[39] (cf. Evans et al. 2004) and although differential preservation does affect the survival of waterlogged wild plant remains, it should not affect charred cereal assemblages or the larger mammal bone assemblages. Yet we see some marked differences in the frequency and variety of charred cereals and domestic animals between the fen edge and dryland sites which suggest there are true differences between the way in which the dryland and fen edge landscapes were used at this time (cf. Figures 69 and 71).

Stevens and Fuller (2012) argue that warmer and drier climatic conditions in the Middle Bronze Age led to a resurgence of arable agriculture in a ‘second agricultural revolution’ throughout southern England, after the temporary abandonment of cereals in the later Neolithic (cf. Figure 95). Yet although the Earlier Bronze Age dryland data seemed to support this model, the Middle/Late Bronze Age evidence does not. Although drylands seem to be richer in this period than the last, cereals only increase a little in drylands and there is no “major upsurge of agricultural activity” (ibid. 707) (cf. Figure 69). Cereals only occur in c. 35% of all dryland sites in this period, only half of the frequency on the fen edge. Even in wetlands the cereal count is higher (at 50%), which suggest that arable agriculture may not have been very important in dryland sites yet (cf. Figures 68 and 69).

Instead, domestic animals seem to be the focus in drylands. However, the assemblage differs markedly from that in wetlands and on the fen edge, with a very high proportion of ovicaprids, a trend noted elsewhere, especially on the chalks (cf. Fig. lxxv) (Bradley 2007, 192). Many of these were probably sheep (as reflected in the higher frequencies of this species compared to goats) and although these animals may not have had the same socio-ideological status as cattle, they may have provided another form of wealth in the form of wool.

[39] By the Late Bronze Age, the dryland settlement pattern changes significantly (cf. Brudenell 2012). These changes will be discussed in the next section.

From the Early Bronze Age onwards, sheep seem to have had a predominantly woolly (rather than hairy) coat which could be spun and woven into intricate and valuable textiles, as the many exquisite Bronze Age textile finds in Scandinavia demonstrate (Ryder 1964, Serjeantson 2011). This probably explains the dramatic increase in sheep numbers in the second millennium BC (Serjeantson 2011). The reason sheep are found more frequently in drylands than in wetlands or on the fen edge, may reflect the fact that unlike cattle, sheep and goats suffer from foot-rot in wet circumstances (cf. Higham 1964). Given the low cereal frequency and high ovicaprid count, the selected dryland sites may have been used mostly pastorally, to manage and/or graze livestock and particularly ovicaprids. The close proximity of many selected dryland sites to those on the fen edge might indicate that many of these represent pastoral activities of fen edge communities (cf. Figure 67).

Although drylands are relatively poor, there is an increase for many groups, a slightly greater variety of species and a bit more waterlogging, which could suggest that activity in drylands became slightly more intensive in this period (cf. Figure 69). Some of this activity may be linked to dryland sites located further away from the fen edge, like those on the chalk near contemporary Cambridge (cf. Figure 67). Here too (ovicaprid) pastoralism may have been the norm (cf. Bradley 2007, 192). As only a few of these sites were recorded it is difficult to evaluate their relation to those on the fen edge. Given their distance from the fen edge, and their apparently different, pastoral lifestyle, they may have been used by people who were not directly related to those inhabiting the Fen edge, but it is likely that they interacted, with the larger rivers acting as routeways. The distribution of several distinctive Bronze Age shell necklaces, which not only occur in specific areas on the fen edge, but also on the inland site of Striplands Farm (Evans 2016, Evans and Patten 2011, 42) hint at such contacts. Whilst the inland ones are made of freshwater rather than saltwater shells, they are of a similar kind, demonstrating the river valley contacts of the ‘inland’ community at Striplands Farm (Evans and Patten 2011, 42). The many log boats found at Must Farm clearly demonstrate the importance of waterborne transport at this time and the presence of marine molluscs in and around the Fens equally suggests relatively long-distance movement of goods and/or people (cf. Figure 70). In this period, the fen edge and inland communities, with their different economies, may have traded different resources. The implications of this will be explored in the next chapter.

The ways that people interacted with the three environments in this period is of considerable interest, as it shows that there were important differences between them, but it also demonstrates that the three landscapes were probably closely connected, both directly and indirectly. Dryland sites near the fen edge/wetland do not conform to the conventional Middle Bronze Age narrative of settled agricultural communities, possibly because of the focus on the Fens and fen edge at this time. Indeed, the fen edge, once thought to be inhabited seasonally, seems to have seen much more intensive activity than drylands. Yet although domesticates clearly dominate, in line with expectations for this period, wild resources remain important, possibly because they are easily available in the nearby wetland. Thus, the wetlands affect developments on the nearby fen edge and in drylands.

Late Bronze Age/Early Iron Age – Colonisation, intensification and abandonment

This transitional period is characterised by major changes in the recorded food remains and settlement patterns, which indicate an important shift in the way in which people interacted with the three environments. After having been very rich in the preceding periods in terms of site numbers and food remains, fen edge site numbers drop dramatically. Several others have noted that densely settled Late Bronze Age areas along the western and southwestern fen edge seem to be abandoned around 800 BC (Chowne et al. 2001, Webley and Hiller 2009, Brudenell 2012, 94, cf. Medlycottt 2011, 29, Daniel 2009). Most of the recorded Late Bronze Age/Early Iron Age sites are only represented by pottery of this date. Activity does not cease, but it is of a very different nature than in previous periods and the fen edge is no longer 'in focus' (cf. Hall and Coles 1994, 75, 89).

Fen edge food remains also reflect this, with a marked decline in the frequencies of all plant and animal groups, and a much smaller variety of species within them (cf. Figure 74). Several groups disappear altogether. This suggests a much more restricted set of activities. Lower frequencies and variety may imply that fen edge sites were not inhabited for extended periods of time. Although domestic animals still occur most frequently, they cannot be said to dominate (cf. Figure 74). The low number and variety of cereals suggest that arable agriculture was not particularly important either and the absence of wetland animal species suggest that hunting, fishing and fowling activity declines as well (cf. Figure 74).

In contrast to the fen edge, dryland sites become much more numerous and more sites are now located further inland, away from the fen edge (cf. Figure 72). It has been noted by several others that settlement becomes more visible from the Late Bronze Age onwards, with a wide variety of site types, ranging from open and enclosed farmsteads to defended ringworks and the first hillforts appearing in many areas of the study region (cf. Brudenell 2012, 88-93, Willis 2006, Knight et al. 2012) (Figure 102). Much recent work demonstrates the establishment of more permanent clearances with grassland dominating, possibly as a

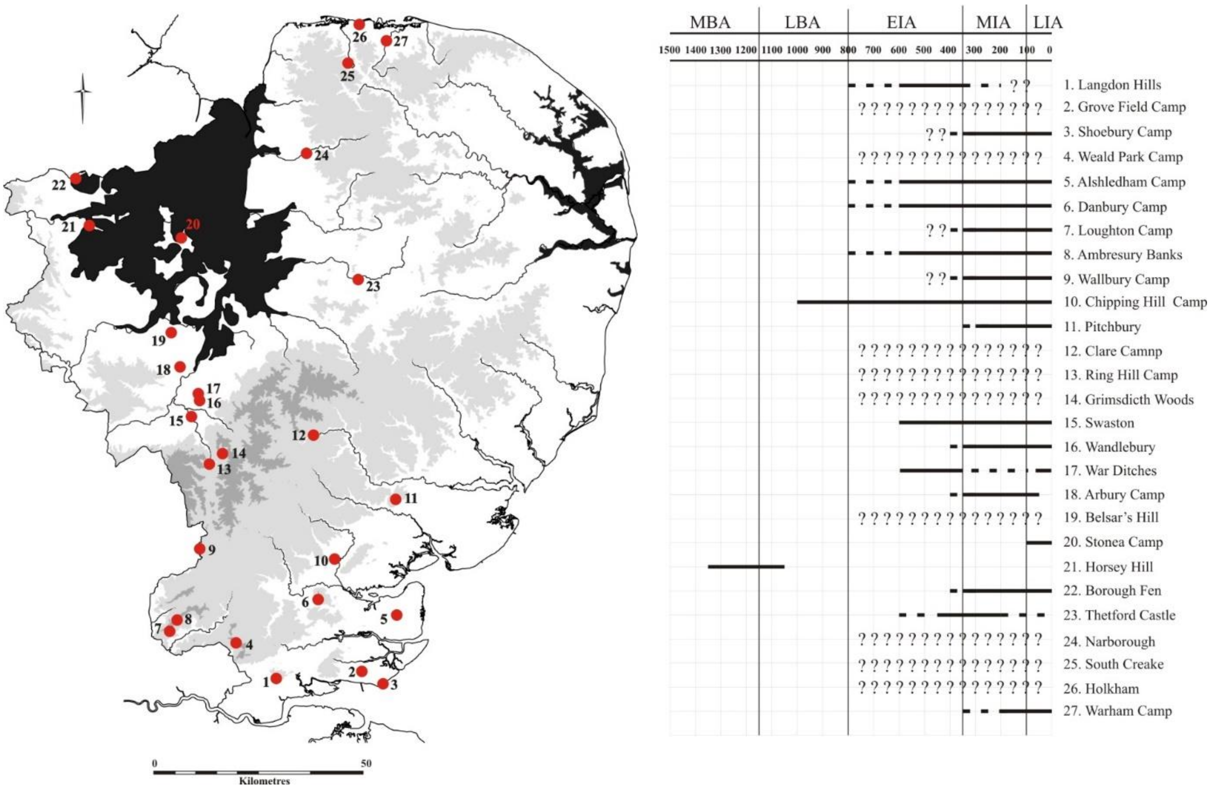


Figure 102: Map showing the distribution and (likely) date of hillforts in East Anglia. (Map from Brudenell 2012, 108, reproduced with kind permission of M. Brudenell)

result of the introduction of iron tools, which are more effective in rapid forest clearance (Cf. Clay 2002, 118). Many sites are characterised by linear land divisions, enclosures and features (pits, post holes, wells and some roundhouses) and they often seem to continue in use in the Early Iron Age. The evidence seems to reflect reiterative modes of occupation rather than long-term permanent settlement (cf. Brudenell 2012, 91, Knight et al. 2012, Willis 2006, 121), but the more "widespread and persistent forms of occupation" in Late Bronze Age drylands suggest that people are starting to become more attached to place in this environment (cf. Brudenell 2012, 88).

The food remains recorded on Late Bronze Age/Early Iron Age dryland sites equally suggest an increase in activity and changes in the way people interacted with this environment in this period. In contrast to the contemporary fen edge, dryland sites are quite rich in food remains (cf. Figures 74 and 75). It is widely recognised that pastoralism played an important role in Late Bronze Age economy (cf. Bradley 1971, Cunliffe 1971, 1984, Hamilton and Manley 1997, 2001, Murphy 1996 in Brück 2007), but besides high numbers of domestic animals, cereals now also occur at high frequencies in drylands (cf. Figure 75). Thus, although these Late Bronze Age communities may have been mostly pastoral still, it seems that arable agriculture may finally have become more prevalent in drylands as well in this period.

Whilst some wild animals, nuts and fruits occur, these do not seem to have been exploited much.

The changes in dryland settlement patterns and food remains suggest that this environment finally conforms to the conventional ideas of Bronze Age settlement and economy, normally associated with the Middle Bronze Age. Interestingly, it is not until the fen edge goes out of focus that this happens, emphasising how developments in one landscape may impact others. Developments are clearly not uniform across the study area (cf. Brudenell 2012). Thus, we need to consider different landscapes and the way they were used, as well as the way they may have interrelated. This relation will be explored in more depth in the next chapter.

The above patterns in subsistence practice, settlement and human-environment interaction suggest that there is a shift in focus in this period, away from the fen edge and towards drylands. There are several possible explanations for this change in focus, including another major climatic downturn referred to as the 'Hallstatt' or 'Homeric Minimum', which brought colder and wetter conditions to much of north-western Europe (Bevan et al. 2017, Wiseman in prep.) (cf. Figure 95). This meant a shift from comparatively dry and mild climate to a colder, wetter period and an increase in flood events in lowland Britain (Wiseman in prep., Macklin et al. 2005, 2006, 2010). In the Fens this is reflected in the fen-wide expansion of freshwater conditions, which resulted in peat growth and fen carr vegetation expanding outwards into the basin and onto the fen edge (Waller 1994, 75) (Figure 15.B). In both the Flag Fen and Lower Ouse region, where most of the recorded wetland and fen edge sites are located, groundwater levels rose rapidly and steadily, leading to widespread fen reedswamp conditions and peat encroaching onto the fen edge (cf. appendix 1). The rising water table and the expanding peat and reed swamps may have made access to the wetlands, especially the productive estuarine habitats closer to the Wash, more difficult (cf. Knight and Brudenell in prep.). And although these fen type wetlands have a higher productivity than nutrient poor raised peat bogs (cf. Dinnin and Van de Noort 1999, 73), the loss of land on the fen edge may have led people to abandon this landscape in this period and migrate to drier locations inland. Indeed, increasing wetness is mentioned as the most likely reason for the abandonment of several recorded sites, including Pode Hole, Billingborough and North Fen island (Daniel 2009, Chowne et al. 2001, Webley and Hiller 2009).

However, this does not fit with the wetland evidence in this period, where, in contrast to the fen edge, activity seems to continue in much the same way as before. In fact, people's interaction with this landscape seems to intensify. Wetland site numbers increase and the broad spectrum of food resources present in the Middle/Late Bronze Age only changes subtly, with a slightly greater focus on wild animals and fewer wild plants (cf. Figure 73). Although domestic animals and cereals occur more frequently than these wild animal resources, they cannot be said to dominate as clearly as in drylands, presumably due to the space limitations noted earlier.

A greater variety of wetland sites is present in this period and they occur in multiple locations (not just the Flag Fen Basin and Lower Ouse region) (cf. Figure 72). Some of these wetland sites may represent seasonal sites, only used at particular times of the year for the extraction of wild animal resources or wetland grazing. Others, like Flag Fen, are mostly ritual in character. Salt starts to be extracted in this period (e.g. at Hoe Hills or Tye's Drove in Lincolnshire) (Lane and Trimble 2010)) and there is a clear increase in the deposition of metalwork in the Late Bronze Age, both in the Fens and in riverine locations (Hall and Coles 1994, 89-90, Knight et al. 2012, Willis 2006, Field and Parker Pearson 2003). Wooden trackways occur in various locations, like at Barway and between Stuntney and Ely (Hall and Coles 1994, 85, Wiseman in prep., Lethbridge, 1935, Lethbridge and O'Reilly 1936). Possible marsh forts like the Magna Park/Horsey Hill earthwork, which occupies a small island and commands crossing points to and from the higher ground to the west and east (Gibson and Knight 2009), demonstrate people's continued interest in the wetlands (cf. Figure 126). The Over sites, now situated on river islands surrounded by wetlands (Evans 2016) (Figure 103), and the Late Bronze Age pile dwelling settlement of Must Farm, built in a former channel of the river Nene, demonstrate that wetlands were also inhabited more permanently in this period.

Must Farm, expertly built to suit its wet location, demonstrates an intimate knowledge of and relation with the local wetland landscape (Figure 104). Although it is unique to us, it is quite possible that similar 'true' wetland settlements, were located further out in the Fens (M. Knight, pers. comm.). Slots through the same channel the settlement was built in and dyke cleaning surveys further out in the Fens have provided hints of human activity here as well, including a fish trap identical to the ones found at Must Farm, bones with typical butchery patterns and wood chips similar to those at Must Farm (ibid.). These finds provide tantalising hints that more wetland settlements may have been present in the deep Fens. These are now invisible, just as Must Farm would have been had it not been located in a modern brick quarry. Thus, Must Farm may represent another migration or colonisation in

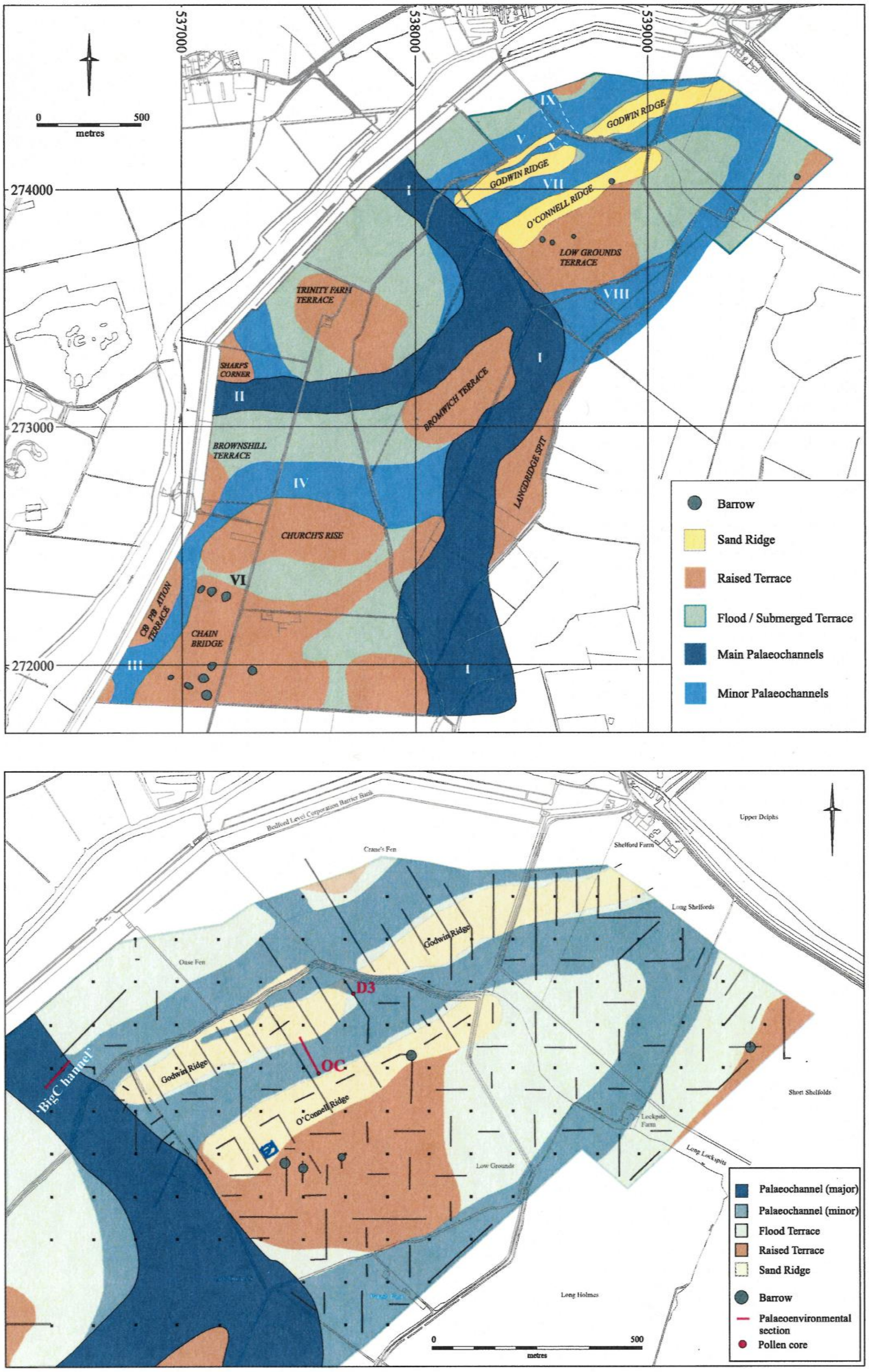


Figure 103: The Over ridges and island terraces within the Ouse delta in the south-western Fens in the Bronze Age. Settlement concentrated on the raised ridges and a barrow cemetery was located nearby. (Image from Evans and Tabor 2010, reproduced with kind permission of CAU)

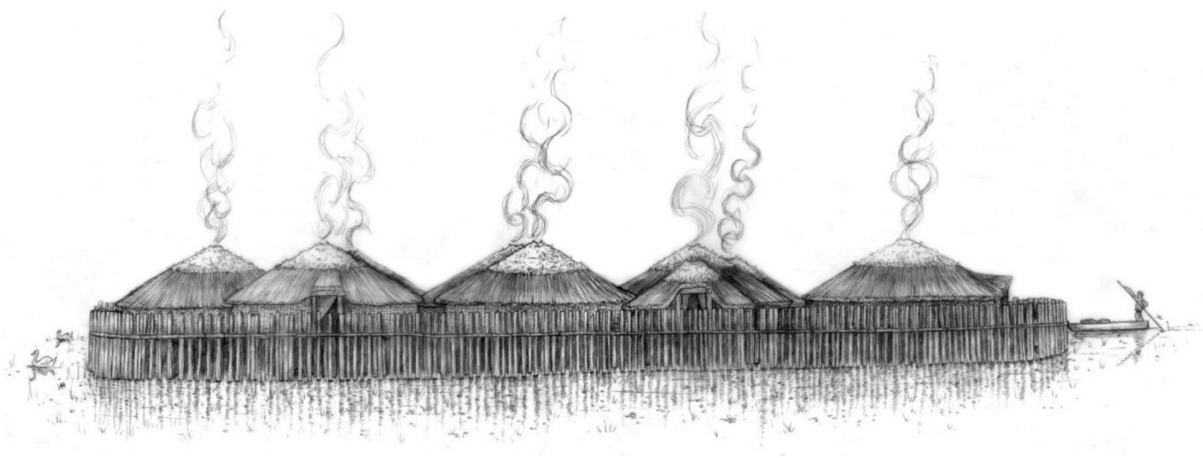


Figure 104: Reconstruction drawing of the Must Farm settlement. (Drawing by Vicki Herring, Must Farm 2018, courtesy of the CAU)

this period, moving in the opposite direction; into the wetlands rather than the drylands (cf. Knight and Brudenell in prep.).[40]

Fen edge communities, who had lived alongside the wetlands for generations, may have valued the wetlands too much to give them up. Yet as peat expanded it may have made the rivers and more productive parts of the wetland landscape inaccessible (cf. Knight and Brudenell in prep.). This may have prompted the 'colonisation' of the true wet Fens. Living in the wetlands also offered protection, which, given the evidence for increasing violence and conflict in the Late Bronze Age, including the development of defended sites and more weaponry, may have been important (Bradley 2007, 206). Finally, the wet Fens, whilst difficult to travel by foot, were criss-crossed by many waterways, the larger of which connected areas further inland with the coast and continental Europe and vice versa. The wetland sites in this period and their inhabitants were well placed to control these trade routes. Indeed, the finds at Must Farm (which include glass beads from central Europe) demonstrate that people tapped into this trade and the site may have been built strategically in a palaeochannel of the Nene, so this trade could be controlled (Knight and Brudenell in prep.) (Figure 105). The presence of dryland resources, and particularly a relatively high number and great variety of cereals in wetlands at this time (cf. Figure 73), suggest that connections between wetland and dryland communities remained important in this period.

[40] Alternatively, Must Farm and other sites like it represent the culmination of a wetland living tradition started much earlier, in the Middle or possibly even Earlier Bronze Age, now invisible to us as sites from those periods are deeply buried. In this case Must Farm is an example of a community that decided to hold their ground as the Fens expanded, rather than move further inland.

Figure 105: A cluster of glass beads found at Must Farm. Some of the beads at this site may have come from Central Europe. (Image from Must Farm 2018, courtesy of CAU)

Although Must Farm is seemingly unique, it does seem to fit into a broader pattern recognised in this period. Bradley (2007, 223) discusses the increasingly diverse settlement pattern in the Later Bronze Age and mentions the new types of 'field monuments' that seem to emerge at this time, including wooden platforms, bridges and crannogs in wetlands. Flag Fen and other causeways in the Fens are amongst several similar causewayed structures found in southern England and in several places platforms were built in the water, or small islands became a focus of human activity (ibid. 203). These include Runnymede Bridge and Wallingford, both in the Thames (ibid.). In Norfolk, several possible 'crannogs', one in Barton Mere (associated with Bronze Age metalwork), the other near Wretham, are described in 19th c. reports (Wiseman in prep.). And whilst the Irish and Scottish crannogs are normally associated with the Iron Age, similar wetland settlements, some located in blanket bogs rather than open water, can be dated to the Late Bronze Age (Cavers 2006, O'Sullivan 1997, 1998, 115). Thus, the colonisation of the wet Fens may be part of a wider trend and an increasing interest in wetlands, not just as exploitable landscapes but as settlement locations as well.

This Late Bronze Age wetland focus, and people's continued interest in and interaction with the Fens in this period demonstrates that in addition to climate and environmental changes, social developments and people's choices played a major role in the developments seen in this period. Indeed, the beginning of the first millennium BC has been characterised as a period of widespread "fragmentation and social change" (Bradley 1984, 129). Demographic pressures, increasing violence and the introduction of iron are all examples of social stress in this period that may have contributed to the major changes we see in the ways that people interacted with the three environments (Willis 2006). These social factors were probably intimately connected to environmental ones.

Bronze Age summary

For the majority of the Bronze Age, all three environments have a good number of sites, allowing for the comparison of food remains and human-environment interaction in all three. The greater amount of evidence available demonstrates that differences in subsistence practices, lifeways and human-environment interaction in the three environments become more pronounced. Yet at the same time, there seem to be clear connections between the three landscapes.

The fen edge seems to be the focus for most of the Bronze Age. Possibly settled in the Earlier Bronze Age, at an earlier date than the conventional Middle Bronze Age, its economy may be characterised as a broad-spectrum one throughout most of the period. Domesticates certainly occur most frequently, but wild resources were added to the diet, probably in a relatively opportunistic manner. The expanding Fens seem to have been attractive, as reflected in wetland use, which also becomes a lot more visible in this period, and seems quite varied, including both practical economic, and ritual activity. Food remains are quite similar to those on the fen edge, although lack of space means that domestic plant and animals occur less frequently than on the fen edge and wild animal resources seem relatively more ubiquitous.

Dryland patterns are quite different. In line with traditional expectations, the Earlier Bronze Age is relatively poor in remains, in many ways resembling the Late Neolithic/Early Bronze Age. The Middle Bronze Age is richer, but, unlike the fen edge, the dryland evidence does not conform to conventional ideas of a Middle Bronze Age intensification of agriculture or even a second agricultural revolution. Instead, there seems to be a pastoral focus on ovicaprids. Cereals do not seem to play a major role until the Late Bronze Age/Early Iron Age, when settlement becomes a lot more visible in drylands. At around the same time the fen edge sees major declines in site numbers and the frequency and variety of most plant and animal groups, suggesting this environment was no longer inhabited. Yet whilst the increasingly wet circumstances in this environment might have resulted in a move from the fen edge towards drier areas, the wetland evidence contradicts this. Here too activity seems to intensify and besides resource extraction and ritual activity, this landscape is now also inhabited. This suggests that some communities did not move to drier areas, but instead colonised the true wet Fens in the Late Bronze Age.

‘Global’ climate change and more regional and local environmental and landscape change clearly played a role in the developments in the three environments, which often seem interrelated. The broad-spectrum economy in wetlands and on the fen edge, and the ‘delay’ in the establishment of a mixed farming economy in drylands may relate to the presence of the developing Fens whose wild resources may have provided a major draw to Early and Middle Bronze Age societies. The abandonment of the fen edge in the Late Bronze Age/Early Iron Age may also be related to increasingly wet conditions. Yet social change and the choices people made when the climate, environment and landscape changed played an equally important role, as demonstrated by the continued interest in, and apparent colonisation of, wetlands in the Late Bronze Age/Early Iron Age. Besides these indirect links between the three environments in terms of inter-related developments, it seems that the three landscapes may have been related through their complementary use throughout most of the Bronze Age. These issues will be explored in more depth in the next chapter.

5.2.3 Iron Age – Mixed farming and specialised wetland use

Although the Middle/Late Iron Age is probably one of the richest periods in terms of food and settlement remains, the Iron Age period overall is poorer than the Bronze Age. This is due to lower site numbers in the Early Iron Age and Late Iron Age/Romano-British period (particularly on the fen edge and in wetlands). Although the Early Iron Age has few sites in many areas of southern Britain (Brudenell 2012, 98), the lower site numbers in the last period may be a result of the site selection process rather than a true absence of sites dated to this period. The period only covers 200 years and any sites that were called ‘Roman’ were excluded in the early stages of site selection, even if they included Roman-British or later Iron Age material. Thus, whilst Early Iron Age patterns can be trusted, the Late Iron Age/Romano-British patterns are unlikely to be representative.

Iron Age food remains and the way people interacted with the three environments differ significantly from those in previous periods. Dryland settlement and subsistence practices seem relatively stable throughout the Iron Age (cf. Figure 77), although there seems to be a development from more mobile pastoralist ways of life to a settled mixed agricultural one. The fen edge and wetlands see major changes between the Earlier and Middle/Late Iron Age. Whilst both environments do not seem to have much activity in the Earlier Iron Age, they are back in focus by the Middle/Late Iron Age, as reflected in large numbers of sites and the exploitation of wild fenland resources (cf. Figures 84 and 86). Yet the way in which these two landscapes are used seems to differ significantly from that in the Bronze Age.

Despite important variations in subsistence and the way people interact with three environments, there are hints for shared practices and understandings, particularly between fen edge and dryland sites.

Earlier Iron Age – Clayland colonisation and wetland decline

From having been actively exploited and even inhabited in the previous period, activity in wetlands seems to decline significantly in this period, as reflected in low site numbers and food remains on the recorded Early Iron Age wetland sites (cf. Figures 78 and 79). The few sites recorded for this research are of a very different character to the Late Bronze Age ones, suggesting that the way people interacted with this landscape changed significantly. Most sites only contain a few sherds of pottery and perhaps a few features, representing the traces of intermittent or less intensive occupation (cf. Knight and Brudenell in prep.). Wetland food remains equally indicate low intensity activity. Only domesticates occur in more than one site and no typical wetland species are found (cf. Figure 79). Yet despite an apparent absence of interest in wild resources, ritual activity does continue, as reflected in the earlier Iron Age Hallstatt D metalwork found near the Flag Fen alignment (Pryor 2001, 300).

The lack of Earlier Iron Age wetland sites in the Fens has long been recognised (cf. e.g. Hall and Coles 1994, Evans 2013a, Brudenell 2012, 94, Lane 1993) and could indicate that the wetlands were now abandoned, possibly due to the continuously deteriorating climate and corresponding increases in wetness in many Fenland areas (cf. Figure 15.C). Now characterised by a large expanse of freshwater wetland and peat with a continuously rising groundwater table (Waller 1994, 74, Boreham 2016, Scaife and French in prep.), the landscape may have become too unstable (cf. appendix 1).

The total number of fen edge sites is very low as well, but the greater range of food types and species present in this period suggests that they were relatively ‘normal’ settlements (cf. Figures 78 and 82). Here fish and birds are found, but at relatively low frequencies compared to domestic plants and animals. Thus, in contrast to most of the Bronze Age, when the fen edge economy could be described as a broad-spectrum one, the Iron Age economy is perhaps better characterised as mixed farming with occasional hunting. This resembles patterns on contemporary dryland sites, suggesting a possible link. Indeed, the fen edge may have been recolonised by dryland communities wishing to gain access to wetland resources at this time. This is reflected in the nature of some of the relatively insubstantial wetland sites in this period, which seem to represent hunting stations for communities on the fen edge (e.g. several Fengate sub-sites and the tops of Bronze Age barrows at Haddenham and Over, now engulfed by peat) (Evans 2009, 2016).

In contrast to wetlands and the fen edge, dryland areas see a lot of activity. Despite a general decline in site numbers in this period which seems to reflect settlement nucleation and population contraction (Brudenell 2012, Medlycottt 2011, 29), there are more recorded dryland sites than wetland and fen edge ones for the first time since the Earlier Bronze Age. Indeed, whilst the wetlands and fen edge see less activity, dense pockets of Early Iron Age settlement were established further inland (Brudenell 2012, 94). There is a lot of continuity between Late Bronze Age and Early Iron Age settlement in drylands, but also hints for change (Brudenell in prep). In Eastern England for instance there seems to be a shift away from the lower-lying river gravels towards clay hills and chalk plains (Medlycott 2011, 23). This is also reflected in the site distribution pattern (cf. Figure 78).

The settlement and pottery in the study area suggests that there was increasing regionalisation, with clear differences between areas like Norfolk and Suffolk on the one hand and Cambridgeshire on the other (Brudenell 2012). Whilst many low-density scatters of Early Iron Age pits and postholes start to appear in Norfolk and Suffolk after 800 BC, fewer, more substantial sites appear in Cambridgeshire (ibid. 98). Some of these sites, mostly located in the chalklands, are characterised by large numbers of pits, presumably used for centralised communal storage (ibid. 95, Evans et al. 2018) (Figure 106). Whilst some features on these sites suggest they were permanently settled, they may equally represent "reiterative modes of occupation" or central places where people gathered periodically (Brudenell 2012, 91). Besides open settlements and small farmsteads, enclosed sites, including ringworks and hillforts occur (Brudenell 2012, 106, Medlycottt 2011). They vary in nature and whilst some may represent settlements, others seem to be used in a more transient fashion (Brudenell 2012, 95). "Complex 'off-site' activity" is evidenced in various areas (Medlycottt 2011, 29) and extensive routeways and landscape boundary features can now be dated to the Early Iron Age as well (Brudenell in prep., Wiseman in prep.).

Unlike in most previous periods, few recorded dryland sites are located close to the fen edge and several occur on heavier clay soils in true inland locations (cf. Figure 78). It seems that these heavier soils started to be become attractive in this period, possibly because they remain fertile for a longer period than lighter soils, and suitable iron technology to work the heavier soils was developed (Clay 2006). The food remains recorded suggest a similar economy to that on the fen edge, with a focus on domestic plants and animals

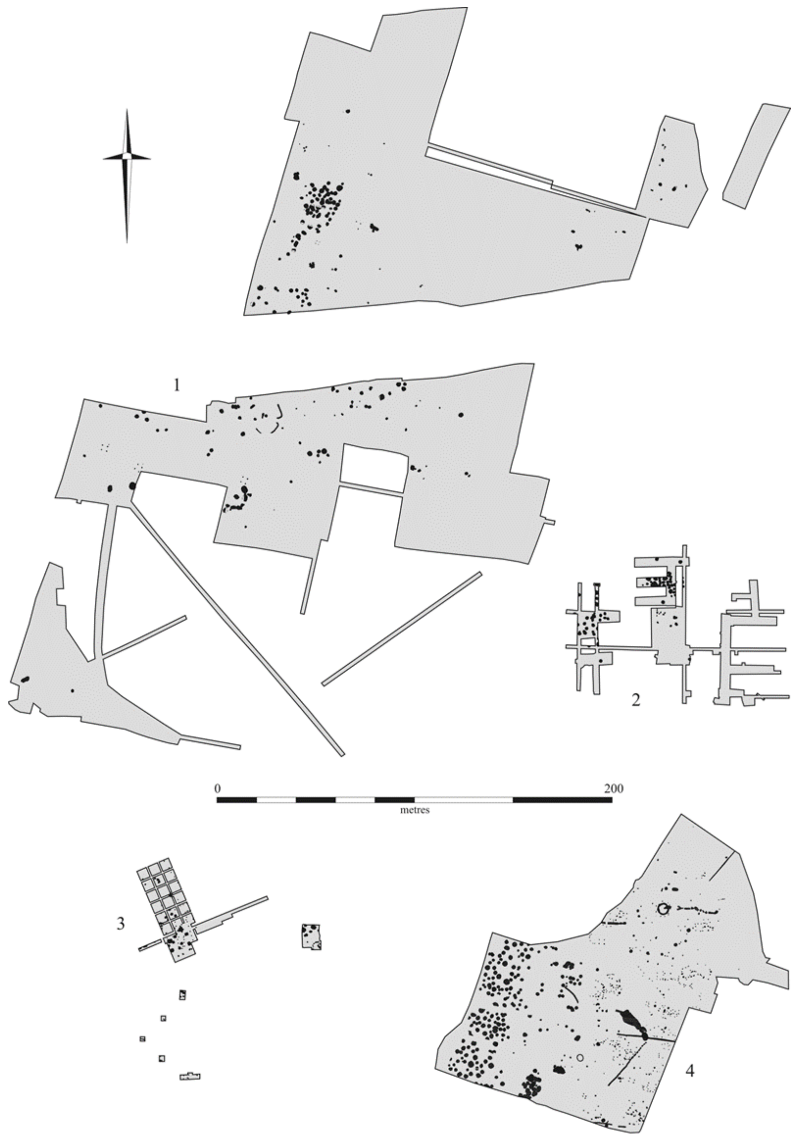


Figure 106: Early Iron Age Pit dominated settlements in southern Cambridgeshire. 1. Trumpington Park and Ride site, 2. Edix Hill, Barrington, 3. Wandlebury, 4. Harston Mill. (Image from Brudenell 2012, 96, reproduced with kind permission of CAU and M. Brudenell)

(Figure 82). However, many inland/clay sites have paddocks, enclosures and animal pens associated with them (e.g. Ecton, Greenhouse Farm), which might suggest that livestock was a bigger focus in these landscapes (cf. Medlycottt 2011, 23). The increase in ovicaprids and horses seen in dryland assemblages may be related to this development (Fig. ciii). A pastoral lifestyle, with regular movement of people might explain some of the patterns described above, including the expansion into new areas, the occurrence of communal sites where people could gather periodically, the development of routeways and off-site activity. Pastoralism may have been more attractive given the climatic circumstances in this period, which may have made growing crops more difficult or risky (cf. Bevan et al. 2017) (cf. Figure 95).

The greater number and variety of sites in drylands in the Earlier Iron Age, and the greater visibility of settlement, suggests that the focus has by now definitely shifted from wetlands and the fen edge to the drylands. Yet although settlement activity on the fen edge and in wetlands seems to have decreased substantially and the way that people engaged with it changed significantly, the sites that are still in use do suggest continued engagement with this landscape. Besides occasional hunting, salt continued to be extracted as well, as evidenced by the briquetage at sites like Billingborough (Chowne et al. 2001). Finally, despite the absence of wetland animals on wetland sites, the presence of wetland species on the fen edge and in drylands shows that the Fens were not wholly ignored. Indeed, the fact that birds occur on inland locations at some distance from the Fens (cf. Figure 81) and the apparent similarities in fen edge and dryland economies hint at the possible connections that may have existed between wetlands, the fen edge and these higher, drier areas. This connection will be explored further in the next chapter.

Middle/Late Iron Age – Intensification, specialisation and interaction

The Middle/Late Iron Age site distribution and site character are very different from that in the previous period, demonstrating the major changes in human-environment interaction in this period (cf. Figures 78 and 83). Not only do overall site numbers increase significantly, the wetlands and fen edge also seem to be back in focus again. It seems that, after an initial tentative phase of fen edge recolonization in the Earlier Iron Age, this period is characterised by more widespread settlement, which by now also extends into the wetlands. A wide variety of sites, of varying character, are now present across the Fens, in a variety of different wetland settings, ranging from saltmarshes in Lincolnshire to freshwater peat areas and gravel ridges in the wet river delta of the Great Ouse) in the west and south (Waller 1994, Evans 2016, Scaife and French in prep.). They include sites without much evidence similar to those in the last period, which may represent temporary off-site fen edge hunting and fishing activity, but also settlements (e.g. at Bradley Fen, Colne Fen and Haddenham) (Knight and Brudenell in prep., Evans 2013a, Evans and Hodder 2006b), specialised industrial sites (e.g. a series of pits at Fen Farm and salterns like the Cowbit Marsh) (Lane 1993, Lane and Trimble 2010), and sites where ritual deposition took place (e.g. Flag Fen, Fiskerton, Godwin Ridge at Over) (Pryor 2001, Evans 2016, Field and Parker Pearson 2003). Several enclosed or defended sites also occur. At Wardy Hill for instance an open settlement on the Fenland island of Ely became enclosed and eventually fortified (Evans 2003) (Figure 107). The site may have controlled access to the fen embayment nearby and could have been used for storage or periodic gatherings in addition to occupation (ibid.). The presence

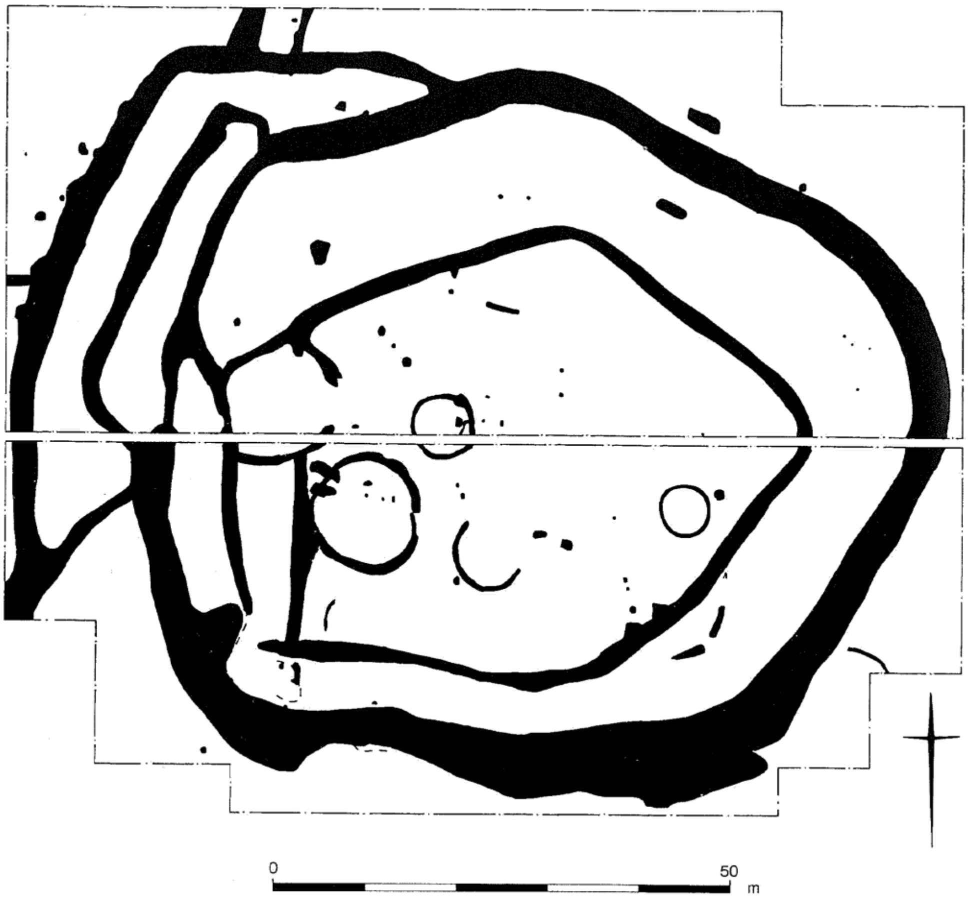


Figure 107: Plan of the Wardy hill enclosure, showing successive structures surrounded by large defensive ditches and ramparts. (Image from Hall and Coles 1994, 98, reproduced with kind permission of Historic England)

of this site and others like it (e.g. the Borough Fen ringwork or the Late Iron Age Stonea camp hillfort) (Malim and McKenna 1993, Brudenell 2012) demonstrate that access to and control of this landscape was important at the time (cf. Figure 102).

The renewed interest in wetlands in this period is also reflected in wetland food remains. Whilst domestic animals do occur most frequently, the wide range of fish and birds found result in ubiquity counts that are higher than those for cereals (cf. Figure 84). Although it is unlikely that wild animals were more important than cereals in wetlands, as presence/absence data lead to relatively high numbers, especially when a great variety of species is present, it does suggest that these wild resources were exploited more intensively than before. Indeed, at the Haddenham V site, the animal assemblage contains many domesticates, but also very high numbers of beaver and bird bones, suggesting the community was specialising in the extraction of these wetland resources (Evans and Hodder 2006b, Evans and Serjeantson 1988) (Figure 108). As other sites of this period are less rich in wild animal remains, Haddenham's assemblage seems quite unique (cf. Evans forthcoming). Yet birds, fish

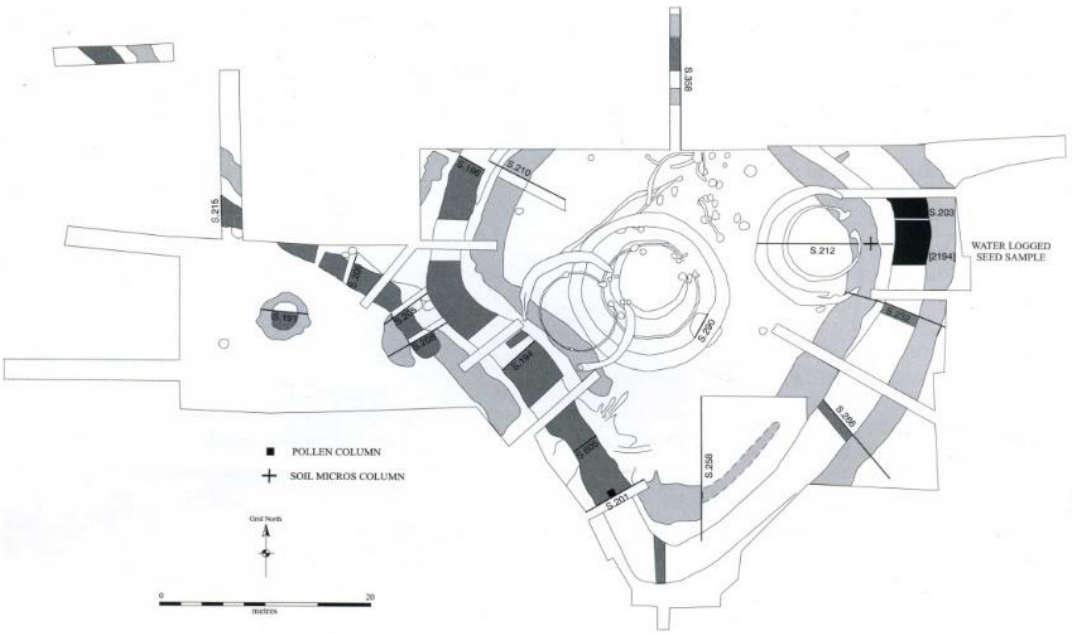


Figure 108: Site plan of the Haddenham V enclosure. (Image from Evans and Hodder 2006b, 100, reproduced with kind permission of CAU)

and wetland mammals occur in various places in and around the Fens in this period and the evidence discussed above clearly demonstrates that the Fens were not ignored (cf. Figures 85 and 88). On the contrary, interaction with this wetland intensified in this period (cf. Willis 2006). Finally, it is likely that other, similar sites simply have not been found yet, possibly because many of them are located further out in the Fens.

It is unlikely that the wild wetland animals hunted at sites like Haddenham V were all used on wetland sites. Many beaver pelts or birds (and feathers) may have been traded with communities on the fen edge and further inland, perhaps in return for some of the domestic (and wild) dryland resources that occur in wetlands at this time (cf. Figure 84) (cf. Evans and Hodder 2006b, Evans and Serjeantson 1988, Evans 1997b). Fen edge and dryland economies are more strongly dominated by domestic plants and animals, suggesting a mixed agricultural economy, but the presence of wetland mammals, oysters, fish and especially birds on the fen edge and in dryland sites suggest that such trade links may indeed have existed (cf. Figures 88). The fact that the same pelt and (wetland) bird species occur in all three environments not only suggest close trade links, but also the presence of shared ideas about what is good to hunt and/or eat. In fact, it is possible that the Fens and fen edge were colonised from areas further inland, as reflected in material culture and settlement forms (cf. Knight 1984, Evans 2013a). At Colne Fen for instance, it has been argued that Earlier Iron Age Scored Ware-associated sub-square enclosure settlements were replaced by more organic-plan enclosures with typical Late/terminal Iron Age artefacts (including wheelmade pottery, coins and brooches) (Evans and Tabor 2012, Evans 2013a). If some of the fen edge sites were founded by western inland communities, it is very likely that they maintained strong links and relations.

People's increasing interest in and the apparent intensification of people's interaction with wetlands may partly relate to the expansion of marine influences in the Fens from the Middle Iron Age onwards (Waller 1994, 78). In the northern and eastern Fens, marine depositions reach their maximum extent, bringing brackish conditions far inland (ibid.) (cf. Figure 15.C). This would certainly explain the many salterns that now occur in Lincolnshire (cf. Lane and Morris 2001). However, in the southern Fens peat growth continued and it seems that the Flag Fen Basin is also characterised by freshwater conditions (ibid., French 2001d, Scaife and French in prep.). Despite these very dynamic and wet conditions, environmental studies in the Lower Ouse regions show clear increases in arable and pastoral indicators which suggest intense arable activity (Evans and Hodder 2006b, Evans 2016). The evidence for intensification and the potential links between dryland, fen edge and wetland communities as outlined above indicates that other, social factors also played a role in the increased interest in wetlands in this period. We will only be able to understand these by considering events on the contemporary fen edge and in the surrounding dryland areas.

As already mentioned, it seems that the fen edge is 'recolonised' in this period, as settlements of varying size and nature re-appear in various places (cf. Chowne et al. 2001). They include open (and later on) enclosed settlements, some of which seem very substantial, containing large numbers of apparently contemporaneous structures and associated features (e.g. Colne Fen) (Figure 109) (Evans 2013a). Several fen edge settlements are associated with field boundaries and 'empty' compounds or enclosures (e.g. at Haddenham or Barleycroft Farm), which may have played a role in stock handling or arable agriculture (Evans and Hodder 2006b, Gdaniec 1995). These low-lying enclosures, situated on the marsh margins, suggest people were clearly making use of wetland resources and opportunities (e.g. grazing, reeds, fish, fowl etc.) (Gdaniec 1995). Evidence for industrial activity, including salt extraction on sites like Market Deeping, or at Baston Quarry (Lane and Trimble 2010, Brittain and Robinson Zeki 2016), equally testifies to fen edge communities' interest in the wetlands and their resources. The occurrence of saltwater molluscs in various fen edge and dryland locations may relate to (seasonal) salt extraction and/or trade links (cf. Figure 88).

Whilst the Fens and fen edge clearly became of interest in this period, dryland settlement was not abandoned. On the contrary, recorded sites, similar in nature to fen edge ones,

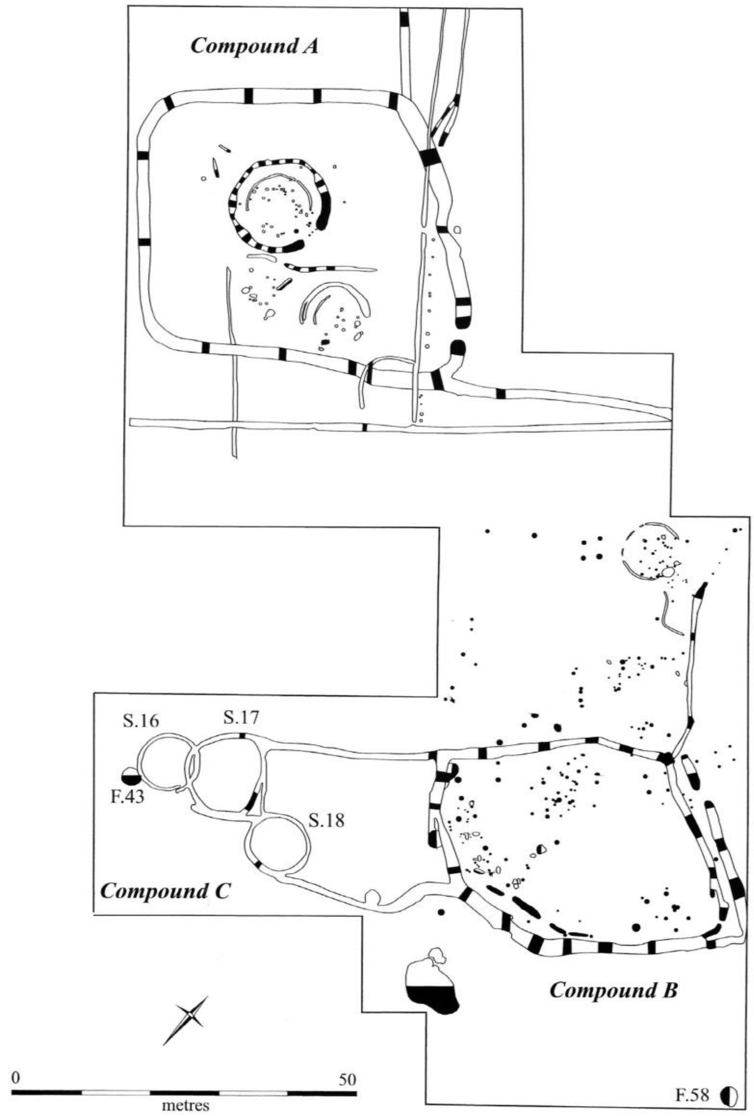


Figure 109: Plan of two Iron Age compounds and their structures at Site 1 (Colne Fen). (Image from Evans 2013b, 155, reproduced with kind permission of CAU)

increase in number and they are fairly widely distributed throughout the study area. This fits with a general trend seen within the region, which sees settlement becoming much more visible and widespread in this period (cf. Willis 2006).

A great variety of settlement types occur in many different dryland landscapes, including both lower-lying river valleys and heavier clay soils first explored in the previous period (cf. Brudenell in prep. Clay 2002, 118, Willis 2006, Medlycottt 2011, Paul and Hunt 2015, 57). Whereas the Earlier Iron Age mostly has unenclosed forms of settlement, which seem to be semi-permanent in nature, the later Iron Age has both open and enclosed farmsteads spaced closely together, reflecting a developed and densely settled landscape, which displays considerable regional variation (Brudenell in prep., Clay 2002). Large defended sites, including hillforts, are rarer in the study area than in other parts of southern England, but they do occur (cf. Figure 102) (Brudenell 2012, 107-10, Willis 2006, 102).[41] Of varying character and form, they are not very well understood (ibid. 110). Enclosures still appear and the evidence for field systems and evidence for land boundaries and trackways becomes clearer in the Late Iron Age (Medlycottt 2011, 22). It seems that that these systems and land boundaries, which indicate increasing agricultural intensification, were used for a mixed agricultural economy with both arable and pastoral components, although the latter may have been the focus (cf. Willis 2006, 107, 127, Clay 2002, 118). The food remains recorded in this research, with a clear emphasis on domesticates and only a small role for wild resources, support this (cf. Figure 87). This economy seems relatively similar to that on the fen edge (although fen edge sites have slightly higher wild counts, presumably because of their close proximity to the Fens) supporting the existence of close connections between dryland and fen edge communities (cf. Figure 86).

The patterns in this period reflect those in other areas of lowland Britain and suggest a marked growth in population, as well as "agricultural colonisation, intensification and innovation", which may be related to a substantial recovery in climatic conditions around 400 BC (Willis 2006, 127, Bevan et al. 2017, Clay 2002) (cf. Figure 95). A combination of social and environmental factors clearly led to changes in the ways that people interacted with the landscape and each other (Willis 2006, 127). The occurrence of grain rich deposits in several areas in Britain likely represents surplus storage, suggesting an increase in grain production (van der Veen and Jones 2007). Whilst pastoral farming regimes still occurred in some places, mixed farming seems to have become more common (Willis 2006, Medlycott 2011), reflecting the patterns in the study area described above. New areas of the landscape (including the heavy clays) were cleared and brought under cultivation (Haselgrove 1999, Willis 2006,) and increasing numbers of communities obtained resources (both agricultural produce and material culture) through trade (Moore 2006, 206, van der Veen and Jones 2007). Indeed, production and exchange seem to become more centralised and specialised, with rivers playing an important role as trade and communication routes, and specific sites and locations in the landscape started to serve specific roles (Willis 2006, 127, Moore 2006, 213, 217, Clay 2002, 118, Abrams and Ingham 2007, 20). The Somerset lake villages, which seem to have been regional centres of production and exchange, are an example of this trend (Haselgrove and Moore 2007, 4), as is the more intensive use of the

[41] This may be due to the fact that the landscape in the study area lacks easily defended hilltops, being mostly flat or at most gently undulating.

Fens and other wetland areas (Willis 2006, 127, Moore 2006). Besides the evidence for salt production and wild resource extraction, there are hints that horse breeding may have become important in and around the Fens at this time, as evidenced by high numbers of horse bones (including those of young individuals) at sites like Market Deeping, Godwin Ridge (Over) and Colne Fen (Evans 2016, 540). The high horse counts in domestic animal assemblages in wetlands certainly support this (cf. Fig. cxiii).

The more active, specialised and targeted interaction with the Fenland landscape in this period suggests that wetland use was a more organised activity than in the Bronze Age, which is characterised by more opportunistic, 'passive' forms of interaction. Thus, despite increasing specialisation and differences in the ways that people interact with the three environments considered in this period, the evidence for links between the three landscapes and those within them equally increases in this period. The next chapter will explore these trends and relations in more depth.

Late Iron Age/Romano-British period – Continuity and consolidation

At first sight, the lower site numbers in the late Iron Age/Romano-British period, especially in wetlands and on the fen edge, seems to reflect the loss of interest in the wetland landscape. Yet this lower number of sites is the product of the site selection process which is biased against Roman sites, as sites characterised as 'Roman' (rather than Romano-British) in their period descriptions were excluded in the early stages of site selection, even if they may have included Roman-British or later Iron Age material. Thus, the lower number of recorded site numbers does not equate to less activity or interest. On the contrary, the Fenland was more densely settled than ever before in the Roman period, as reflected by the many sites identified during the Fenland Survey (Hall and Coles 1994, 120). However, more of these sites are located further out in the Fenland Basin than before, in rural or agricultural areas rather than around zones of modern development which are more common on the fen edge (cf. ibid. 111). As such, these sites are less likely to be excavated and this partly explains why they were not selected and recorded in the database for this research.

The low wetland and fen edge site numbers in this period mean that the food remains recorded for this period are very unlikely to be representative and make it difficult to evaluate subsistence practices and the extent to which people engaged with the Fens. Only one bird bone was recorded on the fen edge at this time, suggesting minimal interaction with this landscape and its resources. Yet despite these lower wild fenland animal counts, the evidence from the few fen edge and wetland sites that were selected for this research does suggest an interest in the wetlands and its resources in this period. Several of the recorded fen edge settlements for instance, are associated with field systems and enclosures of various kinds. Many of these sites, including Billingborough, Fengate, Longstanton and Pode Hole Farm, originate in the Iron Age (Ellis et al. 2001, Hall and Coles 1994, Evans et al. 2004, Chowne et al. 2001). Similar sites are found in the wetlands, as evidenced by the Cat's Water sub-site at Fengate, where a large Late Iron Age/Romano-British settlement was discovered with field systems aligned similarly to those in the Iron Age, suggesting continuation (Pryor 1984). The site was very wet, but perhaps this location was attractive due to its proximity to good grazing in the Fens to the east. The Haddenham site introduced above is still in use and contains many bird bones. This, in combination with the continued presence of bird bones in dryland locations, suggests that wetland resources were still exploited and traded in this period (cf. Figures 93).

This limited wetland and fen edge data is supported by the results of previous studies in the area, which demonstrate the extent of activity within and around the Fens. The Fenland Survey has identified large numbers of Late Iron Age and Roman settlement sites of various character throughout the Fens and along the fen edge (Hall and Coles 1994). Despite considerable regional differences between various parts of the Fens (e.g. the silt fens vs the peatlands, or Lincolnshire vs Cambridgeshire), it seems that in most areas, settlements occur in higher and drier areas (e.g. on the fen edge, on islands, the high silts and roddons). Many of these are small farmsteads and temporary pastoral sites (ibid.). Industrial sites also still occur. In the wetlands these include salterns, but also turbaries, where peat was dug (ibid., Lane and Morris 2001). Salterns also occur on the fen edge, as well as pottery kilns, for which suitable clays for the pots and peat to fuel the kilns could be extracted in this area. Ritual interaction with wetlands also seems to have continued, as reflected in temples at Hockwold-cum-wilton and the Haddenham Snow Farm shrine, where we see the hybridization of indigenous and Romano-British practices (Evans and Hodder 2006b, Hall and Coles 1994, 114) (Figure 110).

These developments are probably closely related to developments in the surrounding drylands, where we also see considerable continuity in settlement and field systems as well as evidence for intensification in the Late Iron Age/Roman-British period (cf. Taylor 2006). Although new sites and field systems appear in several locations, many other sites recorded in the database are still characterised by settlement and field systems and/or enclosures which seem to continue in use uninterrupted from the Late Iron Age onwards (e.g.

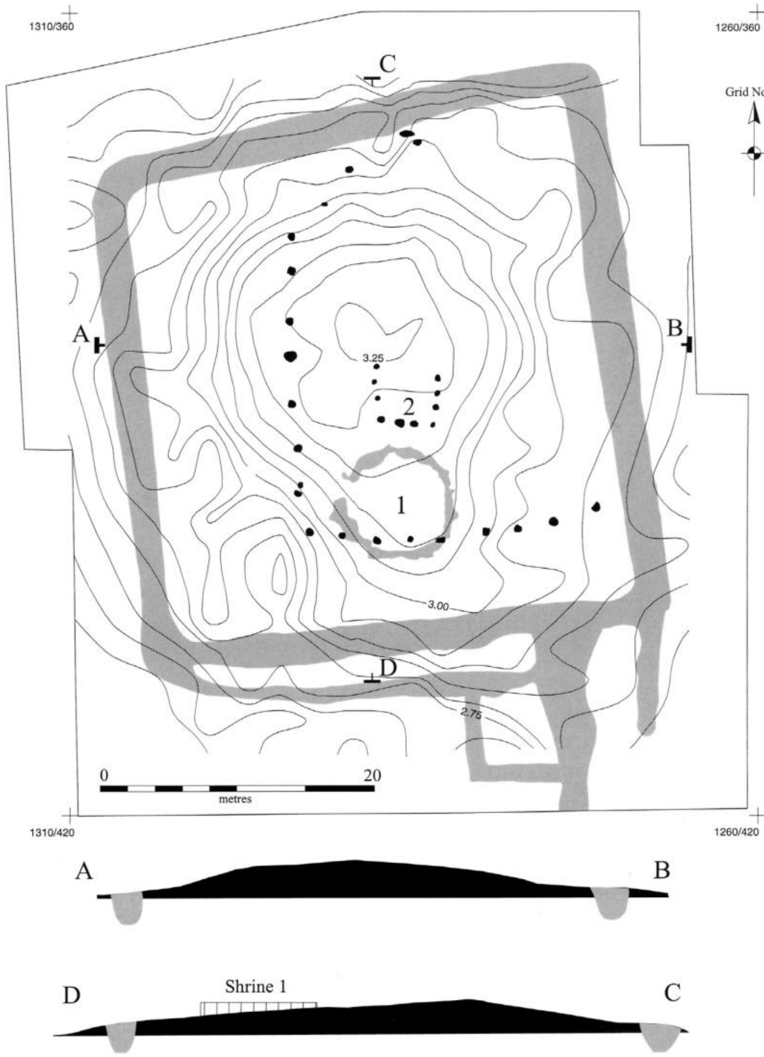


Figure 110: Plan of Haddenham III, where a succession of Romano-British shrines was built on a Bronze Age barrow. (Image from Evans and Hodder 2006b, 329, reproduced with kind permission of CAU)

Addenbrooke, Longstanton (Evans et al. 2008, 40, Paul and Hunt 2015). The dryland plant and animal assemblages are also very similar to those in the last period and suggest a mixed farming economy dominated by domesticates (cf. Figure 92). The presence of relatively high numbers of bird bones in various dryland locations suggest that connections with fen edge and/or wetland communities continued as well (cf. Figure 93).

Such connections become even clearer in the full Roman period, when new site types develop. At Colne Fen for instance, two Later Iron Age sites become a major supply farm and inland port in the Roman period (Evans 2013b) (Figure 111). Imported material culture (e.g. Nene Valley Wares) demonstrate that this was a thriving economic community with extensive trade links well beyond the Fens (cf. ibid. 426). Villas, small towns and political centres found during the Fenland Survey must also have been embedded in wider social networks

Figure 111: 1999 excavation plan of the Roman supply farm at Langdale Hale, Colne Fen. (Image from Evans 2013b, 23, reproduced with kind permission of CAU)

and the importance of these links is reflected in the many roads and canals that were now dug and built in various parts of the Fens and acted as transport and communication routes (Hall and Coles 1994). Some have argued that these relate to the first drainage efforts of the Fens as this area became an imperial estate supplying grain to the Roman army (e.g.

Richmond 1963, Salway 1970, Potter 1989, Jackson and Potter 1989). However, despite some evidence in support of this view, such as the sophisticated stone building at Stonea, there is no proof for large-scale drainage operations and the Fens remained wet (Rippon 2000).

It seems then, that people continued to engage with the Fens in myriad ways well into the Roman period. The large number of fen edge and wetland sites in this period show that this landscape was far from marginal and the high level of activity in the Fens at this time reflects the culmination of the patterns identified in the last period. However, despite much continuity, the increasingly intensive use of the Fens and the first signs of the active manip ulation of this wet landscape demonstrate that the way people perceived off and interact with this landscape started to change. Indeed, from the 2nd c. AD onwards, local 'indigenous' traditions seem to be replaced by a more integrated economy, presumably under the influence of Roman rule (Evans 2013b, 490) and distribution and exchange between the Fens and drier areas may have become even more regulated. The next chapter will discuss the implications of these developments in more depth.

Iron Age summary

Despite clear distinctions between the three environments, connections between the three landscapes become increasingly clear in the Iron Age. In the Earlier Iron Age, the fen edge starts to be inhabited again, but drylands seem to be the focus in this period, which is characterised by settlement and population contraction. Whilst a mixed economy seems to be established on the fen edge, many of the newly founded inland dryland sites may have been more pastoral in nature. Wetland settlement seems to have ceased (possibly in relation to an ever wetter and unpredictable landscape) and the hunting of wild wetland animals seems to decline, but their presence on fen edge and dryland sites demonstrate that some wetland resources, birds in particular, continue to be exploited in this period. It is possible that there was exchange of wild and domestic plants and animals between communities in the different environments.

The Middle/Late Iron Age is characterised by an ameliorating climate and agricultural expansion and innovation, as well as increasing specialisation and the centralisation of production and exchange, which affect the ways people interact with the three landscapes. The wetlands seem to be back in focus, as reflected in the increase and variety of sites that are more widely distributed in this environment. Whilst domesticates dominate, wild animals seem to be relatively important too. Unlike in the Bronze Age, when these resources were seemingly caught on a relatively opportunistic basis as part of a broad-spectrum economy, the extraction of wetland animals and birds, as well as other resources like salt, may have become a more active, targeted and specialist practice in this period. Some of these resources were probably traded with dryland communities, now practicing a mixed farming regime, just like those on the fen edge. Food remains and other evidence suggests that there may have been close links between the communities inhabiting the Fens and fen edge and those in drylands, who are likely to have been responsible for the recolonization of the wetlands and fen edge. It is possible that Earlier Iron Age visits to the Fens led to the first tentative fen edge settlements, followed by more widespread recolonization in this period as people's knowledge of the wetland environment and its opportunities increased (cf. Evans and Hodder 2006b).

The apparent decline of interest in wetlands in the Late Iron Age/Roman-British period as reflected in low wetland site numbers and wild wetland animal remains results from the site selection process and is more apparent than real, as the Fens and fen edge were densely settled in this period and there is clear evidence for continued interest and intensification in the wetland environment (cf. Hall and Coles 1994). At the same time, we see the first hints of change in how people interacted with the wetland, as they started to alter this landscape by digging canals. It is likely that a more integrated economy developed under the influence of Roman rule in this period, in which exchange between the Fens and drier areas became more regulated.

Like in the Bronze Age, climate, environment and landscape change all seem to have influenced the patterns described above, but social change and developments in the cultural landscape are equally important. In many cases, non-human ('environmental') and human ('social') factors were interrelated and the patterns seen result from a combination of these influences (e.g. the Middle Iron Age 'boom' may be related to improved climatic conditions). As previously, patterns and developments in one environment seem closely related to those in others, requiring us to consider the relation between the three landscapes. The next chapter will explore these connections in more depth by considering the role and place of the different environments and their inhabitants in the wider socio-cultural landscape.

5.3 Conclusion – Human-environment interaction through time and space

This first discussion chapter has considered what the food remains presented in chapter 4, in combination with site distribution, site character and other relevant information from the study area, can tell us about human-environment interaction in the three main environments through time. Of course, these characterisations of human-environment interaction are simplifications, based on limited data (especially in the Neolithic). They provide environment-wide interpretations which assume that the wetland, dryland and fen edge environment were relatively uniform despite important regional and local differences within these landscapes. Moreover, it is sometimes difficult to recognise and disentangle developments in the three different environments due to the periodisation used in this research, which combines several periods in one (e.g. the Middle/Late Bronze Age or Late Bronze Age/Early Iron Age).

However, despite these limitations, which have been clearly highlighted throughout the discussion above, several strong trends could be identified. The analysis has demonstrated that a combination of climatic, environmental and socio-cultural factors resulted in clear differences in subsistence practices and the ways in which people used and interacted with wetlands, drylands and the fen edge over time. At several points, the patterns in the various landscapes differ significantly from conventional narratives, either pre-empting developments normally associated with later periods, or lagging behind them. These findings highlight the importance of considering regional and local sequences, as well as different landscape and environment types when studying past economies and human-environment interaction.

However, despite clear differences between human-environment interaction in the three environments, the analysis has also hinted at how wetlands, drylands and the fen edge seem to be connected, whether directly, through trade or the movement of people, or indirectly, when they are used in a complementary manner, or developments in one environment seem to relate to, or even influence those in others. This apparent interconnectedness of the three landscapes, which clearly varies through time, asks for a more in-depth comparative analysis of the developments within and relations between the three environments under consideration. The next chapter aims to do so by discussing what food remain patterns and human-environment interaction may tell us about the role and place of the wetland landscape and those engaging with it in relation to the fen edge and dryland(er)s throughout the period under consideration.

Chapter 6. The role and place of the wetland(er)s in the wider socio-cultural landscape

6.1 Introduction

The results of the analysis of food remains through time and space presented in chapter 4 demonstrated significant changes through time and important differences between the three environments. In chapter 5, these results were placed in a wider context by discussing them in relation to site distribution, site character and other relevant evidence in the study area. This provided insight into the way that people used and interacted with the three environments over time. It became clear that the nature of these human-environment interactions changed significantly over time and that the ways in which drylands, wetlands and the fen edge were used often differed. However, despite these differences and changes over time, it seems that the three environments and those who engaged with them were connected either directly or indirectly.

In line with the main research question (cf. chapter 1), the aim of this second discussion chapter is to consider what the above key findings mean for the role and place of wetland landscapes, sites and people. It will discuss: 1) the role and place of each of the three environments and how the wetland and fen edge landscapes and environments relate to drier areas throughout the period under consideration, and 2) the implications of people's interaction with the wetland landscape for their (group) identities and social relations. To this end, the chapter is divided in two sections. The first (6.2) covers landscapes and environments and will discuss the connections between the former Fens and dryland and fen edge landscapes throughout time. The second section of this chapter (6.3) considers the social outcomes of wetland interaction. It focusses on people and will discuss whether we can identify 'wetlanders' at various points in time, and, if so, how this may have affected their relations with others, and especially 'drylanders'. Thus, the role and place of the former Fenland landscape and those who engaged with it within wider socio-cultural landscape will become clear (6.4).

6.2 Connecting wetlands and drylands

In UK Archaeology, wetlands and drylands are often studied separately, as reflected in the emergence of the sub-discipline of wetland Archaeology (cf. Van de Noort and O'Sullivan 2006, 10, Menotti 2012, 21). To some extent this is understandable as wetland landscapes clearly differ from dryland ones and higher levels of preservation in the former make it difficult to compare the two. This differential preservation results in much richer archaeological and environmental records, which require specific methods of excavation and analysis, exacerbating the perceived difference between wetlands and drylands (cf. Menotti 2012, 21-22, Van de Noort and O'Sullivan 2006, 27). Wetlands tend to be viewed either in rather negative terms, as marginal, liminal landscapes where people might perform ritual activities (e.g. deposit metalwork) (e.g. French and Pryor 1993, 103, Pryor 2001, 430, Pryor 1998a, 364, Allen 2009, French 1994, 109, Abrams and Ingham 2007, 20, cf. Van de Noort and O'Sullivan 2006, 42), or they are described in very positive terms, as highly productive environments, rich in wild resources which must have been a major pull factor for prehistoric people even after they became farmers (Coles and Coles 1989, Van de Noort and O'Sullivan 2006, Menotti 2012, Arnoldussen 2008).[42] Unfortunately, the problematic divide between wetlands and drylands means that the relation between the two landscapes is often not considered in-depth, making it very difficult to gain a good understanding of how wetlands and their inhabitants fit into the wider landscape, or what role they may have played in socio-cultural change. This thesis aims to address these issues by evaluating the relation between wetland and dryland landscapes, sites and people, considering their role within the wider socio-cultural and physical landscape.

This first section will consider the role and place of wetland and fen edge landscapes in relation to drylands, based on the subsistence practices and human-environment interaction outlined in the last chapters. Five main stages which span the Neolithic, Bronze Age and Iron Age can be distinguished, each characterised by a different way of human-environment interaction and changes in the relation between the former Fens and the areas around it. Each of these stages, which characterise the role of the Fens through time, will be briefly discussed below. The relation between the different landscapes are summarised in Figure 112 - Figure 121. Of course, these 'models' are based only on the recorded and selected sites and they simplify a far more complex reality, but it is hoped that they demonstrate the links and connections between various landscape zones. The division in four rather than three landscape zones in these diagrams was made to represent differences between up and lowland drylands (Figures 112-114) and dryland sites near the fen edge and those further inland (Figures 115-121). Page 272 contains the legend for all these figures.

[42] In chapter 1, it was explained that some scholars do not recognise the divide between wetland Archaeology and mainstream Archaeology, arguing that this divide is artificial and untenable. Yet although this is true, few authors have attempted to study how wetland and dryland landscapes and communities might relate.

Legend for Figures 112-121.

6.2.1 Visiting the Fens - Conjectured wetlands

The first stage in human-wetland interaction covers the Mesolithic/Early Neolithic to the Later Neolithic and is characterised by the absence of direct information for people's interaction with wetlands or the fen edge. Given the limited food remains and settlement evidence, the low fen edge (or riverside) site numbers and the virtual absence of wetland sites (or indeed wetland landscapes) for most of this period, it is difficult to characterise the role that the various environments played in this period, or how they related. Yet the available evidence suggest that people did interact with the developing Fens, visiting it to extract wild resources and possibly to access seasonal grazing (cf. Figure 112 -Figure 114).

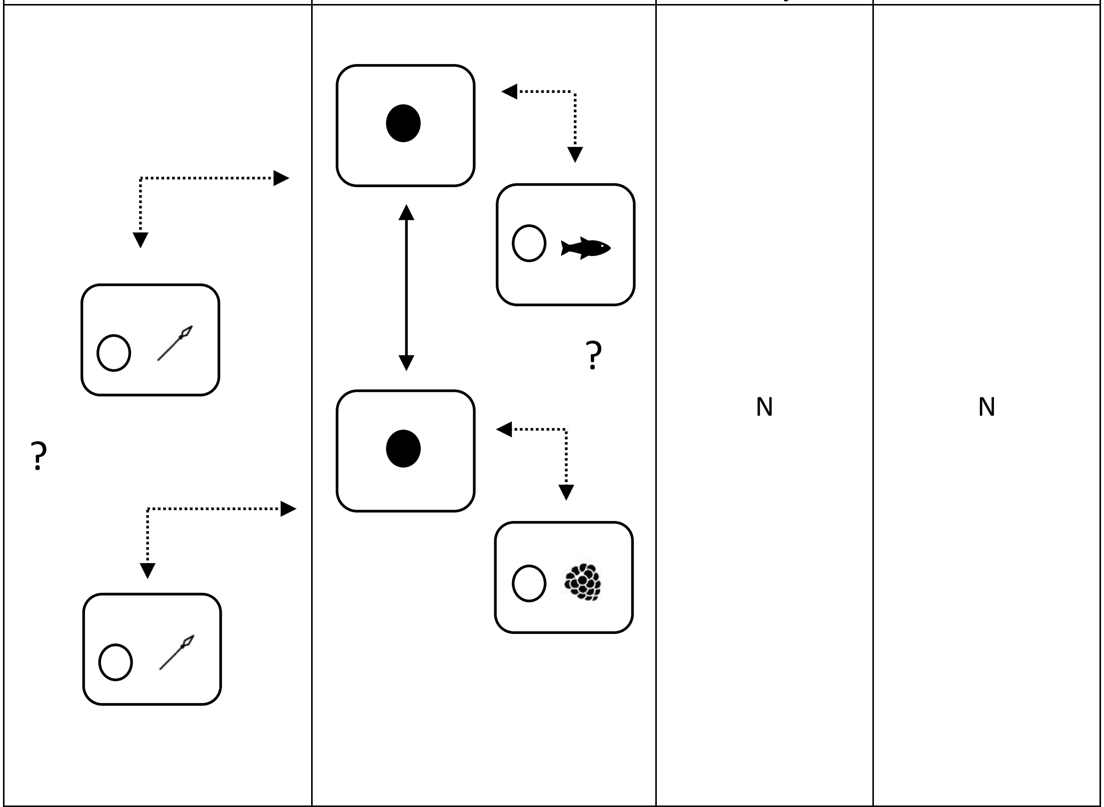
Mesolithic

As the Fenland Basin was essentially dry still, it is impossible to reconstruct the role of wetland landscapes in the Mesolithic/Early Neolithic. All sites are located in riparian environments, which contrast markedly with densely wooded upland areas dryland sites, where evidence is sparse (cf. Silvester 1991, Clay 2002, 48). It is likely however, that these areas were used for hunting expeditions and exploratory forays (Paul and Hunt 2015, 54). Though not a major focus of activity, they were part of the wider occupied landscape (ibid.). The Mesolithic is understudied in this region, so it is difficult to reconstruct the wider pattern of Mesolithic occupation and landscape exploitation (cf. Medlycott 2011, 7) (cf. Figure 112).

Earlier Neolithic

Despite differences between 'fen edge' or riverside sites in the Earlier Neolithic, it seems that sites in both landscapes are generally similar in nature and played a similar role in this period (cf. Figure 113). The first farming communities in the area inhabited riverine sites where they kept and grew newly introduced domestic animals and crops, but some hunting and gathering also continued, suggesting occasional forays into wooded uplands. Those near and in the Fenland Basin may also have started using the Fens once they started developing (cf. French 1988, Clay 2002, 110, Sturt 2006, Hall and Coles 1994). This dynamic landscape may have been less suitable for arable agriculture, but pastoralism (perhaps on a seasonal basis) was possible (Hall and Coles 1994, 46). Small clearings and open areas would also attract wild resources (ibid.). Communities may have used monuments for larger gatherings on a seasonal basis, which may explain the wider variety of resources present and the wild signature on the recorded 'fen edge'/riverside sites (where most remains were found in monuments as opposed to settlement related sites). It is likely that life for those in the developing wetlands became increasingly different from that in areas

Uplands	Dryland river valleys	Fen edge river valleys	Wetlands



Mesolithic

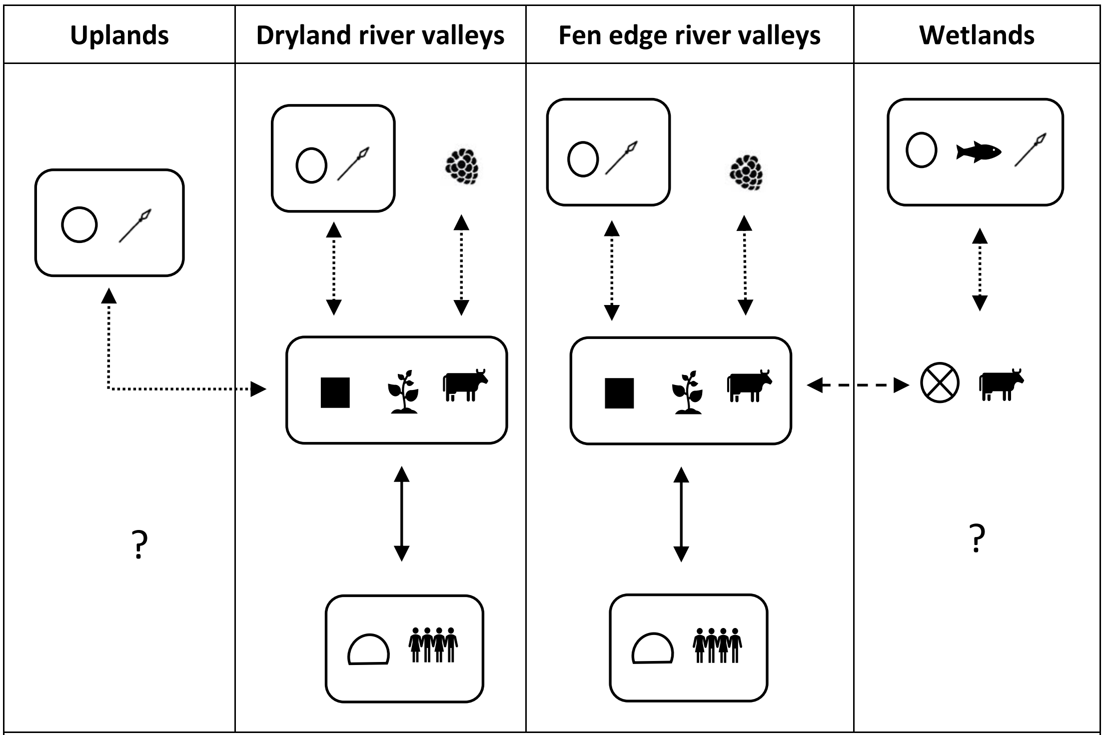
The Mesolithic period is characterised by (seasonally) mobile hunter-gatherers, who presumably had several (seasonal?) base camps (situated in riparian environments) and extraction sites in different areas, including the same river valleys and wooded upland areas.
NB: the diagram is highly speculative as the precise nature of Mesolithic mobility, occupation and landscape exploitation is unknown and requires further study (cf. Medlycott 2011).

Figure 112: A schematic overview of the Mesolithic settlement system in two landscape zones (uplands and river valleys). The Fens do not exist yet, so there is no information for the river valleys near the Fens or the wetlands yet. They have been included here so this period can be compared with those that follow below.

unaffected by tidal influences (cf. Sturt 2006). Unfortunately, the absence of true wetland sites prevents us from considering people's interaction with this more dynamic environment and the relation between drier and wetter parts of the landscape in more detail.

Later Neolithic

By the Later Neolithic, the evidence for people's interaction with wetlands becomes very sparse indeed, making it very difficult to understand the role of the expanding Fens in the wider landscape (cf. Figure 114). The riverside landscapes and contemporary dryland areas

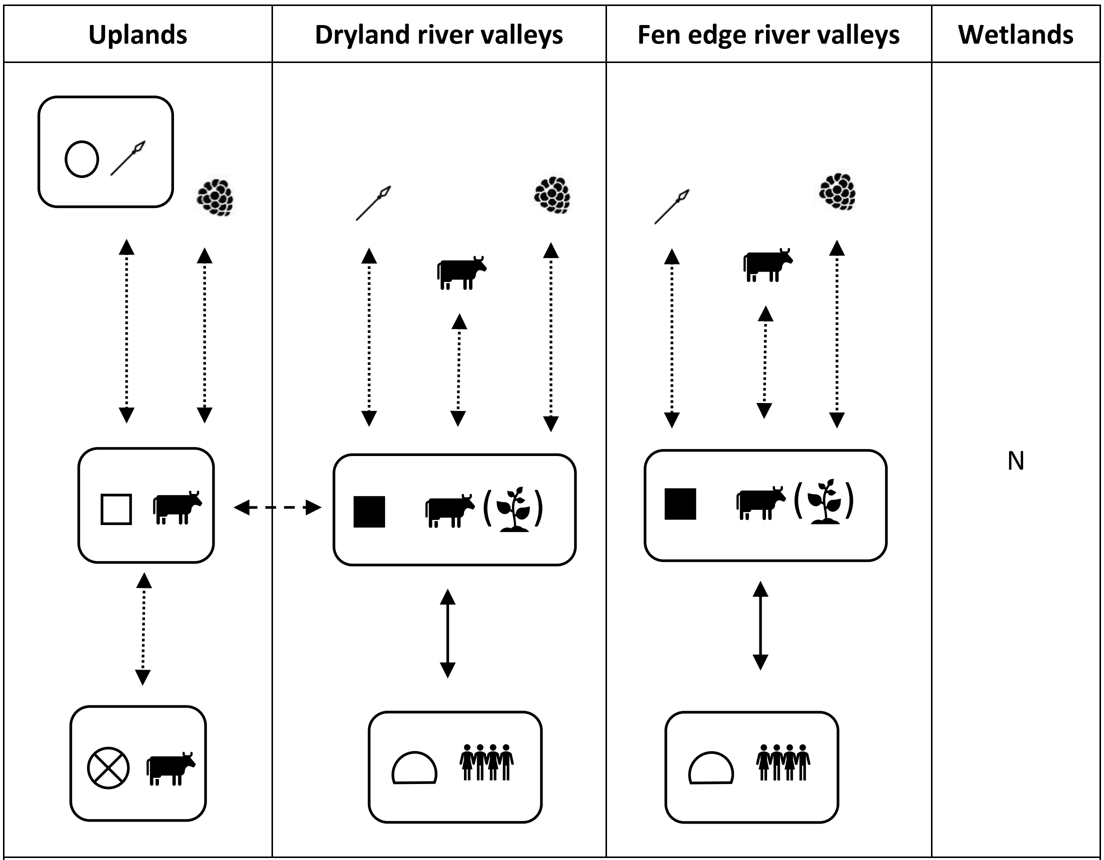


Earlier Neolithic

In the Earlier Neolithic, small mixed farming communities inhabited riparian environments. They continued to hunt and gather occasionally, both in the river valleys, but possibly also in the wooded uplands. The sites near the developing Fens have higher fish and fowl frequencies, so they may have exploited the wetlands. Communities probably gathered (perhaps seasonally) at larger monuments.
In the expanding Fens agriculture would have been difficult, but this environment was suitable for pastoralism, hunting and gathering. Due to issues of visibility we do not know the nature of wetland sites and whether they were inhabited, or only visited by communities living in drier areas (e.g. on the edge of the Fenland Basin). Similarly, the possible relation between dryland and 'fen edge' river valley communities is not known.

Figure 113: A schematic overview of the Earlier Neolithic settlement system in three landscape zones (uplands, dryland river valleys and river valleys near the developing Fens).

seem to have been used in a very similar way, with economies becoming more pastoral and 'wilder' in nature, both in settlements and monuments. Human-environment interaction may have changed in reaction to climate change, with communities expanding their subsistence base and moving into new areas, which may have been used for stock herding (cf. Clay 2002, 118). Although the developing Fens would have provided a wealth of wild resources, wetland animals are conspicuously absent from both riverside and dryland assemblages, possibly because this landscape became too wet at this time, or because wild animals and other resources that were becoming increasingly abundant were now caught, gathered and processed out in the true wet Fens. (cf. Evans and Hodder 2006a, 365, cf. Hall and Coles 1994, 38).



Later Neolithic

In the later Neolithic, communities seem to have become more pastoral (though arable agriculture was not abandoned) and they also used a lot of wild resources. Herding may have taken place near the settlement in river valleys, but it seems that activity also expanded into previously unsettled areas int his period, which may have been used for stock herding. The more intensive activity in some upland areas may suggest that some members of the community (herders/hunters) stayed here slightly longer than before. Monuments still play an important role in communal gatherings.
There is little evidence for wetland interaction. The increasingly wet Fens may have been avoided at this time, but could have been used pastorally. The relation between dryland and 'fen edge' river valley communities is not known, but there seem to be few differences between them at this time.

Figure 114: A schematic overview of the Later Neolithic settlement system in three landscape zones (uplands, dryland river valleys and river valleys near the developing Fens). The communities near the Fens may have used the wetlands for grazing, but there is no evidence for wetland use in this period, so this was not drawn.

It is likely however that these landscapes would have been used for seasonal pastoralism by those nearest to them. Unfortunately, any true wetland sites are now invisible, which means we cannot 'test' this assumption, or discuss the role of these wetlands in relation to the 'fen edge' riverside and 'dryland' river valley areas.

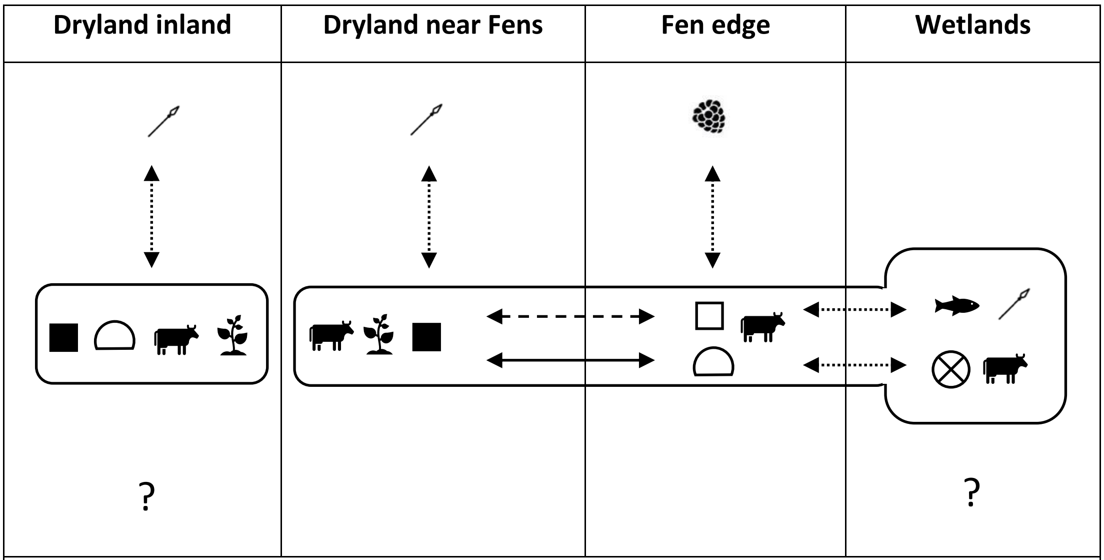
6.2.2 Focussing on the Fens – Expanding wetland interaction

The second stage of human-wetland interaction starts in the Late Neolithic/Early Bronze Age and covers most of the Bronze Age (lasting until the Middle/Late Bronze Ag). In this period, it becomes a lot easier to examine the role of the wet Fens in relation to the surrounding drier areas, as fen edge site numbers increase, wetland sites become visible[43] and the amount of evidence (food remains, settlement and other) increases. Combined, this evidence clearly demonstrates the key role that the Fens played throughout this period. Far from being marginal, the wet parts of the landscape were 'in focus', of interest to and exploited by communities inhabiting the fen edge in various ways (cf. Figure 115 - Figure 117). Drylands on the other hand, seem to play a more subsidiary role for most of this period, possibly because of the Fenland focus. Yet the selected and recorded dryland sites in the study area were not marginal; they too had an important function within the wider Bronze Age landscape.

Late Neolithic/Early Bronze Age

As the Fens expanded, true fen edge sites become visible in the Late Neolithic/Early Bronze Age (Figure 115). In the area around the expanding Fens, the focus shifts from river valleys towards the fen edge and the roles of the two different landscapes start to become more distinct. A temporary amelioration of the climate (cf. Bevan et al. 2017) meant that dryland sites could be used for limited crop cultivation and a mixed economy seems evidenced again in this period, although frequencies for all groups are relatively low. It seems that the fen edge and expanding wetland landscapes were used in a complementary manner by those inhabiting dryland sites near the fen edge. The Fens offered good grazing as reflected in the mostly pastoralist signature on the fen edge. Sites here may have been visited or occupied in spring and summer when the Fens would have offered rich grazing. True wetland sites are still very rare, but the increasingly intensive activity on the fen edge and the occurrence of some wetland resources in dryland locations suggest people were drawn to and interacting with the expanding wetlands, whose role in in the wider landscape was becoming increasingly important. This period can be characterised as one of exploration; through their repeated visits to the Fens and fen edge people were starting to become more familiar with the expanding Fens and its opportunities.

[43] Sites of this date are located higher up the 'slope' of the fenland basin than previous ones and some (particularly near the fen edge) are now revealed by peat shrinkage or wastage resulting from drainage (cf. Hall and Coles 1994).



Late Neolithic/Early Bronze Age

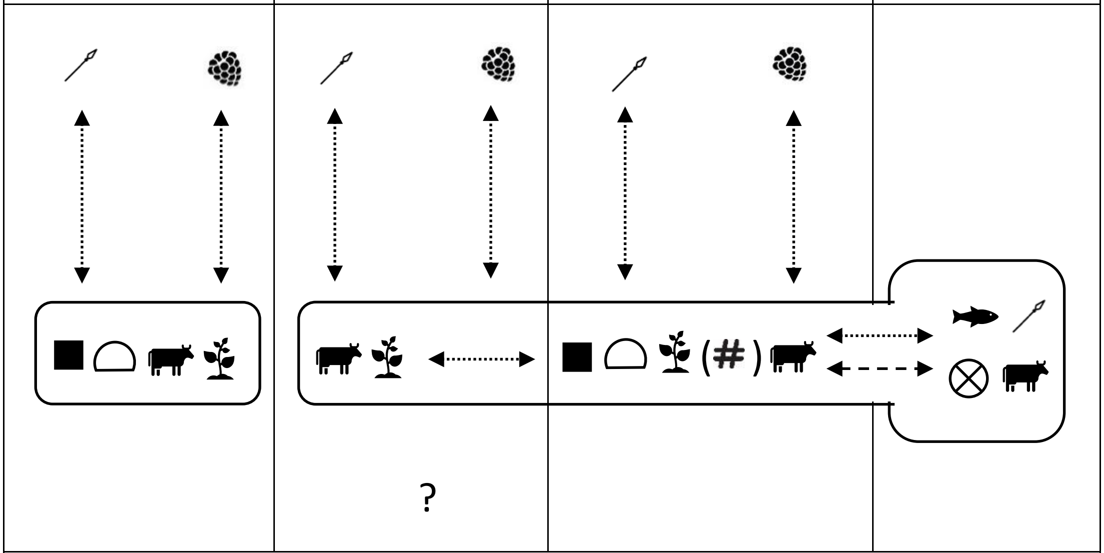
In the Late Neolithic/Early Bronze Age, the fen edge sites are characterisd by mostly pastoralist economies with high fruit and nut counts, whilst dryland sites have low-level cereal cultivation and a greater variety of wild animals. It is likely that dryland sites near the fen edge were used by members of the same communities, who grew crops in drier areas and entered the Fens for grazing and wild resource extraction.
The relation between inland dryland sites vs those near the fen edge could not be exactly established. The pastoral signature on the fen edge suggests (seasonal) grazing in the Fens, and low numbers of wetland resources found on fen edge and dryland sites suggest these wild resources were also taken.

Figure 115: A schematic overview of the Late Neolithic/Early Bronze Age settlement system in four landscape zones (inland dryland, drylands near the fen edge, the fen edge and wetlands). In this period the fen edge first becomes visible (hence the landscape zones have changed in this diagram).

Earlier Bronze Age

In the Earlier and Middle Bronze Age the wet Fens develop to the extent that they start to take on a significant role in the wider landscape and the roles of drylands and the fen edge, already diverging in the Beaker period, seem to have become more distinct (Figure 116). Wild resources would have become increasingly available as the wet Fens expanded further, and this, in combination with extensive grazing, seems to have drawn whole communities (rather than pastoralist task-groups, like before) to the fen edge. This is reflected in Earlier Bronze Age site distribution, the large increase in fen edge site numbers, and the wealth of food remains and settlement evidence in this environment. Structural settlement remains continue to be rare, but the appearance of (groups of) monuments, burnt mounds and pre-field system enclosures demonstrate intensive activity in this environment and suggest that people started to be tied more permanently to particular places.

Dryland inland	Dryland near Fens	Fen edge	Wetlands



Earlier Bronze Age

In the Earlier Bronze Age, the fen edge seems to become the focus. It seems people start to settle down and grow crops in addition to keeping domesticates. Pre-field system land boundaries and monuments demonstrate their increasingly close link to particular locales. In addition to agriculture, hunting and gathering also seem to continue and the Fens were probably used for (seasonal) grazing, fishing and fowling.
The dryland sites in the Earlier Bronze Age seem similar to those in the Late Neolithic/Early Bronze Age (mixed economy with some hunting and gathering), but are far less rich than the fen edge ones. If and how they relate is unknown. Many selected dryland sites are located near the fen edge and they may represent off-site tasking by members of fen edge communities.
The relations between inland communities and those on the fen edge is unknown. It is likely that those on the fen edge would be in touch with neighbouring fen edge 'enclaves', but as only one of these is depicted here, this link has not been drawn.

Figure 116: A schematic overview of the Earlier Bronze Age settlement system in four landscape zones (inland dryland, drylands near the fen edge, the fen edge and wetlands).

They started demarcating and dividing the land used to grow and keep domestic plants and animals, but also gathered wild plants and hunted and fished in the Fens, probably in a relatively opportunistic manner. They may have used wild resources as a 'buffer', adding them to a mostly domestic diet. Thus, living in an ecotonal position, fen edge communities were able to profit from the best of all environments. Individual settlement units may have developed on the fen edge, each with 'territories' that included areas of dryland, fen edge and wetland, allowing for the management of an economy that could be maintained all year (cf. Hall and Coles 1994, 75).

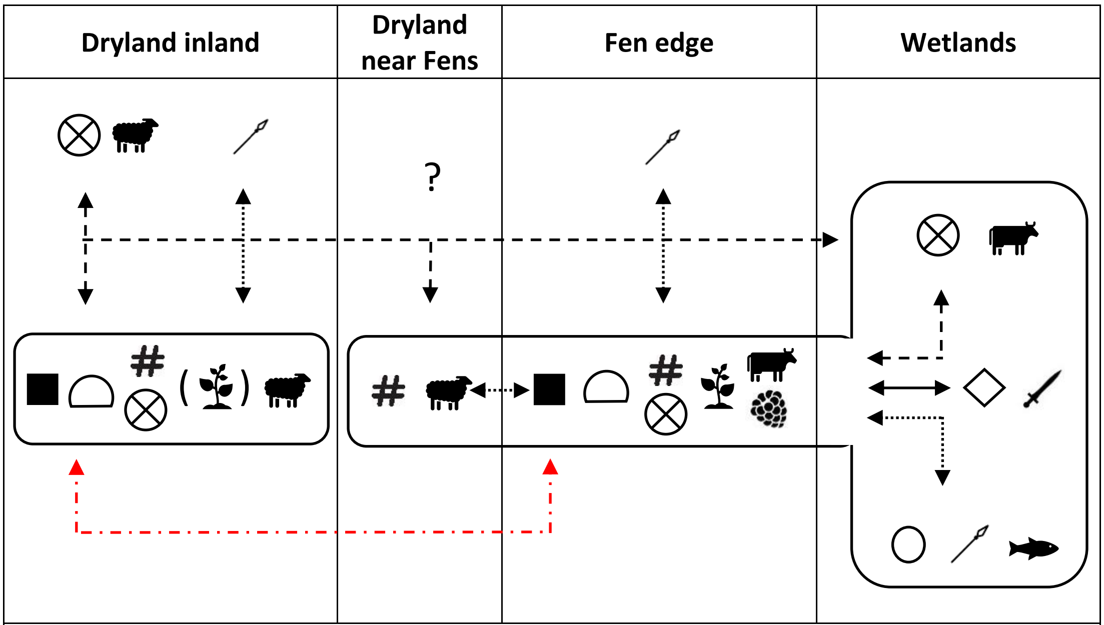
In line with traditional narratives for the Early Bronze Age, dryland sites in this period remain relatively poor, making it difficult to understand their role in relation to the fen edge.

Perhaps those near the fen edge, which seem to have similar plant and animal species as the fen edge sites, were still in use by fen edge communities for low-level cereal agriculture and/or pastoral activities.

Middle/Late Bronze Age

This way of life, with a focus on the fen edge, seems to have been very successful, as it lasted into the Middle Bronze Age (cf. Figure 117). The evidence suggests that there were significant differences in site character not just between the three environments, but also within them (e.g. between the Flag Fen Basin and Over). Like in other areas of lowland southern Britain, large field systems were laid out on the fen edge, probably in relation to a broader pattern of agricultural intensification in this period (cf. Yates 2007). Once related to stock handling and the seasonal, transhumant use of wetlands (e.g. Pryor 1980) the available evidence suggests these systems may have been settled more permanently and were also used for arable agriculture (cf. Evans 1988, 2009). Despite this, and in contrast to expectations of Bronze Age mixed farming economies, a variety of wild animals and plants continued to be hunted and gathered.

People's interaction with wetlands becomes more visible in this period (Figure 117). Earlier Bronze Age communities on the edges of the expanding Fens may have gotten to know this wetland landscape more intimately, recognising the value of its rich resources, leading to increasingly intensive and varied interaction with this environment. Various sites in two different wetland areas (in the Flag Fen Basin and near Over) demonstrate how people entered the Fens for a variety of ritual and practical purposes, including grazing and the extraction of wild resources, but also ritual deposition. There is no evidence for permanent wetland settlement in this period, but people clearly entered these wet places by boat and crossed them by foot over large wooden causeways found at several locations (cf. section 5.2.2). The wealth of evidence from the Fens in this period demonstrate that this landscape was highly valued and played an important role in local Bronze Age daily life, society and cosmology. The importance of the Fens and fen edge at this time may explain why nearby dryland areas were used less intensively. In contrast to the much richer fen edge and wetlands, and contrary to traditional narratives of a settled Bronze Age relying on mixed agriculture (cf. Barrett 1994, Bradley 1984, 2007, Yates 2007), dryland sites within the study area seem to have been relatively poor and used in a pastoral manner, with a focus on ovicaprids. Sheep may have been important for textile production in this period (cf. Bradley



Middle/Late Bronze Age

The Middle/Late Bronze Age period sees the consolidation of the fen edge ‘enclaves’ first established in the previous period. Cattle pastoralism was important, but cereals were also grown. Hunting and gathering still happened and wetland use becomes more visible and diverse. There are wet grazing grounds and extraction sites (fish traps and weirs), and ritual deposition took place, sometimes at selcted sites along wooden trackways. All of these activities were probably undertaken by fen edge communities.
Dryland sites seem to be more pastoral in nature, although cereals do increase a little. They focus on ovicaprids rather than cattle. Some hunting continues but gathering seems less important. Sites near the fen edge may have been used by fen edge people, whilst those further inland may have been more independent. However, there is evidence for contacts between inland communities and ‘fen edgers’ and some inland communities may have used the Fens for seasonal grazing (in addition to seasonal grazing grounds in the uplands) (cf. Pryor 1996).

Figure 117: A schematic overview of the Middle/Late Bronze Age settlement system in four landscape zones (inland dryland, drylands near the fen edge, the fen edge and wetlands).

2007, 192), but ovicaprids are ill-suited to wet conditions, so dryland areas played an important role in the wider landscape. Whilst dryland sites near the fen edge may have been used by fen edge people, dryland sites further inland may be independent. However, it is likely that there was regular contact between pastoralists in these landscapes and fen edge communities, as reflected in the log boats at Must Farm, and shell necklace distributions (cf. Evans and Patten 2011, 42). Thus, despite different roles for each of the three environments, they seem to have been closely connected, with wetlands being an integrated part of the wider landscape.

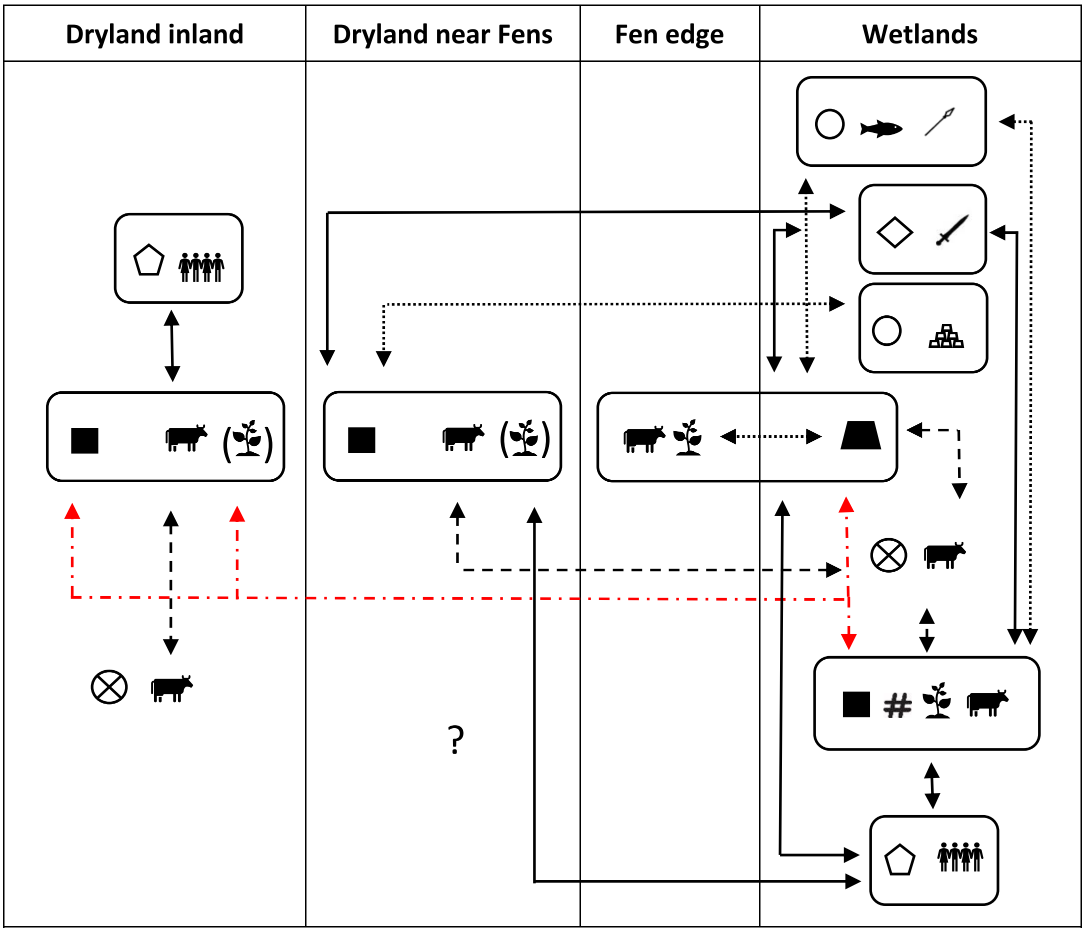
6.2.3 Settling the Fens – A wetland way of life

The Late Bronze Age/Early Iron Age is a turning point in which subsistence practices change significantly and major shifts seem to have taken place in the ways in which people interacted with the three landscapes, resulting in significant changes in their respective roles (cf. Figure 118). With the abandonment of the fen edge and the simultaneous increase in activity in drylands and wetlands, both of which are now clearly inhabited, we see, for the first time, a real 'split' between wetlands and drylands in this period, which had so far been part of the same system. Yet despite this, wetland and dryland communities continued to interact in this period (Figure 118).

Late Bronze Age/Early Iron Age

The fen edge, previously the richest environment in terms of settlement and food remains, seems to have been abandoned in the Late Bronze Age, possibly due to a combination of a wetter and colder climate, the increasingly wet local landscape and important social changes during this transitionary period (Chowne et al. 2001, Webley and Hiller 2009, Brudenell 2012, 94, cf. Medlycott 2011, 29, Daniel 2009, Bradley 1984). Given the contemporary patterns in drylands, where settlement becomes much more visible (cf. Brudenell 2012) and where there is a clear increase in cereal occurrence and variety, it is possible that some fen edge communities moved inland. Wild resources seem to have become less important, whilst cereal frequencies increase. However, pastoralism still played an important role in this period (Brück 2007) (Figure 118).

Whilst some fen edge communities may have moved to drier areas in this period, it seems that others turned to the wetlands. Interaction with the Fens seems to have intensified in this period, as people continued to engage with the Fens ritually (depositing much metalwork and other items) and practically (accessing grazing, extracting wetland resources) and it seems that different parts of the Fens were inhabited in this period. Settlement and 'marsh forts' occur on slightly higher drier areas (like at Over or fen islands) and in the wet Fens themselves (e.g. Must Farm). Despite being unique, there are many indicators, including the expert way in which this wetland settlement was built, and other material found during test pitting, that suggest that Must Farm may be one of many similar settlements now hidden in the deep Fens. Similar sites elsewhere in the UK, also built in watery locations (e.g. Runnymede Bridge or crannogs), demonstrate that this site fits into a wider pattern of wetland dwelling (cf. Bradley 2007). People's attachment to the wet landscape,



Late Bronze Age/Early Iron Age

In the Late Bronze Age/Early Iron Age, the fen edge focus has disappeared, at the same time as activity seems to increase in drylands. Cereals become a lot more frequent, but seasonal pastoralism continues to be important. Ringworks may have been used for large social gatherings.

Wetland use intensifies and besides ritual and extraction sites, we now also see various kinds of settlement appear (e.g. on islands, the ridges at Over and in the actual wetlands at Must Farm). Whilst people seem to have lived in the wetlands, those near the fen edge probably used the fen edge to grow crops and keep animals. They (and those further out in the Fens) may also have traded with drylanders. Fortified sites appear in wet and drylands alike and are probably used for larger gatherings. Communities in all three environments probably interacted and those in drylands near the fen edge may have used the Fens on a seasonal basis for grazing.

NB: the connections drawn here are just one of many possible ways in which communities in different landscapes used the various site types evidenced in this period. Dryland settlement is also more varied than this diagram demonstrates (cf. Brudenell 2012).

Figure 118: A schematic overview of the Late Bronze Age/Early Iron settlement system in four landscape zones (inland dryland, drylands near the fen edge, the fen edge and wetlands). There is a great diversity of sites in wetlands at this time and an attempt was made to reflect this in the above diagram. So rather than depicting one type of settlement (as all previous diagrams have done), this one includes both Must Farm style settlement and those at Over. The dryland sites in this period occur both near the fen edge and further inland. It is likely that those near the Fens were orientated towards the Fens.

access to riverine trade routes or a desire for the protection that wetlands could offer may be some of the possible reasons for the colonisation of the Fens.

Of course, living in wetlands also had its drawbacks. The landscape was too wet to grow crops and space for domestic animals was limited. The fact that both occur on wetland sites in this period and the use of other essential dryland resources (e.g. wood, clay, etc.), demonstrates people's use of and interaction with drier areas and the close contacts that must have existed between people in both environments. Indeed, the limited fen edge evidence in this period may relate to the activity of wetland communities like that at Must Farm (Figure 118). Thus, even though the division between wetland and dryland landscapes seems to become more pronounced in this period, both environments are closely related and form an integrated part of the wider socio-cultural landscape.

6.2.4 The Fens forgotten? – Sporadic wetland use

Throughout the Bronze Age the wetlands seem to have played an important role, influencing the nearby drylands and fen edge both directly and indirectly. In the fourth stage of wetland interaction, which covers the Earlier Iron Age, the focus seems to shift towards drylands, where activity continues to increase, in contrast to the wetlands, where it seems to decline. Yet people continued to interact with this environment intermittently and there may have been regular movement between wetlands, the fen edge and drylands (cf. Figure 119). Thus, although the Fens may have become less important, they were not forgotten.

Earlier Iron Age

Off all the periods under consideration, the Earlier Iron Age is one of the poorest in terms of wetland and fen edge data and evidence, making it difficult to study the relation between the three landscapes. Although some fen edge locations seem to be inhabited again in this period and the few wetland sites that we have suggest that there was still some interaction with the Fens, levels of activity seem low and this interaction may have been of an intermittent and opportunistic nature. Global climate change and local environmental and landscape change in this period may have made wetlands too wet, unstable or inaccessible and maybe less productive,[44] resulting in the abandonment of wetland settlements like Must Farm.[45] However, the period is also characterised by important social changes associated

[44] Peat accumulation may reduce productivity in minerotrophic fens (Dinnin and Van de Noort 1999, 73)

[45] Alternatively, such settlements still existed, but we have not found or identified them yet as any such sites are now deeply buried. However, in contrast to the previous period, there is a lack of other

with the introduction of iron and it has been argued that these may have been a more important factor in the changes we see in the archaeological record (cf. Armit et al. 2014). These changes are reflected in the settlement record in dryland areas, which becomes increasingly varied from the Late Bronze Age onwards (cf. Brudenell 2012). Increasing regionalisation, settlement nucleation and population contraction seem to occur and there seems to be an expansion into clay and chalklands (cf. Clay 2002, Medlycott 2011).

These inland clayland areas seem to have been used in a pastoral manner, whilst fen edge sites relied on mixed agriculture (Medlycott 2011, 23) (Figure 119). The presence of cleaned crops on some of the clay sites might suggest trade in dryland livestock for grain grown on the fen edge (ibid.). The general similarities in the economies of drylands and fen edge sites could indeed suggest close relations between communities in both areas. Perhaps some dryland communities established fen edge settlements to gain access to Fenland resources. The presence of wetland bird bones in dryland locations may equally indicate trade and interaction between the fen edge and drylands; perhaps it was not just domestic resources that were traded, but wild ones too. If dryland communities were indeed mostly pastoral (cf. ibid.) it is likely that people, animals and resources moved regularly between these landscapes. However, the evidence for these connections are slight and suggest that any links that may have existed were probably quite loose and informal. This contrasts with the Middle Iron Age, when patterns become a lot more clearly defined.

6.2.5 Fitting in the Fens - Integrated wetlands

In the final stage of human-wetland interaction, which spans the Middle and Later Iron Age and the Late Iron Age/Romano-British period, the roles of all three landscapes became increasingly distinct and possibly more formalised. By this time, drylands play a leading role in the wider socio-cultural landscape and (social) developments in drylands start influencing how people used the Fens. Yet the Fens were not marginal; people interacted with this landscape in myriad ways again (Figure 120). However, the way that people engaged with this landscape, and therefore its role in the wider landscape, differs significantly from that in the preceding Bronze Age. Wetlands, offering a range of opportunities and resources not available in drylands, seem to complement drylands. Thus, they became a fully integrated part of the wider socio-cultural landscape in which they played a key role (Figure 120 and Figure 121).

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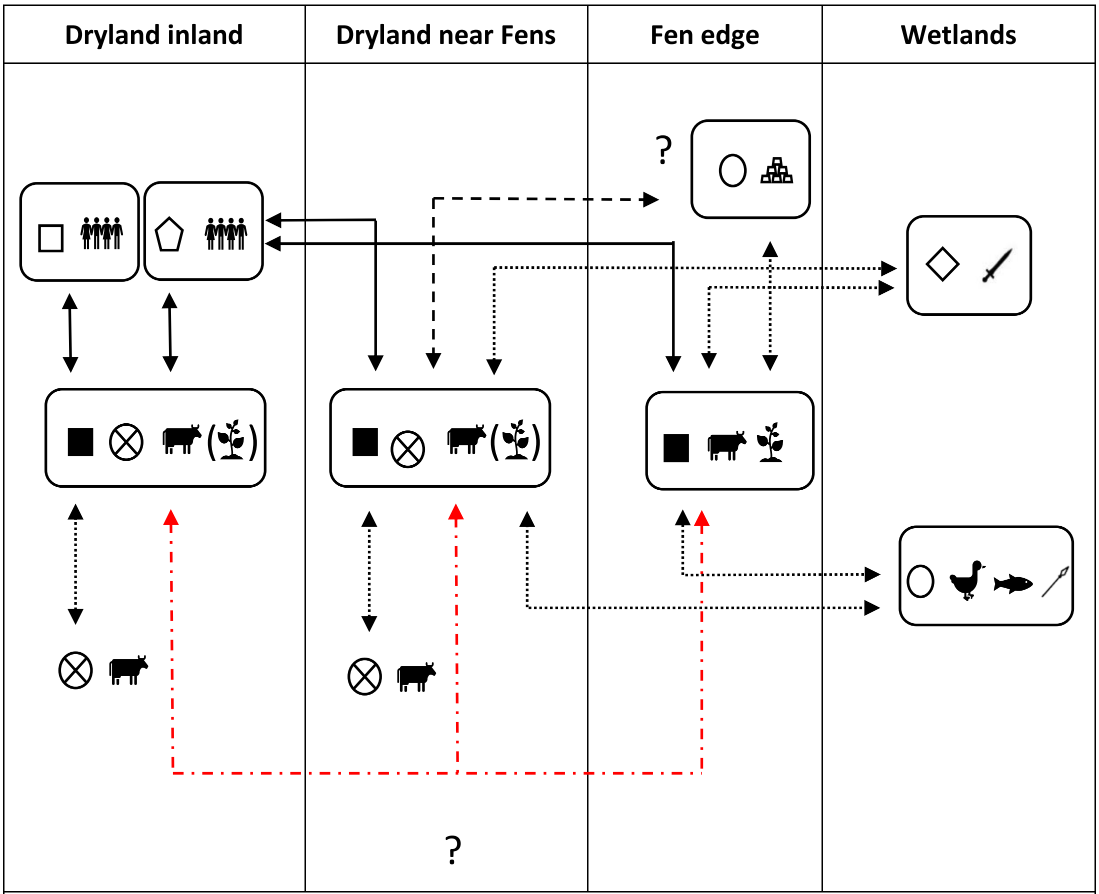
evidence for interaction with the wetlands in this period, which suggests that this landscape truly was no longer inhabited.



Earlier Iron Age

In the Earlier Iron Age, wetland use seems to decline dramatically, but wetland resources (and birds in particular) are still extracted, probably by members of fen edge communities. Birds also appear on dryland sites further inland, demonstrating trade in resources and interaction between dryland and fen edge groups at this time.
Dryland economies may still have been mostly pastoral in this period. Fortified sites and aggregate sites seem to have been used for social gatherings (perhaps on a seasonal basis). Salt extraction may have been undertaken by fen edge communities or drylanders nearby (maybe seasonally).
Dryland settlement is also more varied than this diagram demonstrates. Here fortified sites, the aggregate sites in Cambridge and 'normal' settlements are depicted (the latter especially are more varied).

Figure 119: A schematic overview of the Earlier Iron Age settlement system in four landscape zones (inland dryland, drylands near the fen edge, the fen edge and wetlands). Evidence on the fen edge and in wetlands is sparse, but it seems that some resources continued to be exploited and ritual deposition continued. Like in the previous period, dryland sites occur inland and near the fen edge, but they have not been considered separately. It is likely that some members of communities near the Fens would have visited the wetlands, just like those on the fen edge, but the focus seems to have been on drylands in this period.

Middle/Late Iron Age

Characterised as another ‘boom’ period (cf. the Middle Bronze Age), the Middle/Late Iron Age is very rich, both in terms of food remains, and the number and variety of sites in all environments. In drylands the colonisation of heavier soils is now well underway, and a more settled way of life seems to be evidenced, with a mixed farming economy and a focus on domesticates. After the more tentative Earlier Iron Age phase, it seems the fen edge was now fully recolonised as well, perhaps by dryland communities from the Midlands (cf. Evans 2013a, Knight 1984). Here too we see a mixed economy, but with more wetland resources, presumably originating in the nearby Fens, which are equally of interest again (Figure 120).

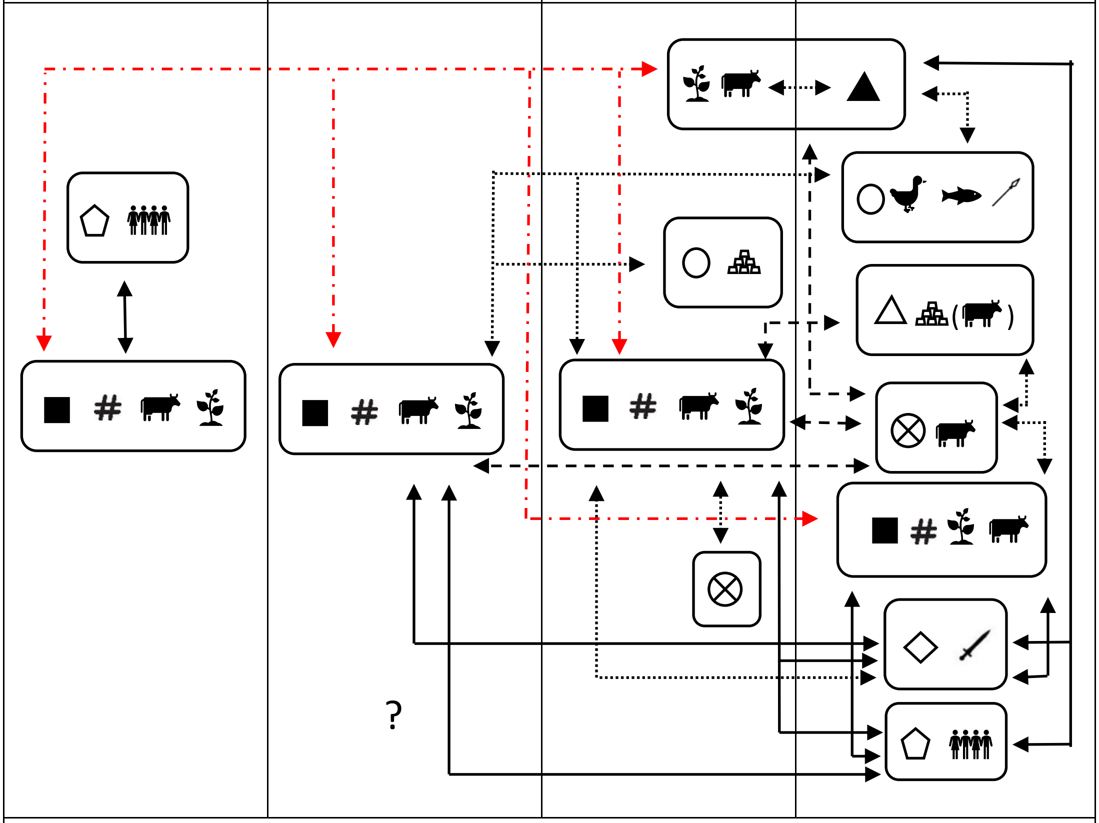
Exploitation of the Fens seems to have become more widespread and intensive and there is evidence for more specific and targeted wetland use, including salt extraction, and the localised exploitation of wetland animals (especially birds), which may have been specialist pursuits (Figure 120). Horses may have been bred in the Fens too, suggesting grazing continued to be important. Marsh forts or defended sites, possibly controlling access to wetland areas, equally demonstrate the apparently more organised use of the Fens. This contrasts with the more opportunistic use of and interaction with the wetland environment in the Bronze Age and fits in with patterns of intensification and specialisation which characterise this period (cf. Moore 2006, Haselgrove and Moore 2007, Willis 2006).

Close links seem to have existed between the three landscapes despite the clearly distinct ways in which they were used. Similarities in dryland and fen edge material culture and settlement compounds suggest that dryland communities, despite settling down in areas removed from the Fens and focussing on domesticates, were interested in the Fens and its resources and wanted a permanent fen edge base. From here people could access and exploit the wetlands, or trade with those living in the Fens. The presence of many birds on the fen edge and in dryland locations, and the domesticates still frequently found in wetlands demonstrate these links between communities in different landscapes. Their contact was probably facilitated by rivers, which played an important role as communication corridors (Evans 2013a, 267).

Late Iron Age/Romano British

The Fens continued to be important in the Late Iron Age/Romano British period and trends from the previous period seem to be consolidated. We see continued interaction with the wetlands at an even larger scale and greater intensity than before. Settlement in and around the Fens becomes denser in this period and a greater variety of activities is added to

Dryland inland	Dryland near Fens	Fen edge	Wetlands



Middle/Late Iron Age

In the Middle/Late Iron Age, all landscapes seem to have settlements which rely on mixed economies. The Fens are back in focus and seem to have been used in a more targeted and specialised way than in the Bronze Age, as reflected in the great diversity of sites, which include specialist extraction and settlement sites. Fortified sites may have been used for larger group gatherings and (in wetlands) to control access to resources. Dryland economies seem to be mixed as well now, just like the fen edge ones, and the different landscapes became more integrated with regular (trade) contact between wetlanders, fen edgers and drylanders, who may have been directly related to each other as dryland communities seem to have recolonised the fen edge and Fens.
NB: the connections drawn here are just one of many possible ways in which communities in different landscapes used the various site types evidenced in this period. Dryland settlement is a lot more varied than this diagram demonstrates.

Figure 120: A schematic overview of the Middle/Late Iron Age settlement system in four landscape zones (inland dryland, drylands near the fen edge, the fen edge and wetlands). An attempt was made to demonstrate the great variety of sites in the Fens and in the fen edge and the possible movements and connections between them, but given the increasing integration of the different landscapes, this is difficult. Like before, the different dryland zones were not studied separately, but as the Fens are back in focus, it is likely that dryland communities near the Fens would have used this landscape as well as those on the fen edge. Both were connected with communities further inland.

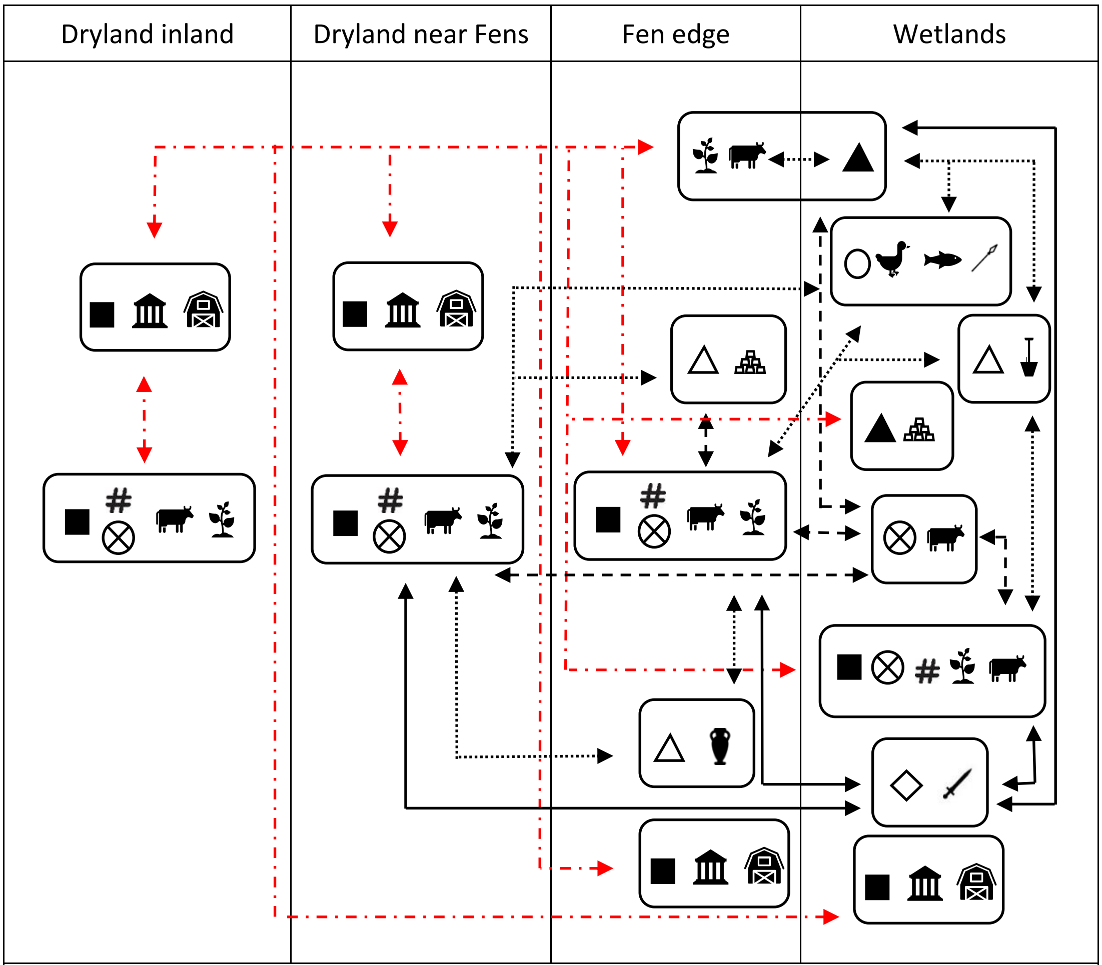
those already taking place (including peat digging and pottery making) (cf. Hall and Coles 1994) (Figure 121). Some of these, including salt extraction, become increasingly specialised (cf. Lane and Morris 2001, 385-86). Whereas Middle Iron Age people may have moved to and from salt camps on a seasonal basis, Late Iron Age saltern sites become inhabited permanently (ibid.).

By the full Roman period, an even more integrated economy developed, presumably under the influence of Roman rule (cf. Evans 2013b, 49). This is reflected in the appearance of larger sites, including villas, ports and supply farms (e.g. at Langdale Hale, the Camp Ground or Stonea) and the construction of roads, dykes and canals for the transport of goods (ibid. Hall and Coles 1994, 105ff.). These site types and major engineering works and landscape modifications reflect a different mentality and new type of interaction with the wetlands. Prehistoric people would also have used waterways in the fens for transport (cf. Must Farm), and they constructed trackways to cross or enter the wetlands, but so far they had not tried to alter the landscape by digging canals.

Developments in this period are the first indicators for major changes in human-environment interaction in the Fens and the role of these wetlands changed dramatically in subsequent centuries. Whilst some people undoubtedly continued to engage with wetlands in very similar ways to their prehistoric ancestors, others started to consider how they might alter this landscape to make it fit their own purpose (i.e. to turn it into fertile farming land). Through drainage operations, which started at a small scale in the Early Medieval period, and culminated centuries later in the complete drainage of the wet Fenlands, the wetlands were essentially turned into drylands (Hall and Coles 1994). Thus, whereas wetlands still seem to have played a significant role in the Roman period, they would become more and more marginal in the following periods, until, eventually, they had disappeared altogether.

6.2.6 Summary – The role of the former Fens within the wider landscape

A combination of climatic, environmental and human, socio-cultural factors, which are often closely related, resulted in major changes in the role and place of the three environments over the course of Neolithic, Bronze and Iron Ages. They are clearly closely connected, as developments in one may influence those in others and the landscapes often seem to have played complementary roles. Five key stages, demonstrating the changing role of the former Fens, fen edge and drylands have been outlined above. In the first of these, which covers most of the Neolithic, the wetlands were too small to play an important



Late Iron Age/Romano-British period

In the Late Iron Age/Romano-British period, patterns in the last period are consolidated. More specialised sites appear in all three landscapes and it is likely that the Roman period saw the arrival of a truly integrated economy. The wetlands and fen edge are inhabited and exploited in many different ways, only some of which are depicted here.
NB: the variety of settlement is much greater than this diagram conveys, particularly in the Roman period and the connections drawn here are by no means all the possible ways in which different sites and communities in the landscape may have been connected, but they do demonstrate the further integration of the different landscapes. Dryland settlement is more varied than this diagram demonstrates. The connections for villas, ports and supply farms have not been drawn, as this would complicate the diagram even further, but it is likely that they were hubs in the Roman landscape.

Figure 121: A schematic overview of the Late Iron Age/Romano-British settlement system in four landscape zones (inland dryland, drylands near the fen edge, the fen edge and wetlands). As the system is becoming increasingly diverse and complex and the various landscapes more and more integrated, it is difficult to summarise in one diagram, but the above demonstrates that the Fens are by now a fully integrated part of the wider landscape.

role. They seem to have been used intermittently (maybe seasonally) for hunting and grazing. Towards the end of the Neolithic the expanding Fens start to become of greater interest and from the Earlier Bronze Age onwards, the Fens start to play a more important role, as people start to settle the fen edge and wetland interaction increases (stage 2). Yet whilst wetlands and the fen edge may have been the focus, drylands were important as well, particularly from the Middle Bronze Age onwards. By the Late Bronze Age/Early Iron Age (stage 3), drylands start to become important in addition to the Fens (whilst the fen edge is abandoned) and by the Earlier Iron Age (stage 4), the focus shifts towards the dryland landscape. Yet although wetlands may have been less important in this period, they come back into focus and become an integrated part of the wider landscape within the study area in the Middle/Late Iron Age (stage 5). They (and the fen edge) seem to play a distinct role within the overall socio-cultural landscape, complementing the drylands, and they continue to do so in the Late Iron Age/Romano-British period.

6.3 Wetland(er)s and dryland(er)s – The social implications of wetland interaction

Wetland people, like wetland landscapes, are often studied in isolation. Although the social aspects of their lives have been investigated in the Fens, most studies so far are rather general. A vague, static and general 'wetland identity' is often assumed for those inhabiting or using the wetland landscape, but there are few studies into how these identities were established and maintained through people's relations with other people, objects and places (but see Van de Noort and O'Sullivan 2006). Social relations are similarly seen as static and tend to be studied in a similar 'general' manner. At most, the overall social organisation within a given period, or for a given community is speculated upon (e.g. societies are argued to be organised along kinship lines, household ties, or in tribal configurations). Different groups might be specified, such as craftsmen, ritual specialists, or the elusive 'elites', but 'normal' people, who would have constituted the majority of any prehistoric society, are hardly ever part of these discussions. Identities and social relations also tend to be considered on one level only (i.e. that of a (sub-)group), with little consideration for individual people. There are few attempts to understand how individuals or smaller local communities fit into larger social groups. A final problem is that social issues are often not related to environmental ones. In fact, they are often placed at opposite ends of the interpretive spectrum. Yet, as outlined in chapter 1 (1.4.1), it is likely that there was a close connection between the environment people inhabited and their identities. People derived part of their identity from their interactions with the landscape they used and interacted with on a daily basis (cf. Van de Noort and O'Sullivan 2006, Bender 1993, Brück 2000, Chadwick 2004, Edmonds 1999). The resulting identities may in turn have affected their relations and interactions with others. This study, which has provided a detailed outline of the ways in which people interacted with the wetland environment through time based on food remains, can offer new insights into wetland identities and the ways in which people related to each other.

This section will discuss the close connection between the environment and people's identities and social relations, examining how people's interaction with the three environments resulted in the construction and maintenance of particular identities at various levels (from individuals to sub-groups and larger communities) and how this affected their social relations, both within their own community and beyond. It will become clear that identities were constructed at various levels and that various type of wetlander identities developed over time, as people's interaction with wetland and the role of this environment changed. So too did wetlanders' social relations, and their role and place within their communities and beyond. Below the five key stages outlined above (section 6.2) will be covered.

6.3.1 Occasional wetlanders and connected communities

Although there are no real wetland sites in the first stage, it is possible to discuss and reconstruct wetlander and other identities and social relations by using information from the other two environments and the evidence from the much more visible Neolithic monuments. As the Fens only just started to develop, wetland use at this time seems to have been sporadic. Although some members of Mesolithic and Neolithic communities may have had a 'wetlander' aspect as part of their identity, it is unlikely that this was consciously recognised, or that it influenced people's relation with others. In this period, broader social kinship ties may have been more important for people's sense of identity and their social relations.

Mesolithic

In the Mesolithic, the Fenland Basin was essentially dry still, and most if not all communities can be characterised as riverine groups. The surface scatters of material that we find provide very little information on how these groups were organised and what types of identities may have been constructed. Edmonds (1997, 100) argues that the composition of flint assemblages could provide insight into the duration of occupation and the tasks undertaken at various locations, which in turn could provide us with more detail on site use and people's social life, but unfortunately Mesolithic material, though found relatively frequently in the study area, has received little attention (cf. Medlycott 2011), preventing us from studying the social life, identities and relations of these societies.

Earlier Neolithic

At the start of the Earlier Neolithic, farmers from the continent came to the UK, introducing domestic plants and animals (Cummings and Harris 2011, Brace et al in prep., Sheridan 2010, Rowley-Conwy 2011). At around the same time, the landscape in the Fenland Basin started to change as river valleys came under the influence of tidal regimes (Waller 1994, Sturt 2006). Both these developments are likely to have affected the lives, identities and social relations of indigenous hunter-gatherer communities. Although we have no real wetland sites, it is likely that those inhabiting the Fenland Basin became attuned to the twice daily changes in the landscape caused by the turn of the tides in a way that those further inland would not (Sturt 2006). Living in a more dynamic landscape, perhaps less suited to arable agriculture, they may have relied on wild resources and/or pastoralism more than communities inhabiting drier river valleys further inland. If so, there may have been a distinction between 'wild pastoralist wetland' communities in the Fenland Basin and 'domestic drylanders' further inland.

In several other areas in Europe (e.g. southern Scandinavia and the Lower Rhine area in the Netherlands), indigenous hunter-gatherers may have played a decisive role in the transition to the Neolithic, selectively adopting Neolithic practices (cf. Amkreutz 2013, 436, Sørensen and Karg 2012, Gron and Sørensen 2018). Interestingly, these areas are characterised by extensive and highly productive wetlands inhabited by wetland-orientated Mesolithic hunter-gatherers (cf. Amkreutz 2013, 436, Gron and Sørensen 2018, 966). This may suggest that their way of life, mentality and regional identity (derived from the close connection to the wetlands they inhabited and exploited) may have resulted in a different attitude to Neolithic novelties like domestic plants and animals (Amkreutz 2013). The possible Fenland Basin patterns as outlined above may reflect a similar dynamic, with groups consisting mostly of indigenous hunter-gatherers inhabiting the Fenland Basin, whilst incoming farmers focussed mostly on less dynamic landscapes further inland. Yet this is unlikely to have been the case for several reasons. Unlike southern Scandinavia and the Lower Rhine area, the Fens were only just starting to become wet. Indigenous hunter-gatherers in the Fenland Basin are unlikely to have been very wetland-orientated yet and they probably did not identify closely with the developing Fens. Besides, as we have seen, dryland, or rather riverine communities, further inland also used wild resources still. Moreover, even though settlements may have been relatively permanent, they may not have been very long lasting, making it unlikely that people were particularly closely connected to a specific place or landscape (cf. Edmonds 1997). Finally, the great variety and complexity of Earlier Neolithic patterns of settlement and mobility (cf. Thomas 2013, 411) would argue against the existence of clearly defined wetlanders and drylanders.

It is unlikely that early farming communities, who seem to have practiced mixed agriculture, were as mobile as their Mesolithic predecessors (cf. Rowley-Conwy 2003, 2004, 2011), but even if people inhabited particular places more permanently, it is highly likely that individuals and groups continued to move around the landscape (cf. Figure 113). Different types of mobility need to be recognised at various levels, including individual's lifetime mobility, communities' seasonal mobility and task-groups' short-term movements into different landscapes, all of which are evidenced in this period. Small Early Neolithic communities are unlikely to have been entirely self-sufficient and must have relied on contact and exchange with each other to sustain themselves and their herds. Isotopic analysis of four Early Neolithic individuals from Cranbourne Chase suggested that all of them had spent part of their lives elsewhere, demonstrating the movement of people over considerable distances (Montgomery et al. 2000). In Early Neolithic northern Europe the movement of livestock across substantial distances is similarly evidenced and comparable patterns have been noted for cattle in Later Neolithic Britain (cf. Gron et al. 2016, Viner et al. 2010). This contact and exchange may have been facilitated by the gathering of large groups of people (whole communities perhaps) at Early Neolithic monuments (cf. Edmonds 1997, 1999). The food remains from the monuments recorded in this research suggest that they may have been used on a seasonal basis (possibly in the autumn/winter). Finally, the use of wild woodland animals and gathered resources in this period (as evidenced in the data recorded for this research) also shows that individuals or small task-groups may have visited areas beyond the immediate settlement.

It is sometimes argued that different social groups in the Earlier Neolithic may have had their own territory within which they moved (e.g. Malim 2000). Others have argued that people at this time are more likely to have thought about the tenure they had over particular places and pathways, rather than discrete territories (Edmonds 1997, 101). Paths were of crucial importance for Early Neolithic communities inhabiting small clearings in an otherwise wooded landscape (cf. Jones and Bogaard 2017), as they would have facilitated the movement, contact and exchange outlined above. Thus, whilst Malim (2000) argues that monument complexes found at regular intervals along the Great Ouse may have marked different territories, is more likely that these sites mark such important places and routes. Here people may have come together to renew and rework social bonds and links (Edmonds, 1997, 1999, Bradley 1984) (cf. Figure 113). Similarly, the digging of pits and depositing of material within them, a new practice in this period, may have served to mark communities' tenure of particular places (Edmonds 1997, 106, Garrow 2006, Harris 2009, Evans and Hodder 2006a).

It is likely that there was considerable flexibility in the connections between people and place and that different identities and social relations came to the fore in different contexts at various points (cf. Edmonds 1997). Within their immediate community, people derived their identities from different activities taking place in various landscapes and environments (Figure 113). Some individuals may have identified as wetland hunters, fishers and fowlers, just as there may have been those who gathered, herded or farmed. Yet it is likely that one person would undertake several of these tasks at different times throughout the year, meaning that such wetlander identities only constituted part of people's overall identity. At a higher level, when various communities came together, broader kinship relations are likely to have played a more important role than people's link to particular landscapes or environments, as most people within these communities will have engaged with various different landscapes throughout the year. Thus, whilst the riparian environments in the Fenland Basin may have been more dynamic than those further inland, and communities here may have interacted with their environment in different ways, it is unlikely that these groups would have (been) identified as 'wetlanders'.

Later Neolithic

It is likely that identities remained very fluid and transient in the Later Neolithic. In fact, they may have become even more so as people's lifestyle and the way they interacted with the landscape changed. Climate change may have made arable farming less attractive, not only in the Fenland Basin, but also further inland (cf. Stevens and Fuller 2012, Bevan et al. 2017). In response, communities, both in drylands and in the lower-lying riverside locations, seem to have become more pastoral with a higher reliance on wild (woodland) resources than their Earlier Neolithic ancestors. Patterns of movement may have changed and contact between groups may have become increasingly important. This seems to have reduced differences between communities living in various landscapes.

Perhaps as part of a more pastoral lifestyle, communities seem to have expanded into previously uninhabited areas (cf. Gardiner 1984, 26, Edmonds 1987, 170-3, Richards 1990, 271, Thomas 1999a, 21 in Garrow 2006, 151, Thomas 1991, 19). It is possible that some members of the community were tasked with herding livestock in these areas and they may have spent some time away from the main settlements, looking after the herds and possibly hunting and gathering wild resources, perhaps on a seasonal basis (cf. Figure 114). If so, they may have identified as a sub-group of herders/hunters within their communities, in contrast to those 'at home' who may have conducted limited arable agriculture and local forays into the immediate surroundings of settlements. These developments would have changed inter-community relations, and possibly also the contacts between various groups.

If Later Neolithic groups did indeed become more dispersed and fragmented, it is likely that central places marked by monuments played a crucial role in maintaining social relations, both between individuals of the same community and between different groups. The Etton causewayed enclosure (Figure 122) recorded in this research for instance, is argued to have been a gathering place for communities with an economy characterised by "both static and mobile elements", or the cultivation of cereals in fixed places and the seasonal pasturing of animals (Hall and Coles 1994, 48). Small funerary deposits attest to ritual activity at this site, but there are also traces of settlement and domestic debris (e.g. pits, postholes, pottery, querns, axes, flint and food remains) (ibid., Pryor 1998a). Different groups of people (possibly kin groups) seem to have been involved in filling in pits at this site (Pryor 1998a). They may have come together at this enclosure at set times in the year to renew social bonds both within these kin groups and between them (ibid.). The Haddenham causewayed enclosure has been interpreted in a similar manner. Here too there is evidence for ritual and settlement alike and different groups seem to have gathered as part of broader community interaction (Evans and Hodder 2006a) (Figure 114).

The clear evidence for feasting on many Grooved Ware sites may be part of the developments outlined above (Rowley-Conwy and Owen 2011, Albarella and Serjeantson 2002). It probably served to renew social bonds between people within the same communities and (at a larger scale) between dispersed groups of people (cf. Hayden 1996). At settlement sites such feasts may have been relatively small-scale household or lineage events involving smaller groups of people or the immediate community, like the more mobile herders and more stationary farmers discussed above (Rowley-Conwy and Owen 2011, 327). Larger scale feasting in monuments of this period might have strengthened social relations beyond these immediate communities (cf. Albarella and Serjeantson 2002). Of course, this is not to say that Earlier Neolithic riverine communities did not interact at this larger scale, but evidence for such feasts at sites like the Etton causewayed enclosure (Pryor 1998a), and the

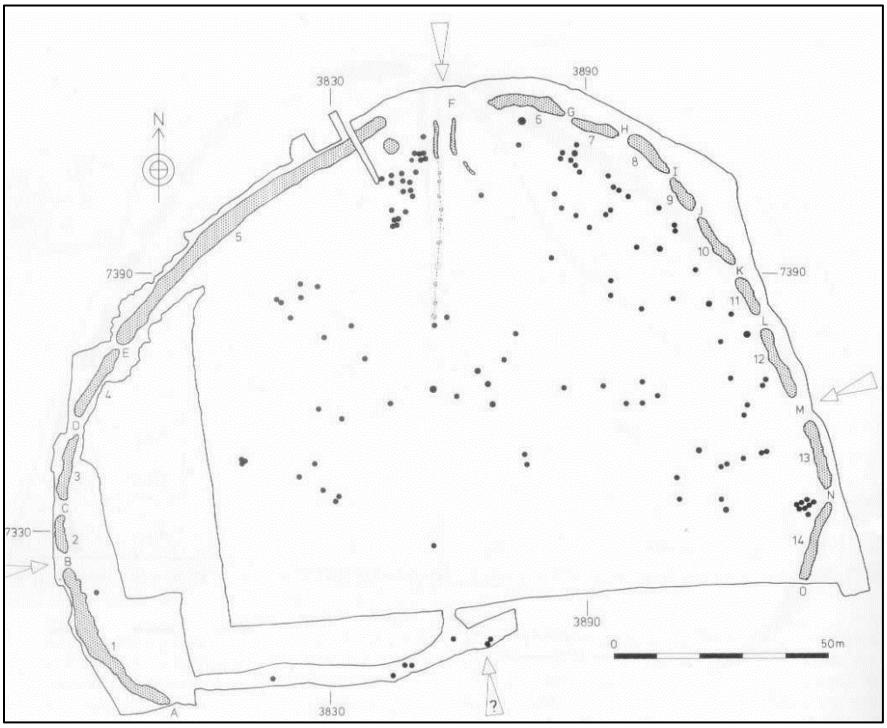


Figure 122: Plan of Neolithic features at Etton, the segmented ditch (in grey) and the many small pits found in the interior of the monument (in black). (Image from Pryor 1998a, 100, reproduced with kind permission of Historic England)

overall similarities of food remains in dryland and riverside locations suggest that such extra-community relations may have become increasingly important. As a result, any differences that might have existed between communities active in different parts of the landscape may have decreased.

Unfortunately, we do not have any real wetland sites and wetland evidence is almost completely absent on contemporary riverside and dryland sites, making it impossible to trace the existence of wetlander identities on an individual or communal level. Wetlands may not have been exploited anymore due to increased flood risks, but given the high levels of mobility in this period, the increasing availability of useful wild resources in the various wetland landscapes that developed in this period and the greater emphasis on pastoralism, it is equally possible that 'dryland' woodland pastoralists discussed above visited wetland sites at some points during the year, whether for grazing or the extraction of wild resources (cf. Hall and Coles 1994, 38). Their pastoral lifestyle was probably very similar to the sort of life that communities in the Fenland Basin, living in a more dynamic environment, had lived from the Earlier Neolithic onwards. Thus, any differences that may have existed between communities inhabiting this area (if it did stay in use) and those further inland may have become less noticeable in this period.

6.3.2 Fishers, fowlers and fen edge communities

From the Late Neolithic/Early Bronze Age onwards, we start to get more direct evidence for people's interaction with the former Fens, making it a lot easier to study the way in which various wetland identities were constructed through people's interaction with this landscape. As this interaction intensified, wetlanders may have started to play a more prominent role within and beyond their communities. However, they were always part of a larger social group, which often included drylanders as well.

Late Neolithic/Early Bronze Age

In the Late Neolithic/Early Bronze Age, mobility patterns may have changed and variations in food remains and the evidence for reiterative occupation on the fen edge suggests that the Fens may have been used for seasonal grazing, whilst dryland sites saw low-level mixed farming. The two landscapes may have played a complementary role and members of the same communities may have used both environments as part of the same settlement system (cf. Figure 115).

The evidence in this period suggests reiterative use of particular fen edge locales, where higher frequencies of domestic animals (especially cattle) and a low frequency and variety of cereals suggest a pastoral focus, whilst dryland sites have a greater variety of cereals, but lower frequencies for most groups, possibly suggesting sites were not in use for a particularly long period. Yet the caring for crops would have required at least part of the community to remain near the fields, whilst others may have moved to the fen edge with the largest part of their domestic herds on a seasonal basis. They seem to have spent a considerable amount of time here, as reflected in features like the burnt mounds which occur all around the Fens, or the Beaker settlements (which include structures) discovered at King's Dyke or Deeping St. James (Knight and Brudenell in prep., Hall and Coles 1994). Like in the previous period, this may have had important implications for the ways in which people within communities may have identified and related to each other. Although they were all part of the same community, sub-groups may have identified as herders or farmers. If the fen edge was indeed inhabited seasonally, these groups may have spent considerable time away from each other, which would create more distinct sub-group identities tied to people's activities in particular landscapes.

Some of the changes in mobility, settlement and identity outlined above may have resulted from the interaction between Beaker immigrants and local pastoralist societies. Some immigrants from continental Europe may have relied on arable agriculture and cereals to a greater extent than indigenous people and new monuments and land divisions appearing in this period may also reflect the influence of newcomers. (cf. Olalde et al. 2018, Louwe Kooijmans 1993, 103, Lechterbeck et al. 2014). Yet the expanding wetlands were not suitable for arable agriculture, which may explain why pastoralism was more important. However, whereas the previous period is possibly characterised by mobility over larger distances (the Later Neolithic expansion into new upland areas), it may have become more restricted on the fen edge in this period. This decrease in movement matches Beaker patterns in the Netherlands (cf. Louwe Kooijmans 1993, 103).

Another important trend, in which communal burial monuments started to be replaced by individual burials with grave goods, is probably also related to incoming ‘Beaker folk’. It has been argued that this trend in burial reflects the emergence of an “ideology of the individual” (Brück 2004, 308). Yet several authors have argued that identities continued to be relational, based on people’s link to each other, animals and places (ibid., Barrett, 1994, 114–15). Still, there are some changes in this period. Whereas relations to other people within the same kin group linked through common ancestors seem to have been key throughout most of the Neolithic (cf. Brück 2004, 310) people’s link to particular places and landscapes may have started to play a more important role in the construction of identities in this period, as people’s movement became more restricted and focussed on particular locations. Indeed, although ties to ancestors must have remained important, the construction of ring-ditch and barrow monuments on the fen edge and the pre-field system boundaries that start appearing at various locales in this environment may demonstrate the increasingly close bond between ancestors, people and these places.

This closer attachment to place may have affected both inter and intra-community relations. Monuments and pre-field system boundaries demarcating key locations on the fen edge and dividing up the land may have been used to claim or negotiate access to the Fens’ riches. This may have led to increasing differences between communities using different parts of the fen edge. Within these communities, the people exploiting the wetland may have been recognised for and derived part of their identity from this interaction. If the Fens were indeed becoming more important at this time (as reflected in activity on the fen edge), these people may have had a certain standing within their communities. Yet as interaction with wetlands seems relatively limited in this period it is likely that any wetland identity that may have existed was only one of many identities a person may have had.

Earlier Bronze Age

By the Earlier Bronze Age, the focus has shifted to the fen edge. Rich in both domestic plant and animal remains, it seems that whole communities may now have inhabited this landscape, in contrast to the previous period, when herding task-groups visited the Fens on a seasonal basis (Figure 116). Nearby drylands seem to be used in a more intermittent fashion, possibly by members of the same fen edge communities. There are only a few real wetland sites but remains from the fen edge demonstrate that, by now, people were exploiting not only the rich grazing grounds, but also wild animal resources, resulting in a broad-spectrum economy (Figure 116).

These developments have clear implications for people's identities and social relations. As activity on the fen edge intensified, and both pastoral and arable agricultural activities were undertaken here, people became even more closely tied to particular locations. This is reflected in the pre-field system land divisions and monuments staking people's rights to these areas. As a result, communities may have started to identify themselves and be identified with particular locations along the fen edge. In contrast to the last period, when arable agriculture and pastoral activities seem to have taken place at different locations, both are now evidenced on the fen edge. Thus, although sub-groups of herders and hunters may still have moved to different locations for herding and hunting (inland or into the Fens), it is likely that people within the same community, with a longer lasting settlement base on the fen edge, may have encountered each other more regularly. This may have led to closer knit, but potentially more inward-looking communities. The burial and other monuments of this period, located near the fen edge settlement base, also reflect this trend. Whereas larger Neolithic barrows were used by different groups and seem to have affirmed people's identity as part of a larger social group, the smaller Early Bronze Age barrows suggest more intimate gatherings which reaffirmed the identity of smaller groups through their descent from known ancestors (cf. Barrett 1988, 1990, 1994, Thomas 2000b). Of course, these local fen edge communities would still have interacted with their fen edge neighbours, and possibly communities inhabiting river valleys further inland, but concerns over land rights and access to the Fens may have become increasingly important.

Interaction with wetlands seems to have been relatively opportunistic and may have been undertaken by means of passive strategies (e.g. through traps rather than through active hunting). However, the hunting and fishing of wild wetland resources required particular skills and knowledge (e.g. in terms of making and using traps and weirs or knowing animals' behaviour) that only some individuals may have had. The same might be true for those taking herds out into the wetlands, those involved in arable agriculture and the people gathering wild resources. However, individual people were probably still undertaking several of these tasks (rather than specialising in one), in different parts of the landscape. Thus, wetland identities were only one of multiple, overlapping identities people had, which came to the fore in different contexts and social situations (cf. Tilley 2006, Bender 1993, Chadwick 2004, Casella and Fowler 2004, Fowler 2004). Whilst it may have influenced their relation to others in their communities or beyond, they were not defined by it.

Middle/Late Bronze Age

Although the overall patterns for the Middle/Late Bronze Age are similar, there are subtle changes in the roles of the three landscapes and the ways in which people interacted with them, which affected group identities and social relations. Although the fen edge continues to be the focus in areas around the Fens, dryland sites may start to be occupied for longer periods of time, possibly in relation to ovicaprid herding (Figure 117). Spending more time away from the main community, the herders involved in this activity may have become a more distinct group within the fen edge communities they belonged to.

The wetland evidence too suggests the development of new identities and relations. Wetland use finally becomes visible in this environment itself as people's interaction with wetlands intensifies and becomes more varied (Figure 117). 'Practical' uses (e.g. grazing, fishing and hunting) were still important and those involved in these activities may have derived part of their identities from this. Yet the ritual deposition of metalwork, as evidenced at Flag Fen and several other locations in the Fens, was another major activity which bound people to this landscape. Some of the material deposited at this site and elsewhere in this period is imported and of great quality and value and it has been argued that the deliberate destruction of such wealth is related to the emergence of higher ranked individuals or a Bronze Age 'elite' (cf. Evans 2009, 259, Yates 2007, 119). Indeed, the formalisation of field boundaries in the large Middle Bronze Age field systems which emerge in many places along the Fens (and other regions of lowland Britain) have been linked to this elite's desire to increase agricultural productivity and their control over land and resources to create more wealth, so they could participate in a long-distance prestige goods economy (e.g. Yates 2007, 122-8). Their power and status, Yates argues, depended on their ability to control large flocks and herds and their ability to flaunt and sacrifice metalwork in wet places like the Fens (ibid.).

Yet the settlement and burial record in the area do not support the presence of elites (Evans 2009, 259, Pryor 2001, 429) and the nature of ritual deposition at Flag Fen is of a "small-scale, almost intimate, nature" (Pryor 2001, 430). Moreover, large field systems may have been the results of communal efforts and co-operation, rather than being imposed by elites (Brudenell 2012, Fleming 2008, 203, Pryor 1998b, 2001, 429). The nature of many of these systems, which develop over time in a piecemeal manner (Evans 2009, 256, cf. Fleming 2008, 203), may suggest this explanation is more likely. If so, the large fen edge systems in this period could be seen as the culmination of patterns first seen in the previous period, when people became more closely related to particular locations and communities started to become more defined in the process. Similar arguments have been made for other field systems, like the Dartmoor Reaves (Fleming 2008). This parallel reave system was probably not imposed by elites, but laid out by neighbourhood groups, who formed cooperative working units with a strong sense of community (ibid. 85, 203). Of course, this is not to say that there were no higher ranked individuals in the Middle Bronze Age, but perhaps such identities were relatively temporary, based mostly on 'mobile wealth' (e.g. cattle), individual merit and experience, or the ability to control resources, such as high-status metalwork and agricultural surplus.

The wetland and fen edge evidence is not only interesting in terms of individual or sub-group identities, and relations between fen edge and nearby dryland communities, it also demonstrates important social changes at a larger level. As outlined in the last chapter, the period is characterised by increasing regionalisation, and sites in different parts of the Fens differ in nature and character significantly. This might relate to the increasingly strong ties between communities and particular areas. Indeed, the formalisation of field boundaries and the construction and long-term use of large barrow cemeteries (Figure 123) on the fen edge highlights people's attachment to these places. Brück (2000) has argued that the transition between the Early and Middle Bronze Age sees a shift in focus from larger-scale communities with extensive kinship and exchange networks to smaller scale co-resident household groups. This process of 'social fragmentation' might have resulted in bonds within fen edge 'territories' becoming even stronger than they had been in the Earlier Bronze Age and could explain the different ways in which these communities seem to have interacted with wetlands (e.g. the Flag Fen Basin vs the Lower Ouse region).

The shift towards a greater focus on local communities inhabiting the fen edge in this period probably affected these communities' relation with other groups as well, as they

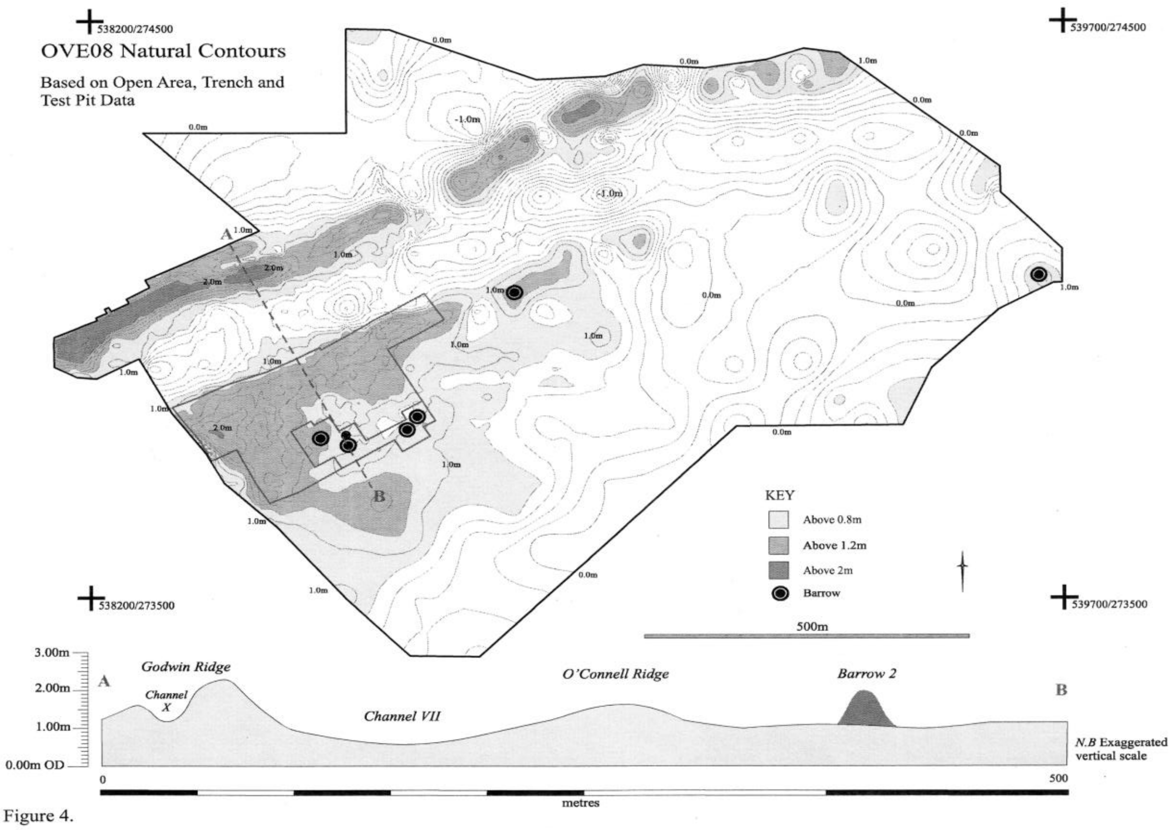


Figure 123: The Over barrow cemetery in relation to two of the riverside ridges (cf. Figure 103). A detailed radiocarbon dating programme has demonstrated that barrow building started in the Early Bronze Age and that several barrows were still in use by the Middle Bronze Age (Evans 2016). (Image from Evans and Tabor 2010, reproduced with kind permission of CAU)

started to differentiate themselves from other communities. Yet at the same time, there is evidence for continued interaction between different groups, as reflected in the fen edge field systems. By laying out these field systems, fen edge communities not only made a visible statement about their rights to the land, they may also have attempted to gain greater control over access to the Fens and its resources (especially wetland grazing) (cf. Fleming 2008, 192). Many fen edge systems have large paddocks which may have been used as stock handling areas and droves leading into the Fens (e.g. at Fengate or Colne Fen) (Figure 124) and they seem well-suited for the movement of large animal herds into the wetlands (Pryor 1996, 1998b, 2001). They were probably used by local fen edge communities, but it is possible that people in the dryland areas further inland also came to the Fens to access wetland grazing (Figure 117) (cf. Pryor 1998b, 2001, Evans 2009, 2013a, 112). Other wetland resources (e.g. wildfowl, peat, reed or fish), and important ritual sites like Flag Fen may equally have attracted people from beyond the fen edge (Pryor 1996, 2001). If so, the fen edge communities controlling access to the Fens' resources and important ritual sites like Flag Fen probably had some status within the wider area.

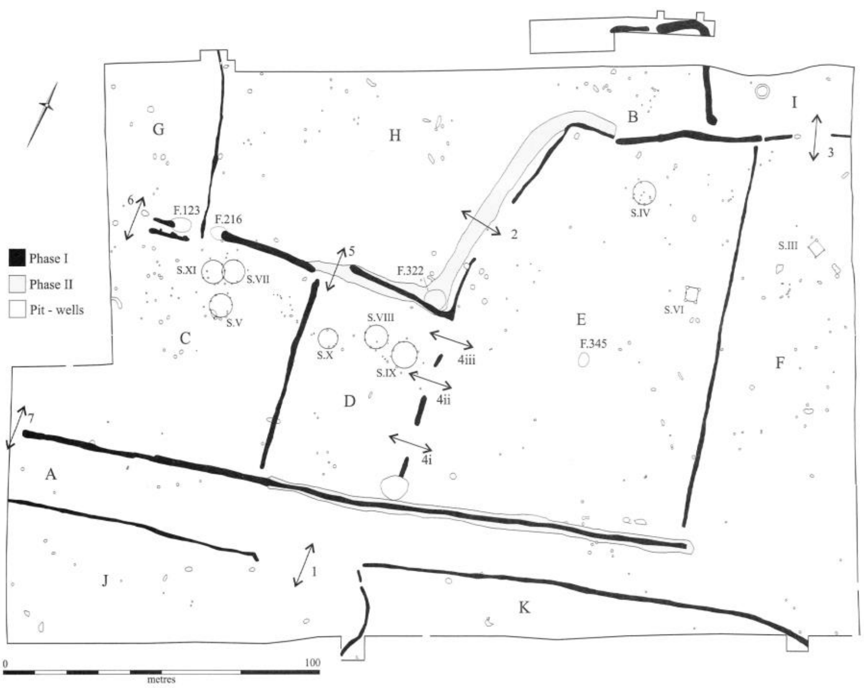


Figure 124: The Bronze Age field system at the Holme (Colne Fen), demonstrating paddocks B-K, the main droveway (A), several structures and entranceways. (Image from Evans 2013a, 96, reproduced with kind permission of CAU)

Thus, various types of individual and group identities, some of them resulting from people's interaction with, or close proximity to the Fens, became more defined in this period. Yet although these identities and social relations may have started to become stronger in this period as a result of people's closer ties to particular places and the more intensive nature of wetland interaction, they probably remained relatively temporary and fluid. Given the close connection between the fen edge and wetland environments, which seem to have been used in a complementary manner, it is unlikely that separate wetlander and drylander identities were recognised in this period. Instead, individuals may have had numerous identities based on the knowledge, skills and experience developed during various tasks undertaken in different parts of the landscape.

Of course, the above description of identities and social relations is limited as it focusses on the recorded sites, many of which cluster around the fen edge. Yet some recorded dryland sites are located further inland, e.g. on the chalk near Cambridge. The monuments and field systems found all along the river valleys leading into the Fens also demonstrate that the fen edge was not the only place which saw intensive activity (cf. Yates 2007, 122ff.). These communities further inland, especially those at some distance from the fen edge, who inhabited a much drier landscape and seem to have focussed on ovicaprids, may have identified as more mobile ovicaprid pastoralists in contrast to more settled fen edge farmers. The shell necklaces (Figure 125) that occur on fen edge and inland sites at this time may demonstrate the existence of such “sub-regional identities” based on the environment people inhabited. These necklaces seem to be “environmentally sensitive” as the inland one found at Striplands Farm is made of freshwater shell, in contrast to those on the fen edge, which are saltwater related (Evans 2015, 1117). At the same time however, these rather distinct necklaces attest to links between inland communities and those on the fen edge, who were connected by rivers acting as major routeways (ibid.) (Figure 117). The large number of log boats near Must Farm demonstrate that rivers and waterways indeed played an important role, enabling easy and quick movement of goods and people (Knight 2012, 11, Murrell 2012, 2, Symonds 2012). Perhaps inland pastoralists exchanged cereals and wild Fenland resources for ovicaprids (and their secondary products) and other dryland resources. It would be interesting to study these relations and to what extent the presence of the Fens impacted patterns in these ‘dryland’ areas in more depth, but too few inland sites were recorded in this research to do so.

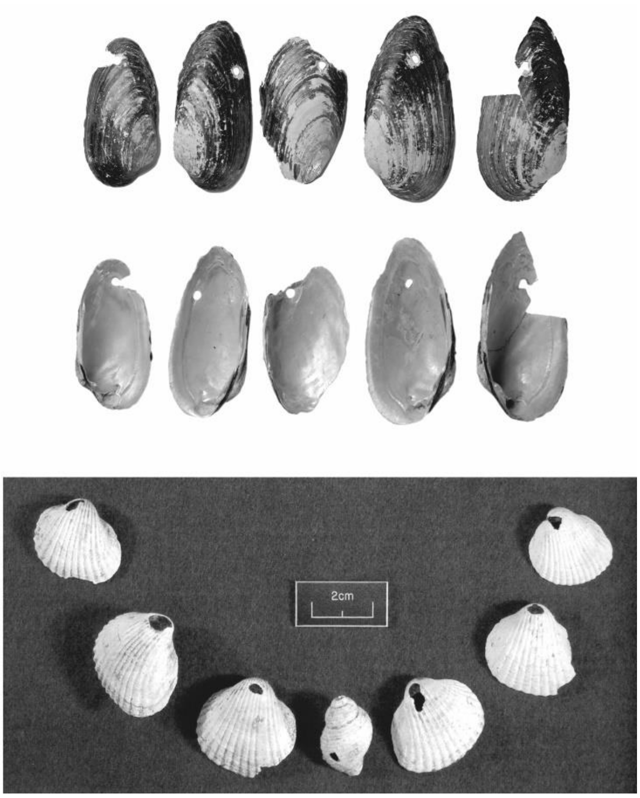


Figure 125: The freshwater shell necklace found at the dryland site of Striplands Farm (top) and a necklace made of cockles and a whelk from Thorny Borrow Pit near the Fens (Evans 2015, 1111). Though different, these necklaces are based on a same idea and may reflect a sub-regional identity and fen edge/dryland links (ibid.). (Photos from Evans 2015, 1111, reproduced with kind permission of CAU)

6.3.3 The first Fenlanders

So far, wetland identities seem to have been more implicit than explicit. Held by some individuals, who interacted with the wetlands regularly, it was just one of their many identities. Even in the Middle/Late Bronze Age, when a wider variety of wetland identities may have developed as people's interaction with the Fens intensified, they were probably relatively temporary and other types of communal identity were more important. 'Wetlanders' were always part of larger communities, whose members engaged in a range of activities taking place in drylands, in wetlands and on the fen edge. It seems this may have changed in the Late Bronze Age, which is a turning point in human-wetland interactions and represents the first period in which wetlander identities may have been consciously and explicitly recognised.

Late Bronze Age/Early Iron Age

The fen edge, which had been the focus of occupation since the Earlier Bronze Age, seems to have been abandoned in the Late Bronze Age/Early Iron Age, (Brudenell 2012, 94, cf. Medlycottt 2011, 29). Increasingly wet conditions at sites like Billingborough, North Fen and similar fen edge areas result in a hiatus in the occupation record (Chowne et al. 2001, Webley and Hiller 2009). At the same time, activity increases in drylands both near the fen edge (e.g. at Eyebury Quarry) and further inland (e.g. at the Addenbrooke Environs) (Gibson and White 1998, Evans et al. 2008, cf. Brudenell 2012). The number and variety of sites increases and for the first time we see clear structures, so far remarkably absent, appear in the archaeological record (ibid.). Interestingly, and in line with wider Later Bronze Age patterns (cf. Bradley 2007), the wetlands also have evidence for settlement, both in the Flag Fen Basin (e.g. Bradley Fen and Must Farm), but also on the Over ridges in the south-western Fens (Knight and Brudenell in prep., Evans 2016) (Figure 118). Like in drylands these settlements are of different type and character and they too have clear evidence for structures (ibid.).

Food remains and site types demonstrate that there are clear differences in the ways in which people interacted with the two environments. Whereas sub-groups or individuals had interacted with the wetlands in various ways on a more temporary, passive and possibly seasonal basis before, the clear evidence for structural remains, the field-systems on the Over ridges, and the wide range of features, material culture and food remains here and at Must Farm (Evans 2016, Knight et al. 2017) suggest that whole communities now lived in the Fens, possibly year-round. Members of these communities would have known the wetland environment intimately, regularly moving into the Fens to exploit its resources, but also towards the nearby fen edge and beyond to acquire dryland resources and possibly to grow some crops (Figure 118). Like in previous periods this will have shaped individual identities, but the lifestyle and daily activities of these wetland dwelling communities as a whole must also have differed significantly from those inhabiting drier areas further inland, who seem to have relied mostly on pastoralism and some arable agriculture. In these communities, herding 'task-groups' may have moved to low-lying pastures on a seasonal basis, whilst others tended the crops (Brück 2007). Whilst some of these people may have come to the Fens, there seems to have been little interest in wetland resources on dryland sites, even near the Fens. Given these differences in landscape, environment and lifeways, it is possible that distinctions were made between 'wetlanders' and 'drylanders' in this period. Although this distinction may still not have been the main identifier for these communities (kinship affiliations may have been more important), this wetland identity may have been more pronounced, explicit and defined as it became an important part not just of individuals', but also communal, group identity.

The apparent split between wetland and dryland settlement and communities fits into larger scale developments in this period, which sees the increasing diversification and categorisation of settlement and appears to be characterised by conflict and competition (Bradley 2007, Brück 2007). Yet at the same time there is evidence for increasing contact and the existence of larger scale communities (Brück 2007). As sites and communities became more clearly differentiated in terms of their function, subsistence practices and ways of life, it is likely that they also became more reliant on each other. Those established in the wetlands for instance, still seem to have relied on dryland resources (as evidenced by the food and building resources at Must Farm). They may have grown their own crops and kept some of their domesticates on fen edge locations nearby, but trade with dryland communities further inland, whom could be reached easily via the major river routes, must have been equally important (Figure 118). At the same time, pastoralist drylanders would presumably have been interested in accessing the Fens for summer grazing. In an increasingly busy landscape, rights of access to different parts of the landscape (whether wet or dry) must have become increasingly important (cf. Brudenell 2012). Moving people, goods and animals across the landscape would have required communities to negotiate, and maintaining social alliances must have been an "economic necessity" (ibid. 221).

Building these relations may have been facilitated by "new forms of exchange and hospitality", including feasting, which is evidenced in the ringworks, hillforts and midden sites that appear in this period (ibid., Brück 2007, 9). There is evidence for increasingly specialised and intensive craft production at these sites and it has been argued that these larger sites with their many (sometimes exotic) finds reflect the development of a settlement hierarchy, with local resident elites controlling this production and access to trade (ibid.). More recently this has been questioned, as find assemblages are similar to those on 'normal' settlement sites and activity at some of these sites seems to be seasonal in character (ibid. 7-8). It seems more likely that these sites represent places where larger groups of people may have gathered periodically for major social events (Figure 118) (ibid. 3).

Whilst there, individual people may of course have derived part of their identity from being craft specialists, possibly gaining a certain status in society (Brück 2007, 10). Similarly, there may have been elites controlling the production and exchange of goods (or the construction of these larger enclosed sites), but, like in the previous period, power and status were probably dynamic, perhaps shifting as people's roles and activities changed in different settings and landscapes during the annual cycle (ibid. 8).

Yet whilst these larger sites may have allowed the construction and expression of individual identities, they equally demonstrate that the scale of community is starting to shift from the more local household groups in the Middle Bronze Age to larger social groups (Brück 2007, cf. Brudenell 2012, 110). Perhaps the Magna Park enclosure (Figure 126) found in the Flag Fen Basin near Must Farm is another example of such a meeting place, where the 'wetlanders' from the Fens and those in dryland areas around the Fens may have periodically met and negotiated access to different parts of the landscape.

Those living in the Fens, may actually have been at a considerable advantage in these negotiations, as they not only controlled access to wetland grazing, but also to major trade routes which connected areas further inland with the rest of southern England and the continent. It has been argued that this may have been one of the main reasons for locating sites like Runnymede Bridge or the Must Farm pile dwelling in or on the edge of waterways (Knight and Brudenell in prep., Needham 1991). Perhaps this enabled wetland communities like those at Must Farm, or those along the river at Over, to acquire (exotic) materials that could be exchanged with drylanders for some of the dryland resources we find in wetlands. These materials may have included amber, jet, shale and glass (cf. the glass beads from central Europe found at Must Farm), but metalwork, which continues to be deposited at sites like Flag Fen, would be another good candidate.

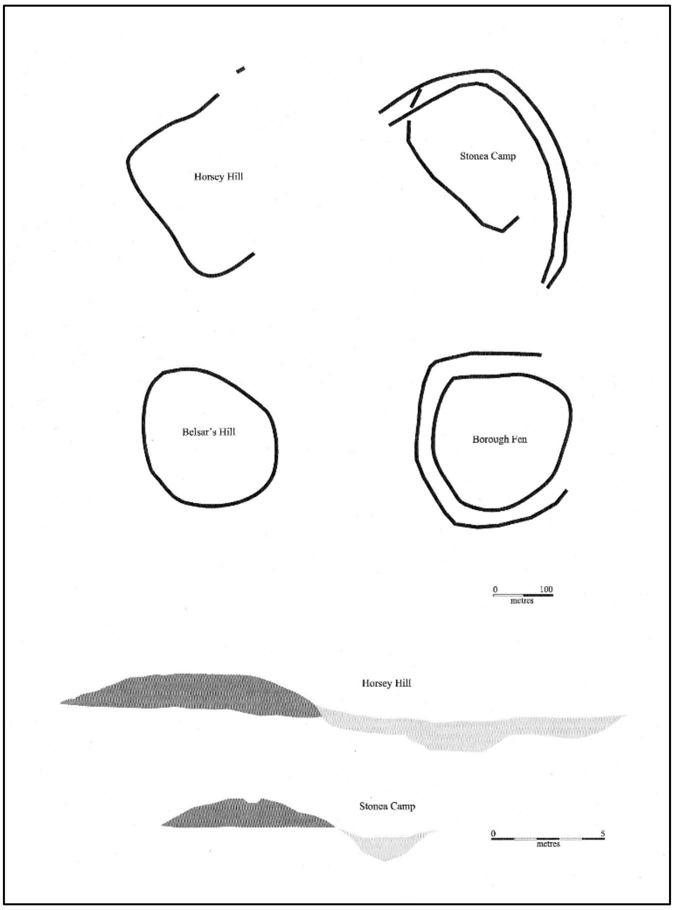


Figure 126: Several 'great' enclosures found in the Fens. The Horsey Hill one is the only Bronze Age one (the rest dates to the Iron Age (cf. Figure 102). (Image from Gibson and Knight 2009, reproduced with kind permission of CAU)

The deposition of metalwork in watery places like the Fens intensifies in this period and seems to be part of a wider trend of conspicuous consumption of both goods and labour (Bradley 1990, 99, Brück 2007, 5, Hall and Coles 1994, 89-90). In the Late Bronze Age a new system of metalwork deposition seems to have become established, which involved competition for prestige goods, including (exotic) metalwork (Bradley 1990 142). By taking this prestigious material out of circulation by making votive offerings, people were able to demonstrate their power and prestige (ibid. 39). By taking wealth out of circulation they underlined their power and position within wider society (ibid.). The deposition of metalwork at this time may have happened at large (seasonal) social gatherings of the kind described above, when people from within and beyond the fen came together (cf. Evans 2002). Perhaps this is when and where the Fenland communities (or individuals within them), who controlled access to the trade in prestige goods, may have made a statement about their place in wider society, emphasising their important role within the wider region. Thus, wetlanders' role in trade and their control over grazing grounds and important ritual sites like Flag Fen mean they were far from isolated or marginalised. Indeed, despite being 'different', wetlanders must have played a central role in the wider socio-cultural landscape.

6.3.4 Hunting parties and reconfigured communities

Earlier Iron Age

The period in which 'real' wetlanders existed seems to have been relatively short, as the wetlands seem to be abandoned by the Earlier Iron Age. Drylands on the other hand, which had started to come into focus in the previous period, continue to see significant activity. Yet although the level of wetland interaction in this period contrasts sharply with that in the previous period, some wetland use seems to have continued, as reflected in the reappearance of a few fen edge settlements and evidence for resource extraction (Figure 119). At Haddenham for instance, the top of Bronze Age barrows protruding from the peat that had by now engulfed them, seem to have been used as hunting stations (Evans and Serjeantson 1988). The apparent focus on birds in this period, as reflected in the high frequency and variety of bird bones in both dryland and fen edge animal remain assemblages, may suggest that some people inhabiting dryland areas or the fen edge, came to the wetlands to hunt these animals, whether for meat or feathers. Spending time away from their community in wetland hunting parties, these people may have temporarily identified as bird hunters. They may have been recognised as such within their communities as well, but given the low levels of wetland interaction in the Earlier Iron Age, this identity was probably not their main one, like in most of the Neolithic and Bronze Age.

Thus, wetland identities became far less pronounced and more fluid again in this period and linked to individuals or sub-groups rather than whole communities. Wetlanders were part of larger fen edge and/or dryland communities. Yet the nature of social relations within and between these communities seem to have started to change. There is evidence for increased regionalisation and enclosed settlements start appearing in various locations in this period (Brudenell 2012, Medlycott 2011). The demarcation of boundaries around houses may have related to the definition of households, local communities, and ownership of land (Brudenell 2012, Thomas 1997). Unlike other areas in Britain, East Anglia has few defended enclosures and other large defended sites, but there is a disparate group of these sites, some of which (e.g. Borough Fen and Ardbury Camp) are found around the fen edge and on in-fen-islands. Just like the Late Bronze Age ring works, these sites should perhaps be seen as "'dominant hubs' in the social landscape" rather than elite residences (Brudenell 2012, 111). The aggregated pit sites in Cambridgeshire, like the Trumpington site, may have been used for communal storage, and could be explained in similar terms (ibid., Evans et al. 2018) (Figure 119). Thus, despite increasing regionalisation, people were clearly part of larger social groups (Brudenell 2012). Whereas the immediate community is likely to have been the focus of social life throughout most of the Bronze Age, different scales of residential community, already noted in the Late Bronze Age, started to appear as communities that were previously more widely dispersed were drawn together (ibid.).

These developments in settlement and social organisation in this period demonstrate an interesting contrast. On the one hand, differences between various communities and their lifestyles seem to become more pronounced and distinct, but at the same time people seem to become ever more connected at larger social scales. This is clear at sites like Trumpington Meadows near Cambridge, where the character and lay-out of settlement suggest the existence of distinct 'local groupings' that nonetheless participated in wider networks (Evans et al. 2018). This is also reflected in the distinctive ring-headed pins found not only on this site and several near it, but also in the wider region (ibid.). Interestingly, although the distribution of this type of artefact is largely confined to England's chalklands, clusters are also found around the Severn and at Fengate, extending along its fen edge and the adjacent Nene and Welland rivers (ibid.). Thus, whilst their lifestyles may have differed quite significantly, with true dry clay inland sites focussing on pastoralism, and lower-lying sites on lighter soils on mixed farming, it seems that people inhabiting both landscapes were in regular contact (Figure 119). Indeed, some of the fen edge sites may represent settlements founded by drylanders wishing to use the Fens. In addition to material culture, those inhabiting different landscapes may have exchanged resources, with fen edge and other low-lying sites on light soil offering grain (cf. Medlycott 2011) and wetland resources like birds in exchange for dryland resources and/or material culture. In this way, 'wetlanders', though far from central, were playing a part in larger socio-cultural developments.

6.3.5 Specialist wetlanders and regional riverine communities

Whilst it is difficult to trace wetland identities in the Earlier Iron Age, people's intensive interaction with the Fens from the Middle Iron Age onwards allows us to study them in more depth. A wider range of wetland identities seems to develop in this period and in contrast to most of the Neolithic and the Bronze Age, some of these seem to become relatively distinct. Wetlanders seem to have played a more clearly defined role in the Iron Age than previously, consolidating their place within and beyond their immediate communities.

Middle/Late Iron Age

Wetlander identities may have become more pronounced again in the Middle/Late Iron Age, as the Fens came back into focus once more and people interacted with this environment in myriad ways (Figure 120). Several of the activities identified required specific skills and knowledge and are likely to have set particular people apart from the wider community. The people extracting salt in the Lincolnshire marshes for instance, needed good knowledge of the landscape and tidal movements. They may have moved to suitable locations ('salt camps') on a seasonal basis, perhaps also accessing saltmarsh grazing (Lane and Morris 2001, 385). They probably stayed in these locations for a while before returning to their permanent settlements. Whilst entire communities (women, children and men) may have been involved in these activities (cf. ibid. 404), it is equally possible that only a small 'task-group' would go out. Whatever the social make-up of these salt extraction groups may have been, it is likely that they identified as salt winners and/or herders for part of the year. Their specialisation and the importance of salt may have conferred some status on these people (cf. ibid. 371). Similarly, those involved in horse breeding (whether these were individuals, sub-groups or communities) may have gained some status as horses (possibly connected to warrior and/or male ideologies in this period) are likely to have been of considerable importance and value (cf. Evans 2016, 412-22).

The specialised hunting of birds and beavers as evidenced in the Lower Ouse region by a specific group (possibly one household, living at the Haddenham V site) within the community reflects the existence of similar 'communities of practice' (Figure 120). However, this site seems to have been inhabited year-round rather than visited seasonally (Evans and Hodder 2006b, 276), which means that the wetland identities of its inhabitants may have been more distinct and enduring than those seasonally extracting salt in Lincolnshire. However, this does not mean that this group of people was isolated or marginalised. On the contrary, the Haddenham V site is surrounded by similar enclosures, presumably inhabited by other families who were part of the same community. The presence of domestic resources in addition to the wild remains at Haddenham V equally demonstrates the close links between the 'wetland household' and others nearby.

Moving beyond specialised wetlanders and their immediate community, it is likely that there were intimate connections between those exploiting the wetlands and people in drier areas (Figure 120). Whilst some of the salt extracted in Lincolnshire may have been used within the communities to whom the salt winners belonged, the number of salterns appearing in this period and the amount of salt produced at these suggest that trade with other communities was equally important (Lane and Morris 2001, 398-402) (Figure 127).

Indeed, finds of briquetage on several of the Cambourne sites, located well inland, represents good evidence for such trade (Wright et al. 2009, 75). Similarly, the sheer number of wild animals that were killed and processed at Haddenham V indicate that a number of these were hunted to be traded with other communities, presumably located further inland (cf. Evans and Hodder 2006b) (Figure 128). The occurrence of relatively high numbers of

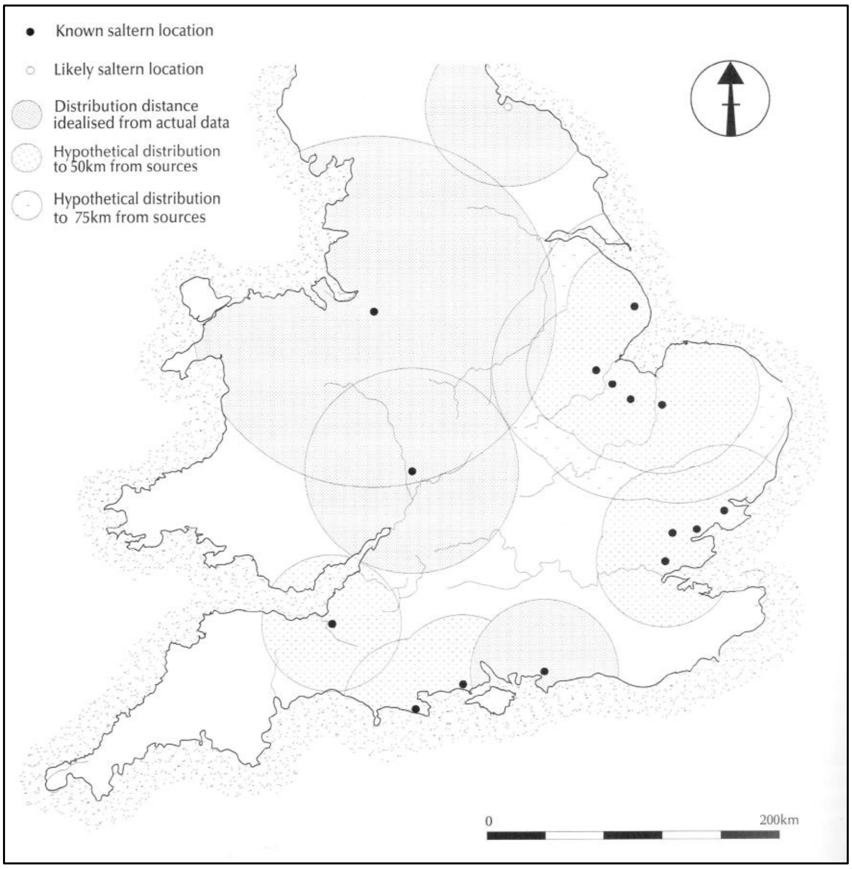


Figure 127: Model of Iron Age salt distribution, demonstrating the possible trade links of Fenland communities. (Image from Lane and Morris 2001, 400, reproduced with kind permission of T. Lane and Heritage Trust of Lincolnshire)

birds on sites across the study area in this period support the existence of such trade links, which may have extended far inland, as evidenced by the worked goose bone (perhaps a flute) found at Lower Cambourne (Wright et al. 2009, 75). In addition to wild wetland resources, the presence of cleaned crops at Cambourne suggest that grain from the fen edge may also have been traded with these inland communities, possibly in return for (secondary) animal products (Wright et al. 2009). Thus, the contacts between people inhabiting different landscapes, already hinted at in the Earlier Iron Age, continue.

Besides these trade links between wetland, fen edge and dryland communities, there may have been important social bonds and relations between these groups as well, as the fen edge and wetlands seem to have been recolonised by dryland communities in this period, as reflected in material culture and settlement forms. The occurrence of different enclosure types and morphologies at Colne Fen for instance, which seems to correspond to different pottery styles, may relate to the incursion of western inland communities (Evans 2013a).

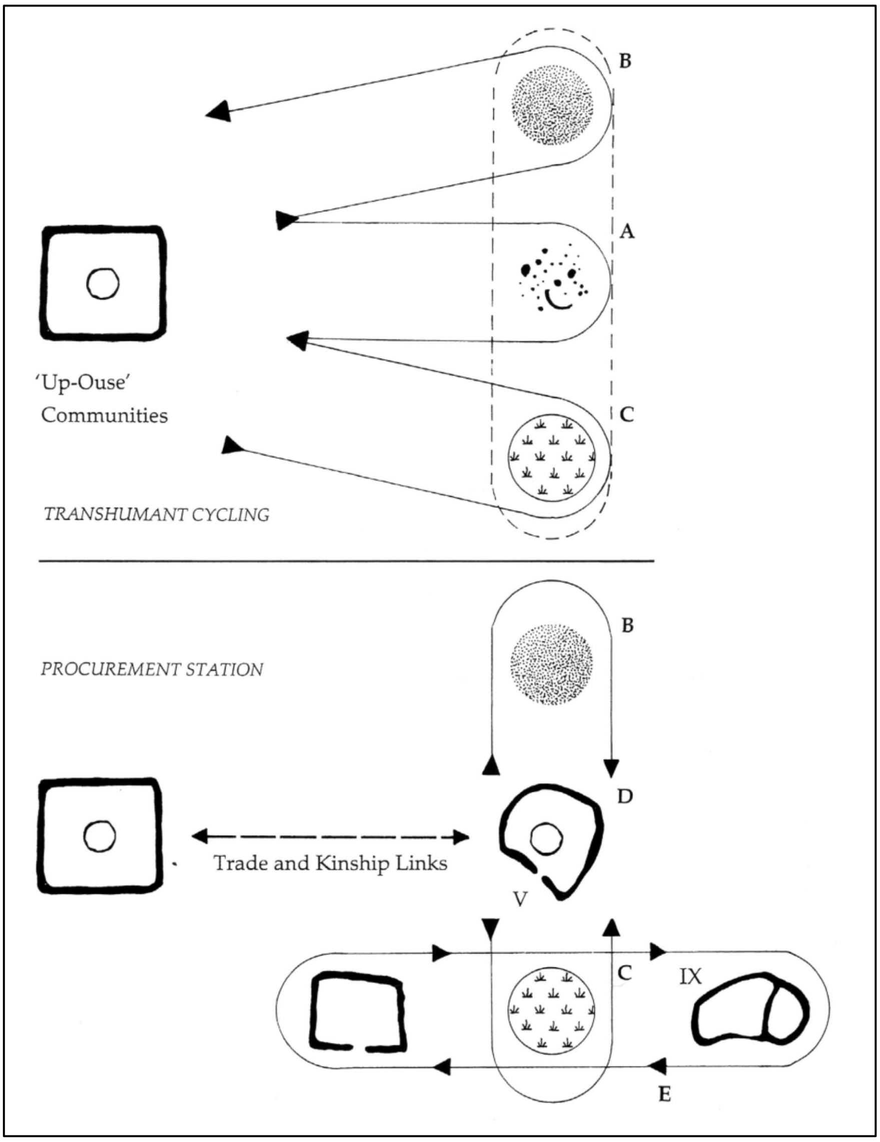


Figure 128: Model demonstrating landscape use and social change between the Early Iron Age (top) and middle Iron Age (bottom) at Haddenham (Evans and Hodder 2006b, 321). In the Early Iron Age dryland 'up-Ouse' communities come to the Fens temporarily for the extraction of various resources (A-C), getting to know the land and its resources. Later in the Iron Age, this seems to have led to the establishment of permanent, year-round fen edge settlements (like Haddenham V) (bottom), who keep exploiting fenland resources (B and C). Up-Ouse communities probably receive Fenland resources through trade with their 'daughter' settlements. E represents use of the Fens by more immediate Fen hinterland communities. (Image from Evans and Hodder 2006b, 321, reproduced with kind permission of CAU)

These Scored Ware communities seem to have strong Midlands affinities as this pottery occurs mostly along and north of the Ouse, whilst Plain Wares occur south of here and along the Cam (cf. ibid. 247, Evans and Hodder 2006b) (Figure 129).

Similar forms and decorative styles in ceramic assemblages in the Cam Valley equally suggest regional social networking between communities along this corridor (Evans et al. 2018). Although the fen edge communities may have become more distinct over time, their

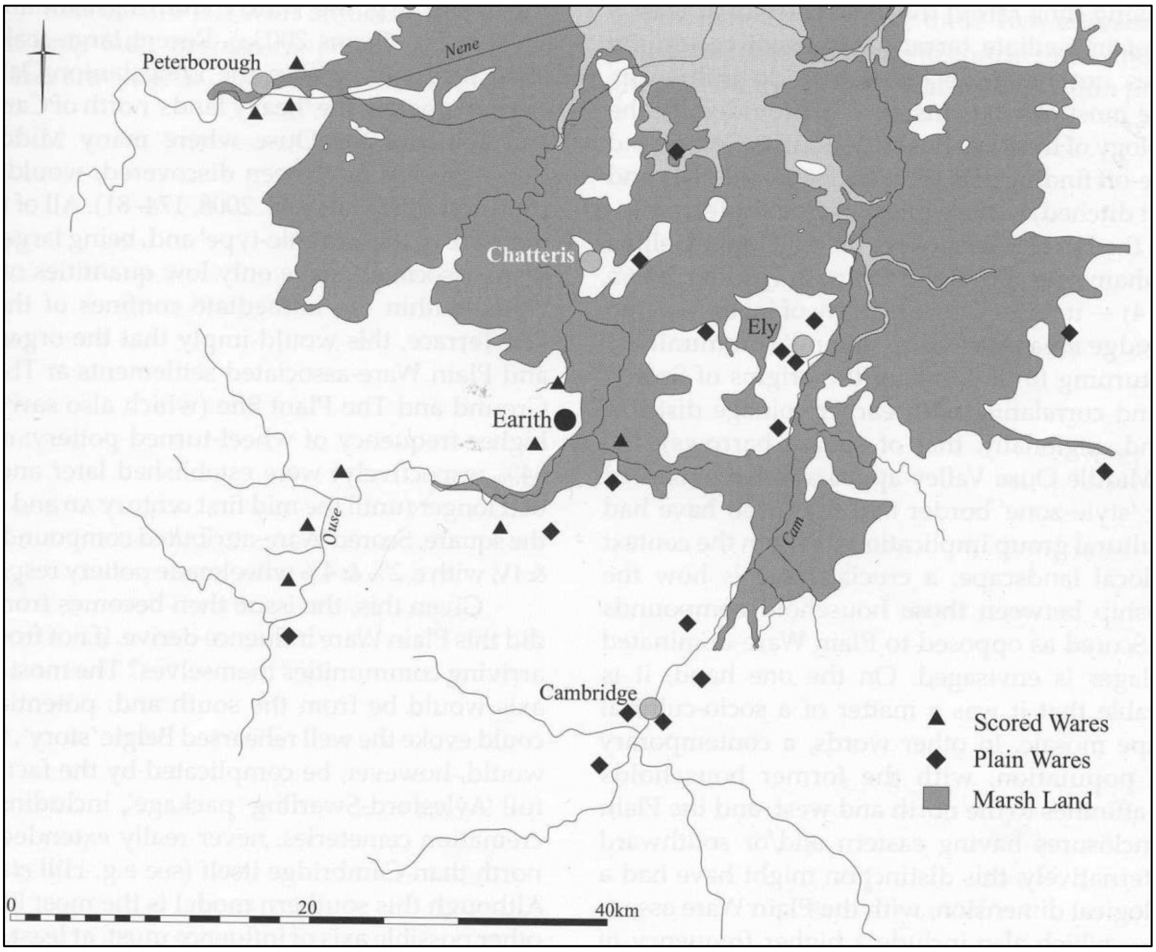


Figure 129: Map showing the Iron Age pottery distributions in the southern Fens and their drier hinterland. (Map from Evans 2013a, 247, reproduced with kind permission of CAU)

relations with their 'parent' communities are likely to have remained strong (cf. Evans and Hodder 2006b). The occurrence of the same bird species in drylands, the fen edge and wetlands suggest that there is a common idea about what was good to hunt and eat.

The close links between communities in different environments suggest that larger social groups, each with their own practices and identities, existed in this period (cf. Haselgrove and Moore 2007). These larger-scale 'regional identities' and social relations, some of which may reflect tribal affiliations (cf. Moore 2006, 217, Clay 2002, 118), were probably more important than any distinction between wetlanders and drylanders at a more local level. Indeed, the integrated nature of the socio-cultural landscape in this period suggests that each of these larger social groups may have contained both wetlanders and drylanders, all of whom had a clearly defined role in the larger system. They seem to have been connected along river corridors, which provided important transport routes (cf. Clay 2002, 118, Evans et al. 2008) (Figure 130). Thus, the 'wetlanders' at Haddenham may have had closer

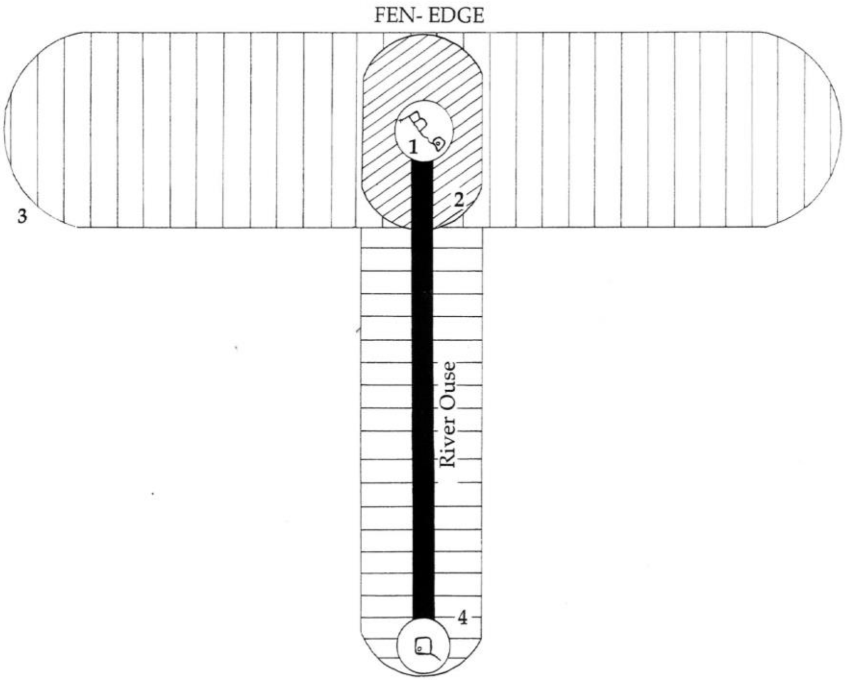


Figure 130: Different levels of community in the Iron Age, demonstrating how wetland and fen edge communities fit into the wider landscape (from Evans and Hodder 2006b, 322). 1. Immediate terrace group, 2. wider fen-edge, 3. Lower Ouse area (south-western Fens) and 4. up-Ouse affiliations with Midlands' groups. (Image from Evans and Hodder 2006b, 322, reproduced with kind permission of CAU)

relations with dryland communities upstream the River Ouse than with similar wetland communities in Peterborough or in the Lincolnshire Fens.

The existence of these larger social groups and the extensive contacts between them demonstrate the increasing social complexity that characterises this period (cf. Haselgrove and Moore 2007). Production and exchange seem to have become more centralised and specialised (cf. Moore 2006, 217), which may explain both the increasing distinctions and close connections between wetland, dryland and fen edge sites and communities. Each of these sites and communities fulfilled a clear role within the wider socio-cultural landscape and the increasingly intensive and specialised interaction with wetlands in the Middle/Late Iron Age is part of this trend (cf. Willis 2006).

The presence of 'marsh forts' may relate to these patterns of intensification. These sites have been interpreted as elite homesteads or related to territorial or tribal boundaries (Malim and McKenna 1993, Evans 1992), possibly suggesting that access to wetland landscapes, offering a range of resources not available in drylands, became more regulated and controlled (cf. Figure 126). Some marsh forts indeed seem to have controlled particular wetland areas (e.g. Wardy Hill) and there are other hints for the emergence of higher-ranking people in this period in the settlement record (Evans 2003, Haselgrove and Moore 2007). The sometimes over-elaborate boundary enclosures around roundhouses may have made a statement about the standing of its inhabitants (Brudenell 2012, 99). Similarly, at Colne Fen the larger size of some compounds and roundhouses suggests some people or households were of higher status (Evans 2013a, 180). Yet the 'marsh forts' include a variety of sites of different form and possible function and it is difficult to say what their precise role was (Brudenell 2012, 110). Although they may have related to higher levels of organisation and control over the Fens and their resources, the evidence for people's interaction with wetlands points more towards localised specialist extraction and exploitation by part-time specialists, rather than 'full-time' wetlanders (cf. Evans forthcoming).

Yet although this may suggest that wetland identities and social relations in this period are very similar to those in the Bronze Age, the nature of wetlander identities has changed and so has wetlanders' role in society. These changes relate to the different ways in which people engaged with the wetland and its changing role in the wider socio-cultural landscape. Whereas several people in the Bronze Age were interacting with wetlands, they seem to have done so in a relatively opportunistic and non-intensive manner. Their wetlander identity was one of many others and they were part of a larger community inhabiting the fen edge. At least until the Middle Bronze Age, the focus seems to have been on this smaller, immediate community, rather than any larger scale social groups. In the Iron Age, more specialised and defined communities of practice are engaging with the Fens in a more active and targeted manner. Their wetland identities may have been more distinct and explicit. Yet they too were part of larger communities, which in turn were part of larger social groups (cf. Figure 128). However, in contrast to the Bronze Age, these larger social groups, rather than the smaller communities within this, may have started to become more important, becoming the main focus of people's social identity and relations. Thus, community sits at a larger scale in the Iron Age than in the Bronze Age.[46]

[46] It should be noted that whilst these larger, regional identities seem to become more important in people's social lives at larger scales, it seems that the household is the equivalent on the smaller scale (cf. Moore 2006). This is reflected in the appearance of enclosed settlements, which has been argued to relate to the clearer definition of households (Thomas 1997, Brudenell 2012, 99). In the south-western Fens, several of these compounds have a pair of roundhouses that may reflect kinship or inheritance laws (Evans and Hodder 2006b, Evans 2013a). If local communities were indeed organised along such close kinship ties, this might explain why only one of the compounds at Haddenham seems to have specialised in wetland hunting; perhaps these activities were organised along similar kinship or family lines.

Late Iron Age/Romano-British period

By the Middle/Late Iron Age, the Fens and their inhabitants were not marginal, but an integrated part of the wider landscape and society. The arrival of Roman rule initially does not seem to have changed this (cf. Evans 2013b, 490). Interaction with Fens continued and sites like the Romano-British shrine at Haddenham demonstrate a hybridisation of indigenous and Roman practices and potentially identities (cf. Evans and Hodder 2006b). Indeed, interaction with the Fens intensified in the Later Iron Age and Roman period, and further specialisation seems to have taken place, potentially resulting in new types of wetland identities, some of which may have become even more distinct and enduring (Figure 121). The salt winners now permanently inhabiting Lincolnshire's saltmarshes for instance, probably derived much of their identity from their specialist daily interaction with this environment.

From the second century AD onwards however, Roman rule becomes more visible in the Fens and the fen edge islands and siltlands become more densely settled than any time previously (Hall and Coles 1994). New and typically Roman site types, including villas, supply farms and ports appear in the full Roman period, several activities (e.g. saltern activity and peat digging) are now undertaken at an industrial scale and canals and dykes start to be dug for the easy transport of goods and people (Figure 121) (ibid., Evans 2013b, Rippon 2000). This demonstrates new and probably more integrated economic structures. Local Iron Age traditions seem to disappear, and 'Roman' identities may have started to become more important. At the same time however, it is likely that the people involved in the exploitation of the Fens were mostly 'indigenous' people who already knew the land and its resources, rather than those who entered the area from elsewhere within the Empire. Although they may have initially identified mostly as being a 'local' in contrast to 'foreign' 'Roman' immigrants (many of whom actually came from other parts of the Empire),[47] it is possible that their wetland knowledge, skill and practices were becoming increasingly important within this 'local', indigenous identity as it was this that set them apart from the newcomers. Over time, this may have led to increasing differences between wetlanders and drylanders, as the latter were not directly interacting with wetlands (especially if they lived at some distance from the Fens). Thus, the arrival of Roman rule in combination with increasing

[47] The term Roman is misleading, as many 'Romans' coming into Britain may in fact have belonged to European Iron Age communities (Mattingly 2004). Yet whether truly from Rome or not, these people differed from the native communities living in the study area.

specialisation may have triggered the development towards the later historic opposition between 'fen slodgers' and dryland outsiders.[48]

The post-Roman Fenland

The later introduction of Christianity by other 'outsiders', including missionaries from Ireland and Rome, and subsequent migrations of yet more 'strangers' (i.e. Saxon people from what is now Germany, Vikings from Scandinavia and eventually the Normans) in the (Early) Medieval period probably contributed significantly to the development of the increasingly strong Fenlander identity that we know from historic sources (cf. Hall and Coles 1994, McCollough 2001). None of these 'outsiders' knew the Fenland landscape or how to exploit it, in contrast to those whose ancestors had lived and worked in the area for generations. They knew its wild resources and how to make the most of living in this environment. Even if they relied mostly on domesticates, they would have used the Fens' wild resources as and when they could. Unfortunately, outsiders, who generally seem to have had a rather negative perception of these 'wild wetlands', became more numerous over time and as demands for arable land grew the Fens started to be drained. As a result, those people that continued to make (part of) their livelihood by exploiting the wild Fens, including full-time fishers, fowlers and 'fen slodgers', but also those who used these resources more opportunistically, became increasingly marginalised.

Of course, the above narrative is a simplification which does not account for the many subtleties in the process. The outline of human-environment interaction in prehistory has shown us that oppositions between wetlanders and drylanders are more often apparent than real, and the same was probably true in the historic period. It is very likely for instance that 'indigenous' wetlanders used domestic resources as well (cf. most prehistoric 'wetlanders') and as some became more reliant on these, they may have started helping to drain parts of the Fens. Similarly, despite apparently very negative views of these wild wetland 'wastes' from dryland outsiders, other written sources praise the riches of the wild Fenland, and the wetlands were clearly intensively exploited (cf. Huisman 2017). However, this did not stop the eventual full drainage of the Fens and although some wetlanders may have aided this process, a core of fen slodgers seems to have held on to a wild wetland life until the bitter end, opposing and even sabotaging the drainage works (Wheeler 1896, Young 1808). It demonstrates their commitment to and love for this landscape and their

[48] There are many anthropological examples of 'colonial encounters', where contact between different groups and cultures results in an increase in identity expression (Evans 2013b, 490).

way of life and the lasting importance of this landscape (Huisman 2017). Although some drylanders understood their plight, as reflected in the pleas from "men of learning and social standing", arguing that the drainage of the Fens would result in the loss of the livelihood of many cottagers in the area (Wheeler 1896, 67), the fen slodgers eventually lost their battle and a wetland way of life, elements of which can be traced back to prehistory, came to an end.

6.3.6 Summary – The role of wetlanders in the wider socio-cultural landscape

The above section has demonstrated that there was a close connection between people's identities and social relations and the ways they interacted with the landscape. It has shown that different types of wetlander identities were constructed at various levels (from individuals to whole communities). Yet whilst 'wetlanders' could be identified in various periods, the ways in which this wetland identity was constructed and maintained differed significantly from one period to the next, in relation to the way that people interacted with wetlands and the role and place of this environment, both of which changed over time. Whilst different kinds of 'wetlanders' (individuals, sub-groups or whole communities) seem to have played a more prominent role in some periods than others, they were never isolated or marginal, as they always related to drylanders, whether through trade, interaction, or kinship.

Throughout most of the Neolithic it is likely that those who fished, hunted and gathered in the wetlands may have been recognised for these skills, but these activities were unlikely to be specialist in nature, which means that wetlander identities did not greatly affect social relations or people's role within their communities. It is possible however, that those communities who lived in the dynamic tidal landscape of the developing Fens differed from those inhabiting more stable river valleys further inland. Unfortunately, we lack the true wetland sites necessary to examine this further.

Wetland interaction becomes a lot more visible in the Bronze Age, when fen edge communities seem to have ventured out into the wetlands for grazing, hunting and fishing. Like in the Neolithic, some people will have been recognised for their skills and experience in these pursuits, but the use of these wild resources seems relatively opportunistic, which means that, like before, these wetlander identities were part of a broader set of overlapping identities. They are unlikely to have greatly affected people's role within the wider landscape. By the Middle Bronze Age, when the heavy clays first start to be occupied, this may have changed. Fen edge communities and those further inland, now relatively permanently inhabiting and using rather different landscapes, may have identified themselves partly based on the environments they inhabited. It is unlikely however, that such 'environmental identities' were consciously articulated.

This probably changed in the Late Bronze Age, when we have the first evidence of permanent settlement in the truly wet Fens, just when activity in the drylands increases as well. Differences in settlement and lifestyle were probably consciously recognised and whilst there may still only have been a few individuals within the community engaged in wetland pursuits like hunting, fishing and gathering, the fact that whole communities now permanently inhabited the wetlands may have led to relatively explicit wetlander identities. Despite this, there are clear connections between wetlanders and drylanders in this period. They relied on each other for resources and probably negotiated access to land and routeways. Wetlanders may have played a relatively important role in the wider landscape as they may have controlled access to rich grazing grounds as well as several large rivers, which connected (those in) the Fens' drier hinterlands to the sea and communities beyond the study area.

It seems that these wetlander communities may have disappeared in the Earlier Iron Age, but by the Middle Iron Age, the Fens and fen edge seem to have been recolonised by members of dryland communities. Over the course of the Later Iron Age and into the Roman period, it seems that some people (individuals, sub-groups and possibly even entire communities) became wetland specialists, whose activities allowed their communities to trade with (parent) communities further inland. Their wetland identity, though still only one of many other, overlapping identities, may have been relatively strong and, given their contribution to inter-community trade, they may have had some standing within and possibly beyond their immediate community.

6.4 Conclusion – The role and place of wetland(er)s within the wider landscape

The previous chapter reconstructed people's interaction with the three environments based on food remains, information from the selected sites and wider socio-cultural developments. This chapter has outlined the implications of this changing human-environment interaction, considering the connections between wetland landscapes, the fen edge and drylands, before examining how people's changing interaction with the former Fens affected their social identities and relations at multiple levels. In this way, it was possible to reconstruct the role of the Fens and those who engaged with this wetland in relation to dryland and fen edge landscapes and people. It has become clear that the role of wetland(er)s changed significantly through time, but that they were always an integrated part of the wider landscape or society.

The role of the wetland landscape changes over time in a fluctuating, ebb and flow pattern. Whilst there seems to have been little differentiation between wetlands and drylands in the Neolithic, wetlands and the fen edge seem to come into focus in Earlier Bronze Age and remain important throughout the Bronze Age, playing a key role in the wider socio-cultural landscape. Yet whilst the focus shifts to drylands in the Iron Age, the wet Fens continue to play an important role within the region, as they became an integrated part of the landscape.

The role of wetland people is more difficult to reconstruct, as identities and social relations are notoriously fluid and dynamic (Fowler 2004, Tilley 2006). However, through the detailed study of people's interaction with the former Fens through time, it was possible to demonstrate that wetlander identities were constructed at various levels, from the individual, to sub-groups and entire communities, at different points in time. How these wetland identities were constructed and maintained differed significantly from one period to the next, in line with the changing role of the wetland landscape. In most of the Neolithic and Bronze Age, wetlander identities were constructed and maintained at a personal and/or sub-group level. Although they may have affected relations within the community (in terms of task divisions and social standing based on particular skills and knowledge), wetland identities probably did not greatly affect extra-community relations until the Late Bronze Age/Early Iron Age, when whole communities may have become 'wetlanders'. In the succeeding Iron Age wetlander identities were maintained at a sub-group level again and wetlanders probably had some standing, both within their communities and beyond, as their activities were important for regional trade.

Thus, just like the landscape's role fluctuated over time, wetlander identities seem to have been more explicit and distinct in some periods, less so in others. Often, wetlander identities seem to have been one of many identities that people had; they were never the main identifier and may have been more implicit than explicit throughout most of the period. Moreover, within one period, they came to the fore in particular social contexts, seasons and places, whilst they were less distinct in others (cf. Tilley 2006, Bender 1993, Chadwick 2004, Fowler 2004). Thus, even when wetlander identities may have been stronger and more explicit, like in the Late Bronze Age/Early Iron Age or the Middle/Late Iron Age, they never resulted in wetlanders' isolation. Indeed, wetlanders in all their guises were always members of larger social groups, which also contained ‘drylanders’. In fact, throughout most of the period, wetlanders and drylanders cannot be separated, as those who engaged with the Fens were actually dryland (or fen edge) people. Even in the Late Bronze Age/Early Iron Age, when whole communities may have identified as wetlanders, they related to ‘drylanders’ through trade, interaction, and possibly kinship. Thus, although we may speak of ‘wetlanders’, it is unlikely that such a category of people would have existed in the prehistoric past.

Given these indistinct and blurry boundaries between wetlanders and drylanders, the historic dichotomy between wild wetland ‘fen slodgers’ and civilised drylanders (cf. chapter 1) is unlikely to be as clear-cut as written sources make out. Still, the role and place of wetlanders did change significantly in the historic period. Although beyond the scope of this research, the migration of many ‘outsiders’ in the historic period and the changing attitudes to this landscape as dryland was becoming increasingly valued over the wetlands, possibly lead to a clearer (or at least more explicit) distinction between local wetlanders and outsider drylanders who did not know the landscape well. The latter were more numerous and generally more powerful, leading to the increasing marginalisation of wetlanders and, with the eventual drainage of the Fens, the loss of their wetland way of life.

Chapter 7. Synthesis and conclusion – From dichotomies to dynamics

7.1 Introduction

This thesis has addressed the artificial dichotomy between wetland and dryland landscapes and their inhabitants, which has long separated the sub-discipline of wetland Archaeology from mainstream Archaeology. It has been argued that we can bring wetland(er)s and dry-land(er)s closer together by considering wetland(er)s relation to dryland(er)s in more depth. To do so, this research has focused on human-environment interaction and its social outcomes. This has allowed us to reconstruct the role and place of the former East Anglian Fens and those engaging with this wetland within the wider region throughout the later prehistoric period.

The aim of this chapter is to summarise this thesis, highlight its key findings and reflect on their implications, both within the study region and beyond. The first section (7.2) will synthesise this thesis chapter by chapter. The second section (7.3) will contextualise the former Fens and those who engaged with this landscape by summarising the role of the former Fens and its people within the wider landscape through time. After this, several key findings will be highlighted, and their wider theoretical implications will be discussed, not only for our understanding of past life within and around the Fens, but also for (wetland) Archaeology more generally (section 7.4). Through this, it is hoped that this thesis has contributed to integrating wetland Archaeology into mainstream Archaeology (section 7.5).

7.2 Synthesis

As outlined in **chapter 1**, an over-emphasis on the environment and well-preserved material culture, a lack of theory, the absence of past people in many narratives and our modern preconceptions of wetland areas, mean that wetland landscapes, sites and communities are often studied separately from dryland ones. This has led to the isolation of wetland Archaeology from mainstream Archaeology. The wet/dryland(er) divide has long been recognised and several scholars have started to contextualise wetlands and study wetland people and their social lives in more depth. Unfortunately, however, despite clear connection between wetlanders and drylanders, the nature of their interaction remains somewhat unclear, because most examples are limited in scope and focus mostly on wetland(er)s, not the dry-land(er)s they are interacting with.

This thesis, building upon previous work, takes on the challenge of bringing wetland and dryland landscapes and their inhabitants closer together by examining how they related to each other and what their role and place was within the wider landscape. It has achieved this through a detailed analysis of human-environment interaction and its social implications. It explicitly focuses on people but acknowledges the role of the physical landscape in the construction of their identities and social relations as they interacted with different environments in their daily lives. In this way, both the differences between wetland and dryland landscapes and communities and the links between them could be studied.

The study area chosen for this research is the former East Anglian Fen wetland region and the drier areas around it. Developing from a dryland basin into a vast wetland during the period under consideration and well-studied, the former Fens provide an ideal case study. The review of previous research in the Fens and nearby drylands in **chapter 2** demonstrated that our understanding of how people used and interacted with different landscapes within the study area has changed significantly as the evidence base grew. Large-scale developer-funded projects have demonstrated the complexity of both the socio-cultural and physical landscape and the great local and micro-regional variability of the archaeological and environmental record.

Yet despite our considerable knowledge of past life in the study area, the Fens, like many other wetland areas, remain somewhat separated from nearby dryland areas. Whilst links between sites and communities in the Fens (or rather on the fen edge) and those further inland have been considered, most narratives remain rather general and simplistic, providing static descriptions of social organisation. These narratives do not consider the complexities and fluidity of past people's social identities, nor explain how these were constructed and maintained through people's interaction with each other, material culture and the physical landscape. As a result, the Fens and their inhabitants cannot be fully integrated in the wider landscape.

This thesis addresses these issues by examining the role of the later prehistoric East Anglian Fen wetland area and its inhabitants in relation to the dryland(er)s around it through a large-scale, multi-scalar comparison of human-environment interaction in wetlands, drylands and on the fen edge throughout the later prehistoric period (c. 4000 BC-100 AD). To study human-environment interaction, it focuses on food remains, which are closely linked to the physical environment that people inhabited, but also provide good insight into people's identities and relations, as many routine, daily activities would have revolved around plant and animals. Data on food remains from 145 published and unpublished sites in and around the former East Anglian Fens was compiled in a large, purpose-built database, introduced in **chapter 3**, which recorded the presence and absence of wild and domestic plants and animals and information about the local environment.

The food remains in (former) wetlands, drylands and the fen edge were compared throughout ten different periods (between the Neolithic and Iron Age) in relation to site distributions mapped onto a series of maps modelling environmental change in the Fens. The results of this comparison are described in **chapter 4**. It was demonstrated that real differences existed between the food remains recorded in the three environments despite differential preservation, and that subsistence practices changed significantly over time.

Chapter 5 sought to explain the patterns identified in chapter 4 by considering them in relation to the recorded site distributions, the character of the selected sites and wider socio-cultural developments in the study area. The resulting reconstruction of human-environment interaction through time and space demonstrates that the Fens and fen edge seem to come into and go out of focus over time, and that human interaction with various dryland areas also changed significantly through time in response to a combination of social and environmental factors. At the same time, it is clear that the three environments were linked, either directly or indirectly, through the people who engaged with them. Thus, developments in one environment were often closely linked to those in others.

Chapter 6 considers the links between the various landscapes in more depth by reconstructing the role and place of the wetland, fen edge and dryland landscapes within the wider socio-cultural landscape. Five key stages of human-wetland interaction were identified which demonstrate how the role of the Fens within the wider landscape changed over time as this wetland developed. The second half of chapter 6 considers the social outcomes, or the effects of this changing human-environment interaction on people's identities and social relations, to gain more insight into the role of the people who engaged with the former Fens. It discusses how different types of wetlander identities, some of them stronger and more explicit than others, were constructed at various levels (from individuals to whole communities) in different periods. However, these wetlander identities were often just one of many overlapping identities that people had. In some periods these identities may have affected people's relation with 'drylanders', but often, wetlander identities were held by dryland (or fen edge) people. Even in periods with potentially stronger and more explicit wet/drylander oppositions (e.g. the Late Bronze Age/Early Iron Age), 'wetlanders' were clearly closely connected to drylanders. Thus, by examining the role and place of the former Fens and the identities and relations of those who engaged with this environment throughout the later prehistoric period, the Fenland area and its people could be firmly placed within the wider socio-cultural landscape of the study region. The next section will summarise the main trends throughout the period under consideration, outlining the role and place of the former Fens and those engaging with this landscape in each of the five stages of human-wetland interaction.

7.3 Contextualising the later prehistoric Fens and their people

7.3.1 Stage 1: Occasional wetlanders visit the developing Fens

The Fens were only just starting to become wet in the Neolithic, and the wetlands probably did not play a very significant role yet. Still, the available evidence for the first stage of human-wetland interaction (which covers the Mesolithic/Early Neolithic to the Later Neolithic) suggest that people already interacted with the developing Fens, visiting it to extract wild resources and possibly to access seasonal grazing. The individuals who fished, hunted and gathered in the wetlands may have been recognised for these skills, but the occasional nature of these activities means that it is unlikely that this wetlander identity greatly affected people's role and relations within their communities or beyond.

At the community level it is possible that the groups who lived in the increasingly dynamic Fenland Basin landscape became attuned to a landscape that changed with the tides, their daily life slowly becoming different from the lifeways of those inhabiting more stable river valleys further inland. Yet given the fact that the Fens were only just starting to develop and people's activity in a range of different environments at this time, it is unlikely that people established strong links to particular places or environments in this period. Thus, Fenland Basin groups would probably not have identified as wetlanders in opposition to drylanders further inland. Although some places may have been significant, kinship relations and links to particular ancestors were probably of greater importance in the maintenance of identities and social relations. Unfortunately, we lack the true wetland sites necessary to test this and can therefore not consider the exact role of these potential wetlander communities.

In the Later Neolithic the increasingly wet Fens may have been abandoned, but issues of visibility prevent us from knowing this for sure. Wetlander identities are difficult to distinguish and it seems that those occupying drylands and riverside sites on the edge of the basin lived very similar pastoral lives. Communities may have become more closely connected, and feasting at monuments and other important locations may have been important in strengthening both intra and extra-communal social bonds. Given the similarities in lifestyle and the similar role that each of the landscapes seem to have played, it is unlikely that wetlander identities, which may still have existed on a personal level, affected social relations between Fenland Basin and dryland communities.

7.3.2 Stage 2: Fen edge enclaves with a Fenland focus

In the second stage of human-wetland interaction the Fens become recognisable as a distinct landscape and drylands and the fen edge were starting to play more defined roles in the overall landscape. However, it is likely that both landscapes were used by members of the same communities. People seem to be drawn to the Fens for (seasonal) grazing in the Late Neolithic/Early Bronze Age, and wild resources were probably exploited as well. Those involved in these pursuits may have derived part of their identity from these activities, but wetland interaction seems relatively limited and it is unlikely that members within the community would have identified as wetlanders and drylanders. Pastoralist and farming identities may have been stronger. People seem to return to the same locations on the fen (edge) in this period and this may have affected inter-community contact. Whereas the Later Neolithic may be characterised by strong inter-community bonds, Beaker communities may have been more inward looking, with a greater focus on the immediate community of which they were a part.

Wetland interaction becomes a lot more visible in the full Bronze Age, as the Fens expanded, and people's knowledge of this landscape increased. By the Earlier Bronze Age people seem to settle the ecotonal fen edge and communities seem to interact with the Fens on a regular basis, venturing out into the wetlands for grazing, hunting and fishing. Like in the Neolithic, the skill, knowledge and experience this required probably set those involved in these activities apart from others. Yet these wetlanders were part of the same community that used the fen edge and nearby drylands and they were probably involved in many other tasks taking place in these areas. Moreover, wild wetland resources were used relatively opportunistically. Thus, as before, wetlander identities were part of a broader set of overlapping identities and wetlanders' role within or beyond their communities was probably not very important. The intensive activity on the fen edge suggest that people became increasingly attached to particular places and communities may have become more close-knit. Although relations with other communities along the fen edge and presumably further inland must have been important, it is likely that these smaller scale intra-community relations became increasingly important.

By the Middle/Late Bronze Age, Earlier Bronze Age patterns seem to be consolidated and interest in the wetlands increases further. The Fens clearly play an important role within the wider study area. Offering opportunities not available in drylands, people engaged with this wetland in multiple ways, both practically and ritually. Yet new areas in drylands also started to be occupied and there is evidence for more inter-group contact and the emergence of new identities. Large field systems and the metalwork deposited at Flag Fen and elsewhere might suggest the emergence of higher ranked people in this period, but their presence is hard to identify in the settlement and burial record. These elite and other 'special' identities may have been relatively temporary, based on individual skills and experience. The same is probably true of wetland identities in this period. Although wetland interaction seems to have intensified and wetlander identities may have become stronger as a result, being a fisher or a hunter was one of several roles individuals may have had. Whilst it may have affected their relations with others within their community to some extent, the focus on domesticates means that wetlanders' role was not particularly significant.

At a larger, inter-community scale however, differences between fen edge and dryland communities, inhabiting and using rather different landscapes, may have started to appear in this period. Whilst both seem to have focussed mostly on domestic animals, drylanders seem to specialise in ovicaprids and arable agriculture may have played a greater role on the fen edge. People's interaction with the Fens may also have set them apart from dryland ovicaprid pastoralists. Thus, distinctions between wetland and dryland areas and those within them, slowly started to emerge. Fen edge communities and those further inland may have identified partly based on the environments they inhabited. It is unlikely however, that such 'environmental identities' were consciously articulated, or that the role of wetlanders was specifically recognised.

7.3.3 Stage 3: The first wetlanders settle the Fens

This probably changed in the third stage of human-wetland interaction, as wetland and dryland identities became stronger and more defined and could have started to affect social relations. The Late Bronze Age represents a major turning point in human-environment interaction and we see major shifts in the roles of and relations between the three environments and their inhabitants. The fen edge seems to be abandoned at the same time as a greater number and variety of sites appears in drylands and we see the first evidence of permanent settlement in the truly wet Fens alongside extraction sites, grazing grounds and ritual deposition. This suggests that some people turned their back on the wetlands and moved inland, becoming 'drylanders', whilst other still valued the Fens and chose a wetland way of life. Differences in settlement and lifestyle between these groups and those in drylands were probably consciously recognised. Moreover, in contrast to previous periods, when members of dryland or fen edge communities had entered the wetlands temporarily, whole communities now seem to have inhabited the wetlands permanently. Thus, whereas only individuals or sub-groups may have had wetland aspects to their personal identities before, whole communities may now have had a relatively explicit wetlander identity, which contrasted with that of drylanders.

However, despite these possible differences between wetlanders and drylanders, there are clear connections between them in this period. Although wetlanders relied on drylanders for some of their resources, they controlled access to the Fens' grazing grounds and other resources and ritual sites like Flag Fen. Moreover, wetlanders were probably able to control some of the large rivers draining into the Fens. These routeways gave access to various dry hinterlands, the sea and communities beyond the study area. Thus, wetlanders must have played an important role within the wider socio-cultural landscape and may have had some status within the wider region. Yet given this likely interaction between wetlanders and drylanders, it is unlikely that the wet/drylander distinction was the main one in this period, even if it was recognised. Instead, larger communities, including both wetlanders and drylanders may have started to develop.

7.3.4 Stage 4: Dryland and fen edge fowlers visit the Fens

This trend may have continued in the fourth stage of human-environment interaction (the Earlier Iron Age). The role of the Fens changed once more, as activity in the wetlands decreases and the focus seems to shift to drylands. The wetlander groups established in the previous period seem to have disappeared, but some interaction with the Fens continued. Individuals or small groups of people who inhabited the fen edge or drylands at the time, may have come to the Fens for the extraction of wetland resources on a regular basis and their knowledge and skill in hunting wild animals (and birds in particular) may have set them apart from others in their communities. Yet although the wetlands were not entirely ignored, wetland hunters are unlikely to have played a very important role in this period as drylands seem to have become the focus. Here we see big changes in the settlement record, which demonstrate regional trends and differences, but equally indicate that people came together at larger scales than before. Thus, there seems to have been a reworking of previous social relations as smaller, local Bronze Age groups disintegrated and the colonisation of new dryland areas, possibly characterised by a relatively mobile, pastoral way of life, led to increasing contacts between previously disparate communities (cf. Brudenell 2012).

7.3.5 Stage 5: Specialist wetlanders exploiting integrated wetlands

By the Middle/Late Iron Age, which marks the start of the fifth and final stage of human-wetland interaction, a mixed farming economy was established and the roles of various communities and the landscapes they inhabited seem to have become more defined and distinct. In line with a wider trend of intensification in production and exchange, the Fens came back into focus as dryland communities recolonised the Fens and fen edge. Wetlands exploitation seems to have become more intensive, targeted and specialised than in the previous Bronze Age. Whilst we cannot speak of 'full-time wetlanders', it is clear than some groups start to focus on the extraction of particular resources (e.g. salt or wetland animals), which could be traded with (parent) communities further inland. These wetlanders seem to have been households or a small 'task-force' within a larger wetland, fen edge or dryland community. They were probably recognised for their wetland-related knowledge and skills and these identities, being more specialised than before, may have become more pronounced and explicit. Yet whilst distinctions between such wetlanders and others who did not engage with this landscape may have become greater, these people were integrated members of larger communities, both locally and at a higher level, as regional social groups and territories, demarcated by river valleys, seem to become established. Wetlanders, fen edge and dryland people were connected through trade, but probably also through kinship, as the fen edge and wetlands seem to have been resettled by members of dryland communities in this period. Given these close bonds and wetlanders' role as suppliers of wetland resources (particularly birds) they played a fairly important role both within and beyond their respective communities. Thus, although the focus is mostly on drylands in this period, the wet Fens and those engaging with this landscape play a key role within the region, becoming a fully integrated part of the wider socio-cultural landscape.

By the Late Iron Age, this system, with distinct roles for different landscapes and the smaller communities inhabiting drylands, wetlands and he fen edge being part of a larger social group bound to territories that may have focussed on major rivers, is consolidated. Interaction with wetlands intensified and over the course of the Later Iron age and into the Roman period, it seems that individuals, sub-groups and possibly even entire communities became wetland specialists. As different parts of the wetlands now became more permanently settled and specialisation increased, true, 'full-time' wetlanders may have emerged again, their activities allowing their communities to trade with drylanders. Their wetland identity, though still only one of many other overlapping identities, may have been relatively strong. Given their contribution to inter-community trade, wetlanders may have had some standing within and possibly beyond their immediate community.

Yet attitudes towards the wetlands may have started to change in the Roman period, and differences between indigenous, local 'wetlanders' and 'Roman' immigrant outsiders may have emerged that would ultimately lead to the wet/drylanders dichotomy we know from historic sources. Although the above outline has clearly demonstrated that the boundaries between wetlanders and drylanders is often blurry and indistinct, drylands became increasingly more valued than wetlands and their wild resources, which means that those who chose for a wetland way of life started to become increasingly marginalised.

It is clear from the above that whilst the distinctions between the three environments and those inhabiting them became stronger over time, so too did the links between them. In the Neolithic it is difficult to see exactly how the developing Fens or any potential wetlanders related to drier areas and their inhabitants, but it is likely that smaller scale communities were part of a larger collective which met regularly at special places in the landscape (e.g. at large communal monuments). By the Earlier Bronze Age, dryland sites near the fen edge were presumably used by fen edge communities, and the newly established fen edge groups may have become relatively inward looking as they became tied to particular locales on the fen edge. By the Middle Bronze Age however, it seems that wider contacts became more important again. It is likely that river routes played an important role in connecting fen edge, riverine and inland communities, who may have exchanged resources. Whilst wetland and dryland landscapes and people may have been consciously and explicitly recognised for the first time in the Late Bronze Age, (trade) links and relations between them continued to be important. The Earlier Iron Age sees an apparent disruption as wetlands seem to be of less interest and Later Bronze Age wetlanders disappear. However, the links between the wet Fens, the fen edge and dryland areas and those inhabiting them was firmly re-established in the Middle/Late Iron Age, when dryland communities seem to have reoccupied the fen edge and exploited the Fens. Thus, despite clear distinctions between the physical landscape of the Fens and the lifeways and identities of those engaging with this landscape, the Fens and its people were fully integrated in the wider geographic and socio-cultural landscape.

7.4 Key findings and their wider implications

The above outline has demonstrated how a detailed, large-scale comparative study of human-environment interaction through time and space in and around the former Fens has helped to elucidate the role and place of this wetland area and those engaging with it in relation to the drier areas around it throughout the later prehistoric period. This section will highlight the key findings of this research in terms of our understanding of past life in the Fens, and discuss their wider implications for Fenland Archaeology, wetland Archaeology and Archaeology more generally.

7.4.1 Key findings

It became clear in section 2.4 that the potential of the Fenland's rich archaeological and environmental record is currently not fully exploited due to a number of reasons. Firstly, Fenland sites and those inhabiting them are often studied separately from those in drier areas around them. We know they are connected, but the nature of their relation is unclear. Secondly, the results of various developer-led projects are not very well integrated, resulting in a rather fragmented understanding of past life in the area. Thirdly, whilst social aspects of past life have been studied, many socials reconstructions are very general and relatively static. Finally, whilst the environmental sequence is well understood and its impact on past people in the area has been considered, the social outcomes of human-environment interaction have not been studied in-depth.

This thesis has addressed these various issues by considering the changing role and place of the Fens and its people within the wider socio-cultural landscape. This approach has provided a new perspective on the well-researched Fenland area and the lives of those within it, by demonstrating not only that people engaging with the Fens related to those in drier areas, but also explaining how. Moreover, it has moved beyond vague descriptions of wetlanders and drylanders by explicitly focussing on past people and considering their identities and relations in-depth. By studying this relation throughout the later prehistoric period, it was possible to see how the role of this wetland and its inhabitants changed through time. This resulted in a more integrative overview of the socio-cultural landscape in the study area, in which the former Fens and its people are related to nearby dryland areas throughout later prehistory.

7.4.2 Wider implications

The close link between the Fens and the surrounding drylands and the people inhabiting these areas have a number of implications for Fenland Archaeology, but also (wetland) Archaeology more generally. Firstly, these findings underline the importance of studying wetland(er)s in relation to nearby drier areas and people. This not only helps us to understand the developments in both areas better, it also helps to explain (rather than simply describe) the relation between those within these areas. Secondly, there is a clear need for a multi-scalar approach, which integrates local narratives at the regional level. Doing so helps overcome the current fragmentation resulting from developer-funded archaeology and allows us to understand and explain both smaller scale local variety and complexity and larger scale trends in more depth. Thirdly, we need to stop separating people and the environment and consider their interaction and its social outcomes. This not only helps us to understand the links between the different landscapes and their changing role through time, but also the connections between different people. Finally, by considering past people and their social lives in much more depth, we can 'people the past', and write more lively, nuanced and dynamic narratives of past life. Below these implications will be considered in more depth, by revisiting the wet/dryland(er) divide and the wider research themes outlined in chapter 1 (sections 1.2 and 1.7).

Wetland(er)-dryland(er) relations

The wet/dryland(er) divide has been addressed before (e.g. Van de Noort and O'Sullivan 2006, Menotti 2012), but the divide between the two remains in place due to the over-emphasis on wetlands and wetland people in many discussions (cf. section 1.3). Drylanders feature as the people with whom wetlanders interacted, but remain somewhat overlooked otherwise. Thus, whilst it is clear that wetlanders engaged with drylanders, *how* they related remains a little obscure.

To address this issue, this research has considered wetland and dryland landscapes and people *together*, in the same amount of depth, studying the (changing) nature of their role and relations. By doing so, it was possible to discuss important differences, whilst also demonstrating the clear links that existed between different landscapes through those inhabiting and using them. These links mean that we can only understand developments in one area fully if we consider what is going on elsewhere.

This is reflected in a few patterns that were recognised during the course of this research, most notably the apparent difference in the level of arable agriculture between fen edge and nearby dryland sites in the Early and Middle Bronze Age. It has been noted before that there seems to be an increase in arable agriculture in some areas on the Early Bronze Age fen edge (e.g. Evans 2016), but it is only when this pattern is compared to developments on dryland sites, where cereal presence remains relatively low until the Late Bronze Age, that the significance of this increase in cereals on the fen edge can be appreciated.

Thus, considering wetland(er)s and dryland(er)s together is important, not only in and around the prehistoric Fens, but also later, in the historic period, or even today. Whilst wetland and dryland people often seem starkly opposed and relations between these two groups may have been antagonistic (e.g. the riots that broke out during the drainage of the Fens), they clearly interact, because identities are defined in relation to others. Wetlanders like the historic fen slodgers, the Marsh Arabs, the Avatip people and Australia's Saltwater people (cf. section 1.4.1) can only exist in situations where they interact with drylanders. Thus, whilst we need to recognise the differences between wetland areas and people and nearby dryland(er)s, this should not stop us from considering how they may have related.

Integrating scales

The developer-funded focus on small scales and the resulting fragmentation of our records is an issue throughout the UK, preventing us from understanding wider trends. Yet studies at a regional or national level may overlook important local complexity and variation (cf. section 1.7.4). This research has demonstrated that we can gain more insight into both local developments and larger-scale, longer term trends by considering multiple scales together.

At a local level (e.g. Haddenham, Colne Fen) it has been noted that the Fens seem to be of greater interest in some periods than in others and the Late Bronze Age abandonment of the fen edge discussed in this thesis has equally been recognised as a wider trend (Evans and Hodder 2006b, Chowne et al. 2001, Webley and Hiller 2009, Brudenell 2012, Medlycottt 2011, Daniel 2009). Yet it is only by considering multiple sites and areas throughout time, as this research has done, that these local developments can be understood and explained as part of larger trends in the area.

This may be exemplified by the Must Farm settlement. Some consider this a unique and special site, rather than a 'normal' wetland settlement. When only looking at the site itself, this idea is clearly supported; nothing like this has ever been found. Yet by considering the larger scale and longer-term developments outlined above, it becomes clear that people started to interact with the wetlands in the Early Bronze Age and that these activities intensified in the Middle Bronze Age. And whilst the fen edge abandonment in the Late Bronze Age may have resulted in a move inland, the combined evidence for the wetland area in this period demonstrates that others decided to move in the opposite direction, further intensifying their interaction with the wetland as they started to inhabit this environment. Besides settlement (exemplified by Must Farm or on the Over ridges), we also see evidence for ritual activity, grazing, hunting, fishing and fowling. Thus, the settling of the Fens at this time could be seen as a culmination of people's continuously growing interest in and interaction with the Fens from the Early Bronze Age onwards. It is likely therefore that Must Farm, rather than being a unique oddity, is exemplary of a broader trend in the Fens. Thus, placing an individual site like Must Farm within its broader spatial and temporal context resulted in a better understanding of both larger-scale developments (i.e. Late Bronze Age intensification and the fen edge abandonment), and the site itself.

Human-environment relations

People and the environment are often placed at opposite ends of the interpretative spectrum, not only in wetland or Fenland Archaeology, but in mainstream Archaeology as well (cf. section 1.7.3). In reality however, people and the environment are closely linked. As people interact with different landscapes they give them meaning at the same time as the landscape shapes past people's identities. This is particularly clear in wetlands, where the dynamic nature of wetlands frequently results in rather distinct wetlander identities (cf. 1.4.1). Therefore, it is important to consider both people and the landscape, or human and environmental factors when we study past life.

This is demonstrated by the results of this thesis. The major environmental changes that transformed this landscape from a dryland basin into a vast wetland over the course of the later prehistoric period clearly affected how people interacted with the Fens. Yet rather than becoming ever more important, or conversely, ever more marginal, the Fens seem to come into and go out of focus over time because of how people chose to engage with this environment. Through these activities people accorded the Fens their meaning and role within the wider landscape. At the same time however, the landscape affected their lifestyles, identities and relations with drylanders, which in turn affected their position within wider society.

The intimate link between the physical environment and society, culture and nature, or people and the landscape as demonstrated in this research, means that these cannot and should not be separated. This is not only true in dynamic wetland landscapes, but elsewhere too. Different dryland landscapes (e.g. chalk vs claylands) will also have influenced past lifeways, identities and social relations. This is reflected in the Middle Bronze Age, when ovicaprid pastoralism seems to have focussed mostly on chalk downs (cf. Bradley 2007, 192). Thus, we need to consider the nature of the landscape or environments people engaged with on a daily basis when examining past social life, both within and beyond wetland Archaeology.

Integrating 'emic' and 'etic' approaches

Our modern worldview has played a major role in creating the artificial dichotomies discussed above (cf. chapter 1). These dichotomies limit our understanding of past life as they present a simplified version of a far more complex past reality. This is clearly visible in the way that the Fens and other wetlands have been approached (cf. section 1.2). Both wetland landscapes and the people within these have been structurally opposed throughout much of the historic period and even today. Of course, our own contemporary context will always inform our understanding of the past to some extent, but we can move beyond such limiting dichotomies by explicitly recognising our modern biases and becoming more sensitive to past people's possible perceptions and experiences (cf. Van de Noort and O'Sullivan 2006, Amkreutz 2013, section 1.7.1). By doing so, this research has provided a more nuanced and complex image of past wetland landscapes and people.

The results of the analysis demonstrate that differences between wetland and dryland landscapes may have been recognised at various points in time, but it is unlikely that these were articulated as opposing dichotomies, as they are today. Instead the variety of different activities taking place in different parts of the Fenland landscape and various dryland areas throughout the period suggest that a range of landscape types, some more wet than others, and all offering different opportunities, was recognised (cf. Van de Noort and O'Sullivan 2006).

It is equally unlikely that the distinction between wetland and dryland people that we often make was explicitly recognised for most of the period under consideration. Instead, a range of different wetlander and drylander identities, based on a variety of human-environment interactions, existed. In the Middle/Late Iron Age for instance, saltmakers would have differed considerably from those cutting peat or those hunting, fishing and fowling. Amongst drylanders, pastoralist herders differed from farmers growing crops. Whilst these various groups share an overall wet or dryland identity it is unlikely that this was explicitly articulated as these identities frequently were just one of many overlapping personal identities.

Whilst the above demonstrates the importance of considering past perceptions in our study of the past, it is only through using a long-term 'etic' overview, considering the data 'from the outside', that changes in past perceptions, identities and relations can be traced. Combining a typical archaeological long-term approach with a more explicit focus on past people's perspective, provides more detailed and nuanced insight into the complexities of past life and helps us overcome the wet/dryland divide.

Peopling the past

Many reconstructions of past social life in the study area, and indeed more generally (cf. section 1.7.2), are rather general and simplistic. They describe identities, relations and social organisation as given and static and frequently focus on one social scale only (e.g. that of the local community). As a result, people, whilst implicitly present, are strangely absent in most narratives, and the nature of the relation between those within the former Fens and 'drylanders' around this region remains unclear.

This research has addressed these issues by demonstrating the fluid, multifaceted and dynamic nature of past identities and social relations. Studying people's changing interaction with the environment and the impact this had on their identities and the nature of their relations demonstrated how a range of wetlander identities was constructed at various points in time, which played out at different social levels and came to the fore in various contexts. Often these identities were just one of several overlapping identities which did not set people apart from 'drylanders' whether within their own community or beyond. In other periods, wetlander identities may have been stronger and more explicit, affecting the relations between individuals and communities at local, regional and inter-regional level. Later Iron Age specialised bird hunters for instance, enabled their communities to participate in regional trade and may therefore have had a certain standing within their communities. Late Bronze Age wetland communities, controlling access to the Fens and trade routes, may have had some standing within the wider region. Thus, by explaining (rather than only describing) the nature of relations between wetlanders and drylanders based on their identities, the changing role and place of wetlanders within the wider landscape could be reconstructed, helping us to bridge wet/dryland(er) divide.

The more detailed, complex and dynamic picture of past life sketched in this research also puts past people centre stage. Doing so helps us to write a more lively and interesting social narrative of past life in the study region and provides generic past people with an identity, which brings us closer to them. By 'peopling the past' in this way, it becomes easier for modern people to relate to and connect with those in the past, which may make it easier to share our stories about the past with a broader audience.

From dichotomies to dynamics

In summary, the results of this research are not only relevant within Fenland or wetland Archaeology, but also in mainstream Archaeology. They have demonstrated that we need to break through various dichotomies that are implicitly present in much of wetland and indeed mainstream/dryland Archaeology. These dichotomies, between wetland(er)s and dryland(er)s, nature and culture, people and the physical environment, us and them etc., are the result of our modern, western worldview. Whilst we may not always notice this, they greatly influence our work, from the questions we ask to our methods and eventually our interpretations (cf. chapter 1). They tend to result in a simplified and 'organised' version of a far more complex and 'messy' reality, which severely limits our understanding of the past and leads to the apparent loss of past people in our narratives, making it difficult to share our findings with a non-specialised audience.

This thesis has attempted to move beyond these binary dichotomies, demonstrating that by studying the intimate link between people and the environment in wetlands and drylands from the perspective of past people at multiple, integrated spatial and temporal scales, we can recognise important differences in the physical landscape and the influence of environmental factors, without ignoring social issues and people. Through their interaction they impacted and shaped each other, and both played a key role in past socio-cultural developments. It became clear that past people probably did not recognise the wet/dryland opposition, instead interacting with a spectrum of landscapes, some more wet than others. And whereas we tend to separate wetlanders and drylanders based on the formation of distinct wetlander identities, it seems wetlander identities were in fact frequently held by drylanders and probably not explicitly articulated. Even when they were distinct entities, these groups were closely linked, either through social bonds, or trade and interaction. By explicitly focussing on past people and their social lives, we can write more dynamic and lively accounts of past life and get closer to these people. Whilst they are clearly different from us in many ways, it also allows us to see in what ways we are similar (e.g. they had as complex a social network, and as many dynamic and overlapping identities as we do), helping us to create connections between us and them.

7.5 Integrating wetland Archaeology

The artificial divide between wet/dryland(er)s addressed in this thesis has led to the isolation of the sub-discipline of wetland Archaeology in the UK. Whilst part of mainstream Archaeology, few wetland studies use (social) theories more common in mainstream Archaeology. This means that the results of wetland Archaeology often do not make much impact within the wider discipline. This is regrettable, as the often rich records in wetlands provide detailed insights into past life. They make good 'testing grounds' for many theoretical ideas, including the close link between past people's social life and the landscapes they inhabited.

The results of this research clearly demonstrate the value of crossing the divide between wetland and mainstream Archaeology by applying social theories more common in dryland Archaeology to the rich record of a well-researched wetland area. It has demonstrated the active role of different physical landscapes or environments in past social life and the importance of integrating multiple spatial and temporal scales. In contrast to many social studies in mainstream Archaeology which focus on the construction of individual identities, it has considered how personal identities may have affected people's relations or social organisation at larger social scales (e.g. at intra and inter-community level). This resulted in a more complex and messy, but equally more realistic picture of past life.

Besides the more theoretical implications outlined above, there are several methodological implications which may be of interest beyond wetland Archaeology. It has become clear for instance, that differences between wetland and dryland records should not be used as an excuse to avoid comparing them. Instead, we need to evaluate the impact of various potential biases on our records and interpretations (cf. appendix 4). Moreover, this research has shown that we can and should use environmental remains (including plant and animal remains) to study social aspects of past life, as they are closely related to daily life (cf. section 1.4.2). Finally, this study has demonstrated that a relatively simple presence/absence-based analysis can deliver significant results if enough data is considered. This is of considerable interest given the amount of archaeological data generated by developer-funded work.

In summary then, the results of this research have not only improved our understanding of past life within the study region, they also have wider implications, both for wetland Archaeology and mainstream Archaeology more generally. By undermining a number of problematic artificial dichotomies which influence our approach to the past, not only in wetland Archaeology, but also in the wider discipline, it is hoped that this research has contributed to the reintegration of wetland Archaeology into mainstream Archaeology.

Epilogue

She stared across the vast expanse of water and reed, which was reaching as far as the eye could see. She'd never seen such a big sky. It was dark and grey, and a cold wind was blowing across the water, making her shiver despite the thick woollen cloak she was wearing. She felt as if she had come to the edge of the world, and in some ways, she had. Never before had she travelled this far away from her village, located many miles upriver in a lush valley near a river bend. "Oh, how she'd miss it…" She had come with her family to the Waterland's edge as she was to be married to the son of one of her mother's relations. They *were part of the same tribe, connected to everyone else who lived and moved along the great river, which originated far inland, flowing through miles and miles of countryside before entering this vast wetland on the coast.*

She had been apprehensive about coming here, in contrast to her mother, who had been very happy for an excuse to visit her family on the Waterland's edge. Her mother had grown up here, before moving inland to marry. Her mother's younger sister, in whose house they were now staying, on the other hand, had stayed behind, marrying a local man. Their village was located at the edge of the wetlands, almost in it. Once, her aunt had told her, many generations ago, villages were built in *the water. She'd looked incredulous: "What? Why?!" Her aunt had laughed. "You don't like the water, do you?" she'd asked. "No…" she had admitted. She didn't mind the river; she was used to that, but the vast open water she was staring at now, with its jet-black mirroring surface, was a different thing altogether. It provided access to the other world, inhabited by spirits and ancestors. Priests and priestesses would enter this wetland to communicate with them, offering sacrifices and asking for the spirits' blessing, but most people she knew would not enter it unless they'd really have to. She'd noticed even her father's reluctance when they all went out last week to perform the customary wedding sacrifice.*

She'd also noticed, however, that the people in her aunt's village (soon to be her *people) were not afraid to go out into the Waterland. Now, in winter, they harvested reed and hunted beaver, otter and many birds. Ducks, geese, swans and a range of smaller ones she'd never seen or tasted. In spring and summer, her mother said, some would take their animals to what she called the saltmarshes, located further north, where there was good grazing. "To fatten the young rams, you'll taste them next summer!" her aunt had added. Whilst here, they also traded some of their pelts, animals and grain for salt, won by people from another tribe, who apparently lived in these saltmarshes throughout the summer. Some of this salt made its way to her village where they used it to cure their meat. She wondered what those saltmarshes would be like. "Must be better than this place…", she thought miserably. Her aunt, having noticed her aversion to the Waterland, had told her not to worry too much. "In summer it all looks and feels different," she'd said smiling, "Much more colourful, much warmer and nicer, you'll see!" "Well," she'd added, "apart from the mosquitos of course…!" Her face must have betrayed her feelings, for her aunt chuckled and said: "Don't you worry love, give us a year or two and you'll be a proper Waterlander, just like your future husband, your mum and I!"*

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