A reanalysis of wetland object deposition in Iron Age Wales and Scotland

By

Tiffany Lorraine Treadway
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Cardiff University

Archaeology Department
School of History, Archaeology, and Religion
Cardiff University, Wales, United Kingdom

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In loving memory of my grandfather, Robert D. Anderson.

Abstract

The study of prehistoric deposition is extensive. Nevertheless, while terrestrial deposition has been thoroughly investigated, wetland studies have focused intensely on mortuary traditions (i.e. bog burials) (e.g. Cowie et al. 2011; Giles 2020a; Stevens and Chapman 2020; Van der Sanden 1995). Object deposition research has long held a hyper-focus on metal pieces at the cost to 'the missing majority' (Hurcombe 2014), creating a biased interpretation of prehistoric wetland deposition traditions. As a result, holistic analyses of cross-regional trends for wetland object deposition for the British Iron Age has not been attempted. The project's overarching aim was to observe, analyse, and interpret wetland depositional practices for Iron Age Wales and Scotland, based on the object and site records acquired. The project collected object records from museums, online databases, heritage trusts, and archaeological units. Variables such as environment, tradition assemblage, object type, material, manufacture periods and discovery dates are evaluated for their commonality. The project's objective was to identify trends and patterns in the data to provide new or confirm pre-existing object depositional traditions.

Wetland deposition practices allow for the study of socio-cultural traditions, communal identity, and social values due to the high level of preservation through anaerobic conditions. Regional traditions were observed through depositional practices (i.e. multi- or single-period hoard, pairs, and singular deposits), material preference (i.e. metal, organic fibres, wood), and common object types.

The result of such analyses revealed Iron Age wetland deposition practices served as a reaffirmation of social identity, tradition, and cultural mnemonic. Depositional practices served both functionalist and traditionalist purposes, which is unsurprising as in prehistory, these roles tend to coincide. In the case of wetland deposition, we can surmise that the tradition intertwined these theoretical roles whereby collective memory benefited both the group and the individuals who participated, even marginally.

Chapter 1 – Introduction

Prehistoric wetland deposition is widely discussed in archaeological theory, but it is primarily subjected to isolated site case studies. A holistic analysis of wetland deposition restricted to the prehistoric period, is essential to understanding cultural practice and evolution of traditions. Therefore, this project aims to perform a holistic evaluation of wetland object deposition for Iron Age Wales and Scotland. It is worth noting that, for this study, only objects found in wetland locations, not archaeologically associated with settlement or production sites, were considered for observation.

The concept of 'separation' or 'isolation' is a modern construct used to improve understandings of depositional activity that is not related to daily occupation. Preceding arguments have made fundamental and valid contributions to the debate. However, a holistic approach is now required to interpret statistical trends sourced from big data sets for wetland object deposition to propose communal and regional traditions.

In previous studies, artefacts discovered in wetlands were often attributed to 'votive offerings,' 'sacrifice' or 'theological ritual' (e.g. Aldhouse-Green 2001; Aufderheide 2003: 178; Bradley 1990, 2017; Fox 1946; Hedeager 1992: 162; Kelly 2006; Randsborg 1995; Van de Noort and O'Sullivan 2006; Van der Sanden et al. 2013; Wells 2007). Archaeologically, it has been widely accepted that wetlands are important locations for prehistoric deposition occurring throughout north-western Europe and parts of the Mediterranean. Objects reported from wetland contexts are often broadly classified as votive or sacrificial, with an overall lack of clarity as to why certain deposits are considered the product of ritual.

Advancements over the last fifty years or so have been made in archaeological methods and interpretative frameworks with a shift in academic archaeology in favour of big data to determine patterns of prehistoric behaviour (Cooper and Green 2017; Gattiglia 2015; Kintigh 2006; Snow et al. 2006). In this vein, Kintigh (2006: 567) states, 'For archaeology to achieve its potential to provide long-term, scientific understandings of human history, there is a pressing need for an archaeological information infrastructure that will allow us to archive, access, integrate, and mine disparate data sets.' Museum and digital heritage catalogues provide a continual expansion of records for artefact finds. However, as inclusive as many of the digital heritage online catalogues aim to be, they do not always record the broad range of variables that are necessary for holistic archaeological analyses of this type.

Likewise, while it is and remains logical to presume similar practices occurring cross regionally would denote analogous practice, minute to major differences in the material, object type, whole or fragmented, and location all characterise regional customs. Therefore, archaeologists should not assume that all similar actions are performed with the same incentive. These types of practices, however, do tend to have similar outcomes, such as a developed common social identity through a shared experience, or creation of an evolved or adaptive mnemonic to retain collective memory. Consequently, the collection of Iron Age artefact records reported from Wales and Scotland, based on wetland landscape type and period, are advantageous for the development of prehistoric social relation theory.

Even with these two parameters (i.e. Iron Age and wetlands), there are limitations as to what can be achieved when applied to a prehistoric environment. The mass collection of records from both museums and online databases (e.g. by Coflein, Royal Commission, Canmore, and the Portable Antiquities Scheme) allowed for the accumulation of data to be housed in a central source for the recalibration of raw information into different specified research needs (Brindle 2013; Cooper and Green 2017). Mass collection of object data placed within specific contexts, such as wetland environments, allowed for patterns and trends to become more recognisable. However, these trends may be the result of modern collection methods, as opposed to prehistoric activity. Nonetheless, it is only when these trends are analysed in such a manner that themes of regionality, distribution of materials, treatment, and context become more discernible.

The project analysed various depositional practices within wetland contexts, such as hoards and single object placements. The data recorded accounts for the wide breadth of variables (Table 1.1) that highlight communal and regional differences and similarities for both Wales and Scotland. Settlement activity and production sites were noted but not included in the analyses, as this study focuses solely on depositional landscapes that are separate from domestic spaces. This separation is not always clear in some instances, but efforts were made to clarify distinctions of space and land partition. Accordingly, the project takes the position that regional wetland depositional performances can only be observed after a holistic analysis is performed.[1]

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[1] Ritual in this context, a behaviour that is habitual with any range of intention, not necessarily connected to a theological belief in perception of modern thought. Ritual in previous arguments referenced, however, do use

Object Name Object Category (Detailed to Broad Identification or Utility) Date (C14 or Style) Period (e.g. Early, Middle, Late, Later Iron Age) Place of Discovery (Parish and County) GIS Coordinates Wetland Environment Type Degree of Wetland Present Degree of Confidence in Prehistoric Environment Type Material (Primary, Non-Primary)	Condition Percentage of Completeness Whole, Bent, Broken/Fractured, Repaired, Damaged Description and Notes Dimensions and Weight Decoration Present Included in a Hoard Museum Curation Date of Discovery How the Object was Acquired Source of Information Photo

Table 1.1. Categorical headings used to organise object record data in the order documented. The description of these categories is expanded in Appendix 2.

1.1 Aims and Objectives

The project's overarching aim is to observe, analyse, and interpret wetland object depositional practices for Iron Age Wales and Scotland based on the object and site records acquired. Only objects were considered for the study due to the extensive research of the deposition of human remains. Bog body research has been thoroughly investigated by Stevens and Chapman (2019) for England, Davis (2018) for Wales, Cowie et al. (2011) for Scotland, the Bog Body Research Project at the National Museum of Ireland for Ireland, and Giles (2020a) for the whole of Britain. There are gaps in the knowledge and a lack of systematic recovery in faunal and object deposition research. Faunal remains have yet to be studied in isolation because it is usually noted along with human or object deposition but often dismissed as accidental or natural deaths; however, this is not the focus of this research. Therefore, future research is needed to expand on this area of deposition in wetland locations.

The project collected object records from museums, online databases, heritage trusts, and archaeological units. A holistic approach, such as the one proposed here, has yet to be accomplished for prehistoric depositional studies in Britain. However, there are limitations to the information provided in certain records, which have created an unbalanced account of pieces dating to the Iron Age.

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the term to mean continual actions with a possible connection to deity worship. Theories to be challenged are most often contested from ethnographic accounts or from the Romanticism period whereby the people are associated with behaviours or intentions that are false.

Several objectives developed within the scope of this project. The first was to catalogue all Iron Age wetland objects recorded in museum collections, digital archives, and archaeological unit records. This process was ambitious because museums may or may not have been able to help due to: COVID 19 restrictions, a lack of funding resulting in staff shortages or an inability to digitise archives, time schedules, and backlogs. Additionally, not all objects were or could be dated and often lack an in-depth description of environmental context. These limitations created issues during analysis, as many of the data entries only contained a generic ‘prehistoric’ label or had an incorrect period assigned. Descriptions of a ‘wet’ environment, or no mention of the context, did provide a noticeable gap in knowledge. As a result, objects with broad categorisation or environmental descriptions have gone under the radar when considering a wetland environment. Comparison of the prehistoric and modern survival of wetlands was conducted via GIS, along with environmental studies of the area and farming accounts of large-scale drainage operations in certain locations.

The objective was to identify trends and patterns in the data that could provide new or confirm pre-existing depositional traditions. The analyses reviewed local and external influences on the typology, materials and resources, landscape, and quantity along with quality. Unbiased patterns of depositional behaviour were limiting due to pre-existing biases, such as: varying regional collection methods, the extent of the archaeological investigation after objects are reported, the lack of understanding artefact variance and provenience, or that certain materials survive better in comparison to others – all directly impact the patterns presented in the data collected.

The second objective was to highlight existing gaps within the data and address why this has occurred. Perhaps in identifying these gaps, archaeologists can begin to make efforts to rectify information missing from existing records and develop a standard for prehistoric archival collections. Theories of ritual, deposition, and socio-cultural advantages of performing wetland deposition were also scrutinised for their pertinence in comparison to the collected statistical evidence.

1.2 Thesis Format

The project was divided into two parts. The first portion of the thesis focuses on the theory and methodology of the project. The second portion focuses on sub-regional case studies, holistic patterns, and discussion of statistical results.

Part 1 of the thesis includes chapters one to six. As this chapter introduces the project and its aims and objectives, the subsequent chapters proceed as follows. Chapter two reviews methods, limitations, and procedures of the project. Chapter three provides an evaluation of digital heritage schemes and services. This chapter assesses these digital platforms' benefits and disadvantages to prehistoric holistic studies. Chapter four identifies wetland environments noted in Britain, with those applicable specifically in Wales and Scotland. This chapter will review definitions, physical parameters, and characteristics of wetland landscapes to establish wetland guidelines which will be archaeologically comprehensive for future use. Chapter five reviews the history of wetland archaeology in Britain in conjunction with depositional theory and archive methodology. While certain events that sponsored the advancement of wetland archaeological study occurred outside of Britain, only those that directly influenced British archaeology will be discussed in the chapter. Chapter six discusses prehistoric tradition and ritual theory and how certain hypotheses apply for wetland depositional practices.

Part 2 of the thesis includes chapters seven to twelve. Chapter seven provides a discussion about observed wetland deposition traditions and provides exemplary case studies of practice. Chapters eight and nine cover sub-regional analyses of deposition practice, reviewing common environments, depositional traditions, object and material types, dates of typological-chronological sequence and re-discovery. These chapters conclude with summaries of why these finds may or may not be significant within the framework of research. Chapter ten consists of cross-regional comparison of common trends for both Wales and Scotland. Chapter eleven provides a discussion of research finds in addition to theoretical discussions about ritual and deposition along with conclusions drawn from the data reviewed. Lastly, Chapter twelve provides an overall conclusion of the project's results and interpretation of wetland depositional behaviour.

Chapter 2 – Methodology and Procedures

The study of wetland deposition is complicated when we consider the multifaceted components of research required to observe, analyse, and interpret these Iron Age traditions. This chapter reviews the methods and materials used throughout the project and justifies actions taken or discounted during analyses. These methods and procedures include but are not limited to the scope of research questions, defining the study area, accessing the archaeological material, considering the limitations of the project, and analysis. Furthermore, this chapter will discuss the different components and subjects of the project in phases.

As wetlands have been primarily portrayed as periphery locations, this research focuses instead on the regional and sub-regional relationships with wetlands, and their significance for the local communities outside of sustainable resources. Precautions were taken after the assessment for inherent biases, and a methodology was developed accordingly.

2.1 Establishing Research Questions

The research questions that were developed provided a comprehensive parameter for the project. These questions revolved around four main themes:

- What role did wetland landscapes have in depositional practices?

    This theme examines the purpose of wetland depositional practices and the relationship of those who actively participated with the landscape. Furthermore, these relationships between performance, objects, participation, and landscape are considered for its cognitive functions in fortifying collective memory.

- What trends can be identified for depositional practices in wetland areas?

    This research question explores if there are patterns of depositional practice reported from wetland areas. These trends can range from popular object types, deposit assemblage configuration (i.e. hoard, single deposit), material composition, and landscape preference.

- What are the regional and sub-regional differences or similarities in depositional practices?

    Differences in depositional practice both cross-regionally and within individual communities are expected. However, because wetland deposition does share common aspects of practice, this portion of the research will identify cultural traditions from communal variation.

- What do these practices reflect about local communities and shared cultural traditions regionally?

  What information do wetland depositional practices provide about those who deposited the objects and how? Furthermore, how does wetland deposition distinguish itself as a cultural tradition in Wales and Scotland?

2.2 Literature Review

The literature review critically assessed preceding arguments about deposition and British prehistoric ritual, in addition to how assemblages and depositional context have been traditionally interpreted. From this review, heterogenous terminology and issues with identification of wetland environments became evident. Therefore, an additional chapter was dedicated to the discussion and identification of British wetlands documented in the archaeological reports.

2.3 Defining the Study Area

The study observed Iron Age wetland deposition practice in Scotland and Wales. The research did not extend to England for two main reasons. First, the initial review of the materials reported from wetlands revealed the high volume of objects reported from England alone. As a result, a decision was made to either study England in isolation or to compare two regions. Second, the amount of material reported from Wales was proportionate to that from Scotland. This led to the conclusion that case studies from Wales and Scotland presented the better choice for comparison because, while a large landmass separates the regions, historically they show evidence of similar prehistoric practices. Ultimately, time became a significant factor in determining the quantity of material to be reviewed. Reviewing collections, gaining accessibility, extracting records, and then varying literary reviews of the desired wetland sites proved to be restricting.

For this study, Scotland and Wales were divided into sub-regions to observe archaeological patterns or variations further. Considerations for sub-regional allocations included settlement activity, typological groupings, and deposition traditions. Scotland, identified as 'Study Zone One', was divided into five regions based on Hunter's (2007) sub-regional allocation of production. These regions are Highlands and Islands, Northeast, Central, Southeast, and Southwest (Figure 2.1). Hunter's (2007) division was considered the best representation of archaeological activity in Scotland, as the typological illustrations for variety correspond with sub-regional depositional practices.

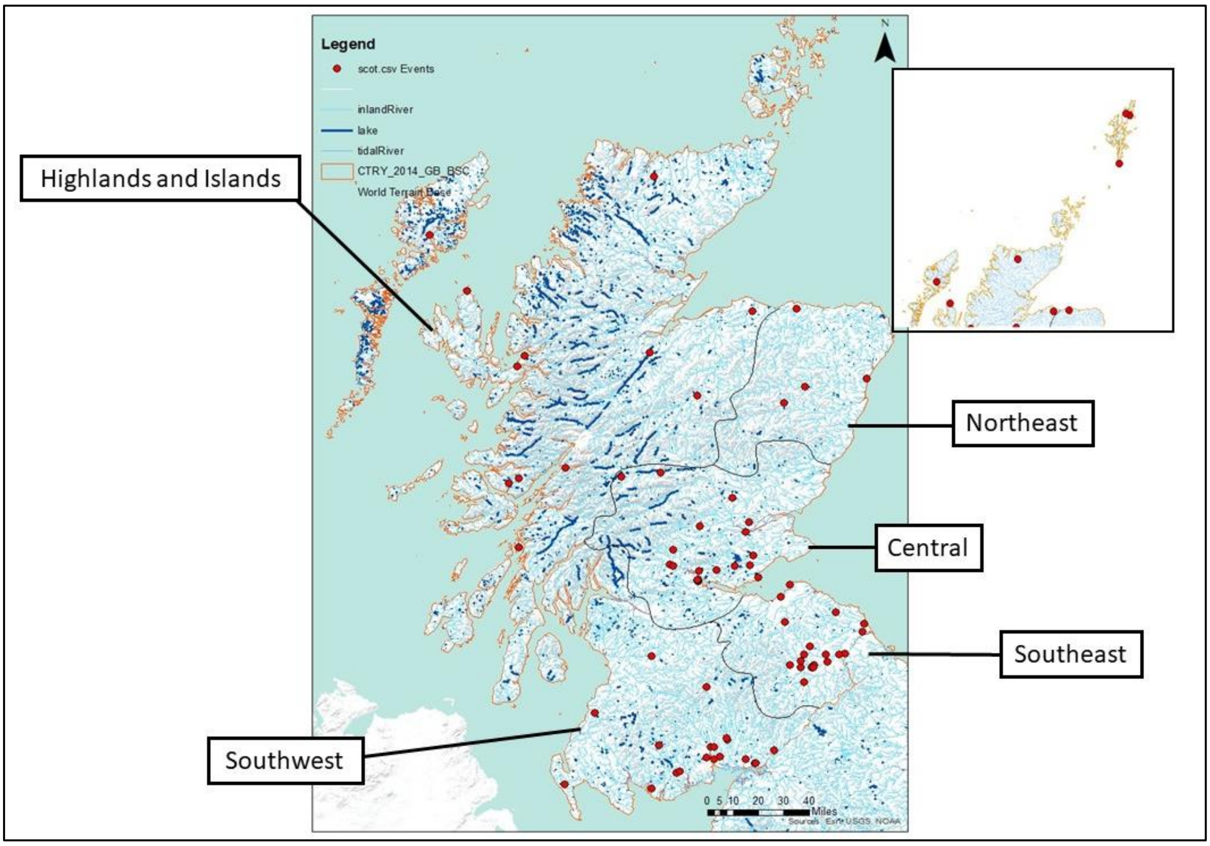

Figure 2.1. Map of Scotland with labels of the sub-regional division.

Wales, for this project, was allocated slightly differently than Hunter's Scotland, which is dependent on typological representation. Originally, Hawkes and Hawkes' (1948) division allocated five regions based on observed archaeological activity. These divisions were Monmouth and South Wales, the Black Mountains, Pembrokeshire, Central Wales, North Wales and Anglesey. However, for this project, the allocation of sub-regions in Wales was determined by Iron Age depositional activity. Whilst the eastern portion of Wales is traditionally identified as the Marches, it was divided into north and south due to the noticeable difference in wetland deposition practice. As a result, the Welsh Archaeological Trust allocations fit well for the division of wetland deposition activity, whose allotments also follow the region's topography. These regions are North West (Gwynedd Archaeological Trust), Southwest (Dyfed Archaeological Trust), Northeast (Clwyd-Powys Archaeological Trust), and Southeast (Glamorgan-Gwent Archaeological Trust) (Figure 2.2).

However, due to differing levels of urban excavation, industrial and survey contracts, and biases in preferred research, observed archaeological activity in Wales is not evenly distributed in some areas.

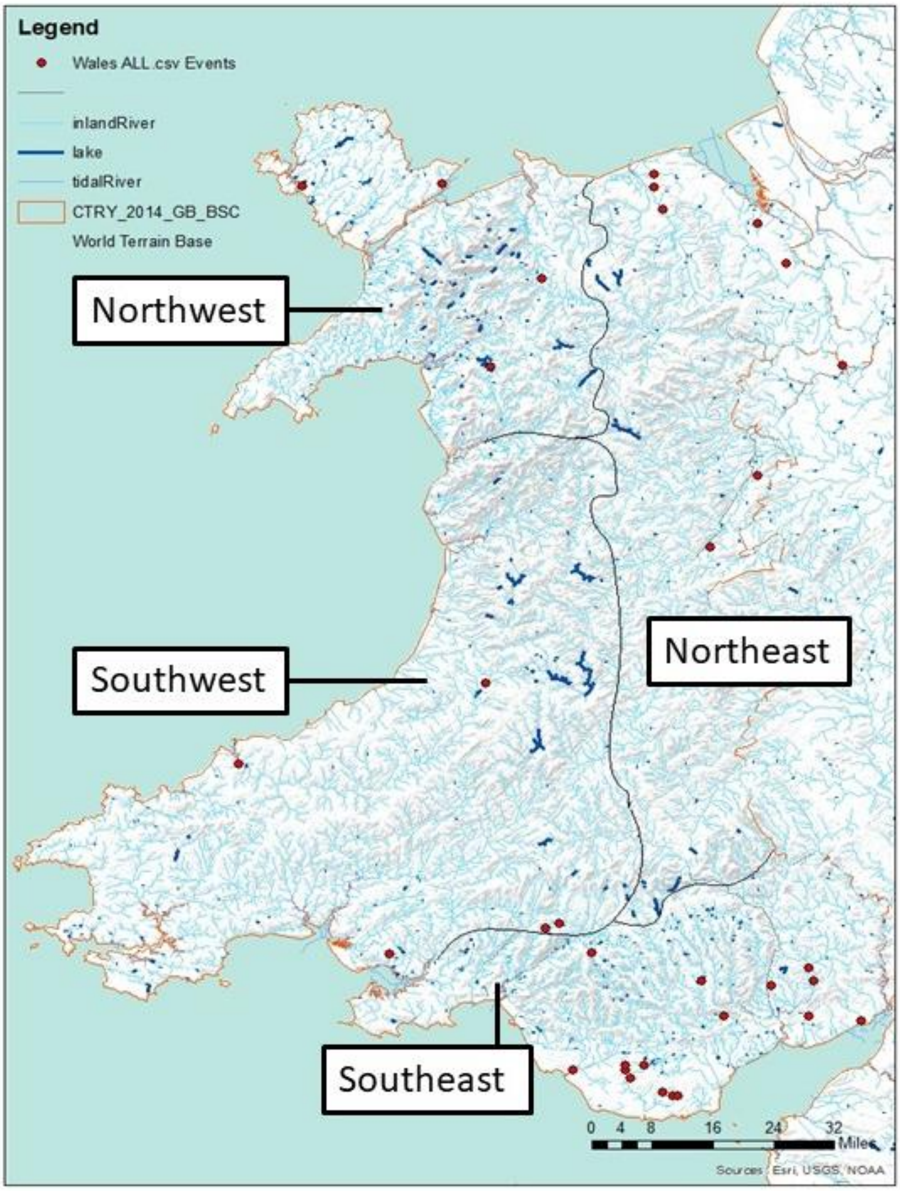

Figure 2.2. Map of Wales with labels of the sub-regional division.

2.3.1 Environmental Parameters

LandIS and Scotland's Soils databases were used to confirm wetland environments and evidence of hydric sediments utilising the coordinates provided from museum object record finds. Utilising the sites' coordinates allowed a little over 15,000 site records dating to the British Iron Age environmental contexts to be confirmed. Notes of the context at the time of discovery have been compared to current wetland landscapes, historical ecological studies, and Google Maps to sort the local water sources in the immediate area. Hydric soils were observed because of their potential to expose archaic wetland environments that have been drained or managed by farmers and industry. Additional research into the exact location concerning a water source and town records of flood zones further supported this hypothesis. This correlation is briefly discussed in Chapter four and provided an in-depth review in chapters eight through ten.

2.3.2 Excluded Sites and Object Types

The thesis aims to observe wetland deposition activity in locations which were separate to or not associated with settlement and production archaeological sites. This isolation is recognised as a modern construct to better understand wetland deposition traditions, not as a reflection of rigid partitions of space. There is evidence along the Severn Estuary in Wales that marsh-like wetlands served to support husbandry grazing grounds (Bell and Nueman 1997; Britton et al. 2008). However, the deposits reported from the Welsh portion of the Severn are interpreted 'separate' from mundane or habitual activity. This process is further clarified in sub-sections 2.4 and 2.5.

Specific sites were not included for analysis based on expert recommendations. One such site was Culbin Sands. Dr Hunter, the Curator at the National Museum of Scotland, advised that there was not enough evidence to support that certain objects were deposited in the intertidal zone versus the dunes because these were too far from the coast, even with higher tides. A similar site at Luce Sands has been suggested to be a possible production site according to Professor Sharples, and was therefore excluded.

Caves were also not included in the study. Many cave sites tend to be problematic with dating and distinguishing habitation from deposition behaviours. Other problems, for example, include contemporary flooding, like the Sculptures Cave in Scotland, making re-evaluation of these types of site too difficult to assess at this current juncture with the limited resources allocated.

2.4 Accessing and Processing the Material

The collection of object records was performed in three stages: contact and outreach, collection, and record extraction and implementation. For archaeological sites and materials to be eligible for the project, they needed to be of Iron Age date and from a wetland context.

2.4.1 Contact

A list of potential Iron Age museum collections was sourced from Historic UK (historic-uk.com). An excel list was created, organising museums and heritage trusts by their known or potential curation of Iron Age pieces. Museums were contacted even if there was no apparent connection with British prehistoric material, but still contained a diverse and international collection. Of the thousands of Iron Age sites catalogued in museum collections, this method of collection resulted in around 600 to 700 potential Iron Age wetland findspots prior to distinguishing between settlement, production, and deposition site.

From this list, 193 museums and heritage trusts were eligible throughout the United Kingdom. Museums which did not have an open-access online catalogue were emailed individually. If the first two emails sent were ineffective or unanswered within three months, the museums were contacted by telephone. Museums were first asked if they held an Iron Age collection, and, if so, the findspot context was questioned. This request usually resulted in only catalogued Iron Age sites and materials; the environmental context of the findspots was mostly unknown. As a result of the unknown context of specific findspots, further research into the site environments was performed after receiving collection records. An excel sheet was compiled based on museum responses (Appendix 1, 10). The list was organised into ‘Yes’, ‘No’, and ‘Maybe’ categories if the museum held Iron Age collections sourced from wetlands. Those who remain on the ‘maybe’ list either did not respond after efforts to contact the organisation or were unable to fulfil the request for various reasons (Appendix 10). Of those contacted, only 22 museums had objects of Iron Age date and from a potential wetland context (Appendix 1).

2.4.2 Collection and Museum Engagement

Twenty-two museums confirmed Iron Age collections with objects sourced from wetland environments, which met the study's parameters. The collections were divided by region and organised into Study Zone 1—Scotland—and Study Zone 2—Wales (Appendices 6, 7, 8, and 9). These excel sheets were further organised using tabs for the different museums. Each museum tab contained all the objects reported from wetland deposit sites curated in their collection. However, some museums required physical extraction from their database or archive.

A catalogue was created to include pictures, measurements, and weight of the collections visited in person; these museums were: Dumfries and Galloway, Elgin, and the Scottish Crannog Centre. Visits to the National Museums of both Wales and Scotland were organised to speak to the curators of the Iron Age, Adam Gwilt and Dr Fraser Hunter, to discuss the project and relevant publications of the objects curated in the museums. Additional meetings were arranged with Jody Deacon of the National Museum of Wales to double-check specific items held in curation.

2.4.3 Object Exclusion

Certain object types were excluded from the study because of their broad application throughout prehistoric periods, like stone tools, such as lamps or weights. Additionally, canoes were generally not included in the study unless they had a calibrated carbon date or associated material that could denote some level of intentional deposition. While certain cases did indicate intentional deposition or an association with a specific tradition, objects with ambiguous context and lack of calibrated or typological chronology were excluded.

2.4.4 Catalogue Construction

Several established catalogues and databases were utilised for the construction of the project's catalogue. The catalogues used were: Sir Cyril Fox (1946), MacGregor (1976), Savory (1976), Earwood (1993), Martin (2003), Garrow and Gosden (2012), and Horn (2015). Digital catalogue platforms utilised were: Portable Antiquities Scheme, Canmore, Coflein, Historical Environmental Records (HERs), Archwilio, and the Royal Commission of Archaeology Wales and Scotland (RCAHMW, RCAHMS).

Categories utilised for the project are expanded upon in Appendix 2. Appendix 2 provides the object categories recorded, their purpose, and the justification for variables removed or amalgamated due to weak supporting data. Excel spreadsheets were then organised by sub-region for final analyses (Appendices 8 and 9). Each line contains a single object record as opposed to the site to provide a more in-depth analysis of the material assessed. Project numbers were assigned to each object. This number contains a created acronym of the region, underscore, and 'S' or 'W' for Scotland or Wales.

After contacting all museums with possible Iron Age collections, every site was reviewed to confirm their Iron Age date. Thereafter, each findspot was evaluated for their potential prehistoric or surviving wetland environment. This method required sorting through hundreds of archaeological sites in Wales and Scotland. Descriptions of the findspots were used to determine the location of discovery further and compare it to the modern environment. City and county records were then sourced to assess how the environment may have been altered through drainage operations or urban development. One prevalent description which continued to recur in older finds was the broad applications of a 'wet' findspot without further explanation. Comparison of the general findspot location with modern soil-scape maps revealed these objects were generally found in peatland or floodplain areas. In several instances, however, only brown soils remained. Further investigation into brown soil areas revealed that many of the peatlands, particularly in Scotland, have been drained for husbandry. However, as in the case of the Deskford carnyx find, pockets of peat still survive and, as a result, continue to preserve the objects deposited (Hunter 2001, 2019).

As this project was largely desk-based, digital heritage databases were utilised to check for missing records, objects not sourced in museum collections, and missing or compounding information for specific objects. These databases were searched for regional specification, wetland context, and Iron Age date. Records were then extracted or added to pre-existing museum records. Online database links were added to each object record which contained information from these sites (Appendices 8 and 9). In addition, missing information from museum records or newly found object records sourced through online archives were supplemented with associated literature.

From the data collection process described above, and with thousands of sites considered, 102 case study sites resulted in 569 objects (minimum number) extracted from reports and utilised for analyses of depositional practices. The exact findspot for these objects (i.e. NGR, easting and northing, latitude and longitude) will be withheld from thesis submission in accordance with agreements with PAS and the Treasure Trove.

2.4.5 GIS

Maps for this project were created using ArcMap 10.8. The foundation maps were created by overlapping the river and lake features to illustrate the prominent wet features on the landscape. Additional maps were made with underlying soil maps sourced from Scotland's Soils (soils.environment.gov.scot) and for Wales—the National Soil Map created by Cranfield University. For Study Zone 1—Scotland—and Study Zone 2—Wales—the modern borders were provided with NUTS0_JAN_2015_GB_BSC. Sub-regional divides were drawn by hand based on Hunter's divide (2007) and the Welsh Archaeological Trust's allocations. Rivers and lake features were overlapped using OS Open Rivers and Scottish_Lochs_Panorama_Tile_Service. All red markers are sites noted from a wetland context. Additional maps were made for sub-regional analysis of wetland deposition sites.

2.5 Consideration of the Limitations and Taphonomic Biases of the Project

Consideration of the limitations and taphonomic biases was essential for the project. These limitations are detailed in Chapter 3 and through the results chapters (8, 9, 10) as they arose. However, certain limitations and biases that require further clarification regarding the methodology are stated below.

2.5.1 Material Identification

There is a common misconception that limited archaeological material is sourced from wetland contexts. Therefore, the majority of the collection period entailed the amalgamation of individual object records in addition to implementing missing information from various sources (e.g. literature, excavations reports, digital heritage services).

Prior to this process, advisors were concerned that there would be limited material sourced from wetland depositional contexts. The vast amount of object records collected during this period proved that there was copious wetland material for the British Iron Age, and it was at this stage that it was decided to reduce the regional observation to only Wales and Scotland.

Due to the volume of material and individual sites, the project has had to rely on previous analyses of the material composition, as opposed to conducting primary evaluations. Certain artefact materials were able to be confirmed during visits to the aforementioned museums (Section 2.4.2). Nevertheless, like the Nant-y-Cafn hoard reanalyses, this project acknowledges that metal objects have the potential to be layered multi-mediums (e.g. the outside wrapped in copper alloy, but the internal structure is iron). For objects that have evidence of layers, these materials were also recorded.

Measurements and weights of objects were documented through primary observations during museum visits or provided in object records (Appendices 8 and 9). Objects which did not have these details in their record, nor the ability to measure them during museum visits, remained blank. Size and weight were not used in the final analyses, as over half of the objects did not contain this information, nor was the museum of curation able to provide this input. As a result, the interpreted value from the objects which did contain weight and measurement was too limited, and therefore unable to be analysed.

2.5.2 Iron Age Periods

For the British Iron Age, the project used varied chronologies to cater for disruptions, or lack thereof, presented by the Roman conquest for certain portions of Scotland and the whole of Wales. Three separate timeframes were allotted for variation of the Iron Age period based on archaeological evidence: the Scottish Isles, the Scottish mainland, and Wales.

The chronology of the Scottish Highlands and Islands follows the ‘long Iron Age’ date. The Iron Age period for this region extended from 700 BC to around 800 AD through evidence of the continuous monument types such as Atlantic roundhouse tradition and broch tower construction (Armit 2003; Armit and Ginn 2007; Barrett 1981; Foster 1989). For mainland Scotland, the chronology follows the standard Iron Age date allotment but extended to 500 AD as per Armit’s (1997a: 15) proposal. Large portions of Scotland were unaffected by the Roman conquest, and other regions had differing periods of occupation. Therefore, extending the end of the Iron Age for Scotland until 500 AD is logical due to the variability of cultural disruption and consequential reaffirmation after their exit.

Similarly, the Iron Age in Wales has been interpreted to begin around 800 to 700 BC, as marked by the presence of the Llyn Fawr typologies (O’Connor 2007). However, the Iron

Age in Wales is generally provided with a strict exiting period around 43 AD due to disruptions of the Roman conquest (e.g. Ritchie 2018). In contrast, Davis and Gwilt (2008) have proposed that the Iron Age instead ended around the first century AD through their study of Campaigning Art typology. For the premise of this project, however, the collection of records extended to pieces that dated to the second century AD because the transition between periods is often ambiguous.

2.5.3 Object Dates

Objects were first dated by radiocarbon dating when present, and thereafter dated by their noted typology. To keep in accordance with Champion et al.'s (2001) *Understanding the British Iron Age: An agenda for action* framework for cohesive dating methods throughout Britain, carbon-dating and typologies were the two methods applied.[2] The radiocarbon dates used for the study were sourced from previous object studies. The typologies and types used are described in Appendix 3. However, most object dates were provided by museum database records.

Objects that lacked a carbon date or typology but were confirmed by archaeological authorities to be from the Iron Age were provided with a broad 'Iron Age' period applicable to that region. Dates were essential for the analysis because they provided a comparison of object types throughout the Iron Age period. This comparison identified potential trends within the wetland depositional traditions. However, the lack of radiocarbon dates and an over-reliance on typological chronologies has led activity to be reflective of manufacture periods. As a result, the period between manufacture and deposition is, unfortunately, unknown.

2.6 Analyses

Regional and sub-regional comparisons were performed from the amalgamated database for the reanalyses of Iron Age wetland depositional traditions in Wales and Scotland. These analyses were performed to test for repetition of activity or patterns in the data acquired. It is understood that these statistics are subject to change as more material is found and catalogued. Analyses were performed for common trends in wetland landscape

[2] While this is agenda is 20 years old, and therefore slightly dated, a new agenda has not been put forward for Iron Age Britain.

location, depositional tradition, object and material types, typological-chronological sequence, method and dates of discovery. The project first looked at the common trends of depositional practice sub-regionally before comparing Study Zones 1 and 2. Chapters 8 and 9 focus on the sub-regional review of sites and materials along with statistical patterns in the data. It was essential to examine the sub-regions first because of the expected variation within each area. Chapter 10 provides the comparison for Study Zones 1 and 2 utilising the results from Chapters 8 and 9. A more in-depth description and justification of methods is provided throughout these chapters.

2.6.1 Further Limitations

As previously stated, this study contains inherent biases. Included in these biases are modern collection and record methods, discovery date of the finds, environmental survival rates, human environmental impact (i.e. drainage and urbanisation), and curation and subsequent study. Due to the inherent biases prevalent in the dataset prior to this study, inferential statistics were ill-suited for analysis. As a result, summary statistics were used for most of the analyses because it allowed for a more cautious, exploratory approach, considering the inherent biases in the data. As the data set suffers various biases (e.g. landscape accessibility, preservation conditions, weather, funding, survey performance, technology, how and who found the objects, formal training, coordinates, and archive records), enforcing a ‘p’ value as an index of causality would be dangerous because of the likelihood of projecting false significance on minor trends.

Likewise, access to collections proved to be challenging (see Appendix 10). In 2019, the Orkney and Montrose Museums were contacted to access their collections because they were not formally digitised or made open access. I, unfortunately, was not able to visit the Orkney due to the high volume of in-person requests – making visiting the museum collection obsolete for the next two years (pre-COVID restrictions). Nevertheless, the curator Gail Drinkhall, made every effort to provide information about any site requested. There is a recognition, however, that there is a large gap in the data for the Northeast sub-region of Scotland, as there are hundreds of wetland artefacts in curation, but whether they are from a depositional landscape or not is still unknown. When I contacted the Montrose Museum, Gavin Lindsey stated that their collection had not been digitised yet but could be sourced through Canmore and DES. In searching through Canmore’s database and the DES publications, I spared no effort to be as comprehensive as possible; however, it is possible that one or two pieces from the collection are missing in the database.

Due to the restrictions implemented by COVID 19, further extraction of either digital or physical object records for 2020, or object handling, was rendered impossible. This limitation occurred because museums throughout the United Kingdom were mandated to shut to the public and most staff completely. In addition, databases could not be digitally updated because of the limited staff offsite access. As a result, desired further in-person analyses of any museum collection were made impossible through COVID 19 restrictions. Nevertheless, curators and authoritative individuals within these organisations did their best to answer questions and send what information and literature they could on certain pieces of the known collection. Thus, the collected object records are limited to discovery dates up to 2019.

2.6.2 Analyses

The analyses of this thesis incorporated numerous variables for observation to provide preliminary results of potential wetland depositional traditions. These variables are:

1. Landscape – Observations for the types of wetland landscapes that objects were reported from was essential for this project. Common wetland types were reviewed in correlation with associated sediment type to hypothesise the possible relationship trends held with depositional behaviour.
2. Traditions – Deposition traditions were examined for their commonly reported locations, their assemblage formation, object types, accessibility, and modern introduction of collection bias. These traditions have been classified as multiperiod hoards, hoards, pairs, multiperiod single, and single object deposits.
3. Objects – Common objects were observed for their location, deposition tradition, material, weight, and size.
4. Object Dates – Periods of activity were reviewed based on typological-sequences or radiocarbon dates.
5. Finds Dates – Dates of rediscovery of object deposits were also reviewed to better understand how and why the objects were discovered. This method also helped to bridge the gap between why some object reports contained less information than others, and how to improve these accounts using modern desk-study methodologies.

6. Region – The aforementioned categorical characteristics (see Chapter 1) and contexts for the various elements of wetland deposition are compared regionally and sub-regionally for Wales and Scotland.

2.7 Conclusion

This chapter aimed to outline the methods and procedures used throughout the project. These actions resulted in a more comprehensive understanding of British wetlands, the history of wetland archaeology, and Iron Age deposition practices (see Chapters 4, 5, 7).

This mainly desk-based study successfully provided new information and confirmed pre-existing theories of wetland deposition based on curated site reports. The amalgamation of mega data with findspots that were considered isolated or separate from settlement and production sites presented a more conspicuous classification of the deposition traditions in Wales and Scotland during the Iron Age (see Chapter 7). The methods and materials used allowed for a holistic review of wetland depositional activity in regard to period, landscape, object and material type, and rediscovery (see Chapters 8, 9, 10).

Chapter 3 – Digital Heritage Services Critique

3.1 Introduction

Digital heritage is rapidly evolving. Artefact databases and the amalgamation of mega-data sets are quickly becoming the new trend in archaeological analyses. Therefore, with the fast-expanding raw data available through open-access, holistic reanalyses are required to re-evaluate certain prehistoric cultural practices. However, archaeological collection methods differ regionally based on county regulations. Limitations and inconsistencies in the maintenance and formulation of cross-regional archive standards have fuelled the debate as to their accuracy, especially for interpretations regarding the prehistoric environment (Tait et al. 2013).

Nevertheless, digital heritage schemes have continued to improve their community interface and establish professional guidelines in pursuit of providing raw information for public access that can be reconfigured for a multitude of purposes (e.g. Canmore, Highlands Environment Records (HERs), Portable Antiquities Scheme (PAS), Archwilio, Royal Commission on the Ancient and Historical Monuments Wales (RCAHMW) and Scotland (RCAHMS), Coflein, Hebridean Connections, the Cherish Project). These databases, when paired with museum archived object records, often help to supplement missing information, or expand on the archaeological methodology. However, as with any responsible researcher's data set, highlighting the inherent biases is always necessary to understand their creation, existence, and methods.

When discrepancies occur, we as a discipline should continue to implement communal archaeological programs whereby the public learn to become curators of their heritage. Ignoring the grey literature created in communal projects and commercial work because it lacks a publication status and peer review does not mean it holds no value in archaeological investigations at an academic level. As a science, we do not have the sole monopoly on curated information and raw data, and can only move forward when we acknowledge external contribution. Likewise, we need to remember that archaeology, especially wetland study, has inherent taphonomic biases. Without studies like this one, which highlights patterns of the known, how are we to discover and establish what is unknown? Therefore, this chapter reviews the development of digital archaeological datasets and critically appraises their usefulness and shortcomings in archaeological analyses in accordance with wetland study in Britain.

3.2 Evaluating with Digital Archive Platforms

Formalised Archaeological Information Science (AISc) was established in the 1960s through studies performed by Peter Ihm, Jean-Claude Garden, and James Deetz according to George Cowgill (1967: 17; Huggett 2014). In many ways, however, AISc is still viewed as an 'emerging' field (Huggett 2014: 13). In 2002, the UK Computing Research Committee (UKCRC) launched an initiative '… to investigate possibilities for the advancement of computing research and identify ambitious long-term initiatives' (Huggett 2014: 18). The development of digital interface facilitated by heritage schemes implemented through government agencies has manifested through the need to archive large data sets. Thereafter, heritage trusts recognised the necessity to create and facilitate a platform for public interaction and provide a catalogue standard for amateur collection methods. For example, the Portable Antiquities Scheme has developed an extensive online digital archive to organise findspots and new material reported through the scheme. Similarly, the Treasure Trove in Scotland was developed to protect objects considered culturally significant and preserved in museum settings for the nation's benefit (treasuretrovescotland.co.uk). Both are governed by key functions of AISc and have open-access, but do have certain limitations whereby information is privatised for the protection of the archaeology. Several broad key areas of AISc were identified by 2008:

1. Integrated data infrastructure
2. Digitisation and preservation of collections
3. Interactive tools for non-expert interface
4. Differentiation between theory and evidence
5. Management of mega-data sets
6. Algorithms and structure for multimedia data sets
7. Technologies which enable the interpretation of historical accounts (Huggett 2014: 18)

Sixty-five additional recommendations were subsequently proposed in response to AISc parameters and organisation provided by Arnold and Geser (2008). Huggett (2014: 17) states that the challenge of AISc is that the '…subject area which derives much of its methods from other disciplines, and which is seen as promoting technique and technology over theory… is always seen as peripheral, ever playing the supporting role, and lacking a coherent central core which provides a clear-cut identity.' Due to this obscurity, digital platforms have struggled to be viewed as legitimate sources of raw data. However, with improved interfaces and academic research utilising these resources as trial studies have proved, these services can provide consistent raw data standards that can be reconfigured into whatever form a project requires.

Digital archives serve to curate a virtual rendition of the collection and records. Many museums and heritage trusts which have created these have made efforts to make these platforms open-access. Beale (2012) argues that open-access to raw data allows for more information to be incorporated because it can reach and interact with a broader audience. Extended interaction with a broader audience, such as through PAS and Canmore, has resulted in the public sharing common and communal knowledge of the relevant sites and collections. Furthermore, the technological innovation of digital heritage platforms has also expanded the current site and object records. This expansion has been achieved through linked data which is organised through their relationships with components, allowing content to become more searchable and therefore increase accessibility (Beale 2012). The creation of open data sources has allowed for a better understanding of the gaps in knowledge and inconsistencies or discrepancies in collection and record processes. However, the lack of consistent collection methods and standards has led to a debate over community involvement in archaeological finds. Beale (2012) points out that community archaeology and open data do not exist in isolation because open-access data is very much a 'social phenomenon.' Community archaeology is characterised by the '…relinquishing of at least partial control of a project to the local community' (Marshall 2002). Opening venues for the public to interact and become part of facilitating their heritage develops stronger relationships between institutions and local communities (Clari 2012; Ridge 2007). However, on the other side of this, is the variation of archaeological standards in the data recorded.

The study of purposeful deposition and prehistoric activity is full of biases. According to Robbins (2013: 56-57), the seven stages of collection bias are deposition (accidental or purposeful), preservation, survival, exposure, recovery, reporting, and recording. This study struggled to navigate certain inherent biases that contributed to misconceptions about wetland deposition in preceding studies. Prehistoric archaeology, especially when sourced from wetland contexts, rarely provides precise explanations as to an object(s) production, use, removal, and discovery within a perfectly understood context. Even when objects are recorded and reported correctly, there are still archaeological gaps in knowledge and interpretations.

As Robbins (2013) states, data collection is far from impartial. Using Collins' (1975) argument for impartiality, objects can be separated from their original use and interpretation—which can also be interpreted as its agency or as a living entity—and its subsequent study. Therefore, there is a disconnect from the object(s) past to its present, which can become more noticeable in an archaeological dataset developed from novice discoveries. Similarly, the objects deposited in wetlands have different preservation qualities or survival to the present (Robbins 2013). Even for those objects that have survived in a wetland context, they may never actually be found. Additionally, objects that have been found in wetland contexts, for example organic finds such as butter and human remains, may disintegrate upon exposure to oxygen and the subsequent research is lost. Another means of object data obscurity is the lack of formally reporting objects and cataloguing their information when a private collector or illegal auction has acquired an object. The assemblage remains outside of authoritative knowledge until it is somehow reintroduced to the public sector. Robbin (2013: 56) expands on Collins' (1975) 'sampling bias conception' to include that amateur collectors do not always report their finds to authoritative schemes, and of those reported, they may not be included or expanded upon in a professional dataset. Gill (2010) provides several examples where objects were not reported to the proper authorities but instead surfaced in antique deals and auction houses. He further elaborates on the misleading narratives applied to object finds in proposed locations with no proper evidence of such structures (e.g. the non-existent temple site of Stow Cum Ouy in relation to the Romano-British bronze reported).

Modern tools and technologies also present potential and well-documented biases. Metal detector finds are usually recovered by amateurs, but the practice has contributed to a saturation of metal pieces in the prehistoric record. A counterargument could be made that metals, especially copper and iron alloys, survive quite well in wetland environments with anaerobic conditions. However, in juxtaposition to this argument, organics can also preserve quite nicely in the anaerobic conditions of wetland environments. Therefore, perhaps this skewed material representation may come down to the technical skill of observing varying types of prehistoric materials, especially those made from organic materials.

Interestingly, Iron Age copper alloy finds reported may be significantly lower in Wales and England because bronzes were not necessarily considered treasure under the 1994 Treasure Act terms, and therefore not required to report these finds to the local authorities. The Act stated that, to qualify, there must be a 'metallic content of which at least 10 per cent by weight is precious metal.' Objects found after 1 January 2003, included the clause above and were required to be reported if an object was of a prehistoric date if any part of it contains precious metal (finds.org.uk 2020; Treasure Act 1996). The new amendment also included, 'Any group of two or more metallic objects of any composition of prehistoric date that come from the same find.' This clause expands the qualifying regulations of what is to be reported and no longer dependent on the weight of the precious metal, but rather its assemblage signifying its cultural significance. New changes to the law were enforced on 12 August 2020, stating that the government now defines treasure not only on an object's material wealth but also cultural significance (gov.uk 2020). This amendment is important because this new definition now includes archaeological material made from organic remains such as wood to be reported to the local authorities in Wales and England.

The Treasure Act is now more closely aligned with the Treasure Trove of Scotland. The code of practice states, 'Under Scottish law all portable antiquities of archaeological, historical or cultural significance are subject to claim by the Crown through the Treasure Trove system and must be reported' (QLTR 2016). Due to the all-encompassing nature of the law to include but not limited to finds of stone, wood, metal, and woven material is considered treasure '…on the basis of its age or rarity, worth preserving for the nation' (QLTR 2021). Established in 1969 to advise the Queen's and Lord Treasurer's Remembrancer, which operates under regalia minora as part of bona vacantia (QLTR 2016, 2021), find discoveries have had a higher rate of catalogue and thus a better presentation and knowledge of amateur archaeological finds. As a result, Scotland has historically maintained a more consistent cataloguing of archaeological materials (especially those of different material types) than Wales and England since the establishment of such institutions.

3.3 Discussion

Digital heritage services have provided open-access platforms through which both novices and experts can access information and archaeological interpretations. Those who extract the raw data presented in these sites can reconfigure this information into new studies that involve different research questions without altering the original units. Variations to collection methods can deter from the significance of holistic analyses if the gaps in data are not supplemented to maintain consistency. While taphonomic bias is still unavoidable, it can be minimised if we as a science continue to reassess how to lessen the discrepancies in archaeological records of the past.

Consolidation of digital sources, such as PAS supplemented by HERs, allows for a more in-depth assessment of regional distribution values (Brindle 2013). Taphonomic bias is inescapable for prehistoric archaeology, particularly in wetland environments. Nevertheless, open-access platforms broaden our understanding of national distribution of specific archaeological activities without radically altering our interpretations of prehistoric deposition practices or creating divergent patterns (Brindle 2013: 74). Big data analyses are achievable with the additional use of digital heritage services, but temporary measures need to be established when dealing with incompatible amalgamated data for 'interpretive potential and limitations' explored (Cooper and Green 2017). Providing temporary defining parameters is the preliminary step to reanalyses of wetland deposition and traditions before other analyses can or should be performed (Treadway 2021).

3.4 Summary

Digital heritage services are beneficial to the development and maintenance of mega-data sets regardless of the inherent biases and noted limitations. Understanding how and why these biases and limitations have developed or persist helps us establish methodologies to minimise variations in collections and records of new finds, while supplementing information for pre-existing collections.

Chapter 4 – British Wetland Environment Identification

4.1 Introduction

Nicholas (2007: 46) states that wetlands are significant features in the global landscape, comprising a wide variety of manifestations based on region. Wetlands are defined by their placement in the landscape – terrestrial and semi-terrestrial, hydrologic cycles, and floral and faunal communities (Nicholas 2007: 146).

This chapter aims to:

- Identify and define wetland landscapes and their characteristics.
- Review the sedimentary contexts associated with ancient and modern wetland landscapes from which these finds were reported.
- Provide unilateral identification of wetland environments that is essential to archaeological methodology.

This chapter reviews and gives clarification to the identification and definitions of wetlands. The chapter also gives special attention to the different British wetland environments, especially those observed in Wales and Scotland. Furthermore, the chapter also recommends how to recognise prehistoric wetlands after initial landscapes are no longer visible, and why these locations are important to the preservation of archaeological material.

4.2 Defining 'Wetland'

The term 'wetland' is used as a broad classification for many different ecosystems that have intermittent, seasonal, or continuous waterlogged soils (Coles and Coles 1994-5: 1). The term, however, has different meanings in accordance with different study foci. Denny (1994: 250) describes how, for a biologist, *wetlands* are a 'transitional zone between terrestrial and aquatic environments'; whereas, for an ecologist, *wetlands* are 'a border between two ecosystems in which either there is a fluctuating variable (such as water level) or a gradient term 'ecotone' (1994: 205). This variation in definition for *wetland* has caused some confusion in interdisciplinary studies and in establishing comprehensive legislation for environmental conservation. As a result, in 1971, UNESCO sponsored the Ramsar

Convention held in Iran to identify and address issues wetlands faced in definition, study, legislation, and preservation. Ramsar established 'wetlands' as,

'Areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters...' (Maltby 1989: 4).

Academic and commercial archaeological excavations follow UNESCO's definition when identifying a wetland site. However, this advice is not standard and calls for the further requirement of some form of consensus when consulting wetland areas. In addition, other interest groups have variations of the term, illustrating the continuous and frustrating lack of consistency across subject studies. One example is the NOAA (2017) definition, which refers to wetlands simply as 'any area of land saturated with water.' Oversimplification of the term and restricted guidelines such as the ones provided by UNESCO can help to clarify identification and terminology for these environments.

According to Van de Noort and O'Sullivan (2006: 34) the term wetland, as it is defined today, did not exist until the 1960s and was not established internationally until the UNESCO funded the Ramsar Convention. Before the 1960s, wetlands in the United Kingdom were identified by prefixes or suffixes often derived from Anglo-Saxon roots (e.g. -fen, -dyke, -moor) (Van de Noort and O'Sullivan 2006: 34). Discoveries and intensive studies of wetland settlements such as the Buiston Crannog (Crone and Barker 2000), Oakbank Crannog (Dixon 2004), Star Carr (Clark and Walker 1954; Milner et al. 2018a, b), Meare (Coles 1987) and Glastonbury Lake Village (Bulleid et al. 1911-1917; Coles and Coles 1986; Minnitt and Coles 1996), and settlements alongside the Gwent Levels (Allen and Fulford 1986, 1987; Rippon 1996), brought the term *wetland* into widespread use. Nevertheless, it was recognised that a coherent terminology for these places did not exist within archaeology or environmental policies, posing issues for clarifications and defining parameters.

One of the challenges this project faced was the fact that certain wetlands may no longer be extant, and as a result, prehistoric deposits in these locations have been and continue to be overlooked. Case studies have been conducted in Britain to analyse the environment and archaeological potential of wetlands (e.g. Bell et al. 2000; Bulleid et al. 1911-1917; Bulleid 1968; Clark and Walker 1954; Coles 1989; Coles and Coles 1994-5; Crowther 1989; French and Pryor 1993; Godwin 1978; Hodgson and Brennard 2007; Pryor and Bamforth 2010; Van de Noort 2004; Van de Noort et al. 2002; Van de Noort et al. 2007). However, a complete holistic study of wetland deposition for the entirety of the British Isles has not yet been attempted, and consequently leaves depositional practices in these environments inadequately represented in comparison to similar terrestrial activity.

This study has therefore established a comprehensive classification for wetlands through the application of three different descriptions that are apposite throughout Britain. First, the study defines wetlands according to the characteristics defined by Nicholas (2013: 762). His characteristics identify present and prehistoric wetlands as having or had 'one of the following characteristics: (a) seasonally or periodically water covered or saturated; (b) supports wet-adapted or tolerant vegetation (e.g., Typha spp.); and or (c) has hydric soils present.' Second, the study recognises the perimeter of a wetland as an ecotone between wet and dry environments (Denny 1994; Nicholas 2013). Third, the study identifies wetlands according to the National Rivers Authority's (NRA) guidelines set by Bradley (1995) for wetland conservation (Table 2.1). The NRA was absorbed by the United Kingdom's Environmental Agency in 1996, however, their identification guide is still relevant. One example of its relevancy in terms of this project for wetland parameters is Research and Development (R&D) Note 378 of the policy, which…

'…recommends a two-layered 'hydrotopographical' classification. The first layer identifies situation-types, i.e. the position the wetland occupies in the landscape, with special emphasis upon the principal sources of water. The second layer identifies hydrotopographical elements, i.e. units with distinctive water supply and, sometimes, distinctive topography in response to this' (Bradley 1995: 7).

Additionally, Bradley's table (Table 4.1) provides a checklist which aids in the excogitation process of identifying wetlands in areas where the ancient wetland has not survived and how to conduct proper identification of the site. His table considers degrees of archaeological evidence, available information, and actions for the proceeding analysis and definition of a potential wetland space.

Landscapes that have drained, both past and present, are all candidates for the study due to the pre-existing wetland habitat. Wetland habitats observed include, but are not limited to: shorelines, lakes, lochs, ponds, rivers, estuaries, floodplains, bogs, salt and freshwater marshes, streams, and moors. For defining the various types of wetlands, the project will use

English Heritage's subgroup definitions for wetland archaeology (Heathcote 2012) (Table 4.2).

Available information	Notes
Site known to be, or formerly, considered as wetland.	Check current status and extent.
Site lies adjacent to a known wetland.	Check relationship of site to known areas of wetland (e.g. was the area formerly part of the same wetland?).
Site clearly lies within a flood plain.	Check current status.
Site adjoins (or includes) a water course.	Check for evidence of flooding (e.g. alluvium), inputs of run-off or groundwater from adjoining slopes and detention of water.
Site adjoins (or includes) open water.	Check for evidence of flooding (e.g. alluvium), detention of water and hydroseral development of vegetation.
Site lies in a clear topographic hollow.	Check current status.
OS maps (recent or past) suggest wetland area, e.g. 'marsh' symbols, springs, flood limits.	Check current status.
Evidence of intensive drainage in the area.	Possibly a degraded wetland.
Flooding known to occur on a regular basis (e.g. annually or one in two years).	Probably wetland.
Springs marked close to the site.	Probably wetland.
Site known to be permanently or periodically saturated with water.	Determine estimates of times and depths if possible.
Soil maps indicate presence of wetland soils.	Check current status.

Table 4.1. Bradley's (1995: 8) checklist for wetland identification for NRA guidelines using existing information sources.

Subgroup	Brief Description	Scoping for inclusion in Strategy for Water and Wetlands
Peatlands	Surface peats in uplands and lowlands.	Included
Relict peat	Buried peat (e.g. beneath alluvium, colluvium, solifluction or glacio-fluvial sediments) on land; inter-tidal and sub-tidal peat deposits.	Included: terrestrial buried peat. Scoped out inter-tidal and sub-tidal peat deposits (covered in Marine Research Strategy).
Freshwater coastal wetlands	Land-claim; grazing marshes	Scoped out (covered in Marine Research Strategy).
Small wetlands	Less than 10ha., e.g. kettle holes, ponds	Included
Rivers and river valleys	River channels, riparian zone and floodplain; including palaeochannels and the original Strategy for Wetlands category, alluviated lowlands.	Included
Waterlogged urban deposits	Includes waterlogged deposits at depth.	Included
Artificial water bodies	Water features (parks and gardens), moats, ditches and canals.	Included
Palaeoenvironmental deposits	Although these will automatically belong to one of the other sub-groups, they deserve special mention to ensure their value is recognised and to maintain focus on this specific historic environmental resource.	Included
Natural lakes and dams	Much of the potential and many of the issues cross-over with artificial water bodies and small wetlands.	Included

Table 4.2. Heathcote's (2012: 9) table for sub-definitions of wetlands for English Heritage's Strategy for Water and Wetland Heritage.

Therefore, this chapter will review the broad wetland types found in Britain. These broad wetland types are rivers, floodplains, estuaries, peatlands, fens, and bogs. The following sections will provide habitat characteristics and how to identify these archaeologically.

4.3 Wetland Environments Observed in Britain

Wetland types have universal characteristics which aid in their identification. However, they also have regional characteristics that are in accordance with the local geology, ecology, flora, and fauna. Therefore, the wetland types discussed here will be in line with the characteristics of environments found in Britain, and specifically Wales and Scotland. The objective of these subsections is to review the prevalent wetland types observed in Britain and their preservation potential.

4.3.1 Rivers and Streams

When we think of wetland deposition, rivers and streams tend to be at the forefront because of their long history of reported finds from both the United Kingdom and Europe. Unexpectedly, however, rivers can be difficult to define because they are viewed more as features of a landscape, than an actual landscape themselves (Evans and O'Connor 1999: 160). Nevertheless, Hornblower et al. (2012) identifies rivers as channels of flowing water fed by or into another body of water. Different characteristics of rivers are total stream power, high or low sinuosity, mountain or valley, upland versus lowland, and lateral versus vertical channel movement (Brewer et al. 2009: 17; Perfect et al. 2013: 8) (Figure 4.1). According to the Scottish Rivers Handbook (Perfect et al. 2013: 18), rivers can start as streams which are defined as smaller, narrower rivers (Hornblower et al. 2012). Rivers can also develop underground before ever making their mark on the surface, and in limestone areas, rivers are largely underground (Evans and O'Connor 1999: 164).

Figure 4.1. Photo of the Nedd Fechan River at the Sgwd Ddwli waterfall. The river system is part of the Neath River in South Wales. Photo by Tiffany Treadway, 2021.

Rivers can migrate over time due to changes in water flow, sediment drift, gradient, sea-level, environment, valley formation, flora, erosion, or man-made alterations (Evans and O'Connor 1999: 160; Harvey and Clifford 2008: 465; Williams and Duigan 2009: 4). Rivers continually adjust to environmental changes and influences, such as: tectonic shifts, climate change, sea level shifts, and human intervention (Williams and Duigan 2009: 19).

Rivers have a wide variety of characteristics which are often reflected in their place names in the United Kingdom (see Appendix 5). Table 4.3 provides concise definitions for wetland subtypes that are usually subjected to interpretational variance based on archaeologists' methodology and training.

Lowland vs. Upland	Rivers that flow from upland areas into lowland streams are 'marked by changes in stream gradient, sediment supply, stream discharge, and land-use, which in turn influence river processes, and the development of river channel pattern types' (Williams and Duigan 2009: 19). Mountain rivers tend to be classified into three different systems: steep, confinement of water source at low gradients, or piedmont systems (Perfect et al. 2013: 18).
Reach	A reach is an uninterrupted stretch of a stream or river. Reaches can also be characterised as the widening or expanding width of a river (Macfarlane et al. 2015).
Meander Systems	Meanders are curves or bends in the river, with low energy streams. They are characterised by 'meander bends, point bars, pools and intervening riffles' (Perfect et al. 2013: 20). Meanders are known to occur where valley slopes decrease, or in mountainous areas where erosion has supplied sediment deposited on the inside of the bend (Perfect et al. 2013: 20). Meanders that occur in lowlands have lower stream power than those in mountainous areas (Perfect et al. 2013: 22).
Bars	Bars are formed when transported bedload form sediment topographic highs in the river channel (Williams and Duigan 2009: 29-30). These bars act as long-term storage for bedload sediment in a location of the river stream (Williams and Duigan 2009: 29-30). The developments and duration of a bar in a stream is dependent upon 'local flow and channel patterns, and in laterally mobile rivers, bars will dynamically adjust their size, form, and position in response to changes in river-channel position' (Williams and Duigan 2009: 29-30).
Channel Boundaries	Channel boundaries occur when the channel's walls are significantly higher than the river's sediment or alluvial reaches (Perfect et al. 2013: 19). Boundaries that are in areas of access transport capacity are characteristically composed of bedrock (Perfect et al. 2013: 19).

Braided Reaches	Braided Reaches are rare, and associated with weak banks composed of gravel, high sediment supply, and medium stream power (Perfect et al. 2013: 20).
Burns	Burns are freshwater, small, spring fed water sources that are generated in lowland hills (Perfect et al. 2013: 22). Term only observed in Scotland.
Riverine	Riverines are the natural features formed by rivers and can be found next to or in a river (Ward et al. 2002). Generally identified as areas along the river bank.

Table 4.3. Sub-River Definitions

4.3.1.1 High vs. Low Energy

High versus low stream energy is an important factor when considering the survival and transport of artefacts from their original deposits in river systems. Stream power is the amount of energy the water flow retains travelling through a river's channel (Perfect et al. 2013: 8). Perfect et al. (2013: 8) suggests that unit stream power can be estimated through the channel's width, gradient, beds and banks resistance to erosion, and vegetation. Different combinations of these factors lead to different speeds and stream power for every river.

Continuous low-energy streams result in higher archaeological material preservation. Low-energy currents have less stream bed drag, lowering friction and subsequent abrasion which results in less erosion of the surrounding banks and artefacts. High stream energy causes river meanders when the bed is asymmetrical, as the high energy erodes the outlying banks causing a river or stream to expand in width, and eventually changing course due to sediment load deposits and erosion factors (Zdankus et al. 2014; Elias et al. 2012). In the same way, the higher the energy stream the more likely the artefacts deposited are dragged downstream, which also lessens the likelihood of their survival. Low stream energy does not result in meanders because it lacks the ability to carry the same amount of sediment or level of erosion as high energy rivers and streams (Zdankus et al. 2014; Elias et al. 2012).

Archaeologists must always be conscious of possible river meander for high-energy rivers and streams when observing patterns of behaviour. Discovering a deposit of artefacts that is within a reasonable distance to a contemporary high-energy river, could have in fact been placed in the same river that has since moved. Understanding how a landscape can change, and the importance of identifying river changes within a landscape, could be key to understanding prehistoric interaction with the landscape in a specified area.

4.3.1.2 Mountainous, Valley, and Coastal River Landscape Topography

Drainage patterns of mountainous, valley, and coastal rivers play a major part in their migration, vegetation, and sediment flow across the landscape. Mountainous river morphology tends to be relatively stable unless the riverbed is boulder-dominated (Werritty and Hoey 2004). This stability directly attributes to the rarity of flooding in mountainous rivers, whereby only fine-grained sediment is regularly flushed through the system (Werritty and Hoey 2004). Rivers and streams draining from mountainous regions like Snowdonia, the Brecon Beacons, and the Cambrian Mountains have high-energy and virtually straight streams through bedrock reaches that converge with low-energy lowland valley rivers and river catchments. This transition can develop alluvial fans where the mountain river flows

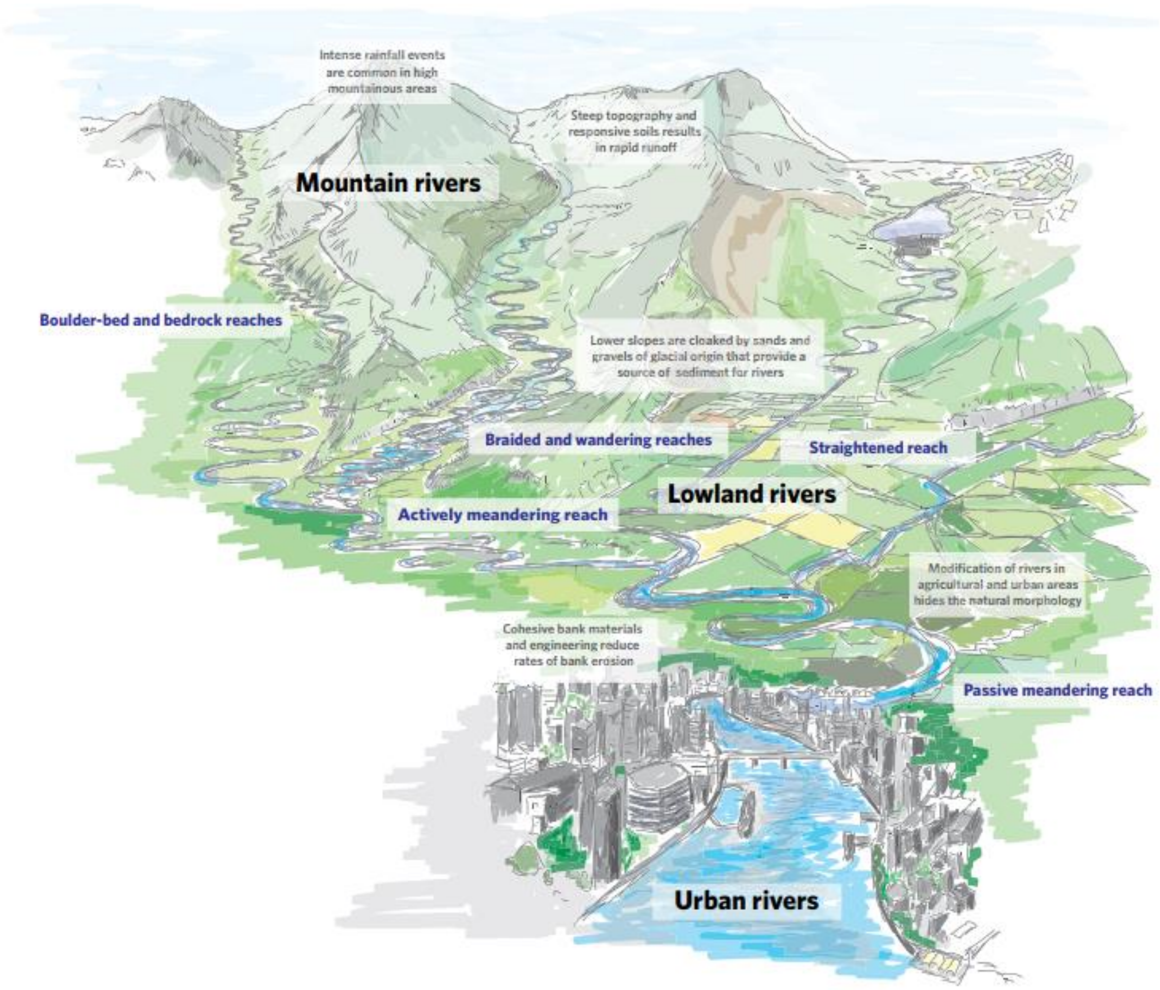

Figure 4.2. Illustration of the differing topographical rivers, and their characteristics (Perfect el al. 2013: 6).

into the main river (Werritty and Hoey 2004: 22; Williams and Duigan 2009). Alluvial fans occur because of a drastic drop in the gradient where the mountainous and main rivers converge, hindering sediment transition during periods of flooding (Williams and Duigan 2009). Once these rivers enter lower-energy valleys, they may begin to meander. It is during this transition from upland to lowland zone that the stream's energy is strong enough to erode floodplain and terrace sediment, leading to greater rates of lateral or vertical river channel movement (Williams and Duigan 2009: 17).

Mountainous rivers have steep topography with rapid runoff, lowland rivers contain variable flow energy and high concentrations of sands and gravel (Perfect et al. 2013: 6) (Figure 4.2).

Unsurprisingly, local dialects in Wales and Scotland have numerous terms for river (Appendix 5). In Scotland the terms for river are, but not limited to, abhainn/aibhne, allt (burn, stream), carach (winding), caochan (streamlet), eileach (mill-lade; narrow shallow stream joining two lochs; arrangement for catching fish in a stream), gil (riverine, watercourse), glais (stream), lub/luib (bend), sruth, and srutha (current, stream, streamlet) (Irwin 1973). For Wales, the terms used for river are, but again not limited to, afon, aber, berw/(g)eirw (rush of waters), rhaeadr/ ysgwd (waterfall), tro (turn, bend), and ystyum (bend shape) (Irwin 1973). Many of these words describe the type of river and the stream power or geography in the landscape.

Floodplains can derive from river systems, especially if there is episodic seasonal flooding. Floodplains provide a landscape in which excessive water can be absorbed back into the water table, river, and (or) surrounding soils without damaging outlying ecosystems.

4.3.2 Floodplains

Floodplains are flexible environments because they can be dry or wet depending on the season, or other environmental factors. They are generally considered flat landscapes which are liable to flooding due to adjacent river overflow (Brown and Brown 1997: 17; Bedient et al. 2008: 710) (Figure 4.3).

Floodplains have not traditionally been considered as wetlands. Due to the characteristics which these landscapes exhibit coinciding with wetland features, they are considered a wetland environment in this study. Floodplains are not solely products of floods and are formed through sediment river deposits during river migration (Brown and Brown 1997: 19). They are also composed of unconsolidated sediment materials transported by adjacent rivers (Jones et al. 2009: 35). In addition, floodplains are characterised by impeded drainage and seasonal flooding through either season rainfall, rise of water table, or overflow from the adjacent water source. As a result, rivers often affect the hydroperiod for floodplains, and in return floodplains affect the river's ability to maintain shape, energy, and a manageable water table in periods of influx.

Figure 4.3. Floodplain along the Eddleston Water, part of the River Tweed catchment in the Scottish Borders. Photo property of British Geological Society.

As floodplains are not consistently considered a form of wetland, they are similarly not always included or considered in wetland analysis for human-landscape interaction. Additionally, floodplains tend to be ignored in archaeological studies due to lack of formal research and excavation, funding, or interpretation of wetland contexts. Recent years have provided a newly refined focus on floodplain activity in England and portions of the Severn (e.g. Brewer et al. 1985; Brown and Brown 1997; Howard et al. 2008). However, the fact remains that many floodplains within Wales and Scotland have yet to be evaluated holistically for their archaeological potential.

Floodplains are categorised as temperate or boreal (Brown and Brown 1997: 104-105). Britain is in the northern temperate climate zone, receiving cooler temperatures, smaller divergences, and differences in soil type (Brown and Brown 1997: 104). After categorisation based on positioning along the equator, floodplains are further identified according to their 'hydrology, geomorphology and morphology' (Jones et al. 2009: 35). Hydrology is a major component of floodplain composition. Flooding is required for the floodplain's flora and fauna to maintain a healthy ecosystem. Flooding is also needed to sustain an anaerobic sedimentary seal, which is vital to artefact preservation. Geomorphology provides when and how much water will be filtered through or to the landscape. Morphology further defines the parameters of the floodplain, the shape and dimensions of the landscape, and how external water systems feed into floodplains.

The ecological primary controls of floodplains are the stability of surface sediment and water regiment (Brown and Brown 1997: 105). The secondary controls are dependent on 'soil type and fertility' (Brown and Brown 1997: 105).[3] Due to the composition of varying soil types, hydrology, degrees of landscape stability, and nutrients allow for the coexistence of a wide array of varying vegetation (Brown and Brown 1997: 108). It is through this vegetation that these floodplains are superficially identified along with their impeded drainage (i.e. carr, wet wood, or grassland).

The words used to describe floodplains tend to overlap with those for wet woodland and grassland in the Welsh and Scottish languages (Appendix 5). However, words such as gorlifdir (Wales) and tuil-uisge which means floodwaters (Scotland) literally translate to floodplain. Other terms used to describe these environments are baidhte (drowned, liable to flooding, livestock liable to drowning) in Scotland and gwlyb/gwleb (wet) in Wales (Irwin 1973).

4.3.2.1 Flooding

Periodic flooding is crucial to the maintenance of floodplains. The cycles of flooding are known as flood pulses (Keddy 2010: 43). Flooding of these areas can occur in several ways depending on 'water – plant – sediment interaction' (Brown and Brown 1997: 104). There are three primary controls of floodplain ecology. The first control is the stability and water regime of 'each patch of [the] floodplain surface.' The second control is soil fertility and type. The third control is rainfall input by 'throughflow and channel flow' (Brown and

[3] The multiple sedimentary features that result in floodplains are: ripples, dunes, alternating bars, point-bars, transverse-bars, mid-channel bars, channel-junction bars, benches, concave benches, levees, crevasse-splays, scroll-bars, sloughs, cut-offs, oxbow lakes, paleochannels, flood channels, meander cores, flood basins (hams), and yazoos (Brown and Brown 1997: 19-21).

Brown 1997: 106). All three controls can operate independently from each other and vary according to catchment size (Brown and Brown 1997: 106) (Table 4.4).

Flood patterns and rates of occurrence are affected by climate change (Brown and Brown 1997: 106). Different soils, likewise, affect flooding because of their conductivity, flow deposition, infiltration, storage, and geographical catchments within the rivers that run through floodplains.

Produced by	**Attributes**
Precipitation and Snowmelt	• Usually occurs in the uplands. • No contributions from lowlands. • Only common for sizable catchments.
Heavy Rainfall	• Directly on the floodplain. • Precipitation exceeds lowland infiltration and (or) storage capacity.
Combination of River Flow and Heavy Rainfall	• Water flowing through river is increased. • Heavy rainfall. • Combination of these lead to flooding of catchment area. • Rare.
Lowland tributary flood	• Water flow exceeding tributary's infiltration and (or) storage capacity. • Lowland location. • Rare.

Table 4.4. Brown and Brown's (1997) Flooding Variations in Floodplains

4.3.2.2 Meandering and Channel Change

Changes in the channel have a significant impact on sedimentation and can change an entire floodplain system (Brown and Brown 1997: 25, 30). Lowland rivers in Britain, as opposed to Highlands, have an incredible lack of mobility (Brown and Brown 1997: 26). In places where reaches are mobile, they are identified as meandering systems. River meanders are asymmetrical, producing different sedimentary patterns along the floodplain or valley (Brown and Brown 1997: 27-8). Documentation of prehistoric river meander can reveal potential river sites and artefacts in locations that are no longer in the stream-course or flooding areas.

British floodplains encompass two major wetland ecosystems: wet woodlands and grasslands. Each has characteristics unique to their landscape, but both can be considered a type of floodplain because they require hydroperiods and seasonally or annually saturated soils.

4.3.3 Wet Woodlands

Wet woodlands are areas of seasonal or annual partially submerged living wood (Haslam 2004: 6; Wildlife Trusts 2018) (Figure 4.4). [4] These landscapes are representative of transitional areas in wetlands consisting of aquatic and terrestrial vegetation. Wet woodlands cannot survive in completely flooded landscapes like wet grasslands (Keddy 2010: 57) because they require dry periods for oxygenation of soils and to gather the appropriate nutrients. Wet woodlands occur in a wide variety of wetlands that range from alkaline to acidic soils (Wildlife Trusts 2018). In transition areas of wetlands that contain limited hydration or flooding of soils, wet woodlands often develop into mixed woodland and vegetation, allowing for certain tree species such as ashwood and oak to begin to germinate (Forestry Commission 2003: 4; Wildlife Trusts 2018).

Figure 4.4. Wet woodland. Photo property of Alastair Hotchkiss and the Woodland Trust.

Wet woodland is estimated to cover 50,000 to 70,000 ha of the British landmass (Wildlife Trust 2018; JNCC 2018a). Wet woodland covers 10,174 ha of Wales, which is 11% of the country's landmass (Welsh Assembly Government 2018). In Scotland, wet woodland landscapes cover 44,742 ha, which is 14% of the country's landmass (Patterson et al. 2019). Projection of prehistoric landscapes and floodplains is not currently achievable. Modern estimations are based on recent woodland growth in areas of newly exposed sediment or

[4] Characteristic species of willow, alder, and birch.

abandoned wetland fringe (Jones et al. 2009: 51). However, archaeologists can use dendrochronology as a way of determining the age of wood preserved in wetland contexts, or the age of established woodland. Dendrochronology of wet woodland is simple because germination occurs usually during a single event which allows for natural regeneration (Forestry Commission 2003: 6).

Wet woodland covers extensive portions of both Wales and Scotland. However, most of the established wet woodlands in Wales have been lost (Jones et al. 2009: 51). This loss is the result of husbandry clearance and differing river management schemes. Development of Welsh wet woodlands are subsequent progressions of reclaimed wetland transition zones and now only cover 3% of wetlands (Jones et al. 2009: 51).

Scotland contains acidic and neutral wet woodlands (Forestry Commission Scotland 2018a). Acidic wet woodland concentrations occur most notably in western Scotland (Forestry Commission Scotland 2018a).[5] Neutral base-rich wet woodland occupies primarily uplands, and upland and lowland fringes (Forestry Commission Scotland 2018b). A wider variety of archaeological materials can survive in a neutral base-rich wet woodland, and are further dependent on anaerobic properties of their deposit site.

4.3.4 Wet Grassland

Wet grassland landscapes[6] are intermittently flooded and dominated by herbaceous vegetation and communities dependent on hydric soils (Keddy 2010: 8) maintained through periodic or seasonal inundation (Benstead et al. 1999: 1; Gallagher and Cornish 1988: 1; Haslam 2004: 6) (Figure 4.5). Wet grasslands tend to have infertile soils, which further propels reinvasion of woodland growth (Keddy 2010: 67). These environments occur in areas that feature 'ditches, seasonal flooded hollows, permanent ponds, and emergent swamp communities'; but do not occur in conjunction with reed communities (Gallagher and Cornish 1988: 1). Vegetation is mixed, and different species thrive at different aquifer levels (Rodwell et al. 2000: 41).

The exact measurement of lowland wet grassland communities in Britain is unknown, the rough total estimate is around 105,000 ha in Wales and England (Jefferson and Robertson

[5] Acidic wet woodlands are generally dominated by downy birch, eared or grey willow, and Scot's pine (Forestry Commission Scotland 2018a).
[6] For example: water or wet meadows, floodplains, washlands, grazing marshes.

1996). Known wet grassland landscape areas have decreased by more than 40% because of extensive drainage and agricultural improvements since 1930 (Benstead et al. 1997: 13; Gallagher and Cornish 1988: 1). The modern estimate for wet grassland in Scotland is currently unknown but believed to be around 300,000 ha (Bell 2015). We cannot expect to save floodplain or wet grassland archaeology if we do not have a current measurement of the remaining grassland communities. Without this critical knowledge, identification, and measurement of these types of prehistoric environments in comparison to the contemporary is impossible. This lack of environmental comparison directly affects the potential survival of archaeological materials in these locations because there is no knowledge of their existence.

Figure 4.5. Seasonally flooded wet grassland in the Cairngorms National Park. Photo by Tiffany Treadway, 2019.

Wet grassland and woodland are described in the local dialects, like floodplains, as wet and prone to flooding (Appendix 5). For example, in Scotland, wet grass and woodlands are also identified using words such as baidhte (drowned, liable to flooding, livestock liable to drowning) like floodplains (Irwin 1973). In Wales, they are known as clun (river meadow, halm), gwaun/gweunydd (moor, mountain, meadow, moor-land field), and gwlyb/gwleb (wet) (Irwin 1973). These locations are identified in such a way due to the seasonal and annual flooding that naturally occurs in these environments, similar to floodplains; thus, it should not be surprising that they are so named.

Wet grassland has proven invaluable for both habitat maintenance and archaeological *in situ* preservation, depending on grassland flora and soil type. Floodplains and rivers have a strong correlation with lake development and maintenance. However, they are not the only ways in which a lake can form or retain their form.

4.3.5 Lakes

Lakes are one of the focal landscapes for prehistoric wetland archaeology in Britain and north-western Europe. The development of wetland archaeology was established through the analysis of prehistoric lake-side settlements and crannog studies. Lakes, both ancient, evanescent, and modern have yielded a large majority of the wetland artefacts that further demonstrates these landscapes as centres of depositional activity.

Figure 43.6. Lakes of Snowdonia National Park from Snowdon Peak. Photo by Tiffany Treadway, 2021.

Lakes are large bodies of still water enclosed by land (Oxford Dictionaries 2018) and can be formed through glacier melt and movement, plate tectonics, water filling inactive volcano depressions, river run-off or flooding, land and mudslides, to beaver dams (Kar 2013: 60; National Geographic 2018) (Figure 4.6). Lake types are characterised by their depth, basin, water volume, surface area, water quality, inflow and outflow rates, complete dissolution of nutrients and sediments (e.g. dissolved oxygen, thermal and chemical stratification) (Balasubramanian 2015: 2).

The level of dissolved oxygen (DO) is an indication of a lake's overall health and fluctuates with annual temperature change (Bruhn and Soranno 2005: 9). The restricted oxygen supply found in lakes is steadily used by bacteria to decompose dead plant and animal material (Bruhn and Soranno 2005: 9). The oxygenation of lakes is broken into three layers: epilimnion, metalimnion, and hypolimnion (Bruhn and Soranno 2005: 9). The epilimnion is the uppermost layer to the surface, containing warm and well-oxygenated water (Bruhn and Soranno 2005: 9). The metalimnion is the middle layer, also known as the thermocline layer, containing rapidly changing water temperatures and oxygen concentrates (Bruhn and Soranno 2005: 9). The hypolimnion is the bottom layer and characterised by cold water. Both the epilimnion and metalimnion influence the temperature and DO level of the hypolimnion. The hypolimnion may contain water that is high or low in oxygen, depending on the trophic state of the lake (Bruhn and Soranno 2005: 9). Lower levels of oxygen present provide a greater level of preservation of artefacts in colder temperature water. High levels of oxygen present in warmer water accelerate the rate of degradation for many of the object materials. High levels of dissolved oxygen are ideal for the preservation of artefacts, especially when paired with low temperatures because it creates an anaerobic environment. Objects will experience a level of accelerated decay as the oxygen bonds are released and replaced with other elements. After this process, the rate of decay for the artefact slows tremendously because of the stable chemical environment.

Lakes are further classified by their trophic levels, which in turn affect their composition, thermal and chemical stratification. Trophic levels are measured by their productivity, or, in other words, their ability to support plant and animal life (Bruhn and Soranno 2005: 4). Object preservation can be assessed from a lake's trophic levels. Variations within trophic types can accelerate or stabilise the decomposition rates of archaeological remains.[7] The trophic levels of lakes are classified into eight categories: oligotrophic, mesotrophic, eutrophic, dystrophic, acidotrophic, alkalitrophic, argillotrophic, and siderotrophic (Balasubramanian 2015: 4; Kar 2013). To determine a trophic state, the chemical compositions of chlorophyll, phosphorus, nitrogen, and water clarity need to be measured (Balasubramanian 2015: 3).

Oligotrophic lakes are low productive, deep, clear water, with minimal aquatic plant growth (Bruhn and Soranno 2005: 4). These lakes maintain low levels of dissolved oxygen (Bruhn and Soranno 2005: 4; Balasubramanian 2015). As they occur in areas of hard acid rock, oligotrophic lakes can often be found in the north and west uplands in the United Kingdom (JNCC 2018b). Oligotrophic lakes contain ideal homeostatic conditions for an anaerobic environment, which would enable better artefact preservation.

Eutrophic lakes are high production, shallow, cloudy, and able to support abundant aquatic life. If the eutrophic lake is deep, the cool bottom contains little to no dissolved oxygen (Bruhn and Soranno 2005: 5). Lakes that fall between the oligrotrophic and eutrophic classifications are mesotrophic (Bruhn and Soranno 2005: 4; Balasubramanian 2015). As eutrophic lakes age, accumulating sediment and nutrients causes water clarity to become poor, the phosphorus concentration increases to above $100mg/m^3$, and chlorophyll can rise to $50mg/m^3$ (Balasubramanian 2015). When a eutrophic lake experiences such drastic changes in minerals, they are called hypereutrophic lakes (Balasubramanian 2015:4; Bruhn and Soranno 2005: 4). Hypereutrophic lakes are usually caused by human activity adding nutrients to the lake via runoff through industrial, septic, or agricultural practices (Balasubramanian 2015). Hypereutrophic lakes are not a sustained preservative environment because of the constant change in lake nutrients. Due to the lack of a state of equilibrium, artefacts are less likely to be able to maintain their compositional integrity.

Eutrophic lakes occur in the lowlands of southern and eastern Britain, and the north and west coasts (JNCC 2018b). If the eutrophic lake is deep and cool, the environment would support material preservation. Mesotrophic lakes can be found in the uplands of north and west Britain (JNCC 2018b). A mesotrophic lake's ability to maintain a positive preservative environment depends on how close on the spectrum to eutrophic or oligotrophic characteristics are. Therefore, it is imprudent to claim a mesotrophic lake has the ability to

[7] Objects reported from lakes also define the trophic type in which they are found in Chapters 8 and 9.

maintain material preservation because of their fluctuating variability. More study is required to delineate if mesotrophic lakes are more likely to preserve archaeological material in comparison to other trophic types.

Dystrophic lakes are characterised by acidic ‘dark, peat-stained waters’, that contain poor plant nutrients (JNCC 2018b; JNCC 2018c). These lakes contain high dissolved organic concentration, or DOC, (Korosi and Smol 2012: 2450) which allow for more resilience in declines of pH, reductions in UV radiation, chelate heavy metals, and can create less stressful environments than clear water lakes (Korosi and Smol 2012: 2450). As a result, dystrophic lakes have a wider variability for fluctuation of pH values, ranging from mildly acidic to neutral, nutrient availability ranging from low to neutral, and chemical compositions that are affected by the preceding two variables. Dystrophic lakes can be commonly found in the northwest of Britain but are scarce in the south (JNCC 2018c). Dystrophic lakes are not considered ideal locations for artefact preservation because they lack a consistent pH balance, nutrient availability or lack thereof, and stable mineral composition.

Other lake types to be considered but are not prominent types found in Britain are acidtropic, alkatrophic, argillotrophic, and sidertrophic. Acidtrophic lakes are low production, low nutrient limitation (N:P), and contain a pH balance less than 5.5 (Balasubramanian 2015:6; Koerselman and Meuleman 1996). Alkatrophic are high production, high calcium lakes (Balasubramanian 2015: 6). Argillotrophic lakes are low production, with murky clay water (Balasubramanian 2015: 6). Sidertrophic are low production, high iron lakes (Balasubramanian 2015: 6).

Wales has 563 lakes, and of these 398 are natural (Hatton-Ellis 2014: 5; Wales.com 2018). Palmer and Roy (2001: 6) estimated the freshwater surface habitat areas as such: dystrophic (0.4%), oligotrophic (47%), mesotrophic (20%), and eutrophic (28%). The Wales Biodiversity Partnership conducted a strategic overview of lakes in Wales in 2004. They listed 157 oligotrophic lakes (1392.2. ha), 15 dystrophic lakes (52.4 ha), 21 mesotrophic lakes (618.2 ha), 11 hard lakes (91.1), 33 eutrophic lakes (700.9 ha), 129 unknown types (811.1ha), 185 lakes ‘unlikely to match a BAP category’ (4391.4 ha), and 12 destroyed lakes (31.6 ha) (Hatton-Ellis 2014: 5).

Scotland has an estimated 31,460 freshwater lochs, which is twice the number of lakes in both England and Wales (Lassiere 1995). According to the JNCC Report No. 317, there are 2119 oligotrophic lakes (129,355 ± 6468 ha), 267 dystrophic lakes (965± 97 ha), 249 mesotrophic lakes (17, 983 ± 1,798 ha), and 689 eutrophic lakes (12,113 ± 606 ha), along with 3 'brackish' types (Palmer and Roy 2001: 22). In Scotland, the only natural area of water enclosed by land considered to be a lake is the 'Lake of Menteith' (Rampart Scotland 2018).

As stated previously, lakes in Scotland are called lochs, retaining their original dialect use. In Wales, lakes are called llyn or llwch, often used as affixes in placenames (Appendix 5) (Irwin 1973). For example, Llyn Cerrig Bach translates to a small stone lake. The difference between the two countries is that 'lake' is used secondary to the signifying placename in Scotland, whereas in Wales, it is part of the placename.

4.3.5.1 Thermal Stratification

Thermal stratification is an important observation for heritage studies because temperatures influence the level of preservation of archaeological materials. Thermal stratification is the change in temperatures depending on the lake's depth and is often influenced by changing seasonal temperatures (Dake and Harleman 1969; Ullyott and Holmes 1936). Lakes that do not stratify seasonally or only once during the hottest season are classified as polymotic (Kirillin and Shatwell, 2016: 180). Lakes that stratify only once a year can be classified as monomictic. Lakes that have two stratification seasons are classed as dimictic (Kirillin and Shatwell, 2016: 180; Kar 2013: 61). Temperature affects density, and therefore also affects stratification of 'geophysical fluids' or fluid dynamics and dissolved nutrients and sediments (Kirillin and Shatwell 2016: 180). Thermal stratification is strongly influenced by seasonal variations in temperature caused by the annual insolation cycle (Kirillin and Shatwell 2016: 180). Thermal stratification has differing effects depending on the type of trophic classification. To maintain the integrity of artefact preservation a consistent and cool temperature is required to create the most stable conditions.[8]

For some lakes, the abrupt change in temperature, usually occurring in the summer, prevents dissolved oxygen from passing from the epilimnion to the hypolimnion (Bruhn and Soranno 2005: 9). During the summer, the hypolimnion is dependent on dissolved oxygen acquired during the spring overturn (Bruhn and Soranno 2005: 9). For certain trophic lakes such as eutrophic, dissolved oxygen can become exhausted in a matter of weeks during

[8] Thermal stratification in relation to lake discoveries is discussed in Appendices 6 and 7 case studies.

summer stratification. However, other trophic types such as oligotrophic, contain a large hypolimnetic volume which provides the ability to retain high oxygen levels throughout the summer (Bruhn and Soranno 2005: 9).

Artefact preservation requires a constant equilibrium state to maintain both chemical and physical integrity after the dissolved oxygen process. Dissolved oxygen occurs once a year on average (Bruhn and Soranno 2005; Yu et al. 2010), and therefore artefacts are expected to be affected to some degree by the influx of chemical change and the release of gases. Temperature also plays a large part in maintaining a preservative state (Karsten et al. 2018). Lakes that experience continuous and drastic temperature changes as deep as the hypolimnion would have a significantly lower probability of artefact survival. In contrast, lakes that experience a consistent temperature (low or high, and dependent on material) at this depth would hypothetically have a higher probability of artefact preservation. Lakes that maintain an overall higher temperature are more likely to have a more accelerated process of gas release, which can cause a lower level of artefact preservation for certain organic material types (e.g. wood objects). Lakes that maintain lower temperatures also have a slower gas release, which creates a more stable environment that would enable a higher percentage of organically composed objects.

4.3.5.2 Chemical Stratification

Chemical stratification is the by-product of thermal stratification. During these periods, phytoplankton consume associated nutrients and produce oxygen in the epilimnion, and chemical stratification occurs (Yu et al. 2010: 252). In the hypolimnion, nutrients falling from the epilimnion are accumulated with organic matter along with sediment release and degradation of organic soil compounds (Yu et al. 2010: 251). This results in a vertical distribution of water quality based on the weight of chemical and organic soil compounds such as ‘chlorophyll-a, nutrients, and dissolved oxygen’ causing a rapid chemical change of the lake’s water, known as chemocline (Yu et al. 2010: 251-252). The chemocline, like thermocline, has an abrupt chemical change in water chemistry instead of temperature change. The strength of stratification is defined by existing chemical unit concentration levels between the epilimnion and hypolimnion (Yu et al. 2010: 252). Repetitive and abrupt changes to water chemistry create a hostile environment for artefact preservation because of the unstable chemical composition. Chemical stratification, however, is needed because it is a natural part of lake’s deep-water thermal stratification cycle. When studying these landscapes, archaeologists need to consider the degree at which chemical stratification is or has taken place, and its frequency to determine projection rates of artefact survival and their long-term stability *in situ*. Wetland artefacts survive better *in situ*, but if their environment is in danger of chemical or mineral instability, archaeologists must then consider the advantages of salvage excavation. Lakes, however, are not the only large inland bodies of water, with estuaries dotting the coastline of Britain which are also centres for archaeological activity.

4.3.6 Estuaries

Estuaries are ecotones between land, sea, and rivers. They are areas that absorb incoming waves from the ocean or sea, or the exit for river flow dissipation through the mouth of the estuary (Figure 4.7). Estuaries are often characterized as transitional zones between marine and terrestrial spaces. Pritchard (1976) defined estuaries as, 'a semi-enclosed coastal body of water, which has a free connection with the open sea, and within which seawater is measurably diluted with freshwater derived from land drainage.' Elliot and McLusky (2002: 817) expand upon this definition for European estuaries, confining them to areas of 'the Atlantic Coast from mid-Norway at 60°N to southern Portugal at 37°N, a latitudinal range of 23' and subjected to two daily tides. Estuaries north of the equator, like those found in Europe, have a continuous river flow that is dependent on winter rainfall (Elliot and McLusky 2002: 817). Estuaries south of the equator are seasonal and depend on summer rain as their main water source (Elliot and McLusky 2002: 817). On the same basis,

Coastal plain estuaries	• Formed during the last glaciation period in flooded pre-existing valleys. • Usually less than 30m deep. • Large width to depth ratio.
Bar-built estuaries	• Widespread in the UK. • Usually have sediment bars across the mouth openings of the estuary. • Partially drowned valleys that have been flooded. • Small.
Ria estuaries	• Drowned river valleys. • Usually restricted to upper reaches before diluted by freshwater conforming into 'large shallow inlets and bays.'
Complex Estuaries	• Are formed through 'glaciation, river erosion, sea-level change and geological constraints from hard rock outcrops' and other variations of physical influences.

Table 4.5. Estuary subtypes as identified by JNCC occurring in Britain (McLeod et al. 2005)

gradient transition from sheltered inland wetland to open sea or river and salinity is also considered (Elliot and McLusky 2002: 816).

The primary geomorphologic estuary types found in Britain are coastal plain, bar-built, ria, and complex estuaries (Table 4.5).[9] Other geomorphologic estuary types identified in Britain are: fjord, fjard, ria, barrier beach, linear shore, and embayment (Scotland's Environment 2011). According to Scotland's Environment (2011:2), estuaries cover an estimated 100,000 ha of the Scottish landscape. Estuaries in Wales are estimated to cover 7,560 ha of the landscape (JNCC 2018d).

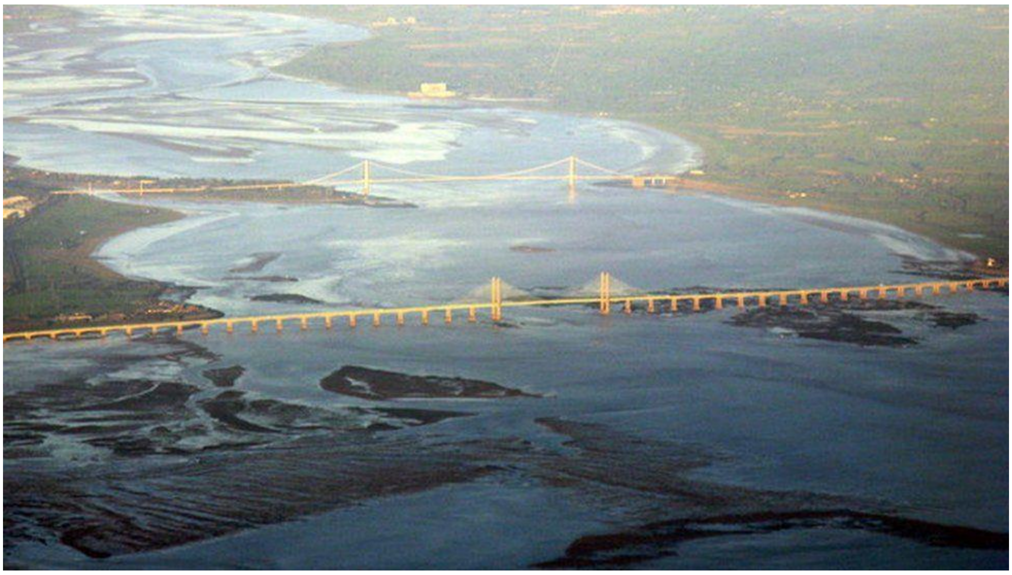

Figure 4.7. The Severn Estuary with the two Severn bridges. Photo is the property of J. Richardson.

Estuaries are identified in the local dialect through certain words (Appendix 5). In Scotland, camas (channel, bay, in inland places a bend) and inbhir (confluence of watercourse, mouth of watercourse) also spelled as inver, are used to identify an estuary (Irwin 1973). Inver is a common affix for place names in Scotland; for example, Inverness translates to the mouth of the river ness. For Wales, aber (estuary, confluence, stream) and moryd (estuary) (Irwin 1973). The Welsh use aber as a common affix for placenames; for example, Aberystwyth means the mouth of the river Ystwyth. Therefore, the words used for estuary are more reflected in the placenames of these landscapes, as opposed to being used solely as descriptive words of the environment like those used for peatlands.

[9] Total occupied intertidal area in Britain – fjord [2% and 1%], fjard [5% and 6%], ria [3% and 2%], coastal plain [35% and 31%], bar-built [6% and 8%], complex [18% and 17%], barrier beach [2% and 3%], linear shore [4% and 6%], and embayment [25% and 26%] (Elliot and McLusky 2002: 820).

4.3.6.1 Salinity and Velocity

The entering salinity-dense seawater mixing with freshwater sources causes vertical saline stratification (Hansen and Rattray 1966: 319). The convection flow of the estuary circulates seawater and freshwater, stopping the denser seawater from sinking in a process known as *estuarine circulation* or *gravitational convection* (Hansen and Rattray 1966: 319). The distribution of salinity and convection within an estuary is dependent upon 'geomorphology of the landscape, freshwater flow, and tides' (Hansen and Rattray 1966: 319). To find the level of stratified circulation, two dimensionless limitations are measured to characterise estuaries: stratification and circulation parameter (Dyer 1997: 25). Stratification parameter is the ratio of surface to bottom difference in salinity, divided by the average of cross-sectional salinity (Dyer 1997: 25). The circulation parameter is the ratio of net surface current to the mean cross-sectional velocity expressing the average of freshwater and entrainment to river flow (Dyer 1997: 25). The degree of convection in an estuary is subject to size, depth, wave energy, flow, and tides providing a range of stratified to un-stratified water column. A stratified water column contains a high degree of convection, given the estuaries' width and depth able to quantify incoming tide flow. An un-stratified water column is partially or completely unmixed fresh and saltwater (European Environment Agency 2018).

Estuaries are a significant landscape for wetland archaeology in Britain. The Severn Estuary is one of the most archaeologically researched estuaries in the world. As estuaries are ecotones, in areas of low energy flow, low disruption, and stable salinity rates, archaeological preservation can be quite high if the artefacts are sealed in an alluvium or peat layer.

4.3.6.2 Tides

Tides play a large role in the degree of salinity and sediment drag of an estuary. Tides have many different forms which generate varying effects for the estuary (Dyer 1997: 33) (Table 4.6). The tidal curve shape is dependent upon the estuary's topography and level of friction (Dyer 1997: 33). All tidal waves have a level of dissipation as they travel towards the estuary head. However, the level of this dissipation and diminishment of energy is dependent upon an estuary's elevation, velocity, friction, and salinity (Dyer 1997: 34, 36).

Microtidal	Less than 2m tidal range
Mesotidal	A tidal range more than 2m, but less than 4m
Macrotidal	A tidal range more than 4m, but less than 6m
Hypertidal	A tidal range exceeding 6m
Table 4.6. Davies' (1964) Tidal Context	

Un-stratified estuaries have shallower waves (Dyer 1997: 33). Lack of friction will cause the wave to reflect, returning to the mouth of the estuary once it has reached the head (Dyer 1997: 33). If the speed of the wave is equal to the tidal period, the returning wave will meet the next entering wave (Dyer 1997: 33). A standing wave system is established provided the antinode positioned at the head of the estuary, and the alternative nodes and antinodes stay still (Dyer 1997: 33) (Figure 4.8).

Where friction dissipates the wave, or the length of the estuary exceeds the waves'

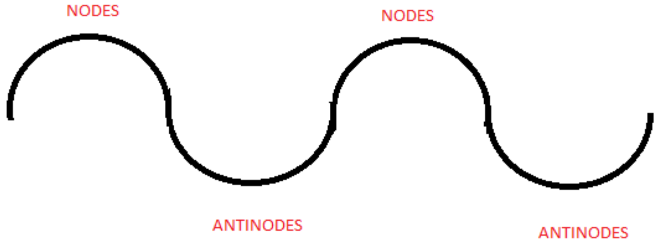

Figure 4.8. Nodes and antinodes of wave systems in estuaries.

energy, the wave is known as a progressive wave (Dyer 1997: 33). Progressive waves diminish before reaching the head of the estuary, meaning that flood currents will only occur at high tide (Dyer 1997: 33-34). These tides are important because they dictate the level of sediment drift and drag, along with particle erosion, of the archaeological material deposited.

Estuaries that consist of a high tidal range also contain a large *tidal prism* (Dyer 1997: 7). A tidal prism is the measurement of water that flows into or out of an estuary (Hume 2005). However, diminution of the tidal range occurs in areas of friction for shallow waters. Hypersynchronous, synchronous, and hyposynchronous estuary conditions are dependent on convergence of the estuary sides and friction (Dyer 1997: 7; Nicholas and Biggs 1985).

Estuaries that contain strong tides and thus high friction along the estuarial floor may not preserve artefacts because the soil or organic matter is constantly being moved, oxygen is introduced through current circulation, and there is exposure to erosion. That is not to state that estuaries with strong currents are not facilitators of artefacts, but that those reported from these wetlands tend to be the most intact along the periphery. These periphery zones tend to have flora that protects against currents, but can also contain peat, which further enables better preservation properties for the objects deposited. For example, artefact discoveries dating from the Mesolithic to the Medieval have been discovered along the shoreline of the Severn Estuary (Bell et al. 2000). Overall, the United Kingdom has over ninety estuaries (JNCC 2018d). Wales has around twenty-two estuaries reported, whereas Scotland contains fifty that cover almost one thousand kilometres of land (Scotland’s Environment 2011: 2).

4.3.7 Peatlands

Peatlands currently cover 12% of Britain’s total landmass, which is an estimated three million hectares. For Wales, the current estimate of peatland area is 90,955 hectares (snowdonia.gov.uk), which is 4% of the country’s total landmass. Whereas for Scotland, the current peatland landmass estimate is somewhere between 1.65 – 2.1 million hectares (Artz et al. 2012). However, the Scottish Parliament has provided the estimated medium of 1.8 million hectares, covering 20% of the country’s total landmass (Marsden and Ebmeier 2012).

Peatlands are vital to the study of wetland archaeology because of the anaerobic conditions in which most artefacts are preserved. Peatlands are wetlands that are dependent on water runoff or rainfall (Bruneau and Johnson 2014: 1; Ramsar Convention 1971). Peat is partially decomposed plant remains that have accumulated at the soil’s surface profile in waterlogged anaerobic environments (Bruneau and Johnson 2014: 1; Lindsay and Immirzi 1996: 3). Peat is developed through hydrostatic submersion of organic materials in water, which inhibits the growth of micro-organisms that normally aide in breaking down plant remains (Countryside Council 2004: 2). After a period of decomposition, oxygen bonds have been released, and the partially decomposed vegetation—with the aid of sphagnum moss—turns into peat. Peatland, according to Joosten and Clarke (2002: 24), comprises a minimum of 30% dead organic material in the form of dry mass. Peatlands are areas that have lost their typical vegetation and therefore may no longer be actively forming peat (Bragg 2001: 112). In contrast, mires are peatland systems of actively forming peat (Bragg 2001: 112). Peatlands can be identified in the form of two broad ecosystems, fens and bogs (Countryside Council 2004: 3).

Due to the anaerobic conditions of waterlogged areas, vegetation is semi-carbonized, giving peat its unique chemical properties (McMillan and Powell 1999: 21). Peat is categorized 'based on function, relation to vegetation management, water table, and organic degradation', in states of active, degraded, bare, archaic, and wasted or lost (Bruneau and Johnson 2014: 13). Peat possesses the ability to enter or exit these cycles based on various internal and external factors such as precipitation, water runoff, and human disturbance. As previously stated, peat differs due to function, vegetation, water table, and degradation. The different types of peat found in the United Kingdom include, but are not limited to: basin, blanket, fen, hill, raised, and flow (McMillan and Powell 1999) (Table 4.7).

Peatlands can be further distinguished through hydrological connections or isolation. Mesotopes are used to describe singular mire units, but a macrotope is a series of interconnected peatland landscapes that form a mire complex (Lindsay et al. 2014: 6).

Mires	• Areas of still actively forming peat. • Influence quality of water. • Protect against erosion for mineral ground. • Modify 'rainfall run-off responses' (Bragg 2002: 125).
Basin peat	• Found in mires 'occupying hollows' and lake basins or valley bottoms.
Blanket peat	• Ombrotrophic. • Containing little to no inorganic mineral nutrient. • Grows on stable features that are subjected to abundant rainfall. • Can alter the biodiversity of an environment through higher acidity introduced into the soils. • High acidity with anaerobic conditions reduces the rate of biological decay.
Fen peat	• Formed through the decomposition of fen vegetation fed by inorganic mineral groundwater nutrients. • Contains little to no sphagnum. • Alkaline.
Hill peat or Upland peat	• Only occurs on plateau mountain tops. • Cool humid regions (Forestry Commission 2018). • Further classed into blanket or raised bog (Forestry Commission 2018).
Raised bog peat	• Identified by having the 'thickest accumulation of peat at the centre' (McMillian and Powell 1999: 21).

	• Mostly covered by sphagnum moss. • Mosses retention high concentrations of water and are less dependent on rainfall. • More dependent on water table.
Peat flow	• Response to a bog burst. • A burst is a release of pressure caused by abundant retention of water in a bog. • The result of the burst is a mudflow of peat into the surrounding adjacent area.

Table 4.7. Types of peat provided by McMillian and Powell (1999).

For both Scotland and Wales, peatlands are described through the presence of peat (Appendix 5). These landscapes can be identified in the local dialects through such words as aonach (moor or market place), bacaichean (peat bank), moine/mona/monach (peat), mointeach (mossy ground) in Scotland (Irwin 1973). For Wales, such identifiers are gwaun (moor), gwlyb/gwelb (wet), mawn (peat), merddwr (stagnnt water), and merllyn (stagnant pool) (Irwin 1973).

4.3.8 Fens and Bogs

Fens and bogs are the predominant peatland landscapes in Britain. They are both superficially similar but are drastically different ecosystems. Fens and bogs are primarily located in cool boreal zones where ‘excess moisture is abundant’ (Kar 2013: 275). Both systems can originate from the other, or develop in conjunction with each other, creating transition zones in the landscape. They differ through moisture and nutrient procurement, vegetation, soil pH, and water table. The nutrients absorbed and processed from water sources determines the pH of the soil or peat. The vegetation that thrives in these systems also influences the soil or peat’s pH value and development.

4.3.8.1 Fens

Fens are defined as a permanent or seasonally submerged wetland, containing 'alkaline or neutral peat', and are generally fed by river water runoff or groundwater (Haslam 2004; EPA 2018; JNCC 2018a) (Figure 4.9). Fens are minerotrophic (water sourced from rivers or streams) and bogs are ombrogenous (water sourced from rain) (Drewitt et al. 2015: 2).[10] Fen soils are a combination of different deposits, such as: alluvial, alluvial fan, fluvial, interglacial, and terrace (McMillan and Powell 1999: 21) (Table 4.8).

Alluvial fan deposits	• Low and outspread, relatively flat to gently sloping mass of loose rock material. • Shaped like a fan or cone. • 'Deposited by streams at the mouths of tributary valleys onto a plain or broad valley.'
Fluvial deposits	• Sedimentary deposits. • Transported, suspended or laid down by river or stream.
Interglacial fluvial deposits	• Fluvial deposits of pre-Late Devensian Age.
Terrace deposits	• Alluvial formation in river or stream. • 'Produced as the dissected remains of earlier abandoned floodplains.'

Table 4.8. Fen Alluvial deposit terminology (McMillan and Powell 1999: 21).

Fen soil contains more nutrients than bogs because fens receive water from soil run off and surrounding mineral rock formations (Bragg 2002: 111-112; Countryside Council 2004: 3). The vegetation in fens is similar to those found in bogs if water runoff is highly acidic (Countryside Council 2004). Therefore, bogs can become fens and fens can become bogs depending on vegetation and peat development.

Sphagnum mosses also occur in fens. The presence of these moss types and their survival in a normally alkaline environment depends largely on yearly precipitation, carbon storage, and habitat disturbance (Vicherová et al. 2016: 1429). In the study conducted by Vicherová et al. (2016), sphagnum shoots only survived when precipitation was high.

[10] Fen vegetation consists of perennial herbaceous dicotyledons, grasses, and sedges (Haslam 2004; EPA 2018).

Otherwise, these mosses are likely to die within weeks or months due to weather, alkaline water chemistry, and intolerance to 'desiccation' in fens (Vicherová et al. 2016). Bog-mosses' death by desiccation is not surprising, given that fens have a much higher rate of evapotranspiration than bogs (Bragg 2002: 113). [11] Therefore, peat is more likely to survive in a bog environment than fen.

Figure 4.9. Photos of 'Ricking the reed' in a fenland by P. H. Emerson (Getty Museum).

The JNCC only identifies with two types of hydrology-based fens: topogenous and soligenous. Topogenous fens have vertical water movement (JNCC 2018a), and 'floodplain fens, basin fens and open water transition fens' (Drewitt et al. 2015). Floodplain fens develop through waterlogged areas adjacent to overflowing floodplains, rivers, or streams (Drewitt et al. 2015). Basin fens develop through minimal water flow in a waterlogged basin (Drewitt et al. 2015). A schwingmoor basin fen is characterised by consecutive floating vegetation that ultimately sinks forming peat. These layers of peat are separated by liquid lenses causing semi-floating structures (Drewitt et al. 2015). Transitional fens develop around large open bodies of water (Drewitt et al. 2015).

Soligenous fens contain lateral water movement and are dependent on subsurface water sources (JNCC 2018a; Drewitt et al. 2015: 9). Soligenous fen types include ladder fens, valley mires, and spring fens. Ladder fens are associated with depressions of blanket mire with a degree of sloping and lateral water movement, but contain 'no evidence of a central water-track' (Drewitt et al. 2015: 9-10). Ladder fens tend to be small, dependent on subsurface water sources, and run along slopes that correlate with the direction of water

[11] Bogs evapotranspiration is (E/Et ≈ 1.0 or 1.1), whereas fens exceeds this by (E/Et ≈1.4) (Bragg 2002: 113).

seepage (Drewitt et al. 2015: 9). A valley fen or mire develops in small valleys, along the lower slopes. These fens depend on springs and seepage for water sources, and only develop with the presence of sub-surface water movement in the area (Drewitt et al. 2015: 10). Spring fens develop under their water source, mainly springs or area of seepage. If this fen develops under 'the artesian pressure' level it can develop a dome composed of mire or peat in an otherwise flat landscape (Drewitt et al. 2015: 10).

Fens are further classified based on pH balance and nutrients introduced from their various water sources. Fens can be classed as 'rich' when they are, 'receiving calcareous, carbonate-rich, neutral to high-pH waters …' (Drewitt et al. 2015: 2). Calcareous fens are characterised as having a calcium dominant cation (Keddy 2010: 37). However, fens which are low in calcium and carbon with a low pH balance are classed as poor fenland (Drewitt et al. 2015: 2). Currently, no study has been published that provides a holistic regional comparison between poor and rich fenland for archaeological material objects. An educated assumption, however, is that material objects would survive better in fens that can sustain active peat. This would mean poor fenland would be a more positive and stable environment than rich fenland. Rich fenland would not provide a stable preservative environment because of the abundant plant life which cycles higher concentrations of oxygen into the soils, thereby exposing deeper deposited artefacts. Knowing the various types of fenland helps archaeologists define the wetland landscape that they are analysing. Understanding water sources, and how water flows through a landscape may help to reveal archaeological features and materials through observation.

Fens can be identified through local placenames with affixes or local dialect (Appendix 5). For Wales, fenland is known as morfa or fen (Irwin 1973). However, certain placenames have affixes that describe the presence of peat, like Corsydd Môn, which translates to Anglesey fens. For Scotland, fenland does not have a word but are identified as boglach, which translates to boggy wetland.

4.3.8.2 Marshes

Marshland is defined as an expanse of low-lying land with seasonal flooding primarily in the winter (Haslam 2004: 3). Marshes can also be defined as drained fens or informal fens (Haslam 2004: 4). Marshes are characterised by mineral soils receiving water from groundwater sources rather than ombrogenous sources (Haslam 2004: 4; Maltby 1991: 9). These landscapes are typically shallow with soil accumulation and fen vegetation (Haslam 2004: 4; Maltby 1991: 9). The lack of peat, however, does not mean that marshlands are incapable of preservation, only that preservation of material objects is achieved through waterlogged conditions. Marshlands develop along the edges of lakes and rivers (Maltby 1991: 9). There are three types of marshland: freshwater, tidal salt, and tidal freshwater (Maltby 1991: 9) (Figure 4.10).

Freshwater marshes are almost always located further inland and their vegetation is dependent upon location and hydrology (Maltby 1991: 10). Tidal salt marshes are generally located at ‘temperate sheltered shorelines’ (Maltby 1991: 10). The salinity of the marsh is reflective of the tidal sequence fluctuations and periods of inundation (Matlby 1991: 10; Keddy 2010: 50). These areas develop into complex transition zones from wetland to terrestrial (Matlby 1991: 10). Tidal freshwater marshes also occur in similar locations as tidal salt marshes but lack the same level of salinity but are still dependent on tidal fluctuations and inundation (Maltby 1991: 11).

Figure 4.10. The Tollesbury Saltings, a salt marsh in Essex, England. Photo is the property of Geoff Robinson.

Marshes can be identified in the local dialect through words such as easg, easgaigh, easgain, and goath (Scotland), or brwynog and morfa (Wales) (Irwin 1973). Interestingly, certain words have dual meanings, such as goath which refers to both wind and marsh; or brwynog which means places of the rushes and marsh.

4.3.8.3 Bogs

Bogs are vital for wetland archaeology because their anaerobic conditions paired with peat create a seal providing excellent preservation for archaeological material and remains. Bogs can be superficially identified through the growth of sphagnum mosses and acidic peat organic compounds (Figure 4.11). Partial decay of waterlogged vegetation produces deep layers of peat in which certain acidic dependent vegetation such as sedges, ericaceous shrubs, or evergreen trees thrive (Keddy 2010: 8; McMillan and Powell 1999: 21; Maltby 1991:12). They form in areas where a high water table is present and paired with reduced oxygen or anaerobic conditions (Maltby 1991: 12). Bogs contain acidic soil, having an average pH balance less than five (Countryside Council 2004: 6; Keddy 2010: 8; McMillan and Powell 1999). Bogs, however, are ombrogenous and 'calcium starved environments', which creates a low plant nutrient status (Bragg 2002; Countryside Council 2004: 3, 5). Low plant nutrient status is required in bogs for artefact preservation because the vegetation that would circulate oxygen into the soil is unable to grow.

Figure 4.11. A blanket bog in the Caithness and Sutherland region in Scotland. Photo is the property of NatureScot.

Mosses, such as sphagnum, grow in bogs and add to the acidity of soil pH (Countryside Council 2004: 6). These mosses, in addition to peat, help bogs absorb up to 20 times their weight in water (Countryside Council 2004: 6). There are hundreds of different species of sphagnum moss (Rydin and Jeglum 2003: 75), each successful at 'relative heights to the water table' (Bragg 2002: 121).

The two most distinctive types of bogs are *blanket* and *raised*. Blanket peat bogs occur on hilly landscapes (Brunaeu and Johnson 2014: 3) and tend to cover large areas of terrain (Maltby 1991: 12). They are often found in the uplands and coastal areas in Western Europe (Maltby 1991: 12). Raised bogs occur in lowland landscapes such as floodplains or basins, and usually develop on top of already established fen peats and continue to grow upward (Brunaeu and Johnson 2014: 3; Maltby 1991: 12). The bog will continue to grow upward until it can no longer be reached by the water table (Maltby 1991: 12).[12]

Bogs can be identified through local placenames with affixes (Appendix 5). For Wales, these affixes are cors, corsydd, mawn, and mawnog for bogs (Irwin 1973), and can be found in placenames such as Cors Caron and Cors Fochno. For Scotland, these affixes are boglach, coinneach (moss), coinneachan (place of moss), and moine/mona/monach (peat) (Irwin 1973), and can be found in such placenames such as Moine Mhor (meaning place of the great moss). Placenames referencing bogs differ in these two regions whereby in Wales the affixes describe the identifying landscape, whereas, in Scotland, they describe environmental characteristics such as peat.

4.4 Finding Prehistoric Wetlands that No Longer Exist

The challenge when recording objects derived from prehistoric wetland contexts is that many of these landscapes no longer exist as wetlands due to extensive drainage, human intervention, and global climate change. Therefore, soil types associated with these wetlands known as *wetland sediments* were included for analysis. The sediment types themselves are important, as the objects do not float in some homeostatic status in the water, but instead are buried through sediment drift or human action within the wetland's soil or peat.

Distinguishing wetland soil types can be confusing, as many are a composite of peat, gley (i.e. hydric soil), and alluvium. This confusion is only compounded when old records provide the descriptive environmental context as 'wet.' Observation of soil compositions was helpful in revealing prehistoric environments through their layered stratification. For example, peat can develop in various wetlands from bogs, to fens, to lakes. However, peat layers can remain long after these initial environments are no longer active. One such case is the Deskford carnyx, which was deposited in peat. Upon discovery, it was

[12] Other examples of bog types are marsh swamp bog, swamp marsh, kettle hole bog, plateau bog, string bog, and slope bog.

found laid on a layer of clay and the peat deposit buried under brown soil (Hunter 2001, 2019a: 239). The peat where the carnyx was buried is theorised to have been placed in a pit cut. The peat was removed until the clay underlayer was exposed, the object placed, and the cut filled with the removed peat. At the time of its deposition, the peat would have been a metre in depth and grown to at least two by 1800 according to Hunter (2019a: 239). Extensive farming and drainage of the area had removed traces of the prehistoric marshland, but trace deposits of the pre-existing environment remained through buried peat layers.

Thus, the three main soil or organic compound types that indicate a wetland or serve as evidence for previous prehistoric wet landscapes are peat, gleyed soils, and alluvium. Peat, depending on the development of bog or fen, can leach nutrients from the remaining soils and organic compounds. This leaching process is most evident in prehistoric bog bodies. Peat behaves '… as a simple cation exchanger with ion preference decreasing in the order Ca^{2+}> Mg^{2+}> H+>K +>> Na+)' (Bragg 2002: 120; Shotyk and Steinmann, 1994). Through this sequence, nutrients are leached by passage through bogs. Fens, however, act as retention areas for nutrients such as phosphorus and inorganic nitrogen (Bragg 2002: 120). Therefore, archaeologists can expect a significant alteration in the chemical composition of artefacts and remains found in bogs.

Peat is carbon-rich and plays a major role in global carbon cycling. It is greenhouse positive and produces large quantities of methane through anaerobic conditions. However, in the beginning stages of peat development in certain wetlands, it becomes greenhouse negative 'since the rate of carbon sequestration exceeds that of decomposition' (Bragg 2002: 123). When wetlands which contain peat are drained, the decomposing peat becomes a strong CO emitter (Bragg 2002: 123). The release of the gas from peat is not only harmful to the environment but also for the artefacts deposited. The release in gas causes the peat and artefact to become unstable because of the changing chemical composition and the re-introduction of oxygen compounds, which accelerates the material decomposition process.

Gley soils, also known as wetland sediment because of their hydromorphic characteristics, is a waterlogged soil with anaerobic qualities. These soils can be found in fluvial and lacustrine environments. 'Hydromorphic soils are characterised by the reduction or localised segregation of iron, owing to the temporary or permanent waterlogging of the soil pores which causes a lack of oxygen over a long period' (Duchaufour 1982: 335). Therefore, there is a strong correlation between the water table and redox process for the development of gley soil (Duchaufour 1982: 336). Gleys are common in fluvial (rivers and streams) and lacustrine (lakes) systems, and as a result, provide strong evidence for prehistoric wetlands that are no longer in existence, especially when paired with archaeological material of a known typology (e.g. terrets, torcs, cauldrons).

Alluvium is another strong indication of a fluvial environment and tends to be associated with and deposited by rivers or floodplains through sediment drift. Consequently, there is a high probability that prehistoric objects found in prehistoric fluvial environments were placed when a river or floodplain was present.

Further discussion will be provided in subsequent chapters and appendices detailing the preservative qualities of wet soils and associated wetland types. Surviving wetlands do not provide a complete representation of the extensive nature of the prehistoric wetlands. It is important to look at the sediment profiles to create a more comprehensive understanding of the prehistoric environment. Therefore, while sediments at first seems to be a separate and possibly unrelated element to the study, it is instead a very important clue to finding prehistoric wetland environments that no longer exist in the modern period.

4.5 Environmental Shifts and Correlation with the Iron Age Period

Major fluctuation shifts occurred through the prehistoric periods. However, in the Iron Age, this shift was in favour of producing wetter environments and more temperamental weather systems. Dark (2006) points out that there was regional variability to climatic and environmental shifts. These shifts were not just dependent on natural environmental fluctuations and invasive flora, but also the level of human alteration of the landscape such as extensive farming and deforestation.

Dark’s (2006) study revealed that peat growth peaked in Wales at the beginning of the Iron Age. This peat growth was represented in the Brecon Beacons and Tregaron Bog. Major woodland clearance occurred in Bryn y Castell, Breiddin, and Waun-Fignen-Felen, which is unsurprising considering the large settlements in these areas during the same periods as the aforementioned peat growth. However, peat growth in the Breiddin and Cefn retain the same and consistent growth. As a result, as Cunliffe (2004: 33-34) states, the north and the west regions of Wales, with evidence of the boundary horizon, shows that certain areas became unstable due to environmental decline in addition to bog formation. He goes on to say that the increased precipitation, colder temperatures, and reduction of a growing season during this period would have also disrupted certain kinds of cereal growth, no doubt putting pressure on resource sustainability of communities.

Environment shifts within sub-regions and cross-regionally would have had a significant effect on local extraction of resources ; however, many of these shifts were because of human alteration. For example, during the Iron Age there is extensive evidence for the extraction of bog iron in the North of Wales. Perhaps without the increased interaction with these encroaching environments, bog ore may not have been discovered and thus extracted for production. Large-scale production smelting sites such as Bryn y Castell and Crawcwellt West impacted the local environment due to the level of deforestation with ‘evidence for bronze- and/or secondary ironworking since the 1st millennium BC (Musson et al. 1992)’ (Mighall and Chambers 1997: 203-204). Perhaps what should be considered is the self-renewing properties of bog ore as forementioned by Giles (2020a: 114), citing Tylecote, which could be harvested at least once every generation with a regeneration ‘…rate of 5-10 cm a year’ (Tylecote 1986: 125). Therefore, the deforestation of certain areas may have been purposeful, not only for the construction and maintenance of settlements and production sites but also to grow boglands to increase potential ore extraction.

However, largescale deforestation did not only increase boglands but also grasslands, as evident in the Abercynafon valley, Powys, Wales (Caseldine and Earwood 2013: 25). Aptly named, the Abercynafon translates to the river before the river or the confluence before the river (Appendix 5), characteristic of the valley which is full of off-shooting streams from the River Caerfanell that later joins with the River Usk. The clearance of woodland during the Late Bronze Age and Iron Age caused the growth of grasslands which were then utilised as subsequent grazing grounds (Caseldine and Earwood 2013: 25). The late Iron Age saw a revival of woodland until a marked clearance in the Roman period, which is characteristic of this time.

In Scotland, the environmental shift is almost the complete opposite, having a decline in precipitation in the early Iron Age with an additional lowering of the water table (Charmon et al. 2006). In the North of Scotland, Tipping (in Hunter 2019a: 266- 272) states that basal peat began to grow in the basin around the Middle Bronze Age, which was sponsored not by increased precipitation but by human activity (e.g. soil disturbance, deforestation). Regeneration of the local woodland occurs after 1000 BC (Tipping in Hunter 2019a: 268).

However, local grasses that serve as grazing indicators began to appear within the woodland, and the activity intensifies around 400 BC (Tipping in Hunter 2019a: 269). Other environmental shifts occurred in the north of Scotland, such as Deskford. According to Tipping (in Hunter 2019a: 270), the ‘erosion of the scarp of glaciofluvial sediment last occurred by the Roman Iron Age.’ This erosion occurred due to a shift in the bend of the burn on the eastern edge of the floodplain, thus widening the valley and floodplain, accelerating fluvial activity. Charmon et al.’s (2006) study of the Borders and Central regions revealed a rise in the water table in 2700 – 2800 cal BP, with a peak occurring from 2400 – 2450 cal BP.

The Middle transitioning into the Late Iron Age saw another period of increased water tables and precipitation in certain regions of Britain (Cunliffe 2004; Dark 2006). This rise resulted in a second wave of instability to some regions and an increase in extreme weather conditions (Cunliffe 2004; Dark 2006).

Extensive woodland clearance was evident during the Roman occupation (e.g. Dumayne-Peaty 1998a, b; Turner 1965; Whittington and Edwards 1993). Woodland clearance is generally linked with a subsequent period of environmental instability, along with increased water tables due to the lack of deep-rooted systems, which would have absorbed a large percentage of the ground- and rainwater. As a result, the Iron Age had a relatively wet environment with few periods of environmental stability that was quickly unbalanced by episodic human alterations of the landscape.

4.6 The Importance of Wetlands in Archaeology

Wetlands are important to archaeology because they provide anaerobic conditions or facilitate environments whereby the chemical structure of the object is altered, thus ensuring the survival of organic materials that would otherwise decay.

Wetlands provide an alternative archaeological landscape to the terrestrial in which the contemporary peoples interacted with and inhabited (i.e. crannogs, lake dwellings – see the work of Dixon et al. 2007, Cavers et al. 2011 and Crone et al. 2018). The studies of Bell (2020), Madgwick et al. (2019), and Britton et al. (2008) have highlighted the use of wetlands in Wales and Scotland as grazing grounds from the Bronze into the Iron Age, lasting well into the Roman period. Bell (2020) and Philip (2018) discuss the Severn estuary evidence of Mesolithic and Bronze Age ‘footprints’ sealed under the peat that has helped better understand social dynamics and the roles of children. Likewise, the presence and preservation of cattle lice and footprints found at the Iron Age site of Goldcliff highlight how these marshlands were used as grazing lands and the dynamic between husbandry and human relationships (Bell 2020). Madgwick et al.’s (2019) study detail the potential for large-scale import and husbandry to sustain the Roman legion stationed in the Caerleon, located in the Southeast sub-region of Wales. However, the small sample size means that, ‘It remains to be seen whether the animals were requisitioned from local farmers or were raised by the legion itself, but the diverse pattern of strontium isotope results presented here does not suggest a centralised supply chain based on land around the fortress (or indeed elsewhere)’ (Madgwick et al. 2019: 233). The study only looks at faunal remains sourced from the garrison store and not in the outer hinterlands; therefore, there may be undiscovered evidence for episodic prehistoric grazing in the Langstone wetlands (see Treadway, in press). It is highly likely that the marshland itself would have been used as seasonal grazing grounds similar to the Severn and Thames Estuaries and elsewhere throughout prehistory (e.g. Britton et al. 2008; Van Dijk 2016: 45); therefore, the local people may have utilised this space for centuries prior to the construction of the Roman complex (i.e. Ford Farm and Caerleon) for grazing purposes.

It is also important to recognise wetlands' immense raw resource potential, particularly bogs, fens, and marshlands. As discussed previously, Mighall and Chambers’ (1997) study highlights the extraction of bog ore in Northern Wales and the subsequent production industry. Another industry that would have benefited from bogs is peat extraction as a fertiliser and burning agent. When mixed with animal faeces, peat can be used to make a potent fertiliser, and its production was seen on an industrial scale by the First World War (Giles 2020a: 107) (see Chapter 5). Likewise, dried peat or turf has historically been used as a burning agent because of its ability to stay ablaze for extended periods (Moore et al. 2012).

The local flora and fauna of wetlands would have been sought by prehistoric communities, particularly those of bogs. Giles (2020a: 107) states, ‘…heathers and ling, useful for bedding, flooring, roofing and fuel for the hearth…’ The natural sprouting fruits attract fowl, the flora invites insects, and the environment is home to other fauna like the frog (Giles 2020a: 107-108, 112). ‘Badgers, foxes, stoats and otters can also be tempted on to the bog to hunt or to cross between habitats’ (Giles 2020a: 112), making these locations prime hunting grounds. Bog flora has also been used in other unexpected ways. For example, ‘Bog myrtle or ‘sweet gale’ has been used as a bitter flavouring in beer since the early medieval period at least, with other uses as a fragrant bedding agent for repelling insects and also a food preservative (Godwin [1981] 2009: 101)' (Giles 2020a: 107). Sphagnum moss possesses antiseptic properties, historically used for wound coverage and sanitary napkins because of its ability to absorb large amounts of liquid (Giles 2020a: 107). Clothing could also be made from the mosses, like the head cap on display at Vindolanda made from Polytrichum commune (Giles 2020a: 109-110). Waterlogged sites throughout Britain have recovered '…organic containers, vessels, utensils, implements, clothing, boats, vehicle components, personal ornaments, figures, building materials, even weapons…' of both Bronze and Iron Age periods (Giles 2020a: 13), which have been termed 'the missing majority' by Hurcombe (2014).

Wetland anaerobic properties, in addition to alterations of an object's chemical structure, ensure the survival of these pieces to the modern-day. Additional analyses of pollen, dendrochronology, human and animal remains, and settlement activity found in the environment provide context to these deposits. Sadly, a wide array of artefacts have been preserved in wetland conditions only to be consequently destroyed through exposure and(or) lack of proper maintenance and monitoring in curation (e.g. bog bodies in the late 1800s, early 1900s), thus creating a recovery bias.[13]

Wetlands and the preservation thereof are extremely important, not only because of the biodiversity they provide, but also the sealed archaeological material found in the peat, alluvium, and gley (Menotti and O'Sullivan 2013). The degree of preservation is dependent upon wetland type, pH values, level of chemical alteration and degree of stability outside of a wet environment (see Appendix 4). Therefore, wetland archaeologists must consider the variations in each wetland environment to predict the level of preserved archaeology.

4.7 Summary

Different local and colloquial terminology in reference to topographical features has left archaeologists unable to provide cohesive documentation of the varying wetland landscapes. By providing a systematic approach, identification, toponymy, and varying characteristics, archaeologists will be able to better identify these wetland landscape types and use a common terminology that will be able to cross from commercial to academic

[13] Recovery bias is discussed in Chapter 3.

records and analyses. Identification of wetlands, including evidence of ancient landscapes, aids in recovering material that would have otherwise been overlooked. Creation of a cohesive study of wetland landscapes and knowledge of its preservation properties (i.e. waterlogged, anaerobic) will enhance methodologies for recovery and help to develop an awareness for the potential archaeological material yet to be discovered.

Chapter 5 – History of British Wetland Archaeology

5.1 Introduction

The history of wetland archaeological development is complex, pulling influences and research both internal and external to Britain. This history is further complicated when considering the development of depositional theory, and how this influenced wetland archaeology. As a result, this chapter will review the development and history of British wetland archaeology and associated object analyses that have led to the development of depositional theory dating from the 18th century to 2010. This review will include influential individuals, iconic sites, important artefacts, and the development of methods of analyses and wetland archaeological theory with a primary focus on the British context. The history provided is a baseline understanding of the nature of recovery and trends in wetland research.

5.2 The 1800s

Before the 1800s, established archaeological excavation methodologies and object records did not exist. Nevertheless, formal heritage institutions were in formation, such as the British Museum, founded in 1753. Often, prestigious finds were the by-product of peat drainage and extraction or dredging that took place well into the mid-1900s. Victorian obsession with treasure sponsored a revival of interest in local archaeology and the development of a newfound identity using the Celtic individual as the archetype (Cislo 2006; Logan 2001). However, this archetype had a varying presentation dependent upon the type of propaganda desired.

According to Bulleid (1st edition 1924; 1968: 9), archaeology was a ‘chaotic’ mixture of local mythologies that lacked established scientific methods, which changed with the establishment of formal institutions. The establishment of institutions which housed and displayed ancient artefacts introduced new standards in the curation and display of archaeological material, like the British and Pitt-Rivers museums. These institutions represented the change in attitudes towards history and archaeology as a science without dependence on superstition or religious beliefs. Objects became tools to recreate a prehistoric narrative rather than collections and displays of ‘treasure’ (Bud 2014; Porter 2001; Whitehead 2017). The study of archaeology became a viable interest not only for the aristocracy, but for gentlemen with financial stability and an education. Gradually, the focus shifted from a Victorian obsession with personal displays of prestigious objects—both foreign and native—to exaggerate their status, to an interest in the sites and their chronological sequences and scientific value.

The excavations of Fredrick Keller, often regarded as the father of wetland archaeology, in Zurich, Switzerland in 1853 brought international fame to wetland settlements throughout Europe. However, Keller's interest in the lake dwelling villages was 'purely financial' and political (Menotti 2012: 3- 4). For this reason, fishermen were employed to dredge the lakebed while antiquaries would sell artefacts illegally to private collectors and museums. Site finds increased tourism for the region, and Keller used the lake dwellings to provide a national identity after the civil war in 1847 (Menotti 2012: 3-5). These endeavours brought Keller international fame and influence, along with the publication and translation of six of his books on Alpine Lake Dwellings (Menotti 2012:4-5).

Robert Munro became inspired by the English translations of Keller's reports and began analyses for the Scottish crannogs (Munro 1890). He found crannog sites could be revealed during seasonal flooding, leaving a distinct man-made or manipulated island. He published his findings in *Ancient Scottish Lake Dwellings or Crannogs* (1882). His other major contribution to wetland archaeology was the delivery of the Rhind Lectures in 1888, which was subsequently published as *The Lake Dwellings of Europe* in 1890. He had a few protégés, such as Arthur Bulleid, who later discovered the Glastonbury Lake Village.

Arthur Bulleid, who, like Munro, studied medicine, abandoned the discipline in pursuit of archaeological study. He held the belief that prehistoric communities occupied the wetlands near his home in Somerset. He spent four years looking for evidence of prehistoric habitation until he discovered settlement mounds near Glastonbury in March of 1882 (Bulleid 1968: 14). Excavation began in 1892, and Glastonbury soon became one of the most important prehistoric sites in England (Coles and Coles 1994-5:5). Bulleid believed the prehistoric lake dwelling settlements found in Somerset were the structural median between the Scottish and Irish crannogs and the lake dwellings of North Western Europe (Bulleid 1968: 12). Excavation at Glastonbury occurred every summer from 1892 to 1898, with additional seasons and research continued in later years.

Nevertheless, while excavation and exploration of settlements were vital to the foundation of depositional studies, mass deposits of objects also provided typological-sequences. The discovery of the lake dwelling of La Tène procured artefacts dating back to as early as 1859 due to the construction of canals for the Jura Lake system. Investigations were performed in response to these finds, which later revealed the archaeological site of La Tène, located at Lake Neuchatel, Switzerland. However, archaeological excavation did not begin until 1874. The high volume of artistically significant objects exhumed enabled the definition of the La Tène artistic style, and culture, soon becoming a shorthand for the chronological period (De Navarro 1972). The site's significance was the repetitive deposits at the lake's deepest portion, proposed to be votive (Fitzpatrick 1984). As a result, the deposit accumulated over time, further suggesting the significance of the location and multiple period depositional traditions. The deposits ignited debates about the significance of votive offerings in wetland locations throughout the Continent and Britain. These debates reviewed regional differences and highlighted the importance wetland locations served in practising prehistoric communities.

Exemplary objects that dated to the same La Tène period found during the 1800s in Wales and Scotland include the Ballachulish figurine (c.1880), the Trawsfynydd tankard (19th century), Torrs pony cap (c.1812), Capel Garmon firedog (c.1852), and the Deskford carynx (~c.1816); but also the Roos Carr figurines of Holderness, East Yorkshire (c.1836). These finds represent the broad array of artefacts believed to have been purposely placed or buried in waterlogged soils. These deposits have been argued to be the product of votive offerings in or near wet landscapes and will be discussed in later chapters and appendices. Their placement in wet and inaccessible locations sponsored similar debates as the Le Tène deposits as votive offerings in deposition theory.

The development of the archaeological discipline in this period established comprehensive site excavation methodologies, catalogues and the curation of material culture, recognition of the importance of provenience, and the display of collections in institutions as opposed to privately (Cunliffe 1991).

5.3 The 1900s

The 20th century marked the beginning of advanced scientific approaches to archaeology, especially for wetland studies in the latter half of the 1900s (Menotti 2012: 5).

With the discovery of the Llyn Fawr hoard in 1913, a new typological-sequence was established which indicated the transition from the Late Bronze Age into the Early Iron Age (Fox and Hyde 1939; O'Connor 2007). Likewise, excavation methodologies improved in the early 1900s, setting up the evolution in scientific practice and analyses later in the century.

British excavation methodologies also progressed with Pitt Rivers' development of terrestrial excavation practices on archaeological sites (Cunliffe 1991: 2). His assistant, Harold St George Gray, would later excavate the wetland site of Glastonbury, continuing this standard (Cunliffe 1991: 2).

However, not all advancements were made through scientific innovations or serendipity, but rather through recognising the limitations in excavation and methodologies. For example, Frödin excavated the wetland site Alvasira in Sweden from 1909 to 1930. Despite the international fame and recognition these Swedish prehistoric lake dwellings provided, Frödin was unfortunately not able to publish his full report due to difficulties establishing a decisive chronological sequence (Coles and Coles 1994-5: 40). Bulleid, Munro's protégé, overcame many of Frödin's challenges by analysing his unpublished site reports.

The second series of excavations in Glastonbury, performed again by Bulleid and Gray, began in 1904 continuing until 1907 (Bulleid 1968: 16-17). From 1911 to 1917, Bulleid and Gray provided a series of monographs which recorded and described a range of structures and artefacts discovered at Glastonbury (Bulleid and Gray 1917; Coles and Coles 1994-5: 96). The lake village became known as one of the best persevered prehistoric villages in Britain. *The Glastonbury Lake Village: A Full Description of the excavations and the Relics Discovered 1892- 1907*, published in 1917, provides a monograph of all known discoveries and their contexts. The catalogue is meticulous in its description of the pieces, and, thanks to Bulleid, is well divided by categories of 'like' objects. The monograph is still of considerable importance and heavily referenced today.

The value in object typologies became much more apparent with the find of Llyn Fawr. The discovery of Llyn Fawr marked the transition into the British Iron Age from the Bronze Age. The Llyn Fawr hoard was discovered during the construction of a reservoir in the north escarpment of the Welsh Brecon Beacons. The hoard was uncovered from 1911-1913, when the lake was partially drained for construction (Driver 2006). Unfortunately, some of the initial finds were dispersed within the local community and only later recovered by archaeologists. The collection is important for understanding the changing of motif in hoards from the Bronze to Iron Age within Britain, set within a 'wide range' of object imports, and extensive trade networks and the resulting economic transition (Lynch et al. 2000).[7]

World War I began in 1914 and ended in 1918. Within this period, all archaeological excavation paused with a few exceptions. However, their resources, like other archaeologists of the time, were severely limited. Archaeological theory, however, was further advanced with the development of standard archival catalogues introduced by Smith and Dalton in 1925, published as *British Museum's Guide to the Antiquities of the Early Iron Age.* The guide rebalanced collections by including common items in addition to prestigious and unique pieces (Cunliffe 1991: 4). The catalogue was also a literary source that considered the various elements of Iron Age culture and tradition from all aspects of life. The publication allowed for better cataloguing of museum and site artefacts which presented an archetype for future museum and digital catalogues.

Formal education also began to develop for wetland studies. For example, in 1920, the University of Groningen in the Netherlands founded the Biological Archaeological Institute (BAI) to integrate archaeological and paleobiological studies for prehistoric sites (Van de Noort and O'Sullivan 2006: 22). This establishment was an immense step forward to developing wetland studies through fostering the scholarships of ecology, biology, and archaeology.

Lake dwellings remained a popular wetland archaeological focus after the war. Schmidt (1930) and Reinerth (1922, 1932) continued Frank's work (1876) at Lake Feder, Germany (Menotti 2001). Schmidt and Reinerth proposed that lake dwellings may have been seasonally flooded, not positioned in standing water (Menotti 2001: 321; 2012: 5). Reinerth's proposition became known as the *new pile-settlement* theory and was later confirmed with the excavation of Sipplingen of Lake Constance, Germany (Menotti 2001: 321-322; 2012: 5-6). Their find sparked a conflict in lake dwelling archaeological theory known as the *pfahlbauproblem* or 'the lake dwelling dispute'. In the 1930s, the lake dwelling theory was 'under serious attack' as different types of wetland sites were discovered (Coles and Coles 1994-5: 9). In the 1940s, Oscar Paret disputed previous arguments by providing evidence from Hochdorf-Baldegg, Switzerland of lake dwellings built on solid ground. However, this was subsequently ‘rejected by Swiss scholars’ (Menotti 2001: 322-323).

In Britain, ecology in conjunction with wetland settlement research became a cornerstone of the study. Godwin collaborated with Grahame Clark in the 1930s to study the ecology of the East Anglian Fenlands. This excavation was the first multidisciplinary team to have ever existed in archaeology and undertook paleoenvironmental analyses (Rippon 2000: 8-9; Van de Noort and O’Sullivan 2006: 21). Godwin’s ecological and collaborative work was revolutionary, and his foreknowledge of the importance of interdisciplinary work for the reconstruction of site stratigraphy was renowned. In 1933, Godwin, with the assistance of his research student Clifford, established that peat stratigraphy was a product of ‘vegetation succession, edaphic and topographic factors and climate factors’ (West 1988: 274). Their analysis explained the degradation of peats, and peat development in an anaerobic environment allowing for preservation of deposited material. His interest in wetland environments led to the publication of four iconic papers from 1938 to 1940. These papers looked at pollen diagrams and sea level changes, and established a broad stratigraphy based on tree pollen (West 1988: 274). Pollen analysis has since been adopted as a means of creating a site chronology, as well as recreating a period’s ecology.

In 1939, Bulleid retired at the age of 74, but Gray continued their work excavating Meare Lake Village (Coles and Coles 1994-5: 112). Gray moved forward with the publication of excavations and material discoveries, but his publications lacked the structure and attention to detail that Bulleid brought to the project. Nonetheless, the lake dwellings found in Somerset were important because they provided a link between the lake dwellings and crannogs found in Scotland and Ireland with those found in Europe.

In 1939, the Second World War began. Like the Great War, a lull ensued in archaeological excavations and analyses because of lack of funds, resources, and manual labour. Near the end of the war, archaeological excavations and theoretical debate slowly crept back into existence. Wetland sites throughout Europe were constantly unearthed through war construction and expansion of military sites, like Llyn Cerrig Bach. Nevertheless, the analyses of these newly unearthed sites often came at the expense of their ruin through bombings, resource extractions, and even urban constructions or expansions.

An Iron Age hoard was reported from Llyn Cerrig Bach on Anglesey, Wales during the construction of an airfield. The collection sent to the National Museum of Wales contained 180 pieces of iron and copper artefacts. Fox, the museum's curator, suggested a far greater number of artefacts were spread across the airfield (Fox 1946: 2-3; MacDonald 2007: 4). Fox's format for recording these artefacts is still used today and is important in studies such as this to understand how and when object report forms expanded and evolved in character. He believed the deposits exhumed were thrown initially from a 'rock platform' at the edge of the prehistoric lake. However, this interpretation of the Llyn Cerrig Bach deposits has been subject to a major review (Macdonald 2007: 4-5).[8]

Another important site, the Mesolithic settlement at Star Carr in Yorkshire, was discovered in 1947 by John Moor, an amateur archaeologist. Grahame Clark, a Mesolithic and paleoenvironmental expert, was invited by Moor to see *in situ* flint blades. Clark, realising the site's potential on his visit began one of the most multidisciplinary excavations of the time, excavating from 1949 until 1951. He collaborated with Godwin to better understand prehistoric interactions with the environment. Star Carr became an important prehistoric wetland and terrestrial site in the years following for its methodology, theory, and results (Van de Noort and O'Sullivan 2006: 21). The first publication of the site was produced in 1954 (Van de Noort and O'Sullivan 2006: 22).

Godwin also began his paleoecology study of the Somerset Levels in the 1950s and, in 1956, he finished his excavation at the Meare Lake Village. Godwin continued his study of the *Somerset Levels and Moors Project* until the 1980s, financed by English Heritage (Brunning and McDermott 2013: 361). He decided to continue his work in the Somerset Levels due to the abundant archaeological evidence and collaborated with A.R. Clapham in sequencing stratigraphy (West 1988: 276). His work brought in other disciplines and students for research, such as John Coles. John Coles developed a good relationship with Godwin, and the two worked together to illustrate the importance of the Somerset Levels for their paleoecological and archaeological potential. John Coles began work in Somerset in 1964 and would make the archaeological study of the Somerset Levels internationally significant. Coles maintained his work in the Somerset Levels until his death in 2020.

In 1953, Piggott began excavation at Milton Loch after the landowner drained the loch considerably, revealing two crannogs. Piggott's (1953) excavation revealed a single-family occupation dwelling with timber framing that could be accessed by a causeway. A dock may have also been part of the crannog, with piles and stone mounds on the southeast side of the house's entrance facing the loch. An ard head was reported from the floorboards, an object that has been noted at many formally excavated crannogs since, and now considered to be a tradition to Scottish crannog construction (e.g. Dixon 1982, 2004; Murray 2011). In 1974, Guido submitted the ard head to be dated by the Copenhagen Radiocarbon Laboratory, which reset the crannog's date from Piggott's second century AD estimate to around 500 to 460 BC.

The development of carbon dating and dendrochronology in conjunction with archaeological analysis provided further clarification for European lake dwellings as part of the *pfahlbauproblem*. Perini in the 1960s confirmed Paret's theory through site excavation at Fiavè, in Northern Italy. The site contained several house construction variations: stilts, raised floors, and dryland construction, all changing over the site's period of habitation. Perini's discovery confirmed that house constructions were based on current environmental factors. As the environment shifted, the community adapted house constructions in response to these changes (Menotti 2001: 326). The 'dispute' or '*pfahlbauproblem*' was not formally resolved until the 1970s-80s, recognising that housing construction was subjected to prehistoric environmental and cultural adaptations (Menotti 2001: 326; 2012: 6).

The 1960s also brought a post-war era of growth, with shifting attitudes in Britain from war rationing to rebuilding (Coles 2004: 106). Technological advancement of machine cutting and the growing trend of peat used as a 'horticultural medium' accelerated the rate of extraction (Coles 2004: 106). This acceleration created a demand for archaeological intervention due to the abundance of material and human remains reported. While Clarke organised the Fenland Research Committee in 1932, modern archaeological innovation for survey of the Fens began in the 1960s with the aid of aerial photography performed by the Welland Research Committee. The photos were utilised for analysis of endangerment of potential archaeological sites due to increased gravel extraction in the Welland Valley (Pryor and Simpson 1993: 1). Rescue excavations were performed in various places throughout the valley, and M.W. Barley set out to organise a programme to save the monuments (Pryor and Simpson 1993: 1). However, with the Welland Research Committee's end in the late 1960s, many monuments were placed in direct danger of destruction, and several lost much of the original context and materials. The sites were described as 'cleaned', with the original matrix scraped away, and any materials (i.e. human remains, or pottery fragments) were removed without archiving or archaeological notification (Pryor and Simpson 1993: 1).

Alfred Dieck published *Die Europaischen Moorleichenfunde*, in 1965, completing a forty-year project collecting individual monographs of bog bodies (Coles and Coles 1994-5: 54). His publication proved to be faulty, as many of the bog bodies listed were identified in old and uncertain records (Van der Sanden 1995). Dieck's work has been criticised for the uncritical acceptance of questionable records and local lore. However, he illustrates the importance of local memory in the recovery and maintenance of human remains, as well as peatland interactions. Glob also published his book of bog bodies in 1965, and again in 1996, *The Bog People*. Coles and Coles (1994-5: 57) praise the book to be one of the best archaeological texts of the time. Glob's catalogue is considered more grounded in research as opposed to the 'paper bodies' published by Dieck, only accepting records with physical evidence of the aforementioned individuals.

In 1963 peat machines exposed a portion of Bronze Age trackways in Somerset, including the famous Sweet Track in 1970 (Coles and Coles 1994-5: 26, 113). The Sweet Track would later become famous through its experimental reconstruction in the early 1980s with a team led by Coles and Coles (1994-5: 28). In 1973, a jade axe was discovered during salvage excavation of the track, believed to have been purposely deposited alongside the track. In the same year, Ruth Morgan began her study of the dendrochronology of the Somerset Levels based on samples extracted from the timbers of the Sweet Track trackway (Coles and Coles 1994-5: 28). In 1973 Bryony Coles joined the collaboration of the Somerset Levels along with Alan Hibbert (Van de Noort and O'Sullivan 2006: 23).

Thereafter, additional sites were discovered in the area, and, in 1973, funding was allocated to the *Somerset Levels Project* (Coles and Coles 1994-5: 113). The project was financed by the Department of the Environment and operated in conjunction with Cambridge and Exeter Universities (Coles 1989: 10). The *Somerset Level Project's aim* proposed by John Coles in the first Wetland Archaeological Research Project (WARP) conference was to excavate trackways before their obliteration from peat cutting (Brunning and McDermott 2013: 361; Coles and Coles 1994-5). The fifteen-year excavation was published in their own journal, *Somerset Level Papers,* as no pre-existing journal could encompass the detailed environmental data that they felt necessary to document at the sites (Coles 1989: 12). These journals are still referenced today for their ground-breaking discoveries, methods, and establishment of a systematic analysis of a wetland region.

The 1970s brought an increase in urban expansion and road development, and as a result, a renewed interest in settlement archaeology took place in Britain. However, the primary emphasis of such studies was '…on large-scale excavation and the study of sites in their landscapes' (Cunliffe 1991: 18). Studies of environmental data contributed to a renewed interest in wetland archaeology in Britain (Cunliffe 1991: 19). The number of wetland sites excavated in Wales alone rose dramatically, as there were many important discoveries in the Severn Estuary (Bell 1993, 1999, 2013; Bell and Neumann 1997; Bell et al. 2000; Cunliffe 1991: 18). Nineteen Bronze Age trackways (Bell et al. 2000), the Goldcliff Iron Age settlement (Bell 1999; Bell et al. 2000), the Caldicot Bronze Age settlement (Rippon 2001), and some human remains and various metal work (Bell 1999) are some of the primary examples of archaeology reported from the region.

Along with the rise of global urban expansion came concerns over wetland conservation. The Ramsar Convention held in 1971 at the International Conventions on Wetlands brought to light issues with and methods of wetland conservation. This conference specifically focused on establishing an internationally cohesive wetland terminology, which was fluid until this point. Before this convention, attention was focused on the ecological preservation and artefact extraction of such sites. Since the convention, wetland archaeology has become a platform for sponsoring 'broader biological and cultural values' (Van de Noort and O'Sullivan 2006: 27).

Francis Pryor, also in 1971, began the *Fengate Project* to salvage archaeological sites east of Peterborough and north of the River Nene (Pryor and Bamforth 2010). The project began with the survey of dryland sites threatened by Peterborough's urban expansion, which was partially constructed on prehistoric marshland. Recognition of wetland archaeological features was realised soon after excavating dryland areas due to peat shrinkage and subsequent exposure of upstanding monuments (French and Pryor 1993: 3). The investigation of wetland sites east of Peterborough continued until 1978. The archaeology dated from the Mesolithic to the Roman period with evidence of continual use throughout the prehistoric periods. A trackway was built through the basin to Fengate, leading to a causeway and centre platform (Taylor and Pryor 1990). According to the dendrochronology report, the construction of the causeway dated to the Bronze Age, with several stages of construction

(Pryor and Bamforth 2010; Taylor 1995). Ritual deposits are believed to have occurred along the bridge of the causeway and the shores of the marsh. The discovery of depositional practice within wetland areas such as the Fens supported arguments in favour of votive offerings.

In 1979 Nicholas Dixon, in conjunction with Sub-Aqua Club and Department of Archaeology of the University of Edinburgh, conducted a survey of the crannogs in Loch Tay. Obstructions noted by a sailing instructor were in fact crannog piles, estimating about 24 artificial islands (Dixon 1982: 17). Of the 24 reported, 17 were surveyed. The work performed by Dixon and the team is important to crannog studies as only a handful had been previously excavated to standard, creating an awareness and further documentation of crannogs. With around 350 documented crannog references and limited evaluation, Dixon's work created awareness of the longevity of crannog preservation and the limited research conducted for such a common and distinctive site type.

Another discovery in 1979 by Derek Upton, a local steelworker, recognised the archaeological potential of sites in the Severn Estuary. He regularly visited the area for years, mapping newly found features based on his observations (Bell and Neumann 1997: 99). The Gwent Levels contained evidence of highly diverse prehistoric archaeology dating from the Mesolithic well into the Roman period (Bell and Neumann 1997: 96). While there is extensive evidence for Mesolithic settlement in the area, the Severn Estuary—and in particular the portion along the Welsh coast—became known for their rectangular houses from the Bronze and Iron Ages, in addition to extensive trackways and other archaeological finds (Bell and Neumann 1997: 95). Roman drainage of the area changed the region's ecology, becoming the focal point of study in the 1980s (Bell and Neumann 1997: 96; Allen and Fulford 1986).

In 1981 Geoffrey Wainwright recommended establishing another English Heritage project for survey of the fenlands in east England (Coles and Coles 1994-5: 114). The *Fenland Project* was commissioned by British Heritage from 1982 to 1988, continuing the Fenland Research Committee's research. The project was sponsored in response to the 'rapid desiccation of peat, erosion and the conversion of pasture into arable land…' (Van de Noort 2002: 90). The project resulted in 240,000 ha of the area being field walked, which revealed over 2,500 sites dating from the Mesolithic to Medieval (Van de Noort 2002: 91). Many of these sites did not originate in wetland locations, but instead, modern fenlands had encroached and reclaimed the sites. However, the Bronze Age site of Flag Fen was revealed through surveys to widen the Mustdyke drain in 1982 (Pryor and Bamforth 2010: 3). The site was discovered by Pryor and his team during a dyke survey, revealing exposed timbers dating to the Bronze Age (Taylor and Pryor 1990). Excavation and survey of the area revealed artefacts and habitations dating from the late Mesolithic until the Roman period, including a Late Bronze Age Early Iron Age causeway. In response to the archaeological discovery of Flag Fen and the growing pressures for habitat preservation, the Fenland Archaeological Trust requested additional funds from English Heritage (Pryor and Bamforth 2010: 3). This request was to monitor fluctuations in the water table, which were published in 2002 and 2007. In 2000, a major fire destroyed the Flag Fen's site archive, including original plans and context sheets that had yet to be duplicated (Pryor and Bamforth 2010: 3). Luckily, most of the archive had been digitally retained; unfortunately, the original content was lost (Pryor and Bamforth 2010: 3). The fire is important to acknowledge because it is representative of the innumerable ways information can still be lost.

Settlements and objects were not the only things found in wetlands; several bog bodies have been reported throughout the United Kingdom. For example, peat cutters discovered Lindow woman in 1983 in Cheshire, England. Peat cutters thought that they had found a deflated football and jokingly called it a 'dinosaur's egg', but it was not until closer examination, that they realised it was a head (Brothwell 1986: 11; Joy 2009: 16). The head was brought to the local police, thought to have been a part of a twenty-year unsolved murder (Joy 2009: 17). 'Peter Reyn-Bardt claimed that he had disposed of his wife Malika twenty years earlier… by dismembering and burning her remains in the garden' (Joy 2009: 17). However, the radiocarbon date of the head showed it was deposited around 90 to 440 AD.

The discovery of Lindow man re-sparked public interest in bog bodies, which resulted in a widespread re-analysis of other exhumed bog bodies. Lindow men II and III were discovered in the following years of 1984 and 1987 (Coles and Coles 1994-5: 89; Joy 2009). Analysis of Lindow II's wounds suggest that they occurred during peri (blunt force trauma to the cranium and strangulation) and post-mortem, and that he was finally murdered through a laceration to the throat (Joy 2009: 38-54). The remains of Lindow IV, the buttocks, and left leg of an adult male are believed to be further remains of Lindow III (Joy 2009: 23). Discovery of the Lindow men brought public interest for prehistoric archaeological potential of the north west Wetlands (Van de Noort 2002: 10). From 1988 to 1997, English

Heritage funded the *North Western Wetlands Survey (NWWS)* (Coles and Coles 1994-5; Van de Noort 2002: 91). The surveys are broken into three areas: Lancashire, Greater Manchester, and Merseyside. The three areas encompassed the five counties of Cumbria, Lancashire, Greater Manchester, Merseyside, and Cheshire (Howard-Davis 1989: 35). According to Hodgson and Brennand (2007: 32), the low rate of finds was due to lack of modern fieldwork and the belief that there was no prehistoric archaeology in the region (Howard-Davis 1989: 35). While very little archaeology was discovered for the area, the ecological development was extensively studied (Howard-Davis 1989: 35). The North Western Wetlands assessment developed noteworthy methods of survey, which included extensive observation of the paleoecology and the development of the prehistoric environment (Van de Noort 2002: 92). The NWWS is the first survey to develop and integrate Geographic Information System (GIS) which allowed information to be sent directly to Sites and Monuments Record offices, providing key information for future planning in these areas (Van de Noort 2002: 92).

In 1985 Raftery began a survey and excavation of the bog lands of Ireland due to excessive peat extraction for fuel (Coles and Coles 1994-5: 111). Raw material and other artefacts began to be recognised from bog sources after multiple issues of furnaces clogging with molten ore, presumed to be from melted prehistoric artefacts. Raftery advocated for the importance that peat bogs served in the preservation of chronologies, remains, and artefacts. His efforts sponsored a nationwide re-formalisation of archaeology in the peatlands, thus making Irish archaeology one of the leading authorities of peatland heritage.

Salvage archaeology, as with the aforementioned sites, created recognition for large scale responses to wetland archaeology in Britain and Ireland. The first conference of the Wetland Archaeological Research Project (WARP) was sponsored by English Heritage and held on the 20 January 1989. The conference and formation of WARP was in response to the Ramsar Convention, recognising the necessity for a British organised wetland archaeological heritage sector. Wainwright (1989: 1) stated that the conference served to bring wetland archaeologists together to discuss common problems in the discipline, level of survival of organic materials, environmental indicators, and stratigraphic evidence including fossilised landscapes. The funding allowed for surveys to be conducted in the Somerset Levels, East Anglian Fens, Humber and the North Western Wetlands, along with other wetland projects (Wainwright 1989: 1).

Laws pertaining to water also changed during this time. In 1989, England and Wales privatised the water industry, and the National Rivers Authority (NRA) was established. This privatisation did not occur in Scotland, where River Purification Boards were appointed (Coles and Coles 1994-5: 127). By not having the same regulations as the rest of Britain, Scotland lacked the constraints found in England and Wales. However, the lack of privatisation of the water industry in Scotland allowed some freedom in archaeological endeavours and ecological conservation. In 1996, the NRA was absorbed into the Environment Agency, and became responsible for regulating of all of Britain's water sources.

The 1990s saw an expansion of literature on wetland archaeological theory and methodology. In 1990, Hillam et al. (1990) published their continued research on the Sweet Track's dendrochronology (Coles and Coles 1994-5: 29). The dendrochronology revealed that the oak used to build the trackway had a chronology spanning about 400 years. The wood was felled within a year for the construction of the prehistoric trackway (Coles and Coles 1994-5: 29), and the trackway was used for fifteen years before falling out of use (Coles and Coles 1994-5: 29).

Additionally, Van Der Sanden's book about Dutch bog bodies, the *Mens en moeras*, was published in 1990 (Coles and Coles 1994-5: 57). Research on bog bodies was extended to include all bog bodies the catalogues of Briggs and Turner (1995) in Turner and Scaife's *Bog Bodies.* Briggs and Turner's catalogues only included verifiable accounts of human remains that include cases from the Continent, Britain, and Ireland. The publication of Cowie (et al. 2017) produced a focused publication of all known Scottish bog bodies. However, Briggs and Turner's publications were the most comprehensive listing for all known bog bodies until recently with the publication of Gile's (2020a) *Bog bodies: Face to face with the past,* which includes those from Cowie et al. (2017) research.

Also published in 1990 was Richard Bradley's *The Passage of Arms*, which discussed artefact deposition in wetlands, and the archaeological theory surrounding these discoveries. The book explores various interpretations for these deposits and how the resulting performances provided evidence of these prehistoric communities' social complexity. Bradley illustrates his theories by focusing on key artefacts, using the evolution of prehistoric stone to metal axes and the morphology of traditions through varying regional hoard practices. An important aspect of the deposits explored in Bradley's book is not the 'ritual' in which these objects are assumed to have participated, but the placement in or near wetlands. Archaeological evidence, provided through examples of circulation and construction of axes, revealed that wetlands and their surrounding areas are a key feature in deposits throughout Britain and north western Europe in prehistory.

In 1991, the Irish government announced the formation of the *Irish Archaeology Wetland Unit* (Coles and Coles 1994-5). The unit was established by the University College Dublin in collaboration with the Office of Public in response to the declining bogs in the midlands, with only 10% of the original bogs remaining intact due to peat extraction and drainage (Moloney 1994: 18). The unit successfully surveyed and published numerous reports to encourage preservation efforts of raised bogs in the midlands area. Their surveys revealed several sites, which later led to excavations, such as the Late Bronze Age house site of Clonfinlough in Co. Offaly (Moloney 1994: 19).

Bell and Neumann (1997: 99) excavated Goldcliff in 1996. They chose to excavate from February to March because the storms had cleared the mud cover. Clearance of the mud cover allowed for site features to be more apparent. The excavation is a testimony to the difficulties and continuously changing environment that archaeologists must overcome when working in and with wetland terrain. The archaeological site provided evidence of ‘seven rectangular buildings, thirteen trackways, and various alignments and settings of uncertain function.’ Radiocarbon dates demonstrated that the highest concentrations of activity occurred in the early and middle Iron Age (Bell and Neuman 1997: 102; Bell 1999: 20). Due to the low yield of artefacts and the absence of hearths, Goldcliff is thought to have been seasonally or intermittently occupied (Bell 1999: 22-23). What is unique about Goldcliff is the levelling of the settlement environment before the Iron Age (Bell 1999: 24). Wetland sites are rarely altered to serve the demand of the inhabitants, as wetland conditions are usually worked around while extracting key resources. Excavations in the region are ongoing, with several sites planned for further analyses.

5.4 The 2000s

The early 2000s saw a significant increase in wetland archaeological projects due to the growing concern for and recognition of global climate change. Both the *Scottish Wetland Archaeology Project* (SWAP) and *Monuments at Risk in England’s Wetlands* (MAREW) were created out of concern for the increased destruction of wetland environments and their archaeology. However, no such project has been implemented for Welsh wetlands alone, but instead amalgamated into MAREW.

English Heritage commissioned a desk-based assessment for *Monuments at Risk in England's Wetlands* or MAREW on August 1, 2000 (Van de Noort et al. 2002: 3). The project assessed monuments in Britain's current state, rate of exposure, past and current risks to wetland sites and monuments (Van de Noort et al. 2002: 3). The objective of the project was to assess policies—both governmental and otherwise—that pertained to wetland environments and archaeology, and to formulate future recommendations for English Heritage and the wider archaeological community (Van de Noort et al. 2002: 3). The project used only pre-collected data, which created a baseline for future wetland assessment.

Must Farm, within proximity to Flag Fen, was discovered in 1999 when decaying timbers were noticed in a quarry pit (mustfarm.com 2018). Investigations were performed in 2004 and 2006, dating the timbers to the Bronze Age. The investigation demonstrated the site was exceptionally well-preserved and contained large quantities of material culture associated with prehistoric timber buildings. The site was totally excavated in the winter of 2015-16. Often referred in news circles as 'Britain's Pompeii,' Must Farm is significant for its stellar preservation and production of the largest domestic metalwork collection in the country to date.

From 2003 to 2015, Star Carr resumed excavations under the authority of Conneller, Milner, and Taylor (Conneller et al. 2018). Excavation and analysis of the paleoenvironment revealed occupation lasted around eight hundred years, and not four-hundred as previously hypothesised (Conneller et al. 2018). In addition, the oldest houses were discovered positioned on wooden platforms at the edge of the lake shoreline (Conneller et al. 2018). The paleoenvironmental assessment provided changing environmental climate and the varying degree of occupation of the settlements throughout the occupation of the area (Conneller et al. 2018). Both Must Farm and Star Carr are revolutionary in their research and advancement of wetland archaeological methods, and analyses at an intra-site level. For example, the work performed by High et al. (2015, 2016) assessed how contemporary environmental factors affect the longevity and degree of preservation of objects and material remains.

In 2010, timbers were discovered during drainage operations for the Monreith Estate (Cavers 2010). Historic Scotland and AOC Archaeology began excavation in 2015 and ended their third season in 2017. The excavations revealed an Iron Age lake settlement with crannog structures. The excavation also revealed evidence of a palisade on the south end of the crannog island and a trackway leading from the causeway into the interior of the settlement (Cavers 2010; aocarchaeology.com 2020). This discovery was foundational to archaeological understandings of crannogs, building upon Munro’s early synopses. Excavating crannog structures in the modern period has allowed for contemporary standards to be applied, thereby providing more in-depth and precise contextual analysis of the archaeological activity and relationships with prehistoric wetland environments. In addition, its discovery in a boggy environment also allowed archaeologists to better understand preservation qualities and the degree to which organic material can survive in such environments.

Other advancements made in the last decade to our understanding of wetland environments and the associated archaeology have been expanded by the Cherish Project established in 2014. The project, completed in 2020, aimed to provide environmental analyses of climate change and weathering systems of Ireland and Wales. The project utilised varying innovated technologies and methods to ‘reconstruct past environments and weather history’ (discoveryprogramme.ie 2021). This project is significant to a study such as this because it provides the premise of water table and precipitation levels that may have been related to depositional activity and subsequent preservatory states.

5.5 Conclusion

The history of the development of British wetland archaeology enables archaeologists to analyse gaps within the archaeological record that contrast with the highly innovated technologies and methods developed. Despite this, certain information cannot be reobtained due to the loss of sites, objects, archives, or notes of finds caused through environmental factors or human error. Therefore, taphonomic bias in the archaeological record is inevitable. Nevertheless, global events such as wars, ecological changes and challenges, and economic strategy have all helped shape the development of international wetland archaeology. Understanding the foundation and development of wetland studies allows for further advancements in the study of wetland deposition. Through wetland archaeological history, one characteristic became apparent, that the discipline has succeeded in its development through multidisciplinary study.

Chapter 6 – Tradition and Ritual Theory in Relation to Wetland Deposition

6.1 Introduction

Ritual is often connected to tradition, especially in circumstances concerning prehistoric depositional behaviour. However, the concept of ritual is ambiguous. Therefore, this chapter aims to provide a critical discussion and clarification of ritual definition and interpretation in relation to tradition through wetland deposition. This discussion is critical to later analyses that review wetland deposition practices and notable trends regionally and sub-regionally.

Evidence of prehistoric deposition is often synonymous with ritualistic functions because of the few odd and unique features presented in certain case studies. As Hill (1989: 21) states in reference to the Wessex pits, 'to put bluntly, people were doing something "pretty weird" in [the] Iron Age…' When analysing depositional practices from the period, especially those pertaining to Britain, there is definitely something 'pretty weird' about the behaviours reflected in the archaeological record. These oddities are often attributed as ritual, without providing parameters for such conclusions. However, wetland depositions should be viewed as cultural traditions, whereby ritual can exist within the performative placement of objects. The focus should instead be readjusted to the actual practice itself. Due to the many variants in depositional practice (see Chapter 7), it can be difficult to decipher what is common versus unusual. Garrow (2012: 94), following Brück (1999), tries to simplify this variance by applying 'odd deposits' and 'material cultural patterning', which provides a spectrum within the sampling traditions. Nevertheless, while some case studies present unique and obscure finds, prehistoric depositional assemblages do have a degree of recurring patterns (e.g. Davis 2014; Garrow and Gosden 2012; Horn 2015; Hunter 2019b; Joy 2014, 2016).

Perception of 'ritual' is entirely dependent upon individual interpretation because the term is reflective of both nature (Berghaus 1998; Jeanes 2019) and nurture (Liberman et al. 2018) within a particular culture (Boyer and Liénard 2006). The concept of ritual is complex, and intention is not always known or allocated to the masses (Garrow and Gosden 2012: 156). Therefore, this chapter reviews how ritual has been defined in previous studies and influenced prehistoric depositional theory. Assessment of issues with ritualistic study will be addressed. Likewise, this chapter will discuss the development and expression of British wetland depositional practices during the Iron Age. Furthermore, this chapter will discuss the relationship between ritual and tradition functions.

6.2 How to Define Ritual

The Oxford Classical Dictionary offers a lengthy entry on ritual, which defines it as a multifaceted term with diverse interpretations across differing cultural units and individuals (Hornblower et al. 2012). 'Ritual' can be interpreted as an action, symbol, and (or) abstract concept. This description differs from the more direct and action-focused definition provided by the Cambridge Dictionary. The Cambridge Dictionary defines ritual as 'a set of actions or words performed in a regular way, often as part of a religious ceremony' (Heacock 2009). Both definitions require a repetitious action with an elevated social context for the application of the term. The societal value for such traditions is reflected in the repetitive nature of the performance, and its associated meaning is dependent on the group or individual concept of the ritual's purpose and message.

While rituals are a valid indication of social activity embedded in tradition, some issues need to be addressed within this study. For wetland archaeology, the interpretation of deposition has become synonymous with ritual practice in the literature (e.g. Aldhouse-Green 2015; Bradley 1989, 2005; Fitzpatrick 1984; Jope 2000; Joy 2011a, 2011b: 413; Manning 1972; Van de Noort and O'Sullivan 2006). Generally, each study provides a varying interpretation of ritual through a singular site observation, assemblage, and (or) proposed material remains or lack thereof, as opposed to a cohesive consensus and clarification for the essential considerations of the definition and theoretical concept. Archaeological descriptions of ritual activities remain at a meta-level explanation because the behaviours associated are not well understood (Morris 2012). According to Joy (2014: 240), '…the term ritual is often used to describe a practice like hoarding, which to our eyes defies functional or common-sense explanation (Bradley 2005: xiii) and creates an opposition between quotidian and ritual activities in the past that are probably artificial (Brück 1999; Bradley 2005).' Consequently, a review of ritual theory is required because deposition is the potential result of ritualistic behaviour that has survived archaeologically. Such a review has been provided by Fontijin (2002) regarding Bronze Age traditions, whereby he reviews the various interpretations of ritual. He concludes, ‘I refrained from selecting one because it might bring with it assumptions that may be unjustified for the case under study’ (2002: 276). Therefore, we must remain conscious that depositional traditions are not always the direct result of ritual but can be the product of such behaviours.

While prehistoric intention has been contested and hypothesised (e.g. Aldhouse-Green 2001, 2015; Bradley 1988, 1989, 2000, 2005; Dietrich et al. 2014; Fitzpatrick 1984; Fontijin 2002, 2007; Hill 1995; Hunter 1997; Needham 1988, 2001), prehistoric ritual can only be identified within the archaeological record through physical evidence. Therefore, for the scope of this study, ritual will be defined as repetitive acts with an elevated function that have left an archaeological signature. Nevertheless, while the importance and purpose of such rituals and resulting traditions remains unknown, such behaviours have been known to develop social and cultural interconnections associated with the fortification of communal identities.

6.3 Ritual Development

Ritual is a performance, one that is enacted through a series of customised actions and repetitious events to communicate an individual or group(s) intentions. According to Livarda et al. (2018: xiii), ritual is best recognised when common archaeological signatures are interpreted for their repetitive behavioural performances and associated with social phenomena. These performances can be unconscious acts within a set of repetitious physical cues and can be loaded with symbolic meaning within carefully articulated movements and gestures. As Morris (2012: 14) highlights, there are many forms of ritual which serve different functions and purposes. However, the purpose of a ritual remains completely dependent on the performance of the group(s) or individual. These intentions may be known to their audience or they may not, and either may or may not be deliberate (Garrow and Gosden 2012: 156).

Ritual practices are not isolated to human behaviour and can be observed across species. In a review of rituals performed by animals and those that are more complex performed by hominids, Berghaus (1998: 66) states that the function of such acts is to define and facilitate relations. Therefore, rituals are performed to communicate the relationship of the individual with the group, and the group to its environment (Berghaus 1998: 66). His main argument is that the difference between rituals conducted by animals and those conducted by humans is biology (i.e. nature versus nurture). An animal is compelled to an extent to perform certain acts (i.e. its nature); but as seen in chimps, rituals can be learned (i.e. nurture) (e.g. Harrod 2014; Tomasello 1994; Waal and Waal 2007).

Rituals are viewed as distinct in practice, placement, time, and concept from routine activities (Brück 1999: 319). Ritual may also be the cultures' communication or intent of aspiration (Davis 2008). Aspiration, meaning what they hope to achieve as a social unit, can be manifested in forms such as: expansion, complexity, legacy, and economic stability or monopoly (e.g. Fontijin 2002). These aspirations are often revealed through social functions that are still recognised in modern societies. Furthermore, these rituals are denoted by their constraints within sociocultural actions or ideology. Brück (1999: 319), however, suggests that when limitations are absent for 'the sacred and profane,' ritual may not be distinguished from the more 'mundane' activities. These societies, as a result, tend to be monist as opposed to dualist because they view the world in opposition, but within this opposition is a unified whole (Brück 1999: 319). Bell (1992: 23) likewise, views ritual as a platform for social integration of 'opposing sociocultural forces.' Therefore, through this opposition, ritually charged performances act as a guide for interaction between opposing social groups (Bell 1992: 20).

Additionally, when identifying expressions of ritual within social boundaries, different systems need to be considered. This study utilised Boyer and Liénard's (2006) systems, which propose that different systems of ritual serve diverse cognitive functions. The *hazard-precaution system* is a motivational system which serves to detect and react to 'potential threats to fitness' (Boyer and Liénard 2006: 595). Whereas *action parsing* is a system concerned with providing parameters of 'behaviour into meaningful units' (Boyer and Liénard 2006: 595). Through the combination of these two specialised cognitive systems, ritualised actions are formalised.

Ritual is, therefore, a learned behaviour which is presented, taught, and manifested in different ways. At times, these variations can be in conjunction, opposition, transition, or simplification of ritual or rituals. Therefore, for the purpose of this study, with consideration of the definitions and theory provided above, ritual is defined as a repetitive behaviour or performance with a developed significance to the community that results in social bonding and cohesion.

6.4 Issues with Ritual Theory and Methods

Before discussing what ritual is and how it manifests in archaeology, several issues must first be addressed, as they are often interconnected and compounding. Rituals may appear to have similar characteristics between unassociated cultures, but this does not equate to analogous intentions and manifestations of traditions. Equivalating similarities in traditional performances as parallel developments forces static application of the term. Clarification and physical evidence are required to justify ‘ritual’ connections between activities that resemble traditions.

Over-reliance on anthropological theory has also been an issue when applied to ritual activities. While helpful at times, ethnographic observations of rituals and subsequent traditions are not necessarily a continuation or accurate reflection of prehistoric performances, as they often evolve to suit the needs of the living population. Likewise, over-reliance on biased classical ethnographic accounts has been just as damaging to understanding prehistoric traditions.

Overall, these issues become even more problematic when used to explain obscure and unique finds, especially for those found in wetland locations. Applying ritualistic labels to sites in such a manner appropriates unique situations which are then normalised without researching regional variations and the potential patterns that would give reason to interpret common finds as part of a widespread tradition.

6.4.1 Obscure Definitions

‘A favourite but deplorable term commonly used by archaeologists looking to explain unfamiliar patterns in material culture that seem to have no functional explanation’ (Darvill 2008).

To define ritual has been surprisingly challenging, but, as stated previously for the scope of this study, it will be defined as repetitive acts which leave archaeological evidence that hold an elevated social context. Depending on whom, where, and when the analysis was performed, different variations and interpretations have developed over the years. The various forms of ‘ritual’ are the result of multifaceted and multicultural adoption and interpretation of specific performances. Morris (2012: 14) states that one of the predominant issues within archaeology is the meta-level use of the term. The dichotomy of ritual is both broad and subjective with varying levels of formality.

Brück (1999: 134) believes researchers should borrow ritual theory and definitions from anthropology. Anthropological terminology of ritual stresses the actions of the performance, not the 'professed aim' (Brück 1999: 314). Likewise, Haaland and Haaland (2011: 34) believe it is advantageous to pull studies from anthropological analyses of living cultures in conjunction with cognitive sciences and apply these analyses to known prehistoric groups. While this cross-disciplinary approach is warranted, there is a danger in applying ethnographic analogies in prehistory. Instead, we should recognise that any ritual activity will have different connotations depending on each culture's development and the purpose of the ritual.

One major underlying issue in depositional studies is the interchangeable terminology with the word 'votive.' Generally, with some exceptions, there has been an absence in defining such terminologies in publications that discuss prehistoric deposition – favouring to assume that audiences understand the author's position. Ritual and votive are two completely different terms. While ritual is repetitious behaviour with an elevated societal meaning that may or may not be obscure to the audience and performers; votive is the offering of a tangible object which can range from person(s) to animal(s) to material(s) (Collins Dictionary 2019). What is offered is also not necessarily connected to theology or religion, but rather the purpose of votive gifts can extend to social functions.

Most disciplines agree that ritual has vague defining characteristics. For example, cultural psychologist Joanna Wojtkowiak defines ritual as an '… embodied action: with a deep foundation in our bodies and senses…' (2018: 461). Whereas, religious scholar Catherine Bell (1992) has several definitions of ritual, depending on the purpose or function they serve for that society, such as: symbolic, performative, ideologic, or other manifestations. Bell's underlying argument for ritual is to condition the individual to yield to social perception and behavioural standards – and therefore closely aligns with this study's position on ritual theory and definition.

Sociologist Jeffrey Alexander (2004: 527) argues that ritual is 'episodes of repeated and simplified cultural communication in which the direct partners to a social interaction, and those observing it, share a mutual belief in the descriptive and prescriptive validity of the communication's symbolic contents and accept the authenticity of one another's intentions'. Anthropologist David Kertzer (1989: 8), who analyses the political aspects of ritual, defined it as 'an analytical category that helps us deal with the chaos of human experience and out into a coherent framework.' He continues that there is not a right or wrong definition for ritual because of personal interpretations, broad and ambiguous categories, and diverse application of the term both cross-culturally and introspectively.

Anthropologists and archaeologists alike have debated the definition and theory of ritual; which has, unfortunately, become a catch-all phrase (Brück 1999; Insoll 2004: 2), weakened by ill-defined parameters. In addition to the lack of clarity, studies of ritual, according to Joy (2011b: 405), have failed to integrate 'literary and archaeological evidence well' in British prehistoric archaeology. However, utilising modern ethnographic accounts and recording testimonies detailing practices and symbolism, helps anthropologists and archaeologists understand past and present motives for behaviour and the resulting archaeological traces (Ferguson 1996; Swidler et al. 1997). For British prehistoric societies' interactions with wetland landscapes, archaeologists have disproportionally depended on classical ethnographic accounts. It is clear that defining ritual is just as challenging for anthropologists as it is for archaeologists because, while anthropologists can relay motives of living populations, this does not ensure accurate interpretation (Leach 1966: 403). Though parallels can be drawn between similar behaviours, we must remain conscious that intentions and performances differ to varying degrees.

As a result, finding commonalities between modern and prehistoric peoples, and (or) completely different societies can at times be damaging in both the initial and reanalyses of cultural traditions. Therefore, while borrowing concepts for ritual from anthropologists can at times be helpful, archaeologists must remain cautious when applying such terminology and theory to prehistoric societies.

While ritual within this study has been defined as a repetitive performance with an elevated social context, the meaning of this would be unknown to outside spectators. Therefore, what can be surmised from these performances is their use to form stronger social cohesion. Social cohesion can result in the development of personal or communal relationships, forming or continuing cultural traditions, economic stimulus, networks and trade, and sharing of personal beliefs.

6.4.2 Dependence on Anthropology and Lack of Incorporation of Other Disciplines

The issues associated with the lack of consistent and unambiguous representation for interpreted ritual activity within archaeological study is aggravated further when taken out of context for a specified culture and (or) period. This is because different cultures have divergent customs regardless of similar archaeology. Albeit, certain traditions and ritualistic practices appear to have similar archaeological signatures, but the meaning may have evolved to suit the inherited generation's desideratum. Therefore, comparative studies of analogous cultures based on archaeological evidence often clash with anthropological analyses. The differences in ritual performances are obvious within anthropological studies because they can utilise physical observational analyses of the community. Nevertheless, archaeologists depend on anthropological research of ritual practice because it connects the people to their material culture.

By referencing the Bodleian Library catalogue in Oxford, Bradley (2005: 31) notes anthropological influence peaked in the 1960s in archaeological theory, and again in the 1980s. The rate of publication on ritual theory appears to drop off into the 2000s due to the changing trajectory in anthropological studies. Bradley proposes that this decline had more to do with the changing and all-encompassing nature 'ritual' has evolved into for anthropological and archaeological studies, as opposed to the loss of analyses under new strands of theory (e.g. deposition). From this progression, two main strands developed from the study of ritual. The first, presented by Rappaport (1999), is the idea that ritual has strong affiliations with religion and a reflection of how humans understand their purpose in the world. The second, presented by Turner (1969), is the idea that rituals are performances portraying certain parables with established social conventions (Joy 2011b: 406).

Archaeological reliance on anthropological evaluations of ceremonies and their materials often developed because objects were removed from the cultural group through physical boundaries or time. Therefore, archaeologists borrow from anthropological definitions and theories of ritual because they stress the '…symbolic, non-technical, formal, prescribed, structured and repetitive nature' (Brück 1999: 314).

Barrett (1989: 4) states that one recurrent theme for anthropological studies of ritual is the recognition that ceremonies analysed are broader expressions of not only religion, but the comprehensive socio-political formation of their culture. Influenced by Bloch (1986), Barrett believes ritual can remain unchanged even during political or economic shifts because the ritual itself is autonomous. He also believes that both disciplines interpret ritual differently, as one interprets the objects divorced of human interaction, and the other records human interaction with said objects. However, the disciplines of anthropology and archaeology are not as rigidly structured as Barrett prescribes, and can readily borrow ritual theory from one another. Another issue with his interpretation is that ritual is any action beyond an everyday experience.

Barrett's definition is problematic, as ritual is not just an unusual or divergent act; it is a repeated one. For example, Leach (1966; 1968: 523) argues that 'ritual' is an expression of communication for all human behaviour. Leach goes on to state that ritual tends to be very repetitive to convey a symbolic message (1966: 404). Brück (1999), however, argues that Leach's interpretation of ritual leaves the question of why some actions can be defined as ritual when other unique or repetitive actions are not classified in the same manner. In comparison, Richards and Thomas (1984) believe that rituals are the act of a community trying to communicate their 'views of the world' through performed actions. It is through these singular or repeated efforts of communication that material evidence is produced in the archaeological record. Goldberg (2015: 216) has proposed that ritual is continuous as opposed to a one-off event, performed through certain actions that then develop meaning and complexity over time. Goldberg feels that ritual can be presented in two identifying ways: first, a repetitive activity, that leaves continuous evidence due to its consistency. Second, the unusual occurrence of specific actions that do not conform with 'modern notions of what is functional or practical' (2015: 213). His position denotes a common issue within ritual analysis, in that a ritual does not need to be unusual for it to be a 'ritual.' Nevertheless, nondescript deposits have been shown to be significant because of their repetition; however, their occasional lack of prestigious items risk misinterpretation due to their commonality. While the intention of deposition is not yet readily obvious to the archaeologist, comparative analysis with similar anthropological phenomena may help to support or deny such hypotheses.

The source of misinterpretation for 'a traditional practice and a form of social action', according to Garwood (1989: 10), is the result of leading archaeologists' interpretation of site context. He suggests that the issue of ritual interpretation in its social and traditional form can be described in three points. First, he states that these issues stem from the inability to accept primitive cultures as having social complexity and expressing themselves through actions and materials. Second, when ritual is explained solely as a functional performance to create social cohesion, it fails to reflect the ideological beliefs that explain why the rituals were performed in the first place. Third, the concern for symbolic and ritual expression through material culture is frequently missed due to the assumption that the object or material is ‘equivalent to the ritual itself.’ By approaching ritual function and interpretation this way, analyses of the object become skewed, creating an oversimplification of the object’s importance or function.

Klassen (2007), likewise, views ritual as a transitionary and secondary characteristic to the actions and beliefs of the community or individual in performance. Klassen utilised Arnold van Gennep’s (1960) theory of *pivoting the sacred* in the description of certain rites of passage. This theory conditions that recognition is to be focused on specified individuals as they evolve or shift from one form to another.

While anthropological or archaeological research often incorporate each other’s work in literary arguments, there is a deficiency for integrating other disciplines (e.g. psychology, sociology). It is beneficial to compare similar archaeological trends that share cross-cultural relevance (e.g. Chadwick 2012; Dolan 2006: 43-44; Herbert 1994; Hodder 1979; Sharples 2010). However, including psychological and sociological theory in the archaeological analysis of tradition and ritualistic functions enables a more thorough comprehension of individual or group intention with their actions. A humanities multi-disciplinary approach also allows archaeologists to understand how and why patterns of behaviour have emerged, and perhaps how these performances are fortified not only on a socio-cultural level but also biological. However, even with psychological analyses, there appears to be a lack of studies which focus on ritual but are divorced from religious practices (Power 2018). The opposing factor is that certain activities are not interpreted as ritual because they are viewed as conventions rather than cultural traditions. Cultural traditions are defined as events, rituals, and customs a society shares as opposed to daily habits that serve as maintenance for survival. Therefore, certain behaviours which have been considered mundane may, in truth, hold an elevated social and cultural significance for those in performance and attendance.

6.4.3 Received Wisdom

Past perspectives, literature and foundational research have helped to develop prehistoric wetland depositional studies. Yet, even with clearly defined parameters of ritual terminology, the overuse of certain examples while many others are ignored, to justify ritualistic traditions for wetland deposition have created cyclical arguments (for example, the writings of Aldhouse-Green, Cunliffe and Ross).

Aldhouse-Green's original insight into ritual has been fundamental to theoretical concepts, defining ritual regarding bog victims as '… repetitive, formulaic action…' (2015: 113). I agree with her position that, 'The repeated deposition of iron implements in watery places, as seemingly intentional acts…may provide clues to the manner in which the metal was perceived in ancient cosmologies' (Aldhouse-Green 2002: 10). However, her arguments have remained much the same throughout her publications concerning wetland deposition, as well as limited new object material introduced from her initial dissemination in related publications, and an overall lack of regional variation to certain traditions (e.g. Aldhouse-Green 1989, 1997, 2001, 2005, 2011 2015). For example, when discussing human sacrifice, her publications generally include the sickle and chain from Llyn Cerrig Bach (e.g. Aldhouse-Green 1998, 2002, 2004a, 2010); the bog bodies Borremose, Lindow(s), Cashel, and Cladh Hallan (e.g. Aldhouse-Green 1994, 2001, 2010, 2015); and the Manching Staff (e.g. Aldhouse-Green 1992a,b, 2001, 2015, and Howell 2017). The sickle and the staff have also been used to justify the existence of certain rituals. Objects such the Gundestrup Cauldron (e.g. Aldhouse-Green 1989, 1992a, 1998, 2002, 2011), bronze boar figurine of Neuvy-en-Sullias (e.g. Aldhouse-Green 1989, 1992, 2001, 2011, 2015), and the Capel Garmon firedog (e.g. Aldhouse-Green 1989, 1992, 2001, 2002, 2004b) have all been interpreted as ritual deposits of votive intent.

Another common problem with the writings on ritual for the prehistoric period within Britain and the Continent, highlighted by Aldhouse-Green's publications, is an over-reliance on classical ethnographers. In almost every publication, her interpretation of human remains (i.e. bog burials) or a prestigious item is justified with an ethnographer's quote (e.g. *Caesar's Druids: Story of an Ancient Priesthood; Sacred Britannia*). Classical sources, while they possess value to empiric perspectives of foreign peoples, are inherently biased or 'incoherent' (Fontijin 2002: 16-17), and reliance on these accounts in lieu of missing archaeological explanation only causes further misrepresentation of the object narrative. This issue will be expanded upon later (see Section 6.4.4). As her arguments focus primarily on ritual behaviour and the defining parameters of Celtic religions, they unfortunately have become slightly cyclical in defining and identifying ritual through sacrifice (Aldhouse-Green 1989, 1992a, 1999).

Publication of similar arguments has saturated archaeological literature. Cunliffe—another distinguished authority in Celtic archaeology specialising in the Iron Age—has become slightly repetitive in his arguments due to copious publications. He views '… ritual behaviour [as] complex and multivariate…' (1992: 72), and deposits (regarding British hillfort pit burials) as '…a range of deposits…[that] reflect a number of different aspects of behaviour…'(1992: 76). However, publications pertaining to the 'Celtic regions' always start with identifying root languages and settlement types (e.g. hillforts, oppida), with a brief review of religion (e.g. 1982, 1987, 1997, 2001, 2003, 2012, 2017, 2018). These arguments are similar to his original publications, with compounding evidence and theory. This creates issues in the oversaturation of similar topics with citations of previous work all containing very similar arguments. Another example can be drawn from Ross (e.g. 1967, 1986, 1999; Ross and Robins 1981) when discussing ritual and religion. However, if a stance in an argument remains the same, it makes sense that the literature produced would likewise not change.

What should be highlighted is the new limited evidence to support a long-held position for arguments of ritual and the dependence on classical sources for further validation. There is no doubt that the repetition of logical arguments is a tried and proven methods of rhetoric, but ignoring the extensive collection of objects from wetlands does present a problem when analysing widespread traditions and perhaps identifying regional variations within the area's customs.

6.4.4 Classical Ethnographic Influence in British Wetland Archaeology

Discussions of ritual theory have created deficiencies concerning British Iron Age wetland deposition, inhibiting research development, and resulting in limited holistic analysis for the last 30 to 40 years. Instead, old ritual and votive theories are recycled but rarely redefined, as the archaeological discipline continues to evolve. Never is this more apparent than with the dependence on ethnographic accounts to describe cultural narratives of the people who resided in Britain at the time of the Roman invasions (Cunliffe 1991; Hill 1996; Ritchie and Richie 1995; Webster 1996). At times, classical ethnographic accounts are substituted as evidence for missing archaeology. This foreign narrative still dominates, even unconsciously, much of wetland archaeologists' interpretations and analyses of the material culture of the Iron Age in the United Kingdom. Nonetheless, as Bell (1992: 13) correctly states, even efforts to re-legitimise 'ritual' through data and theory does not prevent the abuse of the term.

Wetland archaeology remained dependent on classical ethnographic accounts to explain prehistoric intentions due to the failed integration in the 1980s with terrestrial methodologies.[14] Bradley, in his first edition of *Passage of Arms,* made efforts to divert from the ritual narrative by providing an alternative perspective based on economics. 'Deposits that might have appeared enigmatic were explained in common-sense terms, and until recently any interpretation that relied too heavily on ideas of 'ritual' activity was regarded with suspicion' (Bradley 1990: 16). However, with a harsh critique from Tim Champion (1990: 479-481), Bradley retracted certain statements and instead claimed that all wetland deposition was potentially the result of votive activities. In his later publication of *A Geography of Offerings* (2017: 1), he calls attention to the difficulty in using terms such as 'hoard' and 'votive' saying, 'The idea of a 'votive deposit' faired little better, for in most cases it was treated as a residual category made up of collections of objects whose composition resisted a practical interpretation.' Therefore, it has become almost impossible to discuss wetland depositional practices without reviewing how and why the topic is so entrenched in ritual theory. This entrenchment is very much the result of residual and archaic ideals of the ancient world percolated into the modern psyche.

Greek and Roman texts and surviving local folklore are filled with romanticised portrayals of indigenous peoples steeped in the supernatural, and engrained in mysticism that is truly otherworldly. There are, however, no accounts produced by the Britons in the Iron Age. Historians and archaeologists have relied on Greek and Roman accounts (Collis 2003; Hutton 2013), and Christian monks who frequently recorded local folklore (Hutton 1991: 226; Maier 2006; Wait 1985). Greek and Roman accounts should always be monitored for bias because they almost always provide an elitist perspective against foreign and defiant groups. For example, as Caesar demonstrates (e.g. The Battle for Gaul, 81), Rome often used cultural differences or lack of compliance as justification for occupation and military suppression. In addition, many of these original accounts have been lost, and others copied to such an extent that their validity can easily be challenged (Collis 2003). Even for more

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[14] See History, Chapter 5.

credible accounts, the chronology can be inaccurate because many of these recordings are written at least a hundred years after the event (Collis 2003).

When analysing the Roman and Greek accounts, one is provided with an image of a barbaric individual subject to the whims of backward deities all the while committing major taboos of the Greek and Roman cultures. The Greek philosopher Aristotle was one of the first to apply a barbarous stereotype to the Celts, followed by Plato when referencing their drunkenness (Collis 2003: 17). However, Tacitus (Tacitus *trans*. Greenwey et al. 1983), along with Caesar (Caesar *trans.* Edwards 1891) provide similar but at times juxtaposed accounts of the regional groups they encountered throughout north western Europe, ranging from the barbarous to the endearing.

Many of the classical ethnographers focus on describing human sacrifice, probably because this performance was the most provocative and evoked an emotional response. For example, Hieronymus (Collis 2003: 18), Herodian, Pomponius Mela, Caesar (e.g. Gallic War VIl), and Tacitus (e.g. Annales 13) all mention human sacrifice. This stance is highly hypocritical because the Romans also performed human sacrifice, though by this period the custom had fallen out of favour in most circumstances. For example, the Roman performed ritualistic killings in 113 BC before the invasion of Gaul (e.g. Livy and Hieronymous) (Livy 22.57.4 *trans. by* Beard et al. 1998; Collis 2003), but because it was demanded by custom, their action was pardoned.

It is rare for ethnographers to discuss the deposition of objects. For example, Strabo (Geography 4.1.13 *trans.* Jones and Sterttet 1917), quoting Posidonius, tells of a treasure that is worth more than fifteen-thousands talents in the modern Toulouse region placed in ‘sacred enclosures, the rest in sacred lakes, none of it fashioned, but merely unwrought gold and silver.’ This is an interesting observation because, archaeologically, this amount of raw materials could be misinterpreted as a production site as opposed to a sacred deposition, especially if evidence of a fire has been noted in the area associated with the finds. Likewise, the abundance of this type of high-class material found within certain wetland types (i.e. lakes, rivers, coastlines), regardless of a lack of transformation, can also be attributed to loss during transport and not as an act of deposition. We continue to see the Roman value for raw materials in Caesar’s accounts. In Caesar’s Gallic Wars, he describes the raw materials available in Britain. He also details his observation of ‘piles’ or ‘plunder’ and advertised this material to soldiers for military compliance (e.g. Book 5, Chapter 12 and Book 6, Chapter

17). However, these piles of plunder in venerated locations may have been the precursor before deposition. Therefore, it is likely that the Roman conquest upset and disrupted the associated cultural practices in Gaul and Britain.

Classical ethnographers also had issues distinguishing between different groups of people and tribes throughout north west Europe. Many of them grouped the people into 'Celtic' because the languages sounded similar (Collis 2003). However, other scholars have argued that it evolved into a generic term for the people of north western Europe. It was not until later that ethnographers such as Posidonius, Hieronymus, Strabo, and especially Caesar, began to make distinctions between cultural groups and their dialects. But this homogenous perspective still dominates much of the prehistoric literature today.

Moreover, many of the Greek and Roman accounts diminish the inhabitants of the British Isles, not only for their 'uncivilised ways' but their interaction with taboo landscapes, especially marshes and bogs. The Romans believed that '…swamps and bogs harboured evil humours that spread disease, as well as being the haunt of noxious animal life' (Aldhouse-Green 2015: 51). To project this cultural taboo would have encouraged individuals who were influenced by Roman culture to denounce their practices and thereby become more compliant to the newly implemented social protocols. Therefore, it is not surprising that we see a major increase in wetland drainage and abandonment of wetland sites throughout Britain during their occupation and the resuming of habitation in such liminal locations after their exit.

'Most of Britain is marshland because it is flooded by the continual ocean tides. The barbarians usually swim in these swamps or run along in them, submerged up to the waist. Of course, they are practically naked and do not mind the mud because they are unfamiliar with the use of clothing, and they adorn their waists and necks with iron, valuing this metal as an ornament and a token of wealth in the way that other barbarians value gold… Because of the thick mist which rises from the marshes, the atmosphere in this region is always gloomy' (Herodian III.14.6-8).

This excerpt from Herodian has several different elements that are relevant for analyses. First, the mention of the British landscape as marshland. Herodian could be accurately describing an estuary that the Romans utilised to access the mainland of the British Isles. Secondly, he could be describing the importance or relationship the Britons have with wetlands, in that they embrace them. On the other hand, he could be describing the landscape in an unfavourable manner to delineate Britain as a wasteland and the end of the civilised world. He further highlights their uncivilised manner by making remarks about their lack of clothing and any concept of modesty. Herodian's effort to delineate Britain as a wasteland becomes apparent in his finishing line where he states the atmosphere is always gloomy. Within this sentence, he is stating a very Roman perception of negative associations of wetland places, especially as they affect the humours. Distrust of marshland could have evolved from Greek mythologies of nymphs that would lead travellers astray and drown. However, it is more likely that this distrust developed from marshlands being centres of mosquito infestations and the spread of malaria infection in this portion of the world, as prescribed by Pliny the Younger (Pliny v.6.2; Sallares et al. 2004). In addition, Charon's boat passes through the marshes of the Acheron and into the river Styx before passing through the gate of Hades (Cumont 1922: 80). Therefore, by associating Britain with this landscape, he is equating the region to hell; and treating its people with suspicion because they swim in these taboo locations. It should be noted that the Greeks and Romans did have spring cults and utilised these places for worship. Two examples of these venerated locations in Britain are Bath and Caerau. Therefore, not all water landscapes were viewed with distrust, but only certain types of wetland landscapes such as bogs and marshes.

Christian monks who wrote about the British people's history and the Irish and Welsh literature were likewise influenced by the Greek and Roman accounts, furthering false stereotypes (Joy 2011b: 407). Folklore was one of the last remaining components of the preceding oratory culture of prehistoric Britain (Aldhouse-Green 1995). Monks and clergy members continued to record local folklore from their first missionary attempts to the Post-Reformation. However, their incentive for recording these tales was rarely to preserve history but instead to aid in intended mass-communal conversions (Hutton 1991; Maier 2006; Wait 1985). Likewise, many of the localised pagan holidays (e.g. Samhain to All Saints Day, Imbolc to Candlemas), deities and protagonists (e.g. Saint Brigid, Dylan ail Don, and some of the Tuatha Dé Danann to demons or fallen angels) were incorporated into the church to ease conversion (James 1947; Squire 2000; Watkins 2004). Many of the triads and folkloric tales recorded by monks were altered to exhibit certain Christian archetype elements (Lehane 2005). Folkloric tales that have had little alteration either provided no benefit to the church, or were used to condemn certain activities or beliefs (e.g. wetland deposition) and served as examples of inappropriate behaviour (James 1947; Watkins 2004). However, the spread of Christianity went hand in hand with the influence of the Roman state, especially in the fourth century AD (Petts 2016). Therefore, it is unsurprising that the Roman and Greek distrust of certain wetlands and marshland infiltrated the Christian faith. Nevertheless, there is evidence of the incorporation of certain aspects of water cults into the church with saints becoming associated with specific wells, springs, and other water sources along with the incorporation of venerated sites associated with healing (e.g. Bath, England) (Alcock 1965; Oestigaard 2010).

As a result, biased perceptions were adopted in early archaeological narratives for an extensive period, which rarely credited the local peoples with the cognitive or physical ability to produce highly complex objects and sites. Therefore, archaeologists need to be cautious when utilising classical ethnographic accounts to affirm their hypotheses of ritual for archaeological signatures, because history is not written by the victors but rather the literate. Archaeologists must also understand how the acts of ritual are developed in societies to not project false narratives for the sites and objects encountered that are seemingly bizarre and unique.

6.5 Connecting Ritualistic Behaviour with Wetland Deposition Tradition

Ritual manifests itself in archaeology through the analysis of patterns that delineate concrete or anomalous behaviours. Ritual can be defined as repetitive archaeological patterns with an elevated and (or) associated meaning; as a result, many actions can be presented as a form of cultural tradition. For example, within the Iron Age in Britain, house construction and entrance orientation (Bradley 2012; Fitzpatrick 1991, 1997; Harding 2009; Hill 1989, 1995; Oswald 1997; Sharples and Parker Pearson 1997), hillfort layout and rampart construction (Davis 2013; Mytum 2013; Sharples 2010), and even the lack of mortuary remains (Harding 2016), can indicate possible cultural traditions with elements of ritual. However, for this study, we are only focusing on patterns or lack thereof, of material objects deposited in the wetlands. Speculation as to the cause of these types of rituals can only be theorised; but evidence of liminal locations, the nature of the material, and the quantity and quality of these materials all delineate a set of formal behaviours that were practised by prehistoric peoples.

Depositional landscapes, both terrestrial and wetland, often imply significant meeting places for remembrance, rites of passage, and gatherings, and thereby are an important factor in considering the material evidence left behind by individuals after the completion of an event, performance, or action (Bradley 2000; Crease 2015; Fulford 2001; Needham 1992). The act of deposition requires action, such as the acquisition of raw materials, production, transport, and finally placement of the object. The depositional landscapes of the British Iron Age include hillforts, temple sites, stone circles, and pre-existing burial mounds – illustrating a widespread practice for both terrestrial and wetland locations (Webster 1995). Roman accounts also suggest groves, wells and water sources were important, but this was after the Iron Age and therefore may not be relevant (Aldhouse-Green1986; Ross 1986; Webster 1986; Webster1995). Both the natural and altered landscapes played major roles in which rituals were practised.

With the growing study of wetland archaeology throughout the United Kingdom, as reviewed in the Chapter five, locations in wetland landscapes are becoming more recognisable for their archaeological potential and prehistoric structures. For example, crannog studies throughout Scotland and Ireland have proven that these wetland locations were centres for both continuous and episodic activity and settlement (e.g. Crone et al. 2012; Dixon 2004; Henderson and Sands 2013). Settlement activity likewise produces archaeological evidence for depositional behaviour (e.g. Cunliffe 1992; Farley 2011; Hingley 1990; Wainwright and Spratling 1973; Wilson 1999). The difference between isolated wetland deposits and settlement activity is the continuous action of occupation versus the episodic practice. Therefore, patterns that would delineate a special tradition can, at times, be more muddled due to overlaying activity than deposits found in isolation. However, many wetland locations, such as parts of the marshes or edges of bogs, have evidence of animal grazing (e.g. Bell 1996; Pryor 1996; Willis 2007).

Wetlands appeared to have served many functions, not only for resource extraction and settlement, but also serving as a depositional landscape which, through the objects placed or the landscapes themselves, can become mnemonics (Fontijin 2007; Lindström 2008; Sahlqvist 2001). Depositional practices within these landscapes denote repetitive culturally affiliated performances which are assumed to have been held in a place of communal significance. Likewise, these deposits were considered important not only for the monetary or social value they served, but the copious amount of material deposited in a chosen location or landscape type. Additionally, these landscapes must have retained prominence within the communities' memories long after their relevance diminished because of continued depositional practices in specific locations (e.g. Llyn Cerrig Bach). Therefore, while rituals often evolve different motives, archaeologically they retain the same relevant physical practices. [15]

Ritual practice and performance are variable depending on landscape type, which plays a significant role in the differentiation and treatment of objects and (or) remains. For the Iron Age, the variation of depositional objects and (or) remains were also subject to social and cultural intent in conjunction with landscape type and soil context. Within Britain alone, as opposed to a broader cultural affiliation to the Continent, there are significant differences in not only deposition but also mortuary practices, with both linked to a certain level of ritual concept and performance.

Ritual manifests itself through the archaeology in wetland environments through deposition traditions. The repetitious act of deposition is evidence of its longevity in prehistory. The practice over time, of course, evolved to the community's needs and desired representation conveyed through the objects chosen for deposition. The transmission of custom is unmistakable during the Iron Age through the continued performance of wetland deposition which therefore confirms such practices to be rooted in tradition.

6.6 British Prehistoric Deposition Theory

The act of deposition is the intentional placement of materials into a selected location or environment. Structured deposition is the most pragmatic explanation for general depositional practices. The theory of 'structured deposition' was developed by Richards and Thomas (1984) in their paper *Ritual Activity and Structured Deposition in Later Neolithic Wessex.* The paper argues that pits like those found at the Neolithic site of Durrington Walls are the result of deliberate, formalised, and repetitive behaviour resulting in an arrangement of layered and structured material objects, including human and animal remains. Garrow (2012) has pointed out that the argument is too restrictive to apply to all deposit types and landscapes found throughout Britain. He also states (2012: 91) that Richards and Thomas' definition provides conflicting statements about the inability to distinguish between settlement 'ritual' deposits.

[15] These depositional practices in terms of archaeological significance will be explored more in depth in Chapter 7.

Following Richards and Thomas, Needham (1988) was one of the first to develop a structural theory for wetland deposition. In his analyses of Bronze Age deposits, he proposed that the act of placing selected object(s) within a certain location was to convey cultural messages. Thereby, the importance lies in fact that the overall function of artefacts was decided by the society, and not 'by intrinsic properties' (Needham 1988: 240). Thus, the importance of the deposition practice was not the order in which objects were organised but the selection of items and their relation to the topography. Needham's analyses are important for wetland deposition because while a layered structure may be an essential element for terrestrial deposits, it is not always achievable in a wetland context. Changes in deposition practice and location are reflective of period values. For example, in his analyses of iron object deposition, Hingley (2006: 213) states that the desired location is the result of the changing nature of the society and their relationships with landscapes. Therefore, understanding the location is as important as understanding the objects chosen for prehistoric deposition traditions.

Hill's (1995) analysis of Iron Age depositional practices in Wessex confirmed that there was a differentiation between material classes and that their placement was deliberate. Hill (1995: 115) highlights a very important concept regarding deposition traditions, 'The diversity is set within the same cultural and ritual traditions, in which general trends and common structuring principles are discernible, but the way in which these specific principles were materialised, and their elements combined, was not according to liturgical rigidity.' Different materials were utilised to portray alternative messages for the community that performed the deposition, confirming Richards and Thomas' original stance on depositional intention (Hill 1995: 126). He discovered that depositional practices differentiated between pits that contained human remains and those that did not (Hill 1995: 125), a point reinforced by later taphonomic work on human and faunal remains (Madgwick 2010). Hill's reanalysis challenged that of his predecessors (e.g. Liddell 1935; Pitt-Rivers 1888), who claimed that pit-burial traditions, especially in reference to human remains, were the result of rubbish disposal. This stance challenged pre-existing attitudes like Pitt-Rivers (1888: 60) when he stated pit deposits were 'easier than digging a grave'. Wheeler (1943: 51-55) held a more ambiguous attitude towards terrestrial storage pits, whereby he recognised that the pits of Maiden Castle were used for a multitude of purposes, from storage to disposal to human burial. However, these types of structured deposits suggest detailed forethought and planning by the community. Cunliffe (1991, 1992) highlights how patterns of deposition can delineate intentional placement of chosen objects and remains from terrestrial rubbish deposits. He believes that, '… deliberate acts of deposition …form part of the rituals associated specifically with pits' (Cunliffe 1992: 76-77). What is fascinating is that prehistoric wetland deposits (including human remains and objects) have seldom been interpreted as rubbish, and that their placement was the result of either accidental loss or purposeful and thoughtful placement into a selected environment.

Garrow (2012: 85), however, believes that the term 'structured deposit' has become too broad in its meaning since its development in the 1980s, and became a catch-all for any material culture that shows patterning; thereby resulting in a concept now lacking in 'critical attention'. He identifies three main issues with the development of this theory: (1) a tendency to theorise deposits and not define personal interpretations clearly; (2) 'attribute[s] enhanced meaningfulness to material culture patterning'; and (3) a tendency to interpret in isolation as opposed to providing a holistic analysis of similar archaeological patterns of deposition or 'material culture patterning' (2012: 105). Granted, these problems still remain, but there has been a conscious movement to remove fixations that would impede more dynamic interpretations of the archaeological material.

6.7 Depositional Practices and Trends Observed in Wetland Areas

Bradley (1984: 101-103) put forward two broad interpretations for objects of wealth discovered in deposits that are assumed to have been voluntary. The first interpretation is that deposition was a means of '…controlling the supply of objects and thus maintaining their value' and two, the act of deposition is viewed as an important feature of social roles. He states that either interpretation will reflect a different type of society. However, while the argument is valid, there is also the possibility that the two interpretations are not mutually exclusive. Thereby, certain object types were chosen with the purpose of deposition while retaining consciousness of supply.

Bronze Age wetland deposits are often characterised by the destruction of the selected objects (Bradley 1982, 1984; Brück 2006). However, the Iron Age deposits appear to be portions of disassembled objects assembled into a hoard context.[16] For example, component pieces of objects are often prominent in object studies like Horn's (2015) analyses of tankards

[16] See the results chapters 8, 9, 10.

and their handles, Joy's (2014) review of cauldrons, and portions of equestrian gear (e.g. Davis and Gwilt 2008; MacGregor 1976).

According to Armit (1997b: 92-93), the deposition of the large copper alloy objects that characterise the Bronze Age appears to stop by around 500 BC. He concedes that large iron objects may have continued to be deposited, but these might not have survived to the present day. After this time, hoarding culture and deposition appears to halt, only to revive a few centuries later with marked regional variation (Armit 1997b: 92-93).

6.8 Wetland Deposition in Iron Age Britain

There are copious amounts of literature pertaining to wetland deposition of prestige metalwork for certain regions on the Continent and Ireland (e.g. Fredengren 2011; Grogan 1999; Melheim and Horn 2014; Raftery 1994; Vandkilde 2003). In contrast, however, there are very few holistic analyses of wetland deposition in Britain. Likewise, previous publications that do perform broad analyses of deposition practices in Britain are concentrated on the Bronze Age (e.g. Bradley 2013; Brück 1999; Needham 1988; Yates and Bradley 2010). Studies that focus on Iron Age activity are mainly concerned with England (e.g. Fitzpatrick 1984; Lally 2008) or Scotland (e.g. Hingley 1992; Hunter 1997), but not Wales, apart from Martin's (2003) investigation of the south-east. Accounts that provide some scale of holistic analyses towards Iron Age deposition, including wetlands, are usually confined to the Late Iron Age at the time of Roman conquest and influence (e.g. Cunliffe 2004; Manning 1972; Martin 2003). Due to the extensive publications on the topic (e.g. Bradley 2013; Cunliffe 1992; Garrow 2012; Haselgrove and Hingley 2006; Morris and Maltby 2012; Needham 1988; Sørensen and Bjørnevad 2020), the review of established literature regarding depositional theory and evidence will be brief.

In a review of the deposition of metalwork from wetland contexts, Fitzpatrick (1984) commented on the abundance of single or stray isolated finds of objects. He goes on to say that, because these objects were found in isolation, they have been interpreted as accidental losses as opposed to purposeful deposition (1984: 182). Single objects are interpreted in such a manner because there is a lack of context and associated assemblages that would denote objects of significance like those found in a hoard (Fitzpatrick 1984: 182). He highlights that deposits are not always large accumulations, but rather it is the quality or degree of craftsmanship of the object that makes them significant. However, the presence of ingots in many hoards and some textiles does challenge the notion that only prestigious metalwork was of social or economic value. As a result, and in consideration of possible votive incentives, archaeologists should instead interpret that certain deposits were based on both quantity and quality, and mnemonics, assembled in the desired communal tradition (see Chapter 7). Fitzpatrick's comment that exploring a possible votive nature to deposition 'denies us the opportunity to explore how these artefacts, and the contexts in which they were deposited, were used in Iron Age societies,' is untrue. It is when we limit ourselves to one exclusive interpretation of deposition that issues in analysis develop.

Willis (2007: 119) states that archaeological evidence shows how Iron Age communities had a complex relationship with wetlands. Furthermore, Goldberg (2015: 218) argues that wetlands, and specifically boggy areas, were frequently chosen for deposition of objects during the prehistoric period. Due to the high frequency of deposition in wetland areas, there is an equally high probability these prehistoric communities were aware of the unique preservative properties of marginal wetland and boggy areas (e.g. bog butter) (Goldberg 2015: 45).

Waddell (2014), Bradley (2000), and Hingley (2006) discuss the importance of the chosen landscape, believing that certain locations elevated the significance of the deposited material itself. Specific material was chosen for placement in certain types of landscapes; for example, tools are generally found in terrestrial locations, whereas weapons are found in lakes and rivers (Bradley 2000: 37). Likewise, once placed in a wetland, many of the hoards survived due to their inaccessible location, which makes the objects more likely to remain undisturbed. Bradley (2000: 36-37) proposes that the items found in wetland locations, especially those of obvious and exotic significance, represent the end of the artefact's life cycle (i.e. from production, to exchange, to exit, to finally deposition).

In Bradley's book, *A Geography of Offerings* (2017) he describes how certain locations in the topography seem to affect the material chosen for deposition. In terms of depositional differences between terrestrial areas and wetlands, pre-Roman Iron Age objects placed within a terrestrial context were generally cast; whereas those placed in a wetland, were created from hammered sheet metal (Bradley 2017: 117). Therefore, objects most associated with wetland deposition according to Bradley (2017: 117) are cauldrons, bowls, buckets, shields, and helmets.

Hence, variations of wetland depositions have already been observed and identified as hoards and single object placements. Evidence of different prehistoric depositional traditions using site-specific case studies from Wales and Scotland will be presented in a preliminary review in Chapter 7.

6.9 Discussion

The re-evaluation of the theory of ritual and wetland deposition practices for archaeological material dating to the Iron Age within the United Kingdom is needed. This re-evaluation, however, requires a holistic cross-disciplinary study which includes anthropological, archaeological, and historical evidence in correlation with observations of deposited object assemblages. Objects found within a wetland are often classified as votive and interpreted as an elevated ritualistic phenomenon. Re-evaluation of ritual is important to wetland archaeological studies due to the nature of material remains found within these contexts. Likewise, wetland depositional studies need to expand theoretical depositional practices to better understand associated behaviours locally and cross-regionally.

Ritual can take on various forms to serve specific communal functions. As a result, it is unsurprising that the term ‘ritual’ has taken on an all-encompassing interpretation for scholars because of the numerous conceptional applications. For this study, ritual is a performance imbued with meaning, that is then reflected in the local ideology, a tangible object(s), and (or) an archaeological pattern.

For the Iron Age, archaeologists are often faced with complex archaeology which provides no logical explanation. Frequently, these sites are interpreted as having a votive significance, because the ‘unusual’ identifies with abstract concepts which are better understood within the confines of religious ideology. The word ‘religion’ is a little extravagant in this case because it is impossible to define prehistoric religions using archaeological evidence without written accounts of intent. Archaeologists align ritual practices in such a manner because religious-based ideology and motives, even for contemporary religions, are not readily based on the logical but rather ‘the miracle’ or ‘unimaginable.’ It is irrational to explain object depositions that have no logical explanation as part of a religious event because that mindset and action is no longer comprehensible in the contemporary period. Instead, archaeologists should look at what manifests from ritual practices to interpret their economic and social value in a particular society. We will never know why prehistoric societies performed some of these rites and activities, but what can be deduced is that the continued practice produced a form of social cohesion and identity along with the formation of collective memory.

Wetlands held a special significance for prehistoric depositional practices. Hunter (1997) views deposition as a reflection of the community. The more favourable interpretation for hoards is that certain communities had an elite hierarchy which was reflected in the quality of the materials deposited. Other groups may have had collective donations in the form of fragments or components of objects as opposed to fully formed pieces that would represent individuals or households. For smaller hoards, Hunter (1997) has suggested that they reflect individuals or a nuclear family. However, the deposit could have also been the result of a smaller community or an extended family living within a nucleated settlement. Singular object deposits have additionally been suggested to reflect the individual (Hunter 1997). Singular object deposits may have also been the result of individual, family, or communal decision to make a deposit. This hypothesis makes sense for depositional trends if a family is required to donate a single object to a mass hoard. There will always be outliers to depositional patterns and trends because intention remains archaeologically elusive.[17]

Purposeful deposition of high-status objects in natural places, as stated in a series of publications by Bradley (e.g. 1984, 1990, 2005, and 2017), is continuous—despite political and social reorganisation—as the traditions themselves evolve. Many archaeologists have proposed that exchange networks collapsed with the shift from Bronze to Iron Age economies (e.g. Armit et al. 2014; Collis 2003; Harding and Fokkens 2013; Needham 2007). However, wetland deposition tradition is continuous through the repetitious performances and choice of common object types, materials, and assemblage configurations (see Chapter 7), along with set types of wet landscapes and sediment.

6.10 Summary

Tradition is defined by its generational continuation and transmission of thoughts and beliefs. Ritual, likewise, is defined by its continuous nature, but also prolonged repetition which serves different social functions. However, these traditions with elements of ritual performance can serve multiple functions. Due to the complexity of potential ritualistic

[17] Expanded upon in Ritual, Chapter 6.

behaviours indicated in the archaeology, clearly defined interpretations need to be provided for the use of such terminology. Nevertheless, when enough evidence is accumulated, holistic analyses of established patterns can determine sociocultural traditions and habits. For wetland studies, ritual practice can be observed through depositional evidence. Analyses of depositional traditions in conjunction with their ritualistic functions allow for a broader scope of a culture’s regional customs, behaviours, topographical interactions, and relations through archaeological evidence.

PART II

Chapter 7 –Deposition Categorisation

Preliminary observation of Iron Age deposition activity revealed several distinct forms of practice in wetland environments. The distinct forms of wetland deposition practice observed were multiperiod and single period hoards, pairs, multiperiod and single object deposits. As discussed in Chapter 6, certain deposition practices have been theorised with the discoveries of various findspots. However, it is important to re-iterate interpretive definitions of depositional behaviour in conjunction with new observations before introducing the project analysis. These forms of practice will be defined as *wetland depositional traditions* within the study. This chapter will provide preliminary observations of depositional tradition with exemplary case studies. Examples discussed in this chapter were chosen for their distinct characteristics which aligned the closest with preliminary categorical observations of practice. There is variation in the examples used as some are extremely well known while others are obscure in academic literature. However, a mixture of this variation was used to connect well known case studies with those that are lesser known to bridge the connection of deposition traditions.

7.1 Hoards

Hoards are the result of the most known deposition behaviour with historical, ethnographic, and archaeological evidence spanning prehistory well into modern periods. Hoards are, by definition, a collection of items placed together, or in proximity, in a single location. While Darvill's (2008) definition prescribes hoards as the act and collection as symbolic, this study will use Hingley's (2006: 214) pragmatic definition of 'sealed collections of objects, from single finds.' Joy (2016: 239) takes from Livingstone's (2003: 29-40) definition that hoards are '… containers for objects that have been refashioned through selection, collection and accumulation, voicing the values of its collectors and revealing their properties.' In comparison, Bradley (2013: 122) defines hoards as collections of objects selected to be deposited together on the same occasion. Bradley's definition would exclude deposits that accumulate over time, like that of Llyn Cerrig Bach, unless his definition defines deposits as a series of successive hoards, to which it would then remain relevant.

As stated in previous chapters, hoards are not a major focus in Iron Age studies, especially those which have been reported from wetland contexts (Fontijin 2002; Garrow and Gosden 2012: 155), with research instead favouring Bronze Age practice (e.g. Bradley 1988, 2005; Yates and Bradley 2010). Analysis of Iron Age hoards has been limited to site case studies, specific regions, and materials which, when observed alone, can be equally restricting to hoarding tradition interpretations as opposed to utilising holistic methodologies (e.g. Davis and Gwilt 2008; Garrow and Gosden 2012; Haselgrove and Hingley 2006; Hunter 1997; Hutcheson 2004; MacDonald et al. 2007). Deciphering if a deposit is a hoard which contains relatively few objects can be challenging due to the quantity, quality, and proximity of other items. For example, the placement of two or three items may, for some archaeologists be considered a hoard, but a more copious collection may be required for others. Likewise, if objects are placed close to each other, they may be considered a hoard, but again, this status can be debatable depending on personal concepts of proximity.

Hoards, for the purpose of this study, are objects of three or more within proximity or association with each other. Hoards can occur in a series of deposits, whereas others are a single placement event. Likewise, there are hoards that show evidence that care was taken to return to the same spot for deposition, while others occur in the same landscape or wetland location.

7.1.1 Multiple Period Hoards

Multiperiod hoards are deposits that occur over an extended period in a single location or wetland environment. As Bradley (1990: 6) states, multiple objects collected in a singular depositional context are often assumed to have been placed together at the same time. However, single event deposition is not the case for all the hoards found in the United Kingdom, and in particular Wales and Scotland. Within the multiple period deposit tradition, there appear to be two types of deposits: *Location Dependent Multiple Period Deposits* and *Landscape Dependent Multiple Period Deposits*.

Location Dependent Multiple Period Deposit Hoards is a tradition in which multiple or successive deposits have been made over time, and are on top of, or directly next to, the previous deposit. Unfortunately, within the scope of this study, *location dependent* depositions only occur in conjunction with the landscape and have not been found to occur in isolation. An example of this tradition has been noted at Llyn Cerrig Bach, whereby the Iron Age deposits occur at an isolated location within the bog or prehistoric lake.

Landscape Dependent Multiple Period Deposits occur when multiple deposits are placed within the same wetland, utilising its natural boundaries of space, for example, a bog or lake. These deposits can be made in separate periods, but their common placement into the known wetland links them. Other examples of sites that potentially exhibit *Landscape Dependent Multiple Period Deposit* characteristics include Langston and Kincardine Moss. Comparatively, hoards such as Balmaclellan and Kincardine Moss in Scotland exhibit both *Location Dependent Multiple Period Deposit* and *Landscape Dependent Multiple Period Deposit* traditions.[1]

7.1.1.1 Llyn Cerrig Bach

The famous multiperiod hoard was reported from the peat of the prehistoric lake of Llyn Cerrig Bach. The site was discovered in 1942 during the construction of a WWII airfield (Fox 1946; MacDonald 2007: 4; Savory 1976). The hoard was found on the southern margin of Llyn Cerrig Bach in the Cors yr Ynys bog, which developed from a prehistoric lake where peat and marsh continue in patches and are buffered by surrounding sand dunes.

The hoard contains 166 objects (not including fractured elements from the same object): five unidentified bars, 13 bridle bits, two cauldron fragments, nine coiled strips, six currency bars, two daggers, one draught pole, two gang chains, one horn-cap, two lynch pins, four metal sheets, two mounts, nine nave hoops, one pin, one pincer, eight plaques, one plate, one pommel, one reaping hook, four rein rings, three unidentified equestrian rings, two scabbard fittings, one shield boss, one sickle, seven spearheads, 12 swords, three terrets, one tong, one trumpet, and 60 tyre pieces (minimum object number 18) (Figure 7.1).

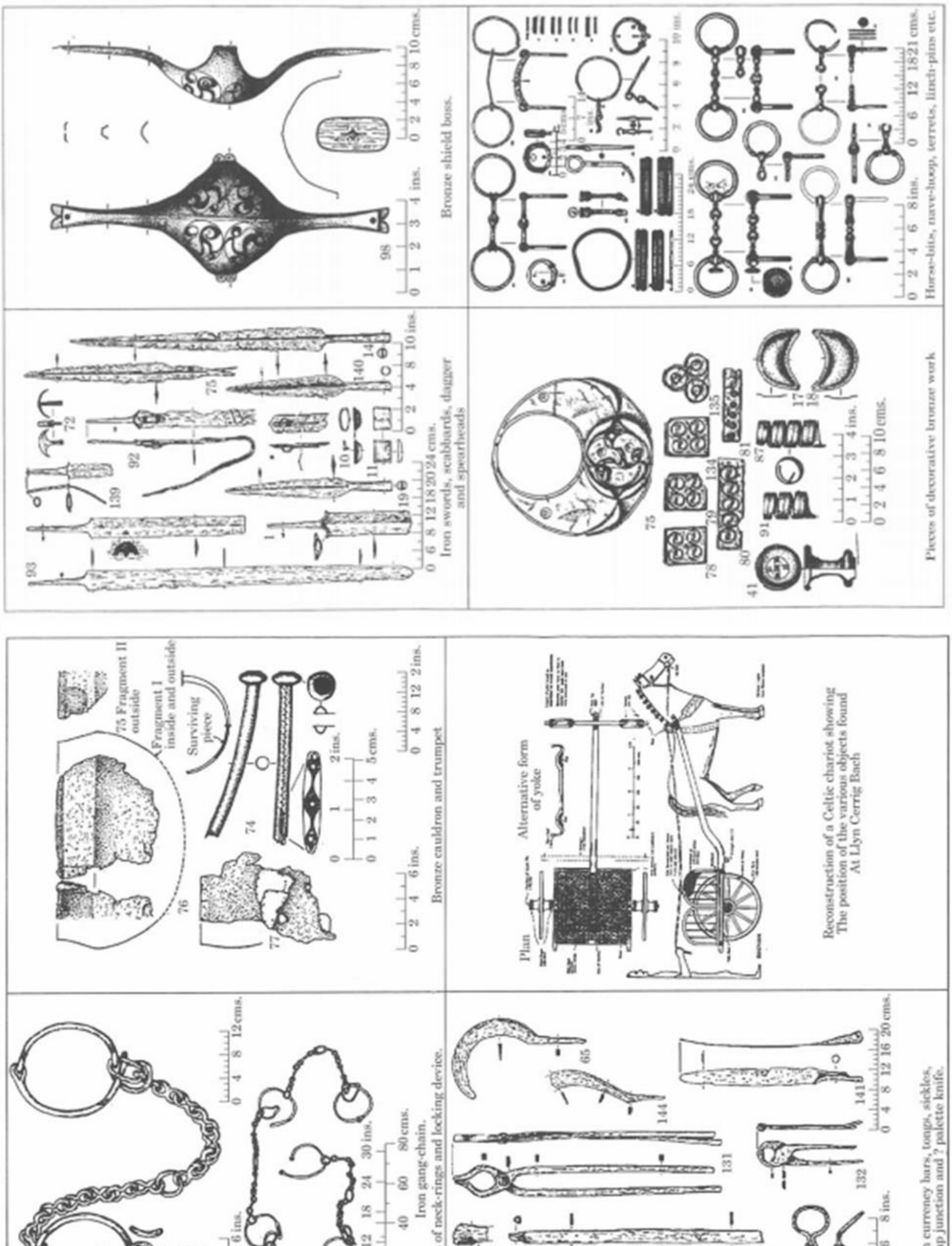
Of the objects, 46 were manufactured from copper alloy, 116 from iron, and four have not been described beyond metal alloy. As a result, the common material chosen for deposition is iron, but this is due to the high concentration of tyre pieces. The preference for iron in this hoard is significant because other reported hoards (multiperiod and single) with a similar typological-chronological sequence were generally comprised of copper alloy pieces in both Wales and Scotland.

If we consider the bias of tyres along with other equestrian and chariot fittings reported from the deposits, this categorical representation appeared to be the favoured type chosen for deposition (Lynch et al. 2000: 189). The tyres can be associated with parade gear aesthetics commonly found within deposits in Wales (Lynch et al. 2000: 189). This association of deposition of parade gear fits with the shift in the Later Iron Age to 'Native Campaigning Art' during the Roman conquest (Davis and Gwilt 2008). Likewise, the hoard contains parts of equestrian gear, weapons, and other components of objects like mounts. Weapons were the second reported object type, followed by ingots, tools, vessels, and lastly miscellaneous (i.e. two slave chains and a trumpet which can also be interpreted as conflict paraphernalia). The ingots came in the forms of raw materials or worked into metal strips. The several metal strips could be interpreted as ore to be traded, components of votive objects such as staffs, or currency (Fox 1946; Hingley 1990; Manning 1972). Therefore, while this multiperiod hoard has some pieces with evidence of destruction and bending, the majority of the finds are components of objects as opposed to wholly assembled pieces for deposition with the exclusion of certain items, such as tools, swords, and cauldrons.

MacDonald (2007), with the aid of Davis, dated the hoard's typologies to at least four periods of deposition which occurred from 390 BC to 100 AD. These different typological periods are noted for objects with variable manufacture dates such as the terrets and swords. For example, some terret types began to be manufactured and distributed around 300 BC, but certain sword types were not made until 200 to 150 BC. Other examples include differing end dates of manufacture such as tyre types, whereby certain pieces end production in 50 AD and others in 100 AD. While all deposit type materials have slight to significant overlaps in production periods, there are at least four periods of deposition when analysed holistically, confirming MacDonald and Davis' theory. MacDonald (2007: 169) states 'The date ranges for individual artefact types in the assemblage frequently span several centuries and, because of the fluctuations in the radiocarbon calibration curve for the Iron Age, precise dating of the animal bone is not possible either.' Animal bones reported from the periphery of the hoard deposits were dated by MacDonald to the Bronze Age. Moreover, MacDonald (2007: 170) also proposes that deposition continued after the Roman conquest, based on additional archaeological evidence. However, the exact nature of the Roman deposits is obscurely stated in MacDonald's report.

Savory (1976: 28) argues that the abundance of wealth found in North Wales, primarily sourced from Llyn Cerrig Bach, during the Late Iron Age Period (i.e. 250 to 50 BC), could reflect the extraction of local copper alloys and iron with very little imported from other regions of Britain. Savory's observation fits well with the hypotheses of local manufacture as the hoard lacks Roman products or campaign inspired materials. This makes
Llyn Cerrig Bach significant because it differs from other relevant contemporary hoards such as the Seven Sisters (i.e. Nant-y-Cafn), Tal-y-Llyn (i.e. terrestrial deposit) (Savory 1976: 28), and Langstone.

Figure 7.1. Llyn Cerrig Bach assemblages rendered by Roberts (2002) based on Fox (1946) and Lynch (1970).



7.1.1.2 Langstone

One of the lesser-known hoards outside of Iron Age deposition studies, the Langstone hoard, reported from the southeast of Wales, was found in a series of discoveries within a set proximity of each deposit (Figure 7.2). Six objects have been reported from Langstone, forming a hoard and three separate single object reports. The hoard consists of two bowls and a strainer (Acc. 2010.23H/1-3), dated from 25 AD to 75 AD based on typology and decorated in the La Tène style. The single object deposits were a toggle (Acc. 2010.35H), spearhead (Acc. 2016.2H) and a tankard (Acc. 2008.15H).

Figure 7.2. Langstone assemblage apart from the spear. All images are property of Amgueddfa Cymru – National Museum of Wales.

The three copper alloy vessels were discovered in a seasonally flooded rough pasture (Worrell and Pearce 2012: 285-287). Gwilt and Lewis (2009) have dated these pieces to 25-75 AD (Acc. NMW 2019). The wine strainer (Acc. NMGW-2010.23H/3) is decorated in the La Tène style with a triskele design, also containing lipped escutcheon for a suspension ring. Both bowls are of the Rose Ash type and mostly intact, with small fragments missing from exposure and decay; the wine strainer is complete.

The toggle, or harness fitting, was found in isolation and decorated in the geometric 'native' style, dated from 60 AD to 120 AD based on typology. The toggle was found at a shallow depth in a rough pasture of a low-lying basin of a possible ancient lake. The spearhead was assumed to be part of the wider scatter of the hoard and therefore contains the same date by association. The spear was found at about 20 cm depth in the peat of a rough pasture within proximity to the hoard's findspot. The tankard was found a few metres (about 25 feet) from the original hoard findspot (Gwilt and Lewis 2009), and dated from 50 AD to 125 AD. It is possible that the tankard and spear, previously thought to have been associated with the hoard, are single object deposits placed around the same period within proximity to the original deposit location. On the other hand, these pieces may have moved due to flooding, considering the location of discovery used to be in a stream that has since migrated. However, it is more likely that these deposits were made in succession, whereby the importance lay in the wetland environment in which they were placed, as opposed to a focal point within the landscape. As a result, the proximity of finds deposits reported from the findspot in Langstone is suggestive of both *Location* and *Landscape Dependent Multiple Period Deposit* tradition. Nevertheless, the deposits of Langstone are closer associated with *Location* than *Landscape* in terms of repetitive placement.

7.1.1.3 Kincardine Moss

Kincardine Moss, also known as Blair Drummond, from the central sub-region of Scotland, is a special location for multiperiod deposits with evidence of deposition reported as far back as the Mesolithic and Bronze Age. The multiperiod deposition of the peat moss has yet to be made in literary arguments. However, there is significant evidence to support this through multiple accounts reported through various archaeological units and archived on Canmore.

A potential Mesolithic find was reported in 1824 (RCAHMS 1963). The findspot contained the skeleton of a whale and a fragment of deer antler with a perforated hole. The hole contained remnants of wood, suggesting it was a Mesolithic antler axe (Turner 1912: 5). The animal remains are about a mile from a potential Bronze Age cairn based on the cordoned urn reported, excavated by Sir Kay and Lady Muir from 1927 to 1928 (Callander 1929: 63; RCAHMS 1979: 7). However, this cairn was located in a slightly elevated location on the periphery of the peat moss. Although wetland deposits from the Bronze Age have also been observed and reported.

The first Bronze Age hoard contains three flanged axes, three socketed axes, and one rapier blade made from copper alloy (Evans 1881: 248). Unfortunately, the exact findspot is unknown because it was discovered sometime in the eighteen-hundreds. However, the patina formation on the objects is suggestive of a watery deposit (O’Connor et al. 1995). Polished axe heads were also reported from the peat moss, suggesting a Bronze Age date; again, the exact provenience in unknown. The hoard contains four polished axe heads and one unpolished, and two possible perforated mace heads (Wilson 1863: 129). Other Bronze Age finds include a single deposit star bead (Callander 1929: 125), and various other polished axes of an unknown date.

The Iron Age, likewise, was a period of exceptional activity in the peat moss (Figure 7.3). Two deposits and a trackway have been reported on separate occasions. The wooden trackway was reported in 1793 by John Ramsay, recorded to have extended no more than 46 metres. A bronze cauldron (Acc. X.DU 1) was discovered in the peat in 1814 (Piggott 1955). However, another cauldron, now lost, was found a few years prior to X.DU 1, and reported to be of the same shape (Anon 1817: 259). Another deposit was reported in 2009 containing four gold torcs (Acc. X.2011.6.1 – 4).

Figure 7.3. The two deposits reported from the moss. The first is the cauldron (Wilson 2015) and the other deposit is the torcs. Photos are the property of the National Museum of Scotland.

The surviving cauldron was discovered during peat casting and found about 402 metres from a wooden trackway (Piggott 1955). Due to its proximity to the trackway along with its decorative elements, it is believed to be a high-status votive deposit. The 'flimsy ring attachments' verify the cauldron's purpose, as it could not be utilised in normal circumstances (Piggott 1955). The cauldron was embellished in Hallstatt D dot and ring decoration (Gerloff 2010; Joy 2014) and manufactured from three sheets. However, due to the size, Joy (2014) considers the cauldron more in line with the Atlantic group and typed to Gerloff Class B3. This find, amongst others like it, are significant because cauldrons were thought to be 'absent' during this time in Britain and Ireland (Joy 2014). As stated previously, reports have stated a cauldron almost identical in shape and size was found a few years before X.DU 1's discovery in 1814. If true, the cauldron may have been deposited as a pair, and therefore considered a *Location Dependent Multiple Period Deposit*.

Another deposit was reported in 2009 of four gold torcs (Acc. X.2011.6.1-4), found while metal detecting. The torcs were dated to between 300 BC and 100 BC based on the varying forms. Each torc is whole, apart from one, which is made of two joining fragments and consist of half a piece. The two twist torcs are characteristic of types found in Scotland and Ireland (Coles 1968; Hunter 2010). However, the tube-like torc is representative of styles found in South France, signifying long-distant networks (Hunter 2010, 2014, 2018). Again, this is significant because Iron Age networks and trade between Britain and the Continent were considered limited. The fourth torc is considered unique, and the craftmanship is not indigenous to the region or continent. The piece has been hypothesised to have been constructed in the Mediterranean or crafted in Scotland by a Greek or Roman trained smith (Hunter 2014, 2018). Archaeological evidence suggests that the torcs were housed in a roofed wooden structure on a small island within the marshland (Hunter 2018 437-438). Hunter (2018: 438) describes the island as situated in a liminal location, whereby, 'flowing water on one side and dank peat or static water on the other.' Overall, the evidence of multiperiod deposits within the same peat moss, in addition to the proximity of Iron Age deposits in relation to the trackway deposits in this wetland, are *Landscape Dependent Multiple Period Deposits*.

7.1.1.4 Balmaclellan

A hoard of 15 objects (Acc. X.FA 1 – 14, X.BB 7) was reported from the peat bog of Balmaclellan and dated to 110 AD to 240 AD based on observed typologies (MacGregor 1976) (Figure 7.4). The general soil association with the hoard's findspot vicinity is ettrick, with a composition mixture of brown soil, non-calcareous gleys, and peaty gleys (Scotland's Soils 2019), which are associated with peatland compositions and prehistoric marshlands. The find was reported about 800 metres from the local clergy's home in 1861; unfortunately, the exact location is unknown. In addition, there is very little literature on the hoard, and further in-depth analyses have proven difficult.

There are a few reports of Bronze Age stone axes and hammers deposited around the area, but all lack exact provenience. Therefore, confirmation for their association with the prehistoric wetland is unable to be established.

The Iron Age hoard contained nine box fittings, one crescent plate, one mirror, and two studs all wrapped in a Romano-British cloth (Henshall 1954; MacGregor 1976; PSAS

1863). The upper rotary quern (Acc. X.BB 7), ornamented with an equal-armed cross (Glasgow Art Gallery and Museum 1951), was found close to the initial deposit during modern drain cutting operations in the peat. Due to the vicinity of deposits, the quern is believed to have been associated with the hoard and therefore provided the same date. However, it is possible that the quern was placed at the same or slightly later as a separate deposit from the hoard, but in proximity.

Figure 7.4. Objects found from both the hoard and other deposits. These photos are not representative of the entire assemblage reported from the site. Rendered images are sourced from MacGregor (1976). All photographs are the property of the National Museum of Scotland.

Additionally, a bronze leaf-shaped spearhead with a rounded midrib, dated from 950 BC to 750 BC based on typology, was also reported from Balmaclellan. The spear was not considered associated with the hoard after its discovery nor noted for its proximity (Coles 1960: 78). Therefore, it is likely that the deposits discovered at Balmaclellan peat bog are part of the *Landscape Dependent Multiple Period Deposit* tradition with possible evolution to *Location Dependent Deposits* closer to the Late Iron Age. The hoard and deposit landscape are important when considering multiperiod traditions and the relationship with foreign and local influences in typologies. While there is possible evidence of Bronze Age deposition activity in the general area, it cannot be confirmed within the wetland portion of Balmaclellan apart from the spearhead. The Iron Age deposits, which have verified wetland contexts, are significant not only for the item types selected, but also the fusion of local and foreign influences represented.

7.1.1.5 Airth

Airth is a unique location, whereby the deposits reported from the wetland areas are not traditionally interpreted as associated, nor are they considered to be part of hoard traditions. Five objects have been reported from various locations around Airth, some in isolation and the others in pairs, and are therefore considered part of the *Landscape Dependent Multiple Period Deposit* tradition (Figure 7.5). Dominating the region is gley soils with floodplain veins mixed with alluvium, which developed from estuarine and lacustrine raised beach silts and clays (Scotland's Soils 2019).

Figure 7.5. Pictured here is the tankard handle and paired terrets. Photographs are the property of Falkirk Museums and Archives.

The finds reported include a brooch, a lynch pin, a tankard handle, and a pair of terrets. The brooch (Acc. TT 51/16), found in isolation in the gley soils of Airth, dated to 75 AD to 175 AD based on typology. The enamelled trumpet brooch was found in gley soils derived from estuarine and lacustrine raised beach silts and clays (Hunter 2017a; Scotland's Soils 2019). The copper alloy lynch pin (Acc. TT 2016/224) was discovered in the gley soils of Airth. Though the pin contains an iron core, no other attributes other than concentric grooves provide detail as to type. Based on its iron core and similar lynch pins like those found in Tickhill and York, the pin is proposed to have been manufactured between 100 BC to 200 AD. The tankard handle (Acc. 2015-002-001), found in isolation in the gley soils of Airth, dated to 100 AD to 200 AD based on typology. The handle has an asymmetrical lentoid section, with decorated circular terminals, and an arched pointed handle. One side of the terminal is believed to have been in contact with organic remains such as leather due to mineralisation. The handle lacks rivets and is therefore suggested to have been removed from the tankard before deposition (Hunter 2015a: 83). The handle was found in mineral gley soils derived from estuarine and lacustrine raised beach silts and clays (Scotland's Soils 2019).

The observed pair was reported from the northeast of Airth, and contains two terrets (Acc. 2016-002-001, Acc. 2016-002-002a). The terrets were recorded to be found in 'wet' sediments and are dated from 50 BC to 50 AD based on typology. The terrets are not identical; one is decorated with red and yellow enamelled copper alloy, and the other is simple in its shape and design. The enamelled terret is in good condition whereas the simple terret has two broken spurs with considerable wear. Both pieces are thought to be of local manufacture due to high traces of lead. The metal detectorist that found the terrets could only provide a general location and the presence of 'wet soils'; therefore, exact provenience for the pair remains unknown.

Airth must have been a significant area, as there are eight Iron Age hillforts within 10 km of the deposit. The deposits of all these pieces were in gley soils and south of the River Forth. In addition, based on the observed typological-sequences of the objects, the majority of deposits occur from 50 BC to 200 AD.

7.1.2 Single Period Hoards

Single period hoards are multiple artefacts deposited in a single location that are in association with each other. While they often serve as stand-alone examples of single deposit events, it does not take away from their significance. Single period hoards provide the same insight to communal identity and material value as multiple period depositions (i.e. landscape, typology, collective contribution, and material preference). The difference between the two tradition typess is that, where multiperiod hoards are characterised by a succession of deposits in the same location or wetland, single period hoards are deposits that have only occurred once. It is possible that other deposits exist in these difficult to access locations and have yet to be discovered. Examples of noteworthy single period hoard traditions have been reported from Llyn Fawr, Nant-y-Cafn, and Middlebie. These examples were chosen for their representation of regional identity through the items chosen for deposition.

7.1.2.1 Llyn Fawr

The hoard of Llyn Fawr was discovered in the peat during drainage from 1911 to 1913 to construct a new reservoir in Rhigos, South Wales (Driver 2006) (Figure 7.6).
The hoard was originally deposited in a prehistoric upland lake (Lynch et al. 2000: 179). The surrounding soilscape of the established reservoir is a mixture of highly acidic wet upland soil with a peaty surface, and highly acidic loamy upland soils that also contain a wet peaty surface (LandIS 2019).

Figure 7.6. Llyn Fawr hoard on display. Image property of the Hirwaun Historical Society.

The hoard of Llyn Fawr is considered highly significant for several reasons, the top among them are the wide array of pieces from both local and foreign origin, its marked typology that signifies the transition from Bronze Age to Iron Age technologies in Britain, and the fact it contains some of the earliest iron period pieces reported. The hoard contains 25 pieces and has been dated from 700 BC to 500 BC based on the typologies observed (O'Connor 2007: 73-74). Llyn Fawr hoards are believed to be contemporary with Hallstatt C on the Continent, lasting about 200 years (O'Connor 2007: 71, 73; Lynch et al. 2000: 178). The period was named after the hoard because of the Hallstatt styled iron sword found within the deposit, representing a transition period from the Bronze Age economies to the Iron Age (Lynch et al. 2000: 183). The iron present in this hoard is significant as it is the earliest evidence of manufacture in Britain (Lynch et al. 2000: 183). Likewise, this hoard is the only one in Wales at this period to contain rib and pellet axes (Lynch et al. 2000: 187), representing an economic transition.

The hoard contained one cauldron, one razor, one spearhead, one sword, two chapes, three phalerae, three sickles, three socketed gouges, and ten axes. The hoard is thought to be a single large ritual deposit since no other objects have been discovered within proximity, and all typologies occur around the same production period (Driver 2006). The presence of a cauldron may be representative of Hallstatt and Iron Age feasting culture (Arnold 1999; Joy 2014). The cauldron was found in good condition; however, fractures were noted. Aldhouse-Green (2001) compares these fractures to intentional damage before deposition. Although, it is more far more likely that the fractures were due to degradation of the alloy exposed to oxygen, causing corrosion and weakening of the structure when discovered by workmen. Therefore, the hoard was deposited with objects in their complete state which differs from the preceding traditions of intentional and performative damage characteristics of Bronze Age hoards. With all the evidence considered for prehistoric activity reported from the wetland, the hoard is considered to be a *single period hoard* deposit.

7.1.2.2 Nant-y-Cafn

Nant-y-Cafn, also known as the Severn Sisters hoard, was discovered in a mountain stream in 1875 (Figure 7.7). The exact coordinates of the original findspot have been lost. However, the 80-metre length of the mountain stream is composed of highly acidic wet upland soils mixed with peat (LandIS 2019). Moorland surrounds the river and excess precipitation drains into the stream network; the landscape has experienced little alteration since the hoard discovery because it has been primarily used for rough grazing (LandIS 2019).

The hoard was first analysed by Allen in 1905 and re-examined by Davies and Spratling in 1976; Davis and Gwilt (2008) later provided further detailed scientific analysis of the assemblage. The hoard was believed to have been deposited during the Roman Campaign Period in Southern Wales (Davis and Gwilt 2008: 145). The Seven Sisters hoard is contemporary with the Tal-y-Llyn hoard and the Middlebie hoard of Scotland (Davis and Gwilt 2008: 146). Both hoards share similar attributes in the metalwork, but also landscape deposition in a wet environment.

Figure 7.7. Nant-y-Cafn assemblage. Photograph the property of Amgueddfa Cymru – National Museum of Wales.

The hoard itself contains 37 pieces of metalwork comprising: two bells, two bridle bit rings, one buckle, two casting jets, one equestrian ring, one helmet crest, one possible hub, five ingots, four metal sheets, one pendant, two pendant hooks, one phalerae, one strap slide, three strap unions, five tankard handles, four terrets, and one weight. Davis and Gwilt (2008) state, ‘Within the hoard there is both Roman and native British material, plus several ingots, casting jets and pieces of ‘scrap’ metal which are less easily categorised by style and period.’ The hoard has been grouped into four categories: horse equipment, military ornaments, feasting and drinking items, and associated metalworking items. Stylistically or artistically, however, the hoard has been grouped into three groups: Roman military material, geometric, and curvilinear (Davis and Gwilt 2008: 148; Davis 2014). The later latter two of the groups are considered native, and therefore associated with the Iron Age as opposed to the Roman period (Davis and Gwilt 2008: 148). Davis and Gwilt (2008: 146) consider this hoard significant because it indicates the transition of style and objects deposited, reflecting both the 'late La Tène style art in Britain' and also the appropriation of Roman materials. This transition of regional artistic reflection and fusion of Roman influence is defined by Davis and Gwilt (2008: 146) as 'Native Campaigning Art.' Gwilt, through analysis of the native metalwork styles and Roman equestrian equipment, was able to date the deposition from 50 AD to AD 75 (Davis and Gwilt 2008: 162, 164; Davis 2014).

7.1.2.3 Middlebie

Middlebie, a contemporary hoard with Nant-y-Cafn, is also important for its representation of changing local identities. The hoard was found in peaty-alluvial sediment derived from recent riverine and lacustrine peaty-alluvial deposits (Scotland's Soils 2019). The hoard—which contains 27 copper alloy objects (Acc. X.FA 45 – 71)—while believed to be manufactured in the local fashion, was influenced by the potential movement of Iceni refugees into the area from East Anglia (Figure 7.8).

Figure 7.8. Middlebie assemblage. Photograph the property of the National Museum of Scotland.

The hoard consisted of two bridle bits, three dress fasteners, four equestrian rings, one hilt guard, four mounts, two strap unions, and eleven terrets, all made from cast pieces (MacGregor 1976). The horse trappings are in the North British boss style type (Childe 1935), and the hilt is Piggott's Group IVB (1950). The hoard is believed to have been a single event deposit, as no other objects were found in proximity or with different typological-chronological sequences.

7.2 Pairs

Paired deposits within this study are two objects associated or placed together either next to each other or inside the other. The tradition is not currently recognised as common depositional practice on par with hoards or single object deposits in Britain. Other studies performed in Ireland and the Continent have observed paired deposition (e.g. Cassen et al. 2008; Larsson 1998, 2007, 2011; Mount 2013). Consequently, through the data collected, evidence of pairs through object records supports the tradition as a distinctive depositional practice within this study (see Chapters 8 and 10). Pairs appear to be of both a *natural* and *unnatural relation.* Pairs of a *natural relation,* such as armlets, are objects that have a common relationship or characteristic. Those of an *unnatural relation,* such as a terret and brooch for example, are also found, but their relationship is unknown because their object classes are different. It can also be argued where certain deposits such as a sword and scabbard are a single deposit, but for this project, because these objects have also been found in isolated single deposits or as parts of hoards, they are considered a pair. This circumstantial pair is considered to have a *natural relationship* because one fits into the other. Therefore, because they are identified as two independent objects in other depositional traditions, a sword and a scabbard were considered a pair for the scope of this project.

Pairs appear to be a tradition found only in wetland deposits in Scotland and England (e.g. Glastonbury and Meare Lake Village), but they are not yet confirmed for Iron Age wetland deposits in Wales. Perhaps this is because it is still protocol in Wales to label finds of two or more as a hoard as opposed to three as suggested in the previous sections. In addition, the work performed by Hunter (1997; 2006; 2007; 2014; 2019b) about Scottish armlets has shed light on the variation of deposition practice because they are often found in pairs. The examples provided below were chosen for their obvious or *natural relations* to each other. Examples of paired tradition have been reported from Plockton, Barganny, and Bunranoch in Scotland.

7.2.1 Plockton

A paired deposit was reported from Plockton in 1888 consisting of bog butter, C14 dated from 140 AD to 247 AD (Acc. X.SHC 5, the other lost). Analysis of the surviving keg shows it was made from birch (Earwood 1993) (Figure 7.9). The bog butter was found in the An Cnatharan peat moss, though the exact provenience has been lost (Earwood 1993; Mowat 1996). The area in which the pair was discovered is located south east of the River Carron tributary, which filters into Loch Carron. The findspot was reported to be around the edge of the shoreline of the An t-Ob mud flat which drains into Eilean Lagach. While one keg remains, the other has been lost, found at a depth of 1.2m in the peat.

Figure 7.9. The surviving keg of bog butter from Plockton. Photograph is the property of Highland Historic Environment Record (2012).

7.2.2 Bargany

An iron sword and bronze scabbard (Acc. NMS X.FA 95) were reported in 1891 during drainage operations of the local peat bog. Based on the scabbard's typology, Piggott's type IIIA, the pair has been dated from 200 BC to 100 BC (MacGregor 1976; Piggott 1950, 1955) (Figure 7.10). The current soilscape is brown soils; however, the pair was originally found in an alluvial deposit that developed from river meanders and consequential

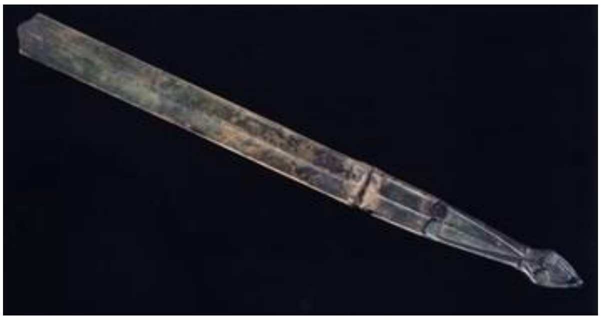


Figure 7.10. Scabbard of the pair, sword point broken within. The photograph is the property of Future Museum.

floodplains. To regard a sword and scabbard as a pair is an unpopular argument. Nevertheless, because both swords and scabbards have been found in both single object deposits and hoards, their association in this context is interpreted as a pair deposit.

The distal end of the sword was not present at the time of discard, meaning it could have been purposely removed before placement or accidentally snapped off and therefore considered to no longer be of use. The remaining portion of the sword has since corroded within the scabbard. The scabbard style and decoration suggest a relationship with Irish trade or influence (MacGregor 1976: no.140; Stevenson 1966: 24).

7.2.3 Bunranoch

A pair of bronze armlets were discovered in Bunranoch, dated from 0 AD to 200 AD based on type (Figure 7.11). Armlets are often paired in deposits in Scotland (Hunter 2006). The armlets are not identical, as one is a ‘massive’ folded type (Acc. X.FA 8) and the other is a snake spiral (Acc. X.FA 75) (MacGregor 1976). The pair were found at the foot of Schiehallion in peaty gleys with dystrophic blanket peat. The nature of the objects may suggest a representation of two individuals as opposed to a set worn by a single person.

Figure 7.11. The armlet pair of Bunranoch. The spiral armlet is shown with its modern replica. Both photographs are the property of the National Museum of Scotland.

7.3 Single Object Deposits

Objects found in isolation and not associated with settlements, production sites, or other material hoards can be considered single object deposits. This isolation is a modern construct developed through the need to review differing activities through their spatial allocations across a landscape, whether terrestrial or wetland. The importance lies in the nature of the object chosen as opposed to the association of items. Likewise, the location still holds considerable importance like those of hoard and pairing placements. Single object deposition is not unique to a particular period, as it is a tradition like hoards, with finds as far back as the Neolithic (Bradley 1987, 1988: 250). The examples chosen to demonstrate single object deposits were objects that were both economically and socially significant to either the community and (or) the individual owner. The representative examples chosen for discussion are reported from Elvanfoot, Trawsfynydd and Torrs.

7.3.1 Elvanfoot

A copper alloy cauldron (Acc. B.1951.3224) was reported from the peat in Elvanfoot. The cauldron is made from a single sheet of the 'Battersea' type with the rim and handles missing (MacGregor 1976) (Figure 7.12). Based on its type the cauldron has been dated from 0 AD to 200 AD. The piece is decorated with punch marks and has a paperclip repair. The peat in which the cauldron was found was mixed with alluvium sediment (Scotland's Soils 2019). While cauldrons are a common element in hoards, they are also found in isolation as individual deposits. Cauldrons and vessels are of considerable importance during the Iron Age, not just in terms of elite status but also feasting culture, with the inclusion of possible votive connotations with the piece itself (e.g. Joy 2014).

Figure 7.12. Cauldron of Elvanfoot. Photograph taken by Forbes, property of Hunterian Museum.

7.3.2 Trawsfynydd

A tankard (Acc. NMW 21.264) was discovered in the early nineteen-hundreds in Trawsfynydd (Figure 7.13). The tankard was reportedly found in peat, but the exact provenience is unknown. The general findspot location context contained blanket peat bog soils with wet heather moor and bog vegetation (LandIS 2019). A copper alloy sheet has been folded over yew staves with a decorated handle and dated from 50 BC to 75 AD (Horn 2015; Jope 2000). The tankard has a 'cooling tower' shape (Horn 2015; Spratling 1972), which Spratling (1972: 213-214) has suggested was inspired by a neo-Hellenistic resurgence. As mentioned in this chapter, cauldrons are not found in isolation in Wales; however, other vessel types are, like tankards (or their components). Nevertheless, as Horn (2015: 313) points out, tankard types often lack wooden stave components, and their handles do not reflect continental influences; therefore, the production and influence of the Trawsfynydd tankard is regional.

Figure 7.13. Modern replica of the Trawsfynydd tankard. Image is the property of the National Museum and Galleries of Liverpool.

7.3.3 Torrs

A bronze chamfrain (Acc. NMS X.FA 72) was discovered in the moss at Torrs, and dated from 300 BC to 100 BC based on type (Hunter 2019b; MacGregor 1976) (Figure 7.14). While the cap is thought to have been fitted for a pony, the horns have been hypothesised as drinking vessels (Piggott 1955). The exact findspot of the cap is unknown, but upon its discovery in 1829, it was reported from a morass on a farm in Kelton. The area has evidence of prehistoric marshland before drainage of the local peatland to cultivate the area.

Figure 7.14. Torrs pony cap. Photograph is the property of the National Museum of Scotland.

7.4 Multiperiod Single Object Deposits

Multiperiod single object deposits is currently not an established archaeological depositional category. However, the data collected has provided evidence for the newly recognised deposition tradition within wetland locations; this is discussed in more depth in Chapters 8, 9, and 10. Multiperiod single object deposits are very similar to single object deposits. The difference in tradition is that multiple single object deposits are made in the same wetland over time but share no association or proximity. For example, the stone balls of Nutberry are on opposite sides of the bog, and their differing material suggests slightly different manufacture dates.

Two single object deposits of stone balls have been reported from Nutberry Moss (Figure 7.15). Neither of the balls has been dated, but rather assigned a broad Iron Age date. One stone ball (Acc. DUMFM:1988.27, TT 88/97) is made from white quartz with concentric circles painted onto its surface (Hunter 1999b; RCAHMS 1997). The other is a decorated glass ball (no known accession number). The balls are located about 0.6 km apart in the peat moss. Due to their size, they could have been the result of accidental loss as opposed to purposeful deposition. However, if they were the product of purposeful deposition, then they are part of the *Landscape Dependent Multiple Period Deposit* tradition.

Therefore, what multiperiod single objects share is the same wetland. Consequently, the perimeter of the specific wetland serves as a natural boundary of the activity. There are several other examples of this practice, mostly sourced from Wales and detailed in Appendices 7 and 9. As a result, the supporting evidence must be interpreted as a separate deposition tradition that has been observed in Wales and Scotland, but is yet to be fully acknowledged.

Figure 7.15. One of the two balls found in Nutberry Moss. Photograph is the property of Future Museum.

7.5 Discussion

This chapter has discussed the preliminary theorisation of depositional practices observed during the data collection process, which have been defined with supporting examples. Through the collection process, depositional trends became readily apparent and needed to be defined before introducing the statical significance of the practice. These depositional traditions have been defined as multiperiod and single period hoard, pairs, multiperiod and single object deposits in this study. Variation in performed deposition tradition may be due to communal or localised practice, the specific messages the people were trying to convey, evolution in generational performative preference, and efforts to reconnect with the past.

Several object types have shown themselves to be prevalent amongst the differing depositions, such as equestrian equipment and tools. Terrets and bridle bits were by far the most common deposit object type within a wetland context for the two regions when comparing like traditions.

The practice of multiperiod deposits show both large- and small-scale contribution, signifying either the importance of the wet landscape or a specific location within the wetland. Contributions to these deposits, both *location* or *landscape dependent*, allowed for participating individuals to create an emotional and cognitive relation with the topography, which would have strengthened social identities with past and present people (Treadway, in press). Through observation, participation, and contribution, the creation of a social identity would be generationally unique but also inherently allied with the past (Treadway, in press).

Multiple period hoards are important for the archaeological understanding of long-held traditions tied to a specific location or association with a wetland type. They also provide a framework for communal identity through deposition, the skills present, the typologies preferred, and their social and trade networks over an extended period. As previously demonstrated, multiple period hoards allow for archaeologists to view how these traditions have changed or stayed the same for these communities through the chronicling of deposition sequencing. However, preference for wetland type is more noticeable when analysed holistically for single period hoards.

Hoards—both multiperiod and single—have shown extensive communal consideration for the objects selected for deposition. These pieces tend to be of high quality or personal significance. The deposition of copious pieces together and in a significant wetland location is reflective of the communal values through the chosen items used to represent the messages these individuals wished to convey. However, hoards are not the only deposition tradition noted in Britain: pairs and single object deposits have also been observed.

Pairs are a tradition that appears to be confined mostly to Scotland within wetland landscapes, with limited examples from Wales. This tradition may, however, be different for terrestrial contexts for Wales, but this analysis has yet to be performed. Likewise, there is also the possibility that objects deposited in wetland locations have yet to be discovered, recovered, and at times catalogued or made accessible to the public. Therefore, pairs may be a prevalent prehistoric tradition within Wales, but this is yet to be extrapolated in the same manner as other applied definitions of hoarding behaviours. Pairs can be symbolic of a community through the representation of socially charged objects. It is also possible that rather than symbolizing the community these objects instead represent an individual(s) or perhaps a family in which these pieces have been passed down generationally. Additionally, the high quality of materials observed for paired deposits may also demonstrate their connection to esteemed individuals in the community or nuclear group.

Similarly, single objects may represent the individual or the household, but may also be a culturally charged symbol of the community or group. Single object deposits, through numerous finds, are shown to be an important depositional tradition. However, Garrow and Gosden (2012: 156) are of the opinion that individual objects found in isolation of other contemporary finds are useless for analysis of material culture networks. Perhaps when an object is found in isolation and studied alone, it may not provide an abundance of material like hoards. When single object deposits are analysed through a regional or landscape holistic approach, material patterning can and will arise. Haselgrove and Hingley (2006: 147) suggest that deposition through accidental loss was relatively rare and that the majority of objects are the result of purposeful action.

Single object placement as deposits appears to be of similar practice for both Wales and Scotland with minute differences. Where Scotland has cauldron deposits, vessel deposits for Wales are mostly isolated to tankards and bowls. Bog butter, however, is only found in Scotland, with no reports of isolated finds of butter dating to the Iron Age in a Welsh wetland context. Wales, nonetheless, contains unique items of deposition like the Capel Garmon firedog. Both Wales and Scotland contain items of high status, and lack fragmentary or purposeful destructed states. Therefore, the importance lies in the completeness of the object as opposed to the representation of the piece like those found in hoards. These traditions, of course, will be expanded upon in the Results and Discussion Chapters (8-11).

7.6 Summary

Depositional traditions can be categorised when analysed in a holistic manner. These traditions may be easier to analyse when isolated to a specific period and (or) landscape type. Prehistoric deposition is an established practice through archaeological evidence. However, the practice has not been as extensively analysed for the Iron Age in wetlands in comparison to preceding periods (i.e. Neolithic and Bronze Age). The British Iron Age has substantial evidence of deposition in wetland landscapes. The difference is that these wetland deposits contain whole pieces, hoards are compiled of components of objects, and pairs are an emerging observation tradition (see Chapters 8 and 10). While there are valid arguments that deposition is linked to prehistoric rituals and in extension religion (see Chapter 6), there is a much stronger argument that the practice reflects individual or communal identity.

The proceeding chapters will provide insight into and analyses of depositional trends in Wales and Scotland through the data collected. Part II expands upon the deposition traditions observed in the study. The latter portion of the research will be concluded with a summary of findings from this data that will define and clarify depositional traditions both regionally and sub-regionally for each of these two countries.

Chapter 8 – Study Zone 1, Scottish Case Studies

8.1 Introduction

According to the copious case studies collected for evaluation, wetland deposition tradition is prevalent throughout Scotland during the Iron Age. Thus, this chapter aims to review and quantify statistical patterns represented in the data to refine the understanding of wetland deposition practices both sub-regionally and inter-regionally. Wetland deposition case studies were reviewed for their variation or homogeneity of practice throughout Scotland. Object records were collected from museum archives[18] and supporting literature.[19] Digital heritage websites provided supplementary information where gaps existed in the archived records.[20]

The amalgamation of sites and records provides a comprehensive understanding of prehistoric depositional practices. This method also helps to discern modern collection methods and biases, as discussed in Chapter 3. To maintain a standard consistency of object documentation this project has used established cataloguing systems as templates (i.e. Earwood 1993; Fox 1946; Garrow and Gosden 2012; Horn 2015; MacGregor 1976; Martin 2003; Savory 1976).

Following Hunter's (2007) division, sub-regions were allocated to identify and quantify patterns, which were originally based on observed decorative metalwork. The allotted sub-regions are Highlands and Islands, Southeast, Central, Northeast, and Northwest. However, patterns produced based on counties and allocated sub-regions must be undertaken with caution due to differences in collection methods. Regardless of the known variation in collection standards, the study has taken measures to ensure consistency throughout the cataloguing period, as stated in Chapter 2. Object characteristics organised into categories, provided in Chapter 1, Table 1.1, and expanded upon in Appendix 2, give a preliminary consolidation of what information was present or absent in the supplied object records sourced from museums, digital heritage sites, and archaeological organisations. The measures taken to provide a consistent standard for object record extraction include, but are not limited to: understanding and establishing biases inherent to the study, standardisation of object

[18] For the list of museums which have contributed object records to the project see Appendix 1.
[19] See Chapters 6 and 7 to see the literary discussions about Ritual and Deposition.
[20] See Chapter 2 for Methodology and Chapter 3 for Digital Heritage Critique.

characteristic categories, an extensive review of object records and literature, and the assessment of the preservation of modern and prehistoric wetland landscapes. Nonetheless, it is beneficial to review patterns that emerge to better identify collection biases in comparison to prehistoric peoples' preferences, behaviours, and activity.

Analyses of the environment, deposition traditions, object types, materials, and dates were performed sub-regionally first before comparing across regions in Scotland. This sub-regional approach allowed for a more developed representation of an already fragmented archaeological record. These biases include, but are not limited to: accessibility of the landscape, environment (prehistoric, modern), preservation, human impact (drainage, urbanisation), funding, survey performance (or lack thereof), technology, how and who found the piece(s), training, coordinates, archive records and curation, and subsequent study.

Another important variable to consider is that the prehistoric dates applied are primarily dependent on typological-chronological sequence dates. Therefore, when referring to typological-chronological sequence dates, the periods of activity are representations of manufacture periods as opposed to their deposit due to the general lack of radiocarbon dating of the sediment, object materials, or pollen analyses. However, when such procedures were conducted, the radiocarbon date was used for periods of deposition.

As Cooper and Green (2017) state, clear set parameters need to be established when dealing with 'big-data' sets to make them conducive to a research model. As there is no controlled sample size, sub-regional variations are at risk of having skewed results. However, while sub-regional analysis is essential, reviewing Scotland's wetland depositional activity is the main objective of the chapter.

8.2 Research Questions

Several research questions were developed to understand the similarities and differences in wetland deposition for Iron Age Scotland. The general research questions presented here are the same as those provided in the methodology.

Primary Research Questions:

- What role did wetland landscapes have for depositional practices?
- What trends can be identified for depositional practices in wetland areas?

- What are the sub-regionally and inter-regional differences or similarities for depositional practices?
- What do these practices reflect about local communities and shared cultural traditions regionally?

However, more detailed questions are also explored for the sub-regional analyses:

- In which wetland environments were objects discovered?
- What are the predominant deposition traditions, as described in Chapter 7, for the region? What are the sub-regional variations in depositional practice?
- What is the material composition of objects deposited in wet landscapes? Is this a reflection of modern methods of recovery or prehistoric preference?
- What are the dates of deposition? How does this reflect periods of depositional activity regionally and sub-regionally?

8.3 Sub-regional Analysis

The sub-regional analysis compared trends and outliers in the collected data to recognise potential patterns of wetland depositional practice. Biases have been recognised in the data and discussed at length in Chapters 2 and 3. As stated previously, the analyses were allocated into five sub-regional non-equivalent groups based on Hunter's (2007) division of Scotland (Figure 8.1a, 8.1b). There is expected to be a degree of variance in practice sub-regionally due to the variability of object reports and object survival based on landscape type, curation, and discovery date.

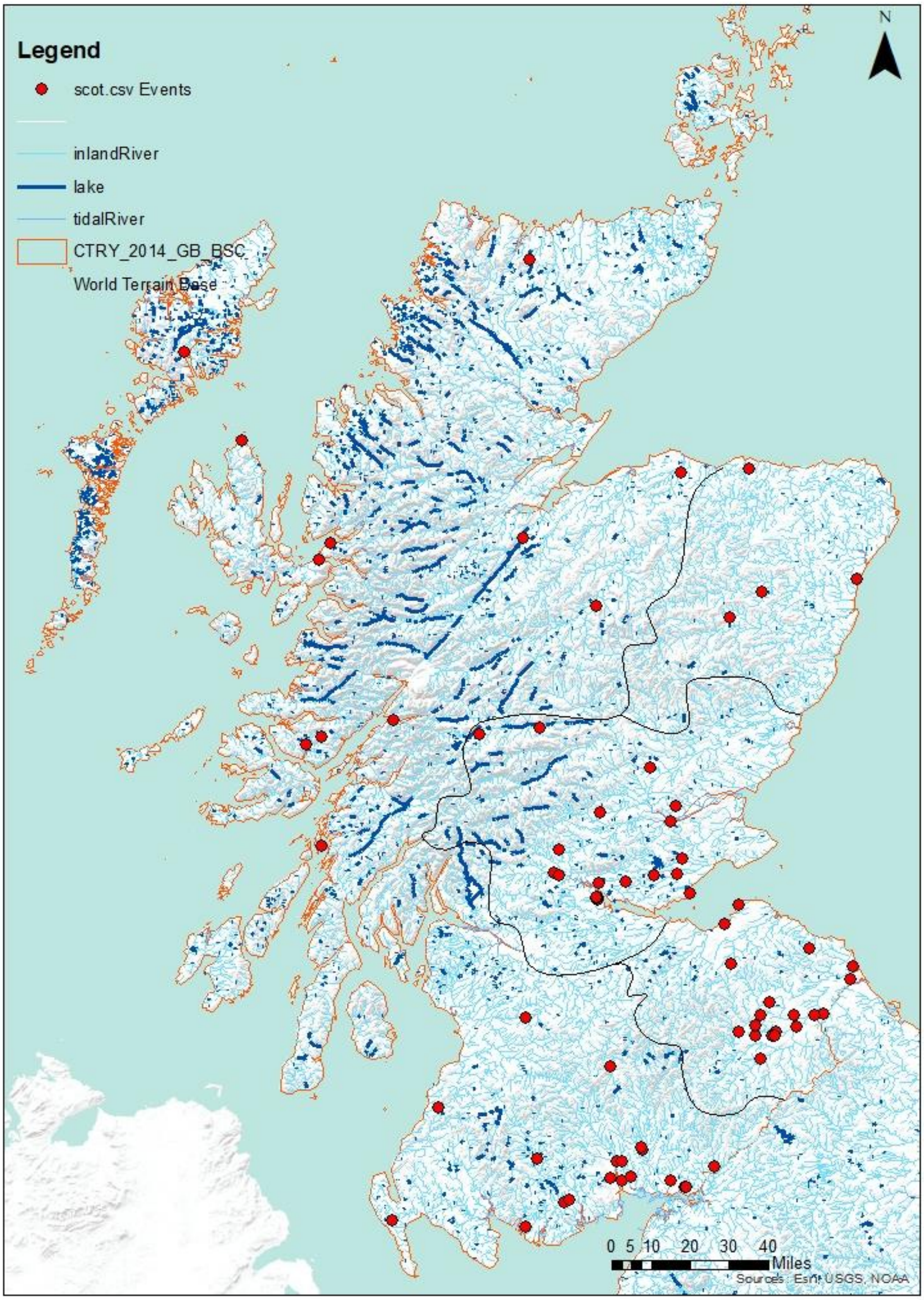


Figure 8.1a. Maps of all sites reported from wetland contexts throughout Scotland. The map contains all the contemporary lochs and rivers.

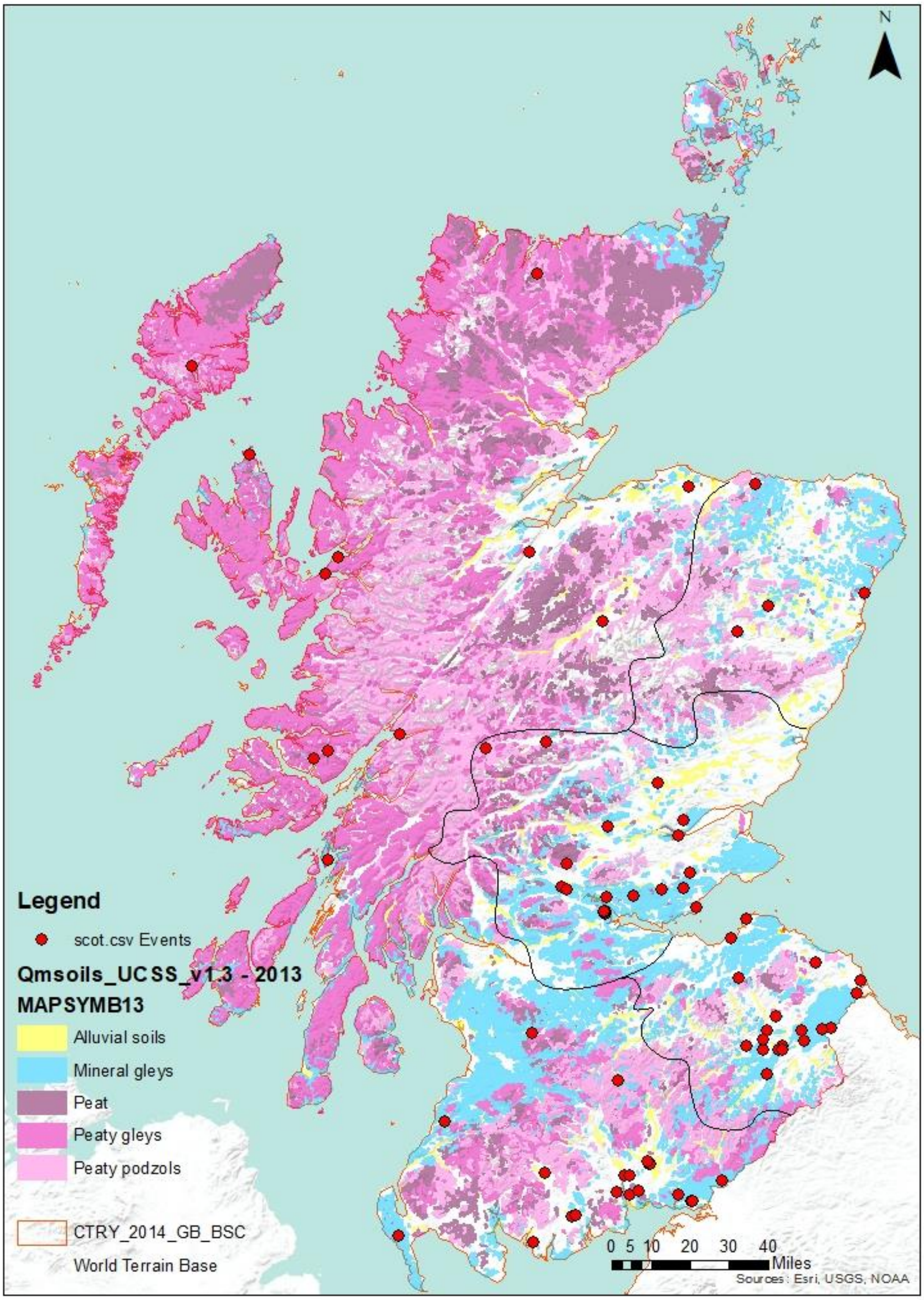


Figure 8.1b. Maps of all sites reported from wetland contexts throughout Scotland. The map displays an overlay of all wet soils provided by Scotland Soils.

8.4 Highlands and Islands

The Highlands and Islands sub-region has reports of around 30 objects from 15 sites applicable to the study (Figure 8.2, Table 8.1). The number of objects is based on pieces extracted from the wetland but does note observed additions to certain deposits (Appendix 6). The sub-region includes the entirety of the Highlands and all the Scottish Isles. The Highlands and Islands dates are different from mainland Scotland because the Atlantic region experienced a 'long Iron Age' dating from 700 BC to 800 AD (Armit 2003; Armit and Ginn 2007).

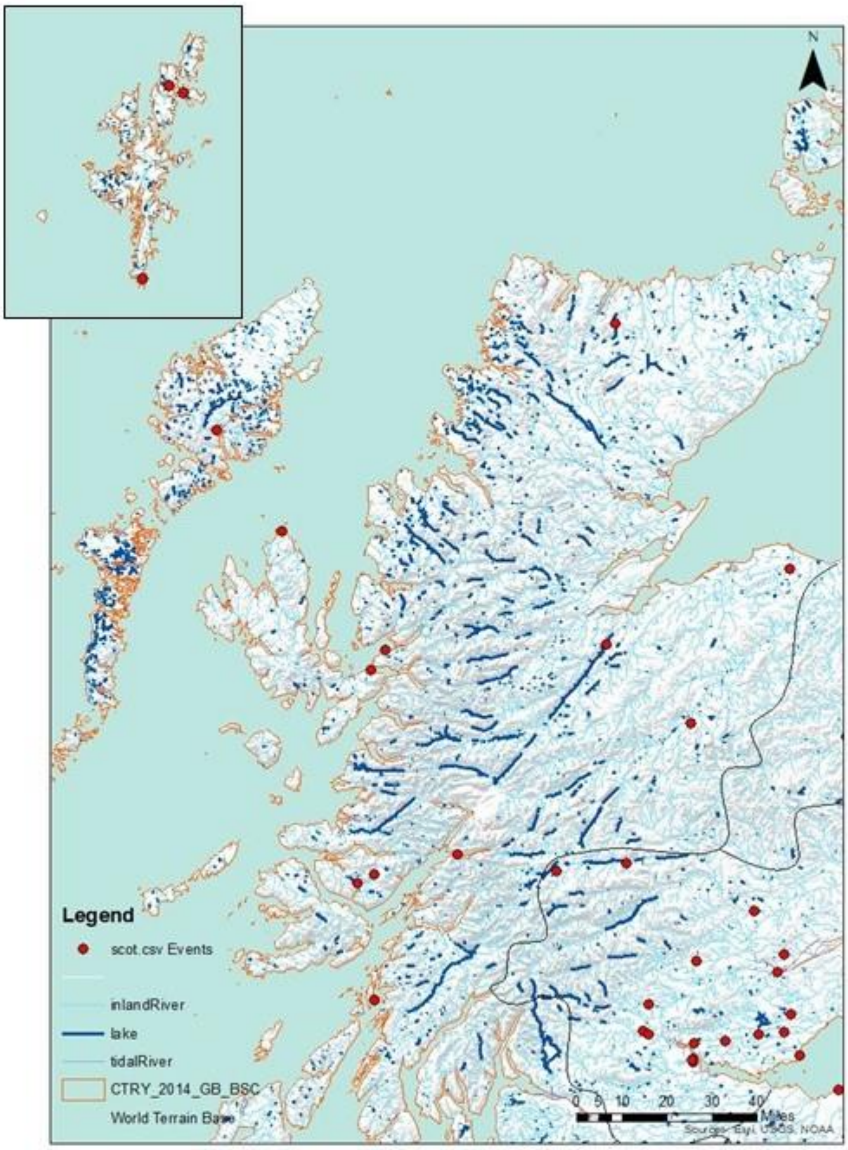


Figure 8.2. Map of all sites reported from a wetland context for the Highlands and Islands sub-region.

Thesis Number	Study Site	Dates	Type of Deposit	Wetland Type	Sediment Type
HI_S1	Ath Linne	550 AD to 790 AD	Single	Intertidal Zone	Shingle
HI_S2	Ballachulish	725 BC to 500 BC	Single	Peatland, Bog	Peaty Gley
HI_S3-HI_S7	Barmuckity	0 AD to 200 AD	Multiperiod Single	River Floodplain	Alluvium
HI_S8	Cunnister	700 AD to 1000 AD	Single	Peatland, Moor	Peat
HI_S9-HI_S10	Dores	700 BC to 800 AD	Pair	Loch/Lake	Alluvium
HI_S11	Duntulm	0 to 200 AD	Single	Peatland, Bog	Peat
HI_S12	Elgin	300 BC to 200 AD	Single	River Floodplain	Alluvium
HI_S13-HI_S18	Fetlar	0 to 200 AD	Hoard	Peatland	Peaty Gley
HI_S19-HI_S20	Gleann Geal	150 to 300 AD	Multiperiod Single	Peatland, Bog	Peat
HI_S21-HI_S22	Kyleakin	250 to 400 AD	Hoard	Peatland	Peaty Gley
HI_S23	Loch Gamhna	0 to 300 AD	Single	Loch/Lake	Alluvium
HI_S24	Loch Loyal	1200 to 750 BC	Single	Loch/Lake	Peaty Gley
HI_S25-HI_S26	Plockton	140 AD to 247 AD	Pair	Peatland, Bog	Peat
HI_S27-HI_S29	Shuna Island	800 BC to 700 BC,	Hoard	Peatland, Bog	Peat
HI_S30	Virkie	700 BC to 800 AD	Single	Intertidal Zone	Peaty Gleys

Table 8.1. Highlands and Islands case study. The study sites according to place, type of deposit, and landscape type. For the complete details of each object entry, see Appendix 6.2.

8.4.1 Environment

Wetland landscapes and their associated soil types were reviewed for the sub-region. The landscapes associated with deposition traditions were intertidal zones, peatland types such as bogs and moors, river floodplains, and lakes or lochs.[21] Overall, the primary wetland landscape type most utilised for deposition was peatland (54%, 8/15). This figure is

[21] Wetland landscapes are defined extensively in Chapter 2.

unsurprising given that most of the sub-region is proportionally covered with peat, peaty gleys, and peaty podzols. Subsequently, the following wetland landscapes were lakes/lochs (20%, 3/15), intertidal zones (13%, 2/15), and river floodplains (13%, 2/15). Locations of the multi-single object deposit were only considered in the analysis once, despite having two or more different findspots. Single object deposits were more commonly reported from peatlands. Multiperiod single object deposits were reported in equal quantities from river floodplains and lochs/lakes. Paired deposits, likewise, were reported in equal quantities from peatland landscapes and lochs/lakes. Hoards, however, have been solely reported from peat landscapes (Figure 8.3).

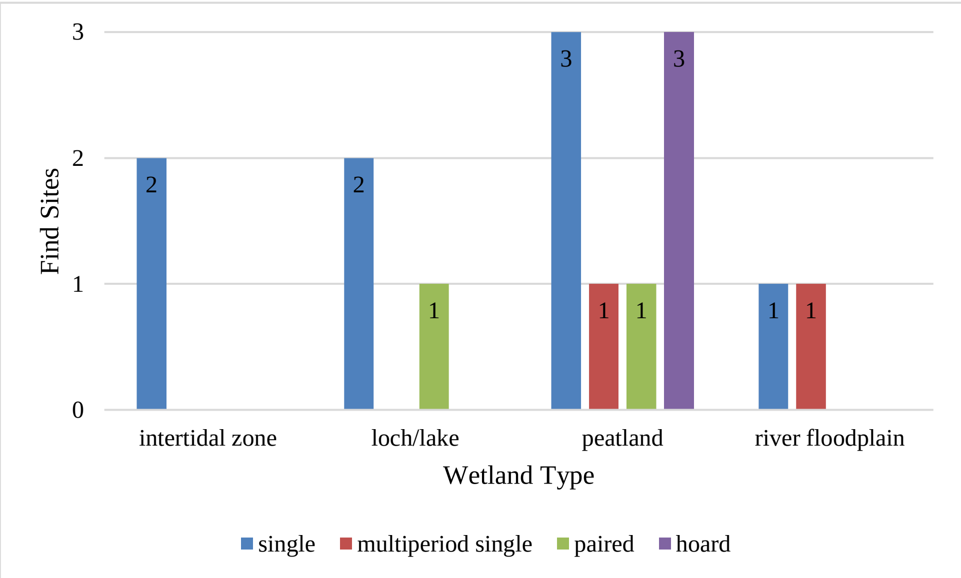


Figure 8.3. Comparison of wetland type with deposition tradition in the Highlands and Islands sub-region.

Sediment context was also considered for observation in relation to the wetland landscapes in which objects were discovered. Sediment is important to catalogue to predict the probability of modern recovery, which will be discussed in more detail at the end of this chapter and Chapter 10. Soil types can also help provide evidence of current and prehistoric wetlands, and therefore need to be included in such analyses. The primary sediment type is equally peat (33%) and gley (33%).[22] The following sediment types observed were alluvium (27%), and shingle (7%).

[22] Gley soil is mostly only found in Scotland and rarely ever reported from other areas of Britain.

8.4.2 Single, Paired, Hoard, and Multiperiod Comparisons

Wetland deposition traditions observed in the Highlands and Islands sub-region have been single object deposits, pairs, hoards, and multiperiod single object deposits. Multiperiod hoards were not observed in the sub-region.

The Highlands and Islands sub-region has traditionally been addressed as part of Atlantic Scotland, comprised of the northern and western mainland and island chains (Henderson 2007). The northern settlement sequence characterises Shetland, Orkney, Caithness, and Sutherland (Henderson 2007: 150). The western settlement sequence characterises Argyll's areas and the inner isles settlement sequence (Henderson 2007: 150). When comparing Lenfert's (2013) study of prehistoric crannog distribution and Iron Age lake settlements (Cavers 2006), the western settlement sequence region supports a far larger population compared to the minimal wetland deposition reported from the area. Likewise, the northern settlement sequence also shows a relatively large population density. Even so, there were still fluctuations in the settlement density of the sub-region due to various factors such as environment, economy, and migration. For example, in the first millennium BC, peat began to encroach in much of North Uist's interior, causing what was once densely settled and farmed landscape to then be unviable (Armit 1992: 124-125). Therefore, the 'settlement would have come to focus much more on the coastal belt' (Armit 1992: 124-125).

Due to the sub-region's settlement density, including the islands at differing periods of the Iron Age (e.g. Armit 1992; Lenfert 2013; Cavers 2006, Henderson 2007), the wetland deposition findspots are underwhelming. However, there may be more wetland deposition findspots in this sub-region, but because of limited access to the Orkney Museum's database, the number of case studies remains unconfirmed. Nevertheless, the object records supplied by the Shetland Museum may have provided sufficient representation of the northern islands' depositional activity. The Highlands portion of the sub-region appears to have proportional wetland settlement and deposition activity for the Iron Age period.

Each case study has been summarised in Appendix 6.2, detailing the site context along with associated finds. Case numbers were applied based on object quantities with the addition of each sub-region underscored (e.g. HI_S#). The findspots included in this analysis needed to be considered 'isolated' or unassociated with settlement or production sites to understand depositional behaviour that was separated from day-to-day activity.

8.4.3 Depositional Practices

The sub-region's case studies contained a diverse use of wetland landscapes, object, and material types. Analyses of observed sub-regional depositional practices were performed with the realisation of potential collection bias and missing assemblages. These biases are discussed in further detail as and when they are presented in the data.

8.4.3.1 Objects

There are a variety of object types reported from the Highlands and Islands sub-region. This section reviews the commonality or rare inclusion of such items in wetland deposits to better understand communal preferences for the chosen material (Figure 8.4). Correspondence analysis was used to understand the relationship between the categorical variables. The dimensions observed were limited to two: deposition tradition and associated object types. Objects classified as single objects deposits from this sub-region have been proportionally brooches, discs, chisels or punches, and figurines. Bog butter, beads, daub, pottery, and slag are commonly found in paired and multiperiod single object deposits. Fasteners have been equally affiliated for both single and paired deposits. Armlets, hide or cloth, and swords are predominately associated with hoard deposits. Cauldrons have been

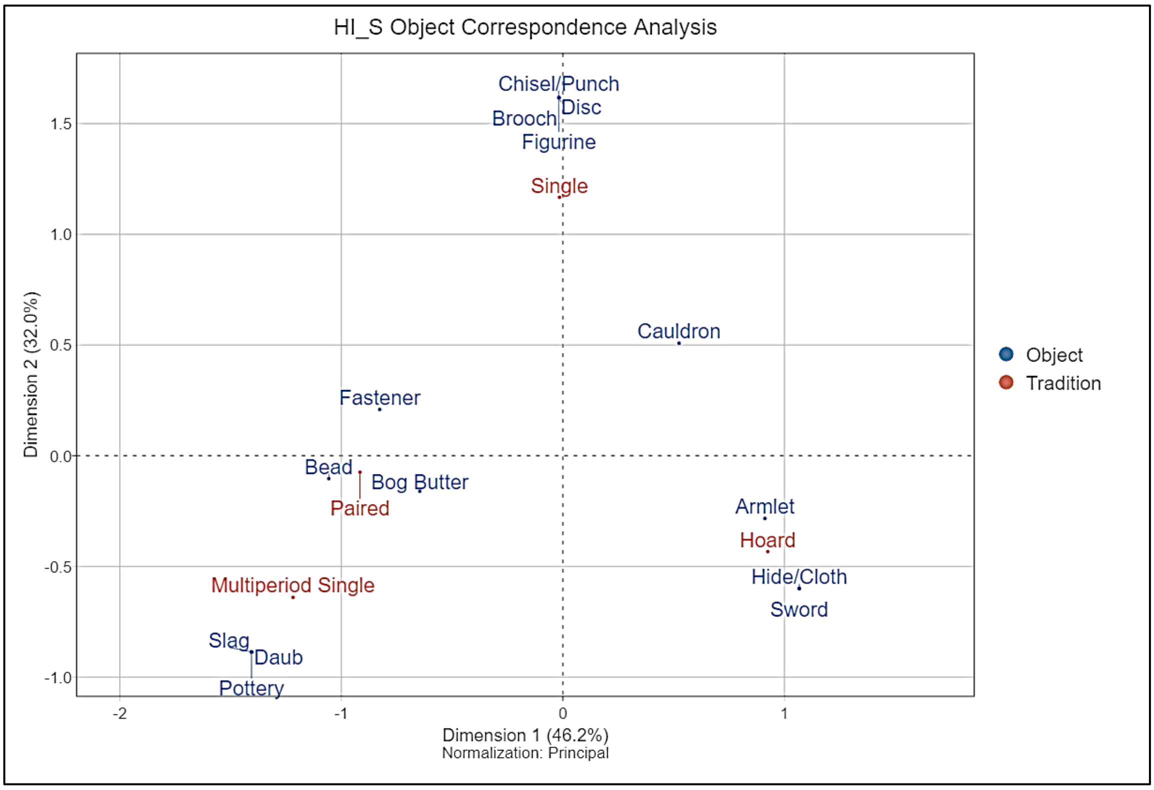


Figure 8.4. Highlands and Islands object correspondence analysis comparing the relationship between object and tradition type.

reported from both single and hoard deposits. Overall, armlets were the most common object to be deposited in wetland contexts.

If we are to include a third dimension to the correspondence analysis, comparing deposition tradition to the predominant object type associated, a few notable observations have been made. Single object deposits do not appear to have a predominant object type associated with the tradition. For multiperiod single object deposits and pairs, the common item for deposition was bog butter. Collection reports of objects reported from hoards show that armlets were the standard item for deposition. Overall comparison of all object types shows that the most common object type reported from wetland deposition context are armlets at 27%, all of the massive type. Massive armlets derived from the Northeast of Scotland, and their production dates extend from the first to the third century AD (Hunter 2014).

Review of the common object types chosen by an individual or community for deposition does bring to light certain associated attributes. For example, Earwood (1997) describes how deposited bog butter has been interpreted as foodstuff hoards, economic regulation through forced inflation, and (or) votive offerings. Alternatively, Kelly (2013) has described bog butter as part of a fertility rite, with which he also associates '…quern stones, plough parts, and, in one instance, a sickle' as having similar symbolic meaning in deposits.

Armlets denote a level of intimacy with the previous owner(s). Henderson (1991) has provided that armlets were typically an item worn by the elite, especially those made of glass in the La Tène period on the Continent. Hunter (2006:148) likewise, reflects that the armlets were worn by individuals who held 'political or diplomatic contacts.'

8.4.3.2 Material Composition

The observed material composition of objects reported has been bog butter, ceramic, copper alloy, glass, stone, unspecified, and wood (Figure 8.5). Records of kegs have been allocated half counts of both butter and wood. In addition, records that have not indicated the material composition are left as 'unspecified.' Correspondence analysis was used to understand the relationship between primary object materials and deposition traditions, limited to two dimensions. The review demonstrated that single object deposits and hoards have an equal representation of copper alloy, wood, and leather materials. Stone, however, has only been reported from the single object deposit tradition. Multiperiod single object deposits have predominately been associated with unspecified materials (e.g. daub and slag) and ceramic. Glass is only present in paired deposits. Bog butter has been observed in all tradition types, most notably multiperiod single and pairs. However, this result may be skewed because we lack the exact number of bog butter finds from Kyleakin, with only one confirmed piece in curation.

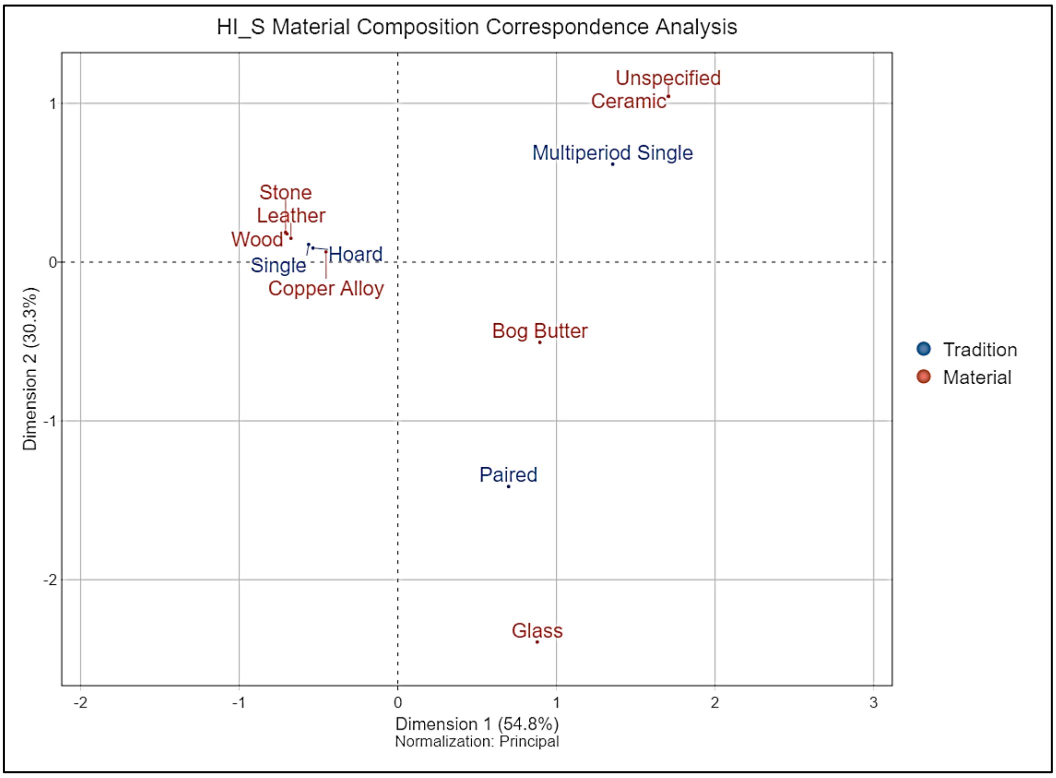


Figure 8.5. Highlands and Islands material composition correspondence analysis comparing the relationship between deposition tradition and material composition of objects.

Overall, the most common material composition noted was copper alloy (57%). The common material type for single object materials is again copper alloy (62%). Bog butter and unspecified materials are both associated with multiperiod single object deposits. For pairs, the most common material is bog butter (50%). Lastly, hoard materials reported have been predominantly comprised of copper alloy (77%).

8.4.3. 3 Dates of Activity

Deposition and discovery dates were reviewed to understand periods of activity. Many of the objects reported that met this project's criteria did not contain radiocarbon dates apart from Ballachulish, Kyleakin, and Movern. Typologies were applied where no radiocarbon date was supplied. Therefore, the periods of depositional activity are instead reflective of their manufacture and economic circulation as opposed to their final placement in a wetland. Discovery dates were likewise observed to understand the context of findspots better. Older depositional wetland findspot discoveries tend to lack formal archaeological excavation and subsequent report. Therefore, to better understand the lack of information in some archaeological records for wetland landscapes and how objects were found, these observations may help bridge the information gap.

8.4.3.3A Typological-chronological Sequence and Radiocarbon Dates

Wetland deposits for this sub-region span the entirety of the ‘long Iron Age’, but the highest concentration of noted typologies place the objects from the first to third centuries AD. Based on mostly typological-chronological sequence dates, there appears to be a three-hundred-year gap between typologies from 500 BC to 200 BC in wetland context. This sequence was also reflected for single object deposits (including multiperiod) and hoards. The Shuna Island hoard provides the oldest deposit from 800 BC to 700 BC. The next reported hoard from wetland contexts is Fetlar, but it has a seven-hundred-year gap from Shuna (0 AD to 200 AD). Kyleakin has a closer date to Fetlar, dating from 260 AD to 329 AD, meaning that wetland hoards from this sub-region are more likely to occur at the beginning of the first century AD to the second. Additionally, because there are no other hoards reported, we can surmise that the end of the hoarding tradition was around 400 AD for this area. Pairs occur throughout the period but are not concentrated around a specific phase for the Highlands and Islands.

8.4.3.3B Discovery Years

Date of discovery can remarkably skew the level of recording, excavation, and curation of an object—especially in antiquarian finds. Observation of the discovery dates is essential because of the variability to the standard in collection and recording methods over the years. Likewise, the means by which some of the objects have been found are no longer in high demand in today’s economy (e.g. peat cutting). The first report was in 1772 and has continued in the sub-region until 2013 (Figure 8.6). Therefore, more finds have likely been reported since this initial research cut-off.

Only one site did not have a date of discovery, Ath Linne, and is not represented in this graph. The scatter plot demonstrates find sites in relation to their discovery years. The circle sizes represent the number of objects found per year. The majority of site-finds in relation to the object quantity from this sub-region date from 1850 to 1900 (7 reports of 15 sites). The discovery rate at the end of the nineteenth century and into the early twentieth century is unsurprising because of the lucrative peat industry and use for domestic fuel. However, with new metal-detector-sourced finds reported in recent years, a second horizon of discovery has occurred in the sub-region.

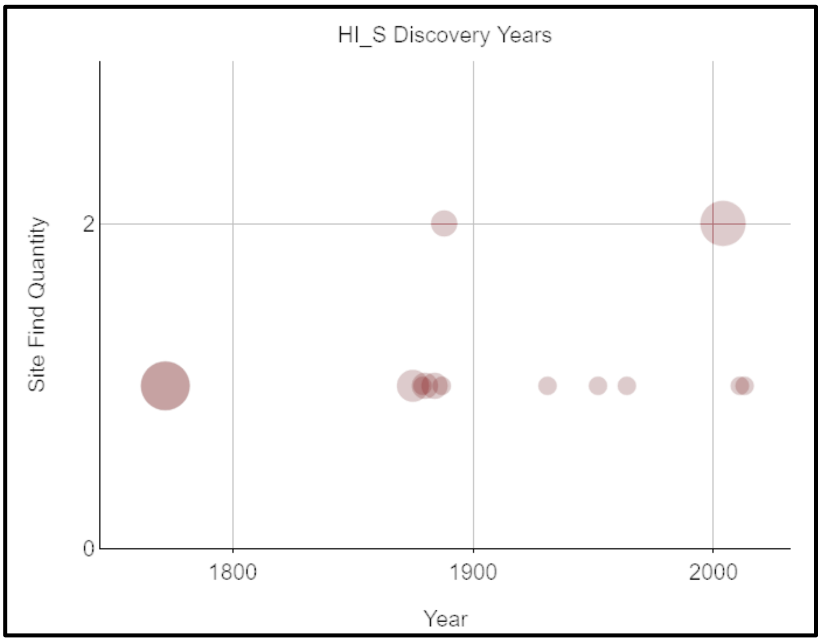


Figure 8.6 A scatter plot of all the discovery years by site quantity in the Highlands and Islands sub-region. The size of the circles represents the quantity of material reported that year.

8.4.4 Highlands and Islands Summary

To conclude, the preferred landscape for the Highlands and Islands sub-region was peatland. The common items chosen by individuals or the community for placement were armlets. The armlet's form suggests that most of these deposits were placed from the first to third centuries AD. Contact with the Northeast sub-region is evident through the exchange of these armlets. However, the high volume of copper alloy material may result from when it was found (i.e. 1850 to 1900s) because it is visually easier to identify metal in peat than organic objects. Nevertheless, due to the settlement density of the sub-region throughout the Iron Age (e.g. Lenfert 2013; Cavers 2006, Henderson 2007), wetland deposition may not have been a popular tradition, but future finds may change this theory.

8.5 Northeast

The Iron Age for mainland Scotland according to Armit (1997a: 15) dates from 800 BC to 500 AD. Mainland Scotland includes Northeast, Central, Southeast, and the Southwest sub-regions. The extended end date for the Iron Age for the Scottish mainland contrasts significantly with the English because the Roman conquest did not extend far into the country, nor was it as culturally disrupting. Instead, Armit (1997a: 15) states that the Scottish Iron Age continues until it merges with the Early Historic period.

The Northeast sub-region had six objects reported from four sites that were applicable for the scope of this study (Figure 8.7, Table 8.2).

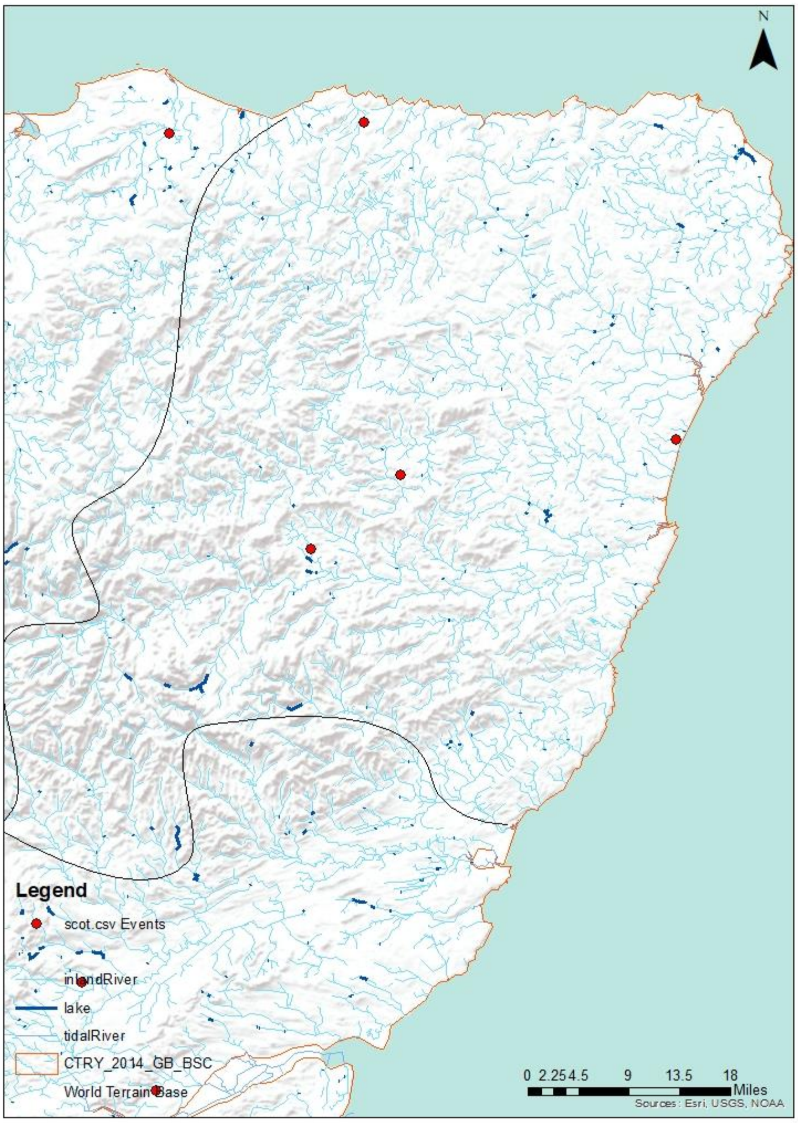


Figure 8.2. Map of all sites reported from a wetland context for the Northeast sub-region. The map contains all the modern rivers and lakes of the area. The red dots represent findspots of Iron Age wetland deposition.

Thesis Number	Study Site	Dates	Type of Deposit	Simplistic Landscape Type	Soil or Compound Type
NE_S1	Ballestrade	0 AD to 200 AD	Single	River Floodplain	Peaty Alluvium
NE_S2-NE_S3	Belhlvie	0 AD to 200 AD	Pair	River Floodplain	Gley
NE_S4	Deskford	80 AD to 200 AD	Multiperiod Single	Prehistoric Peatland, Bog	Peat
NE_S5-NE_S6	Tillychetly Moss	50 AD to 150 AD	Pair	Peatland, Marshland	Peat

Table 8.2. Northeast case study. The study sites according to place, type of deposit, and landscape type. For the complete details of each object entry, see Appendix 6.3.

8.5.1 Environment

Wetland landscapes and their associated soil types will be discussed here for the Northeast sub-region. Wetland landscapes observed in the sub-region associated with deposition traditions were equally river floodplains and peatland. The associated sediment context was sourced primarily from peat and peat compound. However, with such a small sample size, patterns of deposition in wetland environments may not be statistically representative.

There are only accounts of single, multiperiod single object deposits and pairs from the sub-region. Interestingly, all deposition traditions show equal association to river floodplains and peatland. There are single accounts for both river floodplain and peatland for single and paired deposits. In addition, there are also single accounts for both river floodplain and peat for multiperiod single and paired traditions. However, object finds were predominantly reported from peat or a compound thereof when the sediment context alone is considered. Therefore, it is possible that when peat was not within proximity, peat complexes were sourced for deposits in this sub-region, which happened to be in river floodplains and peatlands.

8.5.2 Single, Pairs, and Hoard comparisons

The people of the Northeast sub-region of Scotland practised the wetland deposition traditions for pairs, single, and multiperiod single object deposits. The sub-region is known for massive typologies of various Iron Age object types (Hunter 2006, 2007, 2014). In addition to the sub-region’s signature style and production, the area also has evidence of the largest known hillfort in the entirety of Scotland, Tap O' Noth, located in Aberdeenshire, which may have supported an extensive community (RCAHMS, 2007: 103; Cook 2013: 99). However, according to Harding (2004: 84), hillforts are not as large in the Northeast or Central sub-regions as they are in the south. Nevertheless, there is still evidence of a moderate settlement density for the subregion, especially if the ring-forts of the Late Iron Age are considered (e.g. Harding 2004: 238-243). As stated previously, extensive settlements with production industries are also evident for the sub-region such as Forres (Cook et al. 2016: 65) and Cullykhan (Harding 2004: 93-95). Therefore, the lack of wetland deposition could be the result of two scenarios. First, wetland deposition may not have been a popular tradition in the area, resulting in the lack of sites. Second, the deposits may not have been discovered in the area due to differences in collection and survey methods.

Each case study has been summarised in Appendix 6.3, detailing the site context and associated reported finds. Case numbers were applied based on object quantities with the addition of each sub-region underscored (e.g. NE_S#).

8.5.3 Depositional Practices

There is a substantial difference in the number of deposition sites compared to the Highlands and Islands sub-region; however, the area still contains evidence of wetland deposition practices. Pairs were the most common tradition type noted from the sub-region and also produced most of the material, unlike other Scottish sub-regions. The sample size was small and concentrated to a few object types and materials. Therefore, it is possible that people did not practise deposition in this area on a mass scale but rather in private, or there is still a substantial volume of material to be found in the area's wetlands.

8.5.3.1 Objects

As stated previously, the comparison of object types to depositional tradition provided possible communal preference of chosen material based on specified performance. The results were skewed in favour of smaller assemblages because of the low number of case studies from the sub-region and may not be statistically representative of practice.

Terrets are associated with single object deposits as there is only one account. Paired deposits from the sub-region are only associated with armlets. Lastly, multiperiod single deposits are associated with the carnyx; but again, there was only one deposit, and the representation is skewed.

8.5.3.2 Material Composition

All objects reported from the Northeast sub-region were made of copper alloy. The small sample size and lack of variation in material type did not justify a correspondence analysis.

8.5.3.3 Dates of Activity

The dates of activity reviewed reflect typological-chronological sequences, as opposed to deposition periods. This sub-region does not contain any objects that have been radiocarbon dated and instead relied solely on typologies.

8.5.3.3A Typological-chronological Sequence and Radiocarbon Dates

Based on typological sequences, activity occurred from the beginning of the first century BC to the second century AD. There were no typological gaps of object types sourced from depositional activity in the sub-region. Single object deposits, with only one site-find, dated from 0 AD to 200 AD. Of the two paired reports, one dated from 0 AD to 200 AD and the other from 50 AD to 150 AD. Therefore, paired deposition in the sub-region based on typologies and reported from wetland context occurred from 0 AD to 200 AD until the end of the Iron Age. No hoards were reported from the sub-region. However, Deskford is considered part of *Location Dependent Multiple Period Deposits* tradition and, more specifically, multiperiod single object deposit. It is considered part of this tradition because though there were other items reported from the survey of an unknown Iron Age date, the carnyx was found alone according to Hunter's site reports. As a result, multiperiod deposits are believed to have occurred from 80 AD to 200 AD based on the carnyx's form. Nevertheless, the periods of activity in this sub-region are skewed because of the small sample size.

8.5.3.3B Discovery Years

Find dates of these objects were as early as 1853 and continued until 1904 (Figure 8.11). The majority of finds from this sub-region date from 1853. Tillychetly Moss was excluded because the year of discovery was not stated. Most of the discoveries were made from peat digging, apart from Deskford.

8.5.4 Northeast Summary

The small sample size of the finds from the Northeast in comparison to settlement density of the sub-region suggests that wetland deposition was not a popular practice. Overall, deposits were found in river floodplains and peatlands. However, when sediment context was considered, all deposits were either found in peat. The object types reported from the sub-region provide that massive-styled armlets were the most common object type chosen for deposition. Perhaps these common elements of wetland deposition practices with the Highlands and Islands sub-region are suggestive of close relations from the early first to the late second century AD. All objects reported from the Northeast sub-region were comprised of copper alloy. Prehistoric wetland depositional activity extended from the beginning of first century BC to the end of the second century AD. Nevertheless, the limited deposition material reported from the sub-region could be due to the additionally small finds recovery in wetland locations over the past years.

8.6 Central

From the Central sub-region, 25 objects from 15 sites were reported to be applicable for this study's scope (Figure 8.8, Table 8.3).

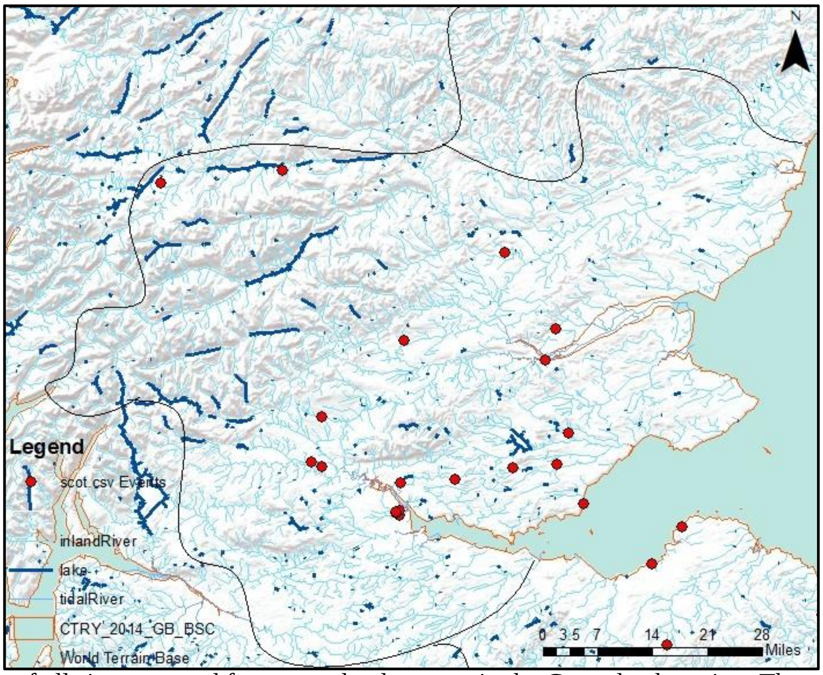


Figure 8.8. Map of all sites reported from a wetland context in the Central sub-region. The underlaying map shows modern rivers and lochs/lakes of the area. The red dots represent find sites in the sub-region.

Thesis Number	Study Site	Dates	Type of Deposit	Simplistic Landscape Type	Soil or Compound Type
C_S1	Abercairny	100 AD to 200 AD	Single	Peatland, Bog	Peat
C_S2-C_S6	Airth	50 BC to 200 AD	Multiperiod Hoard	Estuary Floodplain	Gley, Silt
C_S7	Alloa	100 BC to 43 AD	Single	River Floodplain	Gley
C_S8	Auchterderran	100 BC to 100 AD	Single	River Floodplain	Gley
C_S9-C_S14	Blair Drummond, Kincardine Moss	300 BC to 100 BC, 600 BC - 400 BC	Multiperiod Hoard	Peatland, Bog	Peat
C_S15	Bows of Doune	0 AD to 200 AD	Single	Peatland, Bog	Peaty Gley
C_S16-C_S17	Bunranoch	0 AD to 200 AD	Pair	Peatland, Bog	Peaty Gley
C_S18	Carpow	0 AD to 200 AD	Single	River/Estuary Floodplain	Gley
C_S19	Delvine	800 BC to 500 AD	Single	River Floodplain	Peaty Alluvium
C_S20	Errol	100 BC to 0 AD	Single	Estuary Floodplain	Gley
C_S21	Kelty	0 AD to 100 AD	Single	River Floodplain	Gley
C_S22	Leslie	100 BC to 43 AD	Single	River Floodplain	Gley
C_S23	Rannoch Moor	300 BC to 100 BC	Single	Peatland, Bog	Peat
C_S24	Saline	800 BC to 500 AD	Single	Riverine	Gley
C_S25	Seafield Tower	100 AD to 300 AD	Single	Estuary Floodplain	Gley

Table 8.3. Central case study. The study sites according to place, type of deposit, and landscape type. For the complete details of each object entry, see Appendix 6.4.

8.6.1 Environment

Wetland landscapes and their associated soil types are discussed here for the Central sub-region (Figure 8.9). Wetland landscapes observed in the sub-region associated with deposition traditions were river floodplains, peatland, intertidal zones, riverine, and estuary floodplains.

Wet landscapes which contained two ecosystems were split into half points to not over represent certain environments. The split allocation of 0.5 to different wet landscapes was because of the Carpow findspot which is comprised of a river delta and estuary floodplain. Therefore, this site was awarded 0.5 to river floodplain and 0.5 to estuary floodplain. Overall, the predominant wetland landscape type most utilised for deposition is river floodplain (37%, 6.5/15). The high volume of material reported from river floodplain contexts could be indicative of an original river deposition and resulting current drift which may have led to their discovery in floodplain landscapes. However, floodplains themselves may have been favoured for deposition. The other wetland landscapes observed were peatland (33%, 5/15), estuary floodplain (23%, 3.5/15), and riverine (7%, 1/15).

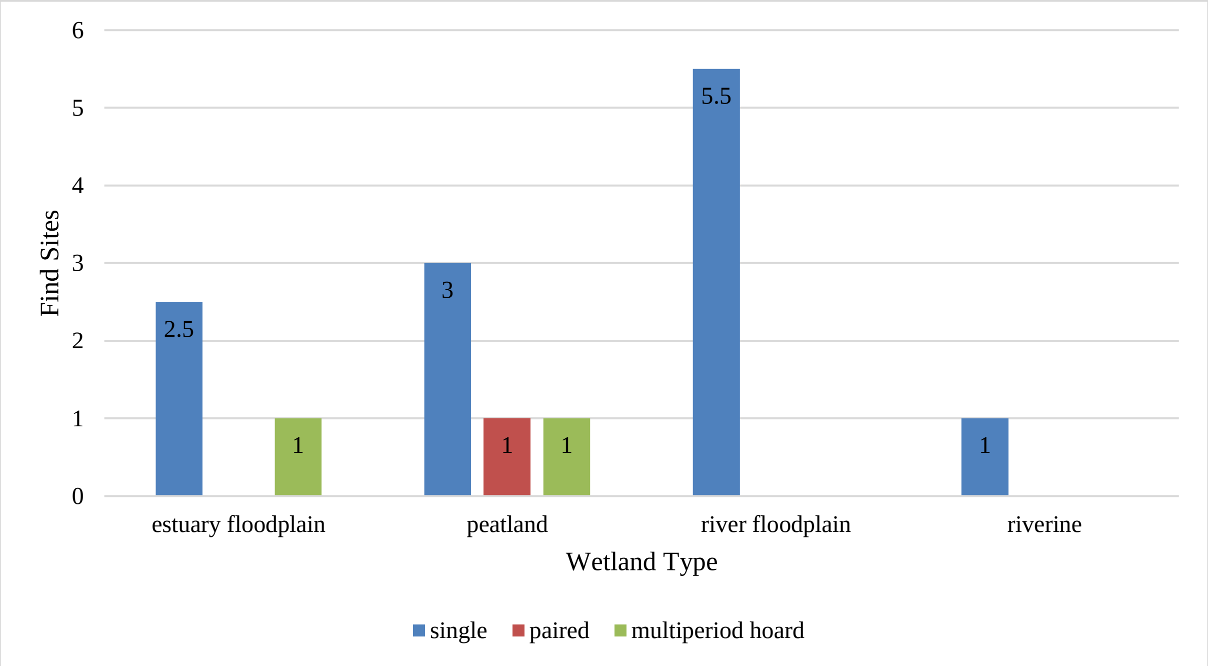


Figure 8.9. Comparison of the quantity of find sites to the wetland type for the Central sub-region.

Single object deposits are commonly found in river floodplains, and thereafter peatland (Figure 8.13). However, hoards and pairs were predominately found in peatland. Multiperiod deposits (i.e. Airth) were most commonly sourced from estuary floodplain landscapes. The sediment context of the object findspots in these wetland locations was also observed. The primary sediment type is gley (53%), and the following sediment types noted are peat (20%), peaty gley (13%), peaty alluvium (7%), and gley silt (7%). The common wet landscape type and soil type was floodplains with gley sediments. This communal preference differs from the other sub-regions due to the proportional surface area of peatland in the sub-region. Therefore, the Central sub-region may have had differing wetland deposition traditions and associated wet landscapes than those surrounding them.

8.6.2 Single, Pairs, and Hoard Comparisons

The people of the Central sub-region of Scotland practised single, pairs, and multiperiod deposits. Observation of multiperiod deposits has shown that they occur as both *Location* and *Landscape Dependent Multiple Period Deposits*. The majority of the sub-region deposit sites are sourced from a single object deposition tradition; however, most of the sub-region's material has been sourced from single and multiperiod hoard deposits.

The majority of the sub-region's finds were dated to the late or later Iron Age and located just north of the Firth of Forth, resulting in most of the findspots to be concentrated in the centre of the sub-region, surrounded in the periphery by Iron Age settlements. Large hillforts, such as Turin Hill (O'Driscoll and Noble 2020: 20), suggest selected densely occupied locations. Nevertheless, due to the variability of site types, Hunter (2007) has proposed that the Central and Northeast sub-regions were 'farmer republics,' whereby the differing architectural forms resulted from social competition and consumption (Cook et al. 2019: 264). Likewise, the Forth Valley was a place of multiple crossings and later an established Roman road network dating to the late 1st century AD despite the boggy terrain, according to Cook (et al. 2019: 259). Therefore, the number of deposition sites throughout the sub-region could have been reflective of these social competitions and acts of consumption and the reaffirmation of communal identity through such actions.

However, this concentration of finds in comparison with other sub-regions may result from the density of the modern population that occupies the area and has thus allowed more opportunity to discover assemblages. Modern urban occupation of the area may explain why so many finds are reported from rivers and streams because of the level of intense dredging. This does not explain, though, how river courses and floodplains have remained untouched. Therefore, deposition in rivers and their floodplains may have been the prehistoric preference for the sub-region.

Each case study has been summarised in Appendix 6.4, detailing the site context, and associated reported finds. Case numbers were applied based on object quantities with the addition of each sub-region underscored (e.g. C_S#).

8.6.3 Depositional Practices

The Central sub-region has a considerable diversity of depositional landscapes and traditions, objects, and materials types. Through this assortment of practices, what is most striking is the small scale of deposits compared to the number of sites reported for the sub-region. Therefore, deposits appear to represent a more personal engagement in the sub-region, or a smaller number of objects were required as they held significant communal value.

8.6.3.1 Objects

The sub-region has a rather copious assortment of object types (Figure 8.10). The correspondence analysis has been limited to two dimensions: object type and deposition tradition. What is distinct about the assemblages reported from the sub-region, is that all the pieces are small in size apart from the cauldron. Single objects are predominantly associated with specific object types such as: cauldron, harness fitting, mounts, strap slider, sword hilt, and toggle. Armlets are associated with both single object deposits and pairs. Multiperiod

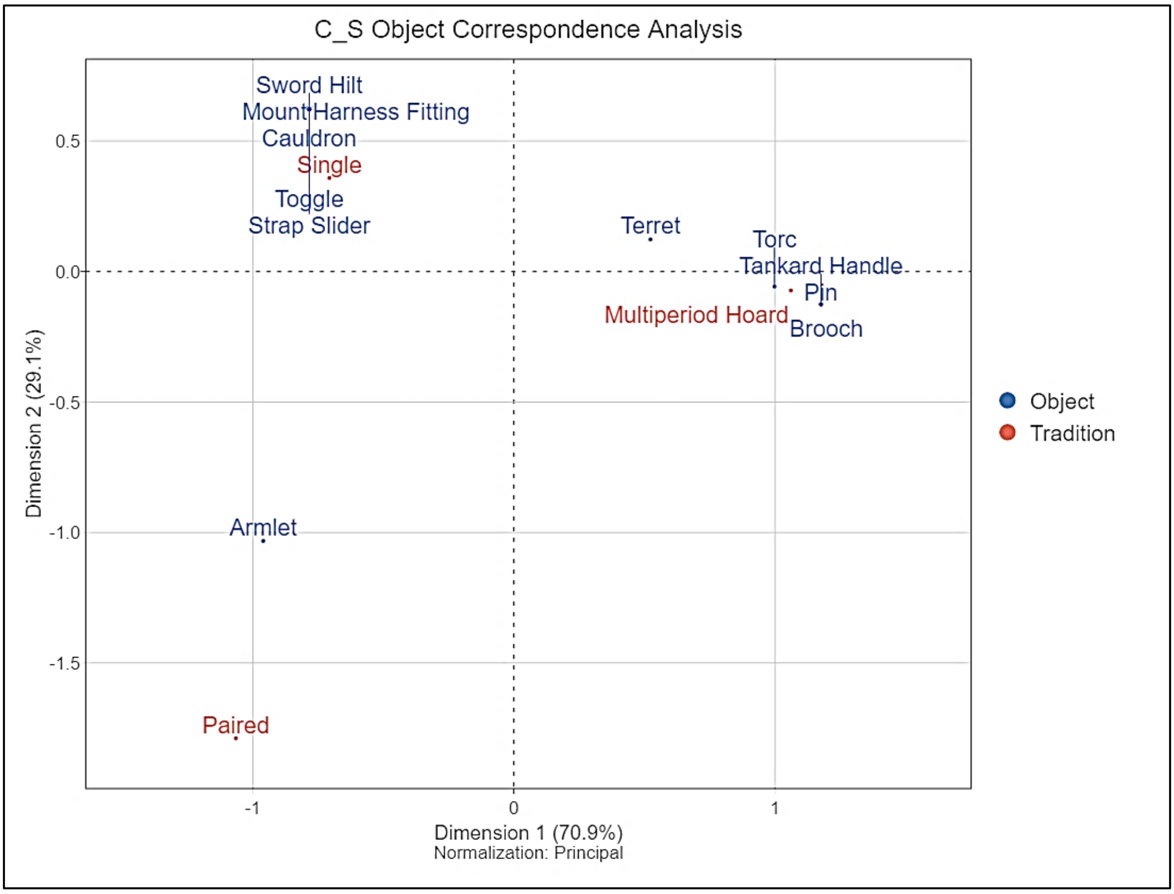


Figure 8.10. Central sub-region's correspondence analyses comparing object type with deposition tradition.

hoards also have predominant associations with specific object types, such as: brooch, equestrian pin, tankard handle, terret, and torc.

Of the single deposit object types, mounts are the most common pieces. Paired deposits strongly associated with armlets and multiperiod hoards held a close correlation with torcs for deposition. Overall comparison of all object types shows that both armlets and torcs were the primary objects sought for deposition. The armlets show a diverse range of forms; however, massive was the prevalent type (67%). Similarly, the torcs also showed diversity in forms, but ribbon was the predominant type (56%).

8.6.3.2 Material Composition

The correspondence analysis for material composition was limited to two dimensions, comparing the relationship between material type and deposition tradition. The objects reported from the Central sub-region were comprised of copper alloy and gold. Single object deposits and pairs were only associated with copper alloy materials. However, multiperiod hoards are closely associated with gold. Multiperiod hoards are also associated with copper alloy, though the relationship is more polarised in the other two deposition tradition types.

The primary material used for manufactured objects reported from single and paired deposits is copper alloy (100%). Multiperiod hoards also favour copper alloy (60%); thereafter, it is gold (40%).

8.6.3.3 Dates of Activity

As stated previously, the dates of activity reviewed reflect typological-chronological sequence dates as opposed to deposition. This sub-region does not contain any objects that have been radiocarbon dated and instead relies solely on typologies.

8.6.3.3A Typological-chronological Sequence and Radiocarbon Dates

The prevalent periods of deposition occurred from the early first century to late second century AD. Single object deposits of Delvine and Saline were assigned broad Iron Age dates that spanned from 800 BC to 500 AD.[23] There were no gaps noted from the recorded dates based on typologies noted from 300 BC to 200 AD in terms of deposition

[23] See Appendix 6.4.1 for reasons these sites were unable to be dated.

practices. Single object deposits occurred predominantly from the first century to the late second century AD. There was only one report of paired deposition in the Central sub-region from Bunranoch, also dated from 0 AD to 200 AD. Multiperiod hoards have been noted from 300 to 100 BC and again from 50 to 200 AD, providing a one-hundred and fifty-year gap based on typologies. Nevertheless, while the torc's type from Abercairney has been dated from 800 BC to 600 BC, its deposition is believed to have occurred closer to the cauldron's production date (i.e. 100 AD to 200 AD). Therefore, it is important to note that though an object is of an older date does not mean it was deposited at or near the time of its manufacture, as with the case of the Abercairney torc.

8.6.3.3B Discovery Years

Object reports began as early as 1825 and continued until 2018 (Figure 8.11). The majority of finds from this sub-region date from 2000 to 2018. Only one site, Abercairny, was excluded because the year of discovery was not stated.

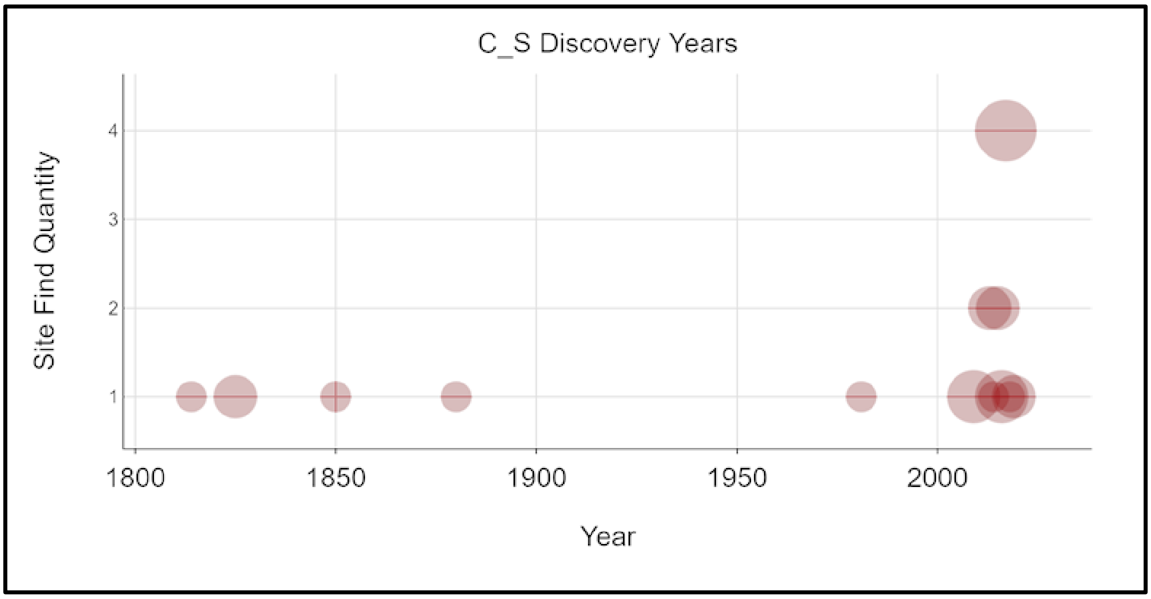


Figure 8.11 Scatter plot of Central find dates in years in association with findspot quantities. The size of the red dots indicates the volume each findspot contained upon discovery.

The scatter plot shows that there was a lack of finds from the mid-1900s to the early 2000s. The increase in finds from the 2000s onwards is attributed to metal detector discoveries.

8.6.4 Central Summary

The Central sub-region appears to be a fusion of both northern and southern Scottish wetland deposition traditions, with sparks of local preference of practice. Find sites concentrated in the centre of the sub-region, which is primarily composed of rivers and adjacent river floodplains (Cook et al. 2019: 239). Therefore, it is unsurprising that the sub-regional wet landscape preference for deposition is river floodplains. This does, however, move away from the northern trend of peatlands as primary landscapes for deposition. Based on their typology date, most deposits occur from the beginning of the first to the end of the second century AD. The common item reported from site reports is equally armlets and torcs. Additionally, the common material is copper alloy; however, this may result from how these objects were discovered – such as metal detector reports under the Treasure Trove system.

8.7 Southeast

From the Southeast sub-region, 119 objects were reported from 19 sites applicable to this study's scope (Figure 8.12, Table 8.4).

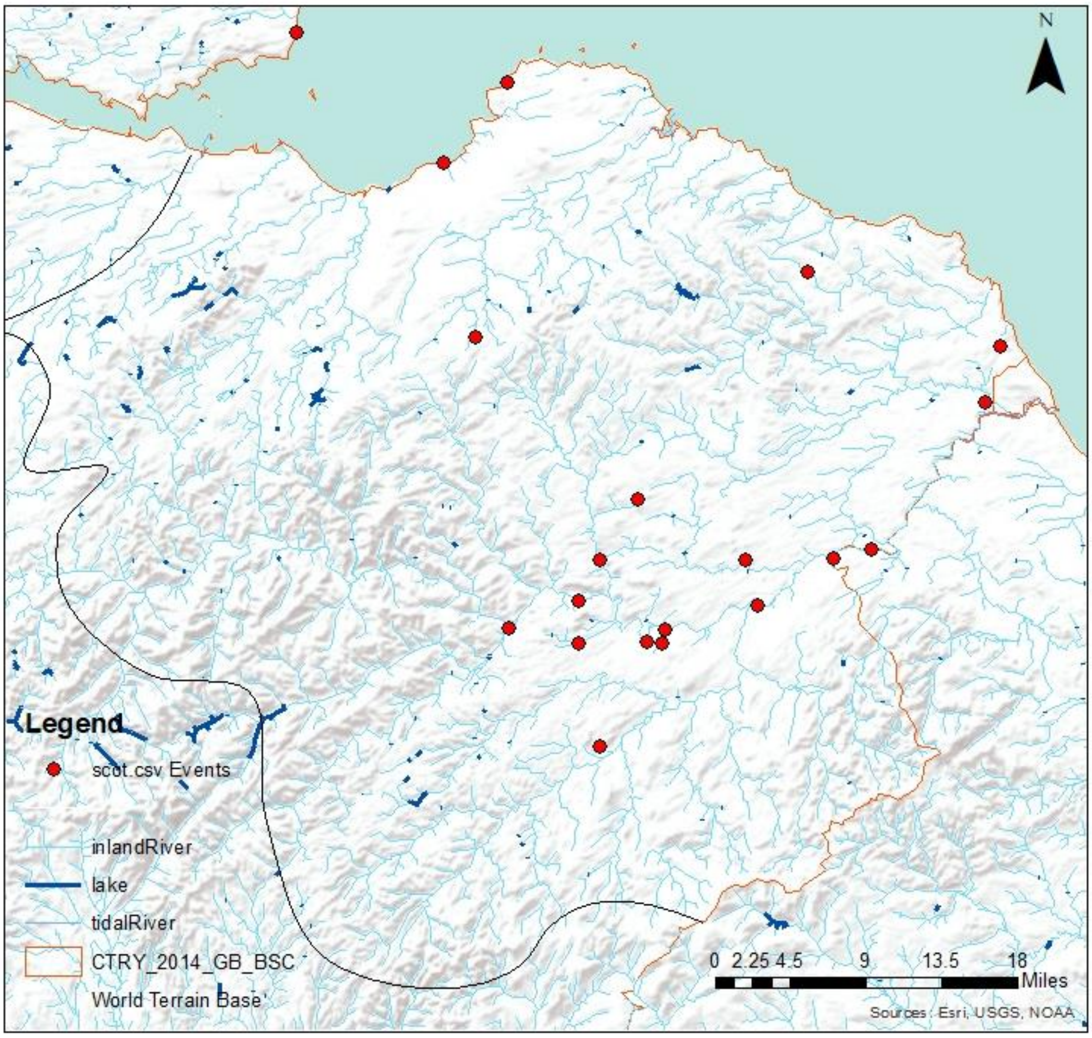


Figure 8.12. Map of all sites reported from wetland contexts in the Southeast sub-region.

Thesis Number	Study Site	Dates	Type of Deposit	Simplistic Landscape Type	Soil or Compound Type
SE_S1-SE_S72	Blackburn Mill	0 AD to 200 AD	Hoard	Prehistoric Lake	Blue Clay, Peat
SE_S73	Bowden	800 BC to 500 AD	Single	River Floodplain	Alluvium
SE_S74	Coldstream	0 AD to 200 AD	Single	River Floodplain	Gley
SE_S75	Corsbie Tower	800 BC to 700 BC	Single	River Floodplain	Gley
SE_S76	Craigsford	0 AD to 200 AD	Single	River Floodplain	Peaty Alluvium
SE_S77	Edrington	400 BC to 400 AD	Single	Riverine	Gley
SE_S78	Fala	100 BC to 100 AD	Single	Riverine, Floodplain	Gley
SE_S79	Gullane	100 BC to 200 AD	Single	Intertidal Zone	Alluvium
SE_S80-SE_S100	Lamberton	80 AD to 180 AD	Hoard	Peatland	Peat
SE_S101	Lindean Mill	800 BC to 500 AD	Single	Riverine	Peaty Alluvium
SE_S102	Littledean Tower	300 BC to 410 AD	Single	River Floodplain	Peaty Alluvium
SE_S103	Maxton	200 AD to 300 AD	Single	River Floodplain	Gley
SE_S104	Melrose	80AD to 180 AD	Single	River Floodplains	Peaty Alluvium
SE_S105	Ploughlands	800 BC to 500 BC	Single	River Floodplain	Gley
SE_106-SE_S107	River Tweed	100 BC to 100 AD	Pair	River Floodplain	Peaty Alluvium
SE_S108-111	Seton Sands	0 AD to 200 AD	Hoard	Intertidal Zone	Alluvium
SE_S112	Springwood Park	200 AD to 400 AD	Single	River Floodplains	Peaty Alluvium
SE_S113-SE_S118	Stichill	50 AD to 150 AD	Hoard	River Floodplain	Gley
SE_S119	Teviothaugh	0 AD to 200 AD	Single	River Floodplain	Gley

Table 8.4. Southeast case study. The study sites according to place, type of deposit, and landscape type. For the complete details of each object entry, see Appendix 6.5.

8.7.1 Environment

Wetland landscapes and their associated soil types are discussed here for the Southeast sub-region (Figure 8.13). As stated in the previous section, half counts were allocated to environments which had a dual landscape to not over represent certain landscapes. Wetland landscapes observed in the sub-region associated with deposition traditions were river floodplains, riverine, river, peatland, and prehistoric lake/loch.

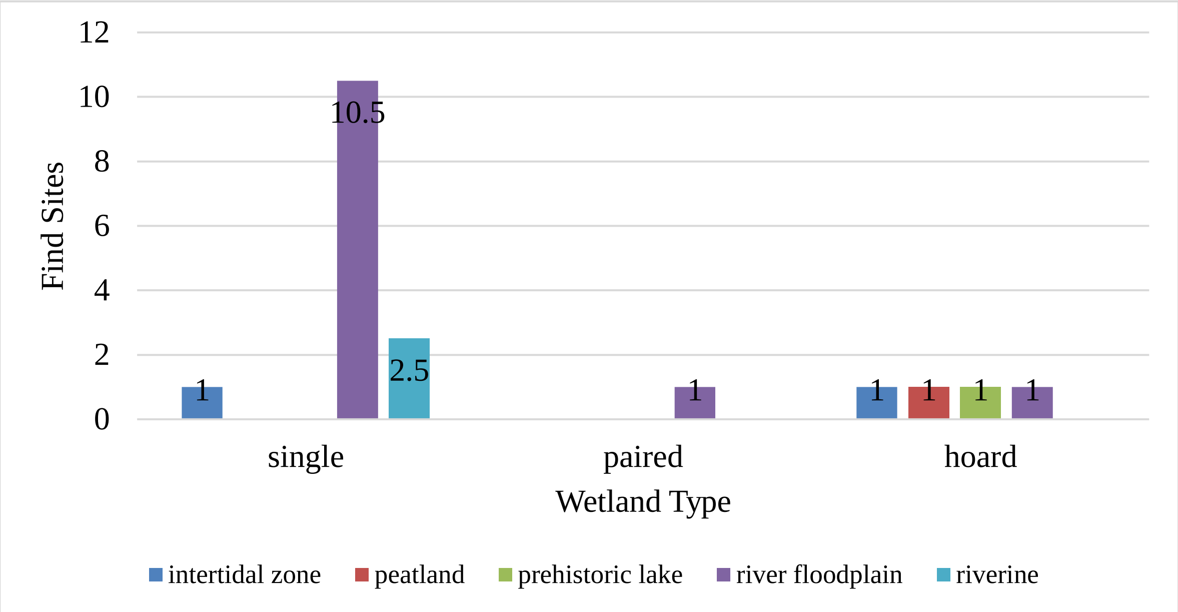


Figure 8.13. Comparison of wetland type with deposition tradition noted in the Southeast sub-region.

Overall, the primary wetland landscape type most utilised for deposition was river floodplain (66%, 12.5/19). The high volume of material reported from floodplain contexts could be indicative of river deposition and the drift of the objects into floodplain areas in times of an increased water table and storm current. There is also a likelihood that these floodplains were used for deposition when inundated. However, many of the rivers and river floodplains are positioned between several settlements and hillforts of the sub-region. Therefore, it is possible that these locations were easier to access due to their proximity to settlement locations, while still retaining a sense of separateness or isolation as previously discussed (see chapters 6 and 7). The following wetland landscapes were riverine (13%, 2.5/19), intertidal zone (11%, 2/19), prehistoric lake/loch (5%, 1/19), and peatland (5%, 1/19).

Single object deposits were observed primarily in river floodplain locations (Figure 8.13). However, the discovery of objects thought to have derived from deposition activity for single object deposits in floodplains could have been the result of river deposition that has since moved because of strong currents. As there is only one occurrence of paired deposits, this observation is skewed to river floodplains. Hoards are equally found in floodplains, intertidal zones, peatland, and prehistoric lakes. The lochs (or lakes) accounted for in this sub-region have transitioned into peat landscapes or contain peat.

The sediment context of the object findspots in the sub-region’s wetland locations was also noted. The primary observed sediment type was gley (42%). The following sediment types noted are peaty alluvium (32%), alluvium and sand (16%), peaty blue clay (5%), and peat (5%). Overall, floodplain landscapes were the primary environment observed for depositional activity within gley sediment for the Southwest sub-region.

8.7.2 Single, Pairs, and Hoard Comparisons

Observed depositional practices in the Southeast sub-region are single, paired, and hoards. Single deposits are the most reported tradition type reported from site case studies (14/19, 74%). However, most of the material produced from the sub-region was sourced from hoard deposits.

The spread of deposition sites is concentrated in the southeast portion of the sub-region, with outliers by the coast. Interestingly, the sub-region's hillforts and enclosed settlement activity appear to be concentrated in the northern portion, contemporary East Lothian (Armit 2019). However, large hillforts and settlements are scattered throughout the sub-region with evidence of long-term occupation (Harding 2001: 357; 2006: 67), and deposit sites appear to occur in the lower valley wet locations, or the gley sediment runs between them. According to Hill (1982: 8-21), the Late Iron Age sub-region settlements were predominately farming communities and ring-ditch houses within hillforts. Settlements were proportionately stable during the Late Iron Age but were disrupted by Roman occupation (Hill 1982: 10). Therefore, the large number of deposition sites during the Late and Later Iron Age may have also been in response to the Roman disruption through the need to reaffirm social identity (see Chapter 11 for further explanation).

Each case study has been summarised in Appendix 6.5, detailing the site context and associated reported finds. Case numbers were applied based on object quantities with the addition of each sub-region underscored (e.g. SE_S#).

8.7.3 Depositional Practices

The depositions from this sub-region appear to be communal contributions or a representation of industry. The items do reflect identity, but through pieces that are communal (e.g. cauldrons, bowls and vessels), rather than individual adornment like the northern sub-regions. There is also remarkably more deposition of tools, which could also be representative of a group of individuals within a particular trade. Perhaps their representation of community was through deposition of objects associated with their trade (e.g. gouges, knives, sickles). In addition, we do begin to see external and foreign trade or influence through object types such as paterae. As a result, this sub-region has a more diverse spread of object and material types, wetland environments, and trade networks.

8.7.3.1 Objects

The sub-region has a very diverse collection of object types reported from wetland locations (Figure 8.14). The correspondence analysis is limited to two dimensions comparing the relationship between object types and deposition tradition. The common object types observed are axe, bridle bit, brooch, cauldron, cup or lamp, fastener, finger ring, strap mount, toggle, and terret for single object deposits. There is only one report of a paired deposit, with object types of the sword and scabbard. Single period hoards were predominately associated with bowls, finger rings, ingots, lynch pins, paterae and their handles, staples, and unspecified implements.

The majority of objects reported from single object deposits were fasteners. Paired deposits were equally swords and scabbards, but this is because there is only one deposit from the sub-region. Ingots appear to be the most common item chosen for deposition in hoards. The overall pattern of object types chosen for deposition showed that vessels were the most common item. The vessel types observed were bowls (59%), paterae (33%), and common vessels (8%).

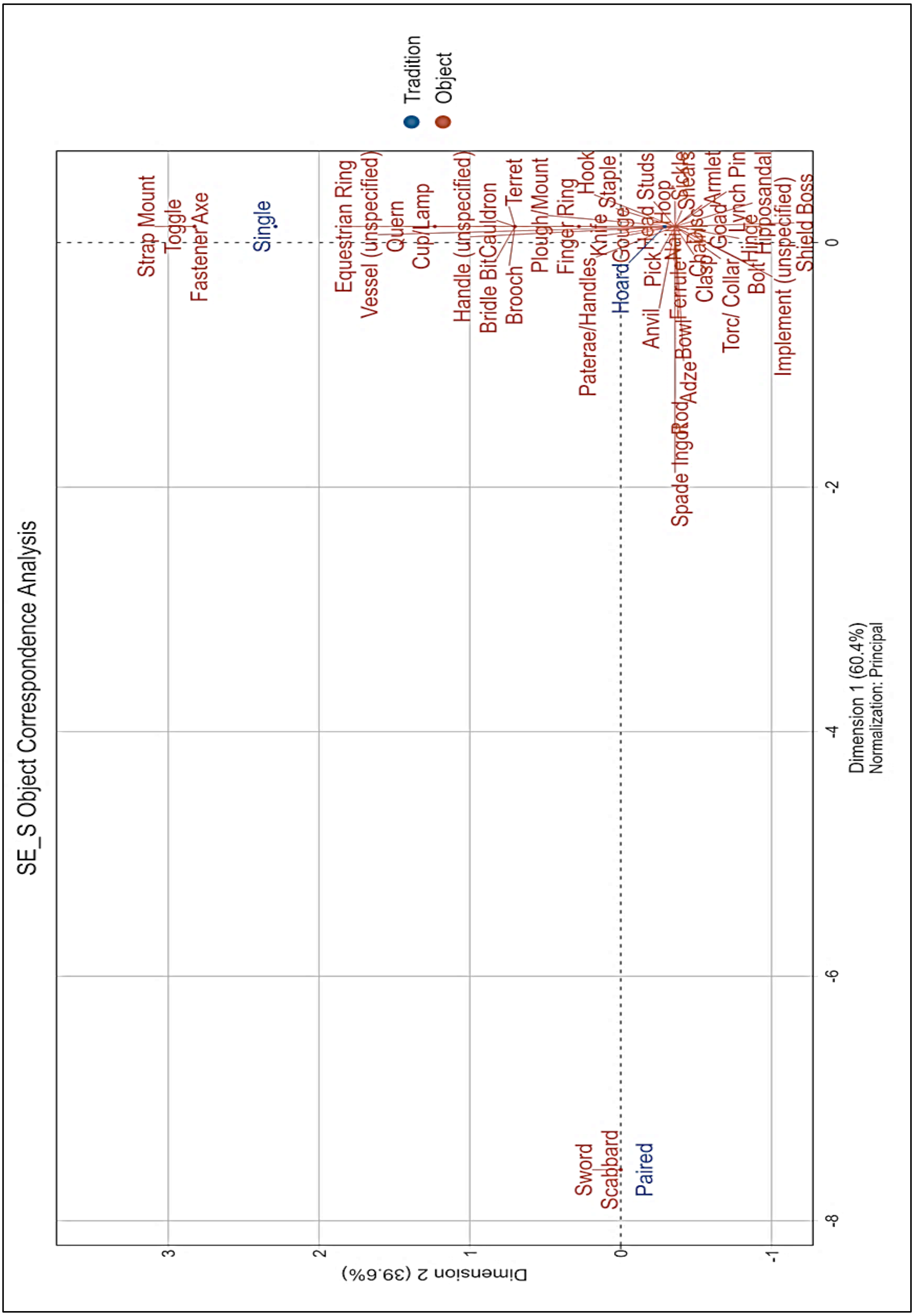


Figure 8.14. Southeast sub-region's object type correspondence analyses of tradition types.

8.7.3.2 Material Composition

The material composition of objects reported from the sub-region is also varied (Figure 8.15). The majority of the material reported from the sub-region has been metal, but organic remains such as wood and stone have also been observed. For single object deposits, stone and copper alloy are associated with the tradition. Copper alloy is also strongly associated with paired and hoard deposit traditions. However, iron and wood are solely associated with hoard deposition.

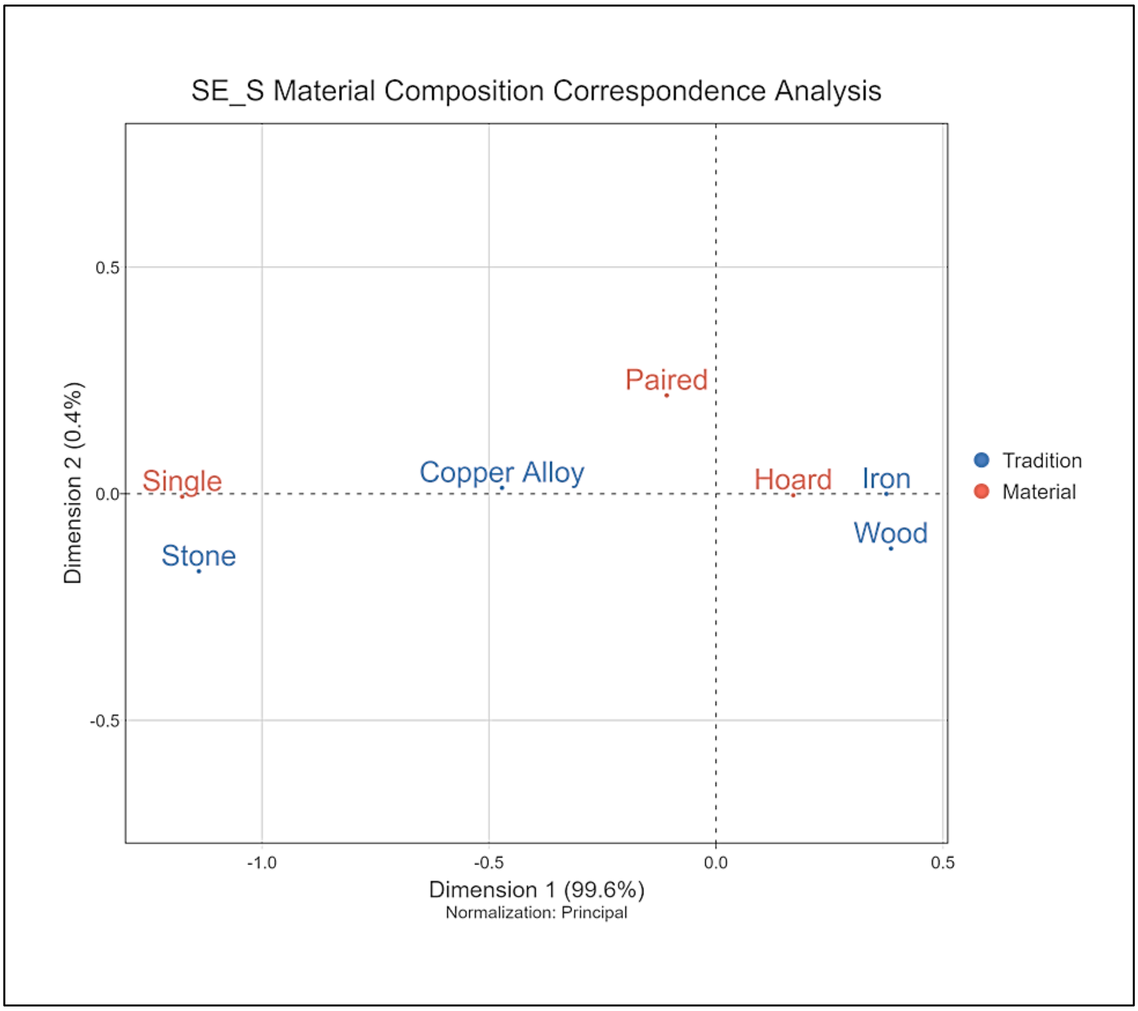


Figure 8.15. Southeast material composition correspondence analysis comparing the relationship with deposition tradition type.

The objects reported from the Southeast sub-region were comprised of copper alloy, iron, wood, and stone (Figure 8.15). The primary material used for manufactured objects reported from single deposits is copper alloy (93%, 13/14). Iron and copper alloy are equally represented for paired deposits. However, for hoards, the common material type used in object composition was iron (63%, 62/98). Overall, iron was the standard material for the

Southeast sub-region (54%, 62/114). However, this figure is skewed due to the high level of iron material supplied from the Blackburn Mill hoard.

8.7.3.3 Dates of Activity

As stated previously, the dates of activity reviewed reflect typological-chronological sequence dates as opposed to deposition.

8.7.3.3A Typological-chronological Sequence and Radiocarbon Dates

The prevalent period of depositional activity for the sub-region occurs from 100 BC to 200 AD based on typological-chronological sequences. However, the highest concentration of activity occurred from the early first to late second century AD. Three sites (i.e. Bowden, Lindean Mill, Ploughlands) were excluded from the analyses because only a broad Iron Age date could be applied. For single deposits, the majority occurred after the first to the second century AD. Based on noted typologies, single object deposits show a three-hundred-year gap of activity from 700 BC to 400 BC. There was only one report of paired deposition in the Southeast sub-region from the River Tweed, dated from 100 BC to 100 AD. Hoards from the Southeast sub-region occurred from the first to the second century AD. As a result, based on finds reports, we can surmise that the sub-region's wetland hoarding tradition ended around 200 AD.

8.7.3.3B Discovery Years

Object reports began as early as 1743 and continued until 2018 (Figure 8.16). A scatterplot was used to understand the relationship between finds date and quantity of sites discovered. The size of the dots represent the quantity of objects found per year. The majority of finds from this sub-region come from the early 2000s. Only one site, Maxton, was excluded because the year of discovery was not stated.

Finds were steadily reported from 1743 until 1920. Thereafter, no finds were reported until 1990, which is unsurprising given that the previous years yielded objects because of peat digging and drain cutting.

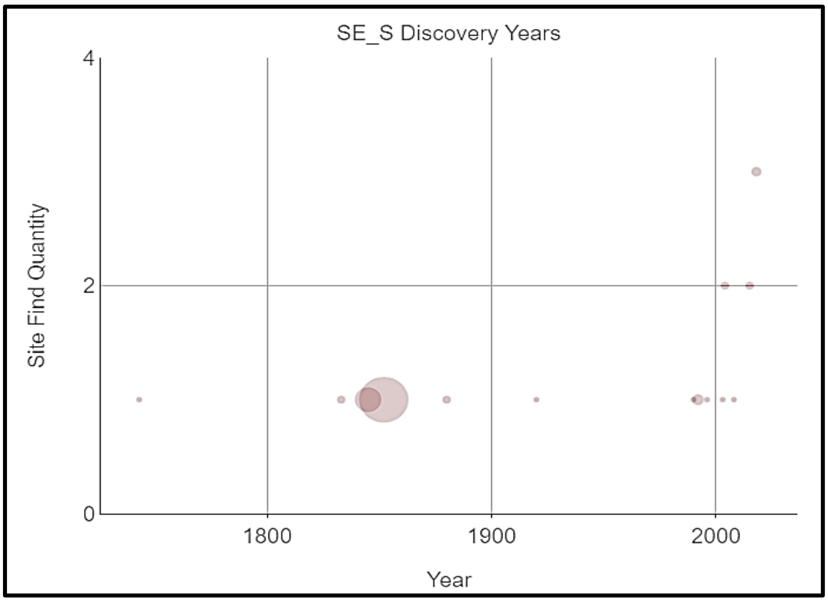


Figure 8.16. Scatter plot of Southeast discovery dates in years with findspots. The size of the red dots represents the quantity of objects.

8.7.4 Southeast Summary

Wetland deposition practiced in the sub-region has evidence for communal contribution. When settlement density is compared with wetland deposition, the practice sub-regionally is underwhelming. Overall, the preferred wet landscape for deposition in the Southeast sub-region was river floodplains. The common item chosen for deposition was vessels. Periods of the highest prehistoric activity, based on noted typology (typological-chronological sequence date as opposed to the actual date of placement due to lack of data), was from the early first to the end of the second century AD. However, in terms of discovery dates, most finds from the sub-region were reported in the early 2000s which may account for the large portion of metal pieces discovered through metal detectorist finds.

8.8 Southwest

From the Southwest sub-region, 166 objects from 17 sites reported were applicable for this study's scope (Figure 8.17, Table 8.5).

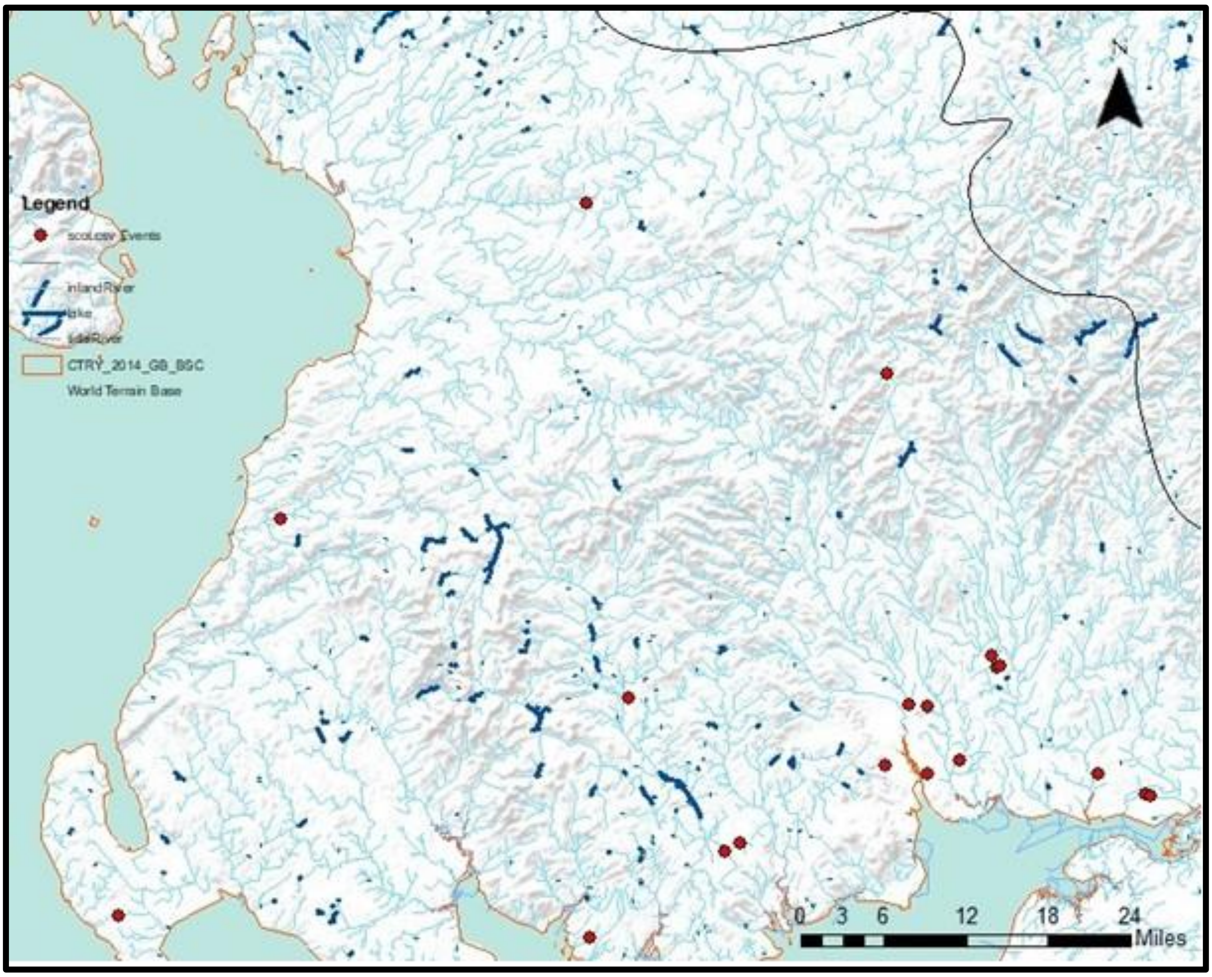


Figure 8.17. Map of the Southwest sub-region with a sublayer of modern rivers and lakes. The red dots represent the findspots of the sub-region.

Thesis Number	Study Site	Dates	Type of Deposit	Simplistic Landscape Type	Soil or Compound Type
SW_S1	Awhirk	100 BC to 200 AD	Single	Peatland, Marsh	Brown Soils, Peat, Peat-Alluvium
SW_S2-SW_S15	Balmaclellan	110 AD to 240 AD	Multiperiod Hoard	Peatland, Bog	Peat
SW_S16-SW_S17	Barganny	200 BC to 100 BC	Pair	Peatland, Bog	Peat
SW_S18	Canonbie	800 BC to 500 AD	Single	River	Gley
SW_S19-SW_S120	Carlingwark	80 BC to 200 AD	Multiperiod Hoard	Loch/Lake	Gley
SW_S121	Dalscone	800 BC to 500 AD	Single	River Floodplain	Peaty Alluvium
SW_S122	Elvanfoot	0 AD - 200 AD	Single	River Floodplain	Peaty Alluvium
SW_S123	Lochmaben	800 BC to 500 AD	Single	Peatland, Bog	Peat
SW_S124-SW_S129	Lochar Moss	450 BC to 200 AD	Multiperiod Hoard	Peatland, Bog	Peat
SW_S130	Loudoun Hill	800 BC to 500 AD	Single	Peatland	Peat
SW_S131-SW_S132	Mabie Moss	100 AD to 500 AD	Multiperiod Single	Peatland, Bog	Peat
SW_S133-160SW_S	Middlebie	0 AD to 200 AD	Hoard	Peatland, Bog	Peat
SW_S161-SW_S162	Nutberry	800 BC to 500 AD	Multiperiod Single	Peatland, Bog	Peat
SW_S163	Pluton Castle	0 AD to 200 AD	Single	Peatland	Peat
SW_S164	Torrs	300 BC to 100 BC	Single	Peatland, Bog	Peat
SW_S165	Whitehills	400 BC to 100 BC	Single	Peatland, Bog	Brown Soils, Peat, Peaty Alluvium
SW_S166	Whitereed Moss	80 BC to 20 AD	Single	Peatland, Bog	Peat

Table 8.5. Southwest case study. The study sites according to place, type of deposit, and landscape type. For the complete details of each object entry, see Appendix 6.6.

8.8.1 Environment

Wetland landscapes and their associated soil types will be discussed here for the Southwest sub-region (Figure 8.18). Wetland landscapes observed in the sub-region associated with deposition traditions were river floodplains, peatland, and lakes/lochs. Overall, the primary wetland landscape type most utilised for deposition is peatland (76%, 13/17). Again, this figure is unsurprising given the landmass in which peat, peat gleys, and peaty podzols cover in the sub-region. Thereafter, the following wetland landscapes were river floodplains (12%, 2/17), rivers (6%, 1/17) and lakes/lochs (6%, 1/17). As the sub-region has a large sample size of sites, but a limited variation in depositional landscapes, perhaps the practice of wetland deposition was more structured in this sub-region.

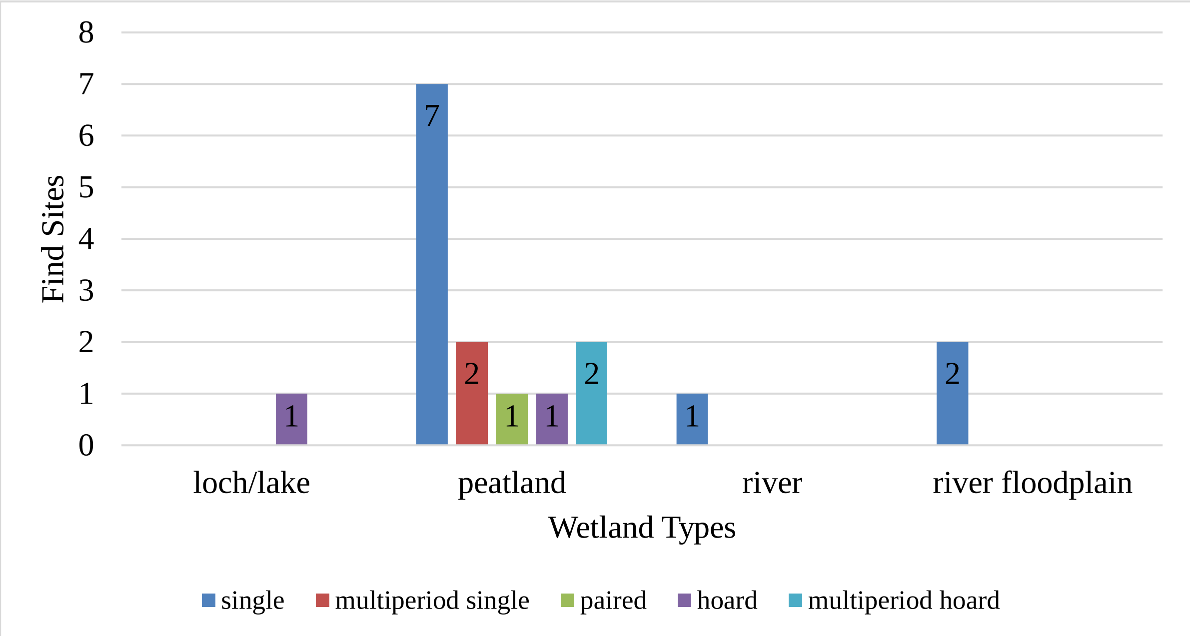


Figure 8.18. Comparison of wetland type with deposition tradition noted in the Southwest sub-region.

Single object deposits, multiperiod single, paired, and multiperiod hoards were primarily reported from peatlands (Figure 8.18). Hoards, however, were equally reported from lochs/lakes and peatland landscapes. The sediment context of the object findspots in these wetland locations was also noted. The primary sediment type was peat (65%). The following sediment types noted were peaty alluvium (11.7%), a mixture of brown-alluvium-peat (11.7%), and gley (11.7%). The overall wet landscape type and soil type correspond, whereby peatland and peat-dominated landscapes are the preferred locations for wetland deposition in the Southwest sub-region.

8.8.2 Single, Pair, and Hoard Comparisons

The Southwest sub-region has evidence of a large Iron Age occupation, with numerous terrestrial and wetland settlements, such as crannogs (e.g. Armit 2019; Cavers 2008; Henderson and Cavers 2011). According to Cavers (2006: 401), a ‘crannog construction horizon’ occurred from the late first millennium BC, extending from the Highlands to the south-west, with evidence of multiple phases of construction. The densest concentration of crannog construction occurred from the Late Bronze Age to the Early Iron Age (Cavers 2006: 402).

However, not everywhere in the sub-region was as densely settled or maintained throughout the Iron Age. For example, the northern Solway plain was less settled and more defended than the south in the second and third centuries BC (Gregory 2001: 35-36). This contrasts with the settlement density for the uplands and lowlands of Dumfriesshire, whereby large defensive settlements were occupied from the Mid to Late Iron Age (Gregory 2001: 38).

Nevertheless, the sub-region also has the highest concentration of wetland deposits reported in comparison to the rest of Scotland. Variation of deposition traditions may reflect a more widespread practice compared to other sub-regions. Likewise, the copious Roman items and influence in objects reported from the sub-region suggest a more substantial assimilation of materials (Hunter 2001). Therefore, it is possible that trade relations were more extensive in the Southwest sub-region. In addition, if we consider the settlement density of the sub-region to wetland deposition sites and object quantities suggests that the practice was popular.

As stated previously, each case study has been summarised in Appendix 6.6, detailing the site context along with associated reported finds. Case numbers were applied based on object quantities with the addition of each sub-region underscored (e.g. SW_S#).

8.8.3 Depositional Practices

Compared to other sub-regions—specifically the Southeast—the Southwest sub-region had slightly fewer site finds, but overall, more items in assemblages. Therefore, the high volume of material with varied depositional traditions shows widespread practice in the sub-region. Wetland depositional traditions practised in the Southwest sub-region were single, multiperiod single, pairs, hoards, and multiperiod hoards. Single deposits are the most commonly reported of the site case studies. However, in terms of quantity of material, multiperiod hoards have produced the most material. The high number of single object deposits may represent individual households' need to perform wetland depositions through a singular but meaningful object. Likewise, the copious material produced by multiperiod hoards may denote a communal obligation for the continued contribution of objects. However, this demand for performance of the practice can only be speculated on.

8.8.3.1 Objects

Like the Southeast, the Southwest sub-region has a very diverse collection of object types reported from wetland locations (Figure 8.19). Due to the amount of material, only those with the highest figures will be discussed in this section. Correspondence analysis was used to understand the relationship between object types and deposition traditions.

Single object deposits show an association with certain object types, such as: axe, bowl, bracelet, cauldron, chamfrain, equestrian ring, raw jet, plough beam, and shoe. The object types with the closest relations with multiperiod single object deposits are stone balls, jet, and sword hilt. Paired deposits only had one account in the sub-region; therefore, the relationship is skewed because of the sword and scabbard from Barganny. Hoard deposits are associated closely with terrets, fasteners, mounts, and strap unions. Bridle bits and equestrian rings have a relationship with both hoard and multiperiod hoard traditions. The object type relationship with multiperiod hoard deposits includes, but is not limited to: box fittings, hammers, knives, nails, staples, and swords. Interestingly, the objects with the closest cluster with multiperiod hoards are mostly comprised of construction pieces and blades.

The standard object type found in single object deposits are cauldrons, both of Battersea type. The deposition of cauldrons in isolation (i.e. single object deposits), may signify a communal representation through a single object instead of through a traditional hoard. For paired deposits, the common object type is sword and scabbard, but again, this is because there is only one pair. Terrets are the most reported item for hoards, while swords are the most reported object type chosen for deposition in multiperiod hoard deposits. Lastly, stone balls are the most common for multiperiod single object deposits amongst the other noted object types. Due to the fact that some deposition traditions are only represented by one account (e.g. pairs – scabbard and sword), the analysis may not be statistically representative. However, it is still important in a study such as this to show the numerical quantities of object types to better understand what items are placed into wetland deposits in general because the numbers provided here are expected to be used in future research as a baseline study.

Comparison of all object types regardless of deposition tradition shows that the most reported object chosen for deposition in this sub-region was blades. Of these blades, 52% were swords, 26% knives, 13% scythe blades, and 9% were identified as either knives or sickles, but the level of corrosion has made differentiation impossible.

Object Correspondence Codes		
A – Adze	F – Fastener	P – Plough Beam
A1 – Anvil	F1 – File	P1 – Punch
A2 – Auger	F2 – Finger Ring	S – Saw
A3 – Axe	H – Hammer	S1 – Scabbard
B – Bar	H1 – Handle	S2 – Scythe
B1 – Bowl	H2 – Hilt	S3 – Sheet Metal
B2 – Bracelet	H3 – Hinge	S4 – Shoe
B3 – Bridle Bit	H4 – Hook	S5 – Spear
B4 – Box Fitting	H5 – Hoop	S6 – Staple
C – Canoe	I – Implement	S7 – Strap Union
C1 – Cauldron	I1 – Ingot	S8 – Stud
C2 – Chainmail	J – Jet	S9 – Stone Ball
C3 – Chamfrain	K – Knife	S10 – Sword
C4 – Chisel	L – Latch Lift	T – Terrets
C5 – Cooking Pot	M – Mirror/ Mirror Handle	T1 – Torc
C6 – Core	M1 – Mount	Y - Yoke
C7 – Crescent Plate	N – Nail	
E – Equestrian Ring		

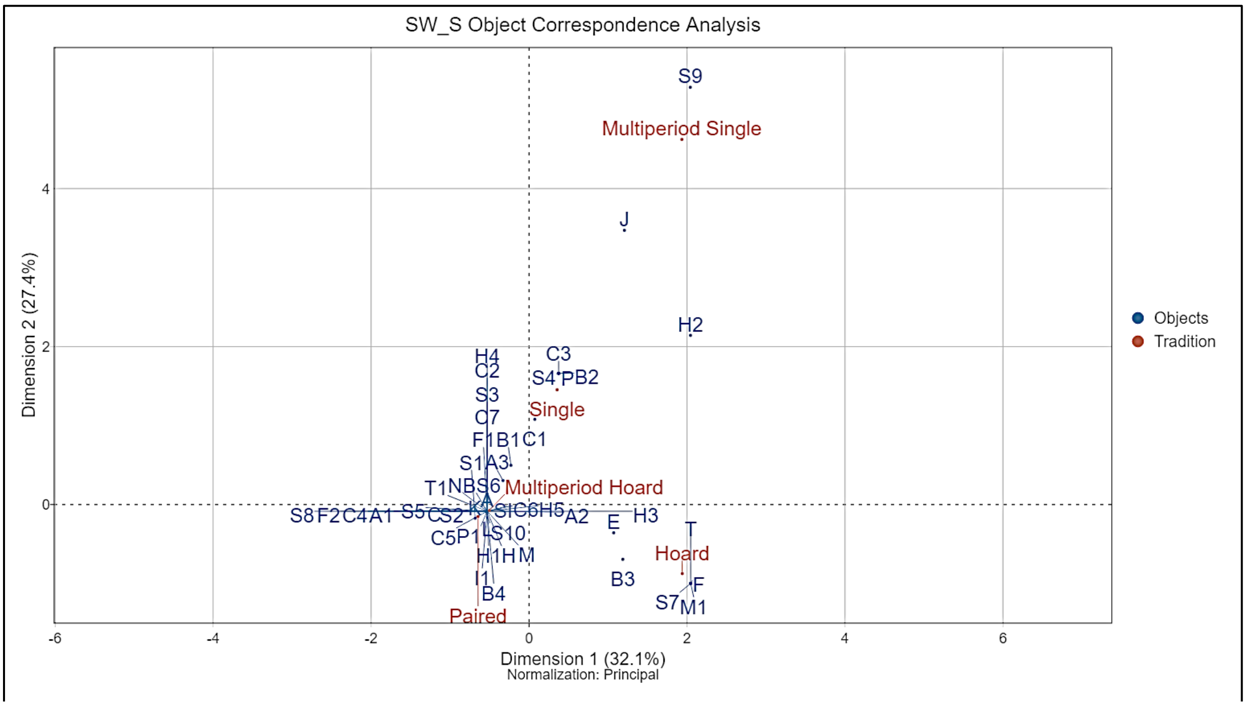


Figure 8.19. Southwest object correspondence analysis comparing the relationship of object type with deposition tradition. The above graph is key for the object codes displayed.

8.8.3.2 Material Composition

The material composition of objects reported has been cloth, copper alloy, glass, iron, jet, leather, quartz, stone, and wood (Figure 8.20). From this observation, the Southwest sub-region has shown to have the most extensive variety of material in Scotland. Copper alloy objects are more commonly deposited in single object, pairs, and hoard deposits. Glass and quartz have been reported from multiperiod single deposits. Jet has been found in single, multiperiod single, and multiperiod hoards. Multiperiod hoards have a close affiliation with iron but are also associated with sandstone, and wood.

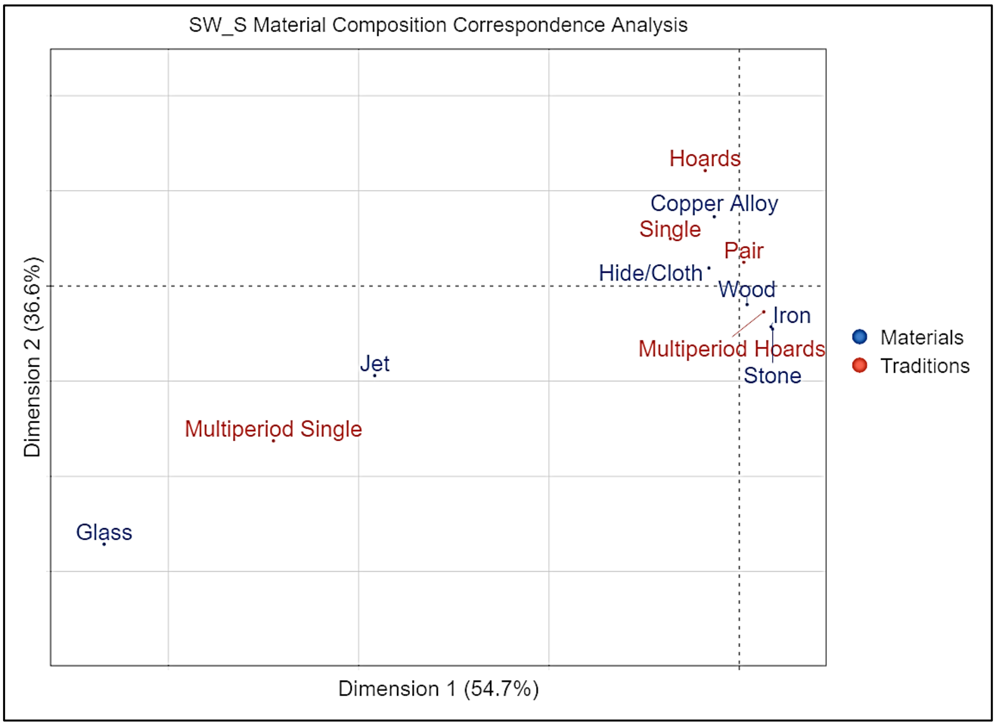


Figure 8.20. Southwest material composition correspondence analysis comparing the relationship with deposition tradition type.

The most common material for single object deposits is copper alloy (60%, 6/10). For paired deposits, the preferred material is equally copper alloy and iron. For multiperiod hoards (including *location* and *landscape dependent* traditions and assortments), the preferred material is iron (59%, 89/151). Lastly, for multiperiod single deposits, the preferred material is stone (50%, 2/4). Overall, the standard material chosen for object composition in the Southwest sub-region is iron (55%).

8.8.3.3 Dates of Activity

As stated in previous sections, the dates of activity reviewed are reflective of manufacture dates as opposed to deposition. This sub-region does contain objects with radiocarbon dates (i.e. Dalscone and Lochmaben). These dates, in addition to typologies, were considered for periods of activity.

8.8.3.3A Typological-chronological Sequence and Radiocarbon Dates

Wetland depositional activity sourced through observed typologies for this sub-region span from 450 BC to 500 AD. Certain case studies were excluded from the analyses because only a broad Iron Age date could be applied (i.e. 800 BC to 500 AD) (i.e. Canonbie, Dalscone, Lochmaben, Loudoun Hill, and Nutberry Moss).

The prevalent periods of object manufacture occurred from the first century BC to the second century AD. Single object deposits begin to appear around 400 BC and end at 200 BC. There is only one account of a paired deposit, and this occurred based on typology from 200 BC to 100 BC. Multiperiod hoards begin around 450 BC and likewise end about 200 BC. However, there is an account of a spear from Balmacllean and Ewart Park sword from Carlingwark, both dated from 950 BC to 750 BC. This means that these locations remained special to the community regardless of significant gaps in deposition for specific sites. Multiperiod single object deposits begin around the first century AD and end about the fifth century AD. Based on dates provided from manufacture periods sourced from typologies, there does not appear to be any gaps in deposition for the sub-region. Therefore, deposition and associated manufacture were continuous from 450 BC to the fifth century AD in the Southwest sub-region.

8.8.3.3B Discovery Years

Discovery dates account for all site discoveries in any given year. If more objects were found later than the initial discovery, the additional year was also included. Reports for objects began as early as 1826 and have continued until 2019 (Figure 8.21).

The majority of finds from this sub-region date from the 1800s due to peat extraction or drainage operations. Dates of discovery were not provided for Dalscone and Lochmaben, as it was absent in literature and archival records. Finds from the sub-region in wetland locations have been primarily reported due to dredging, ploughing, peat digging and cutting, and most recently, excavation and metal detecting.

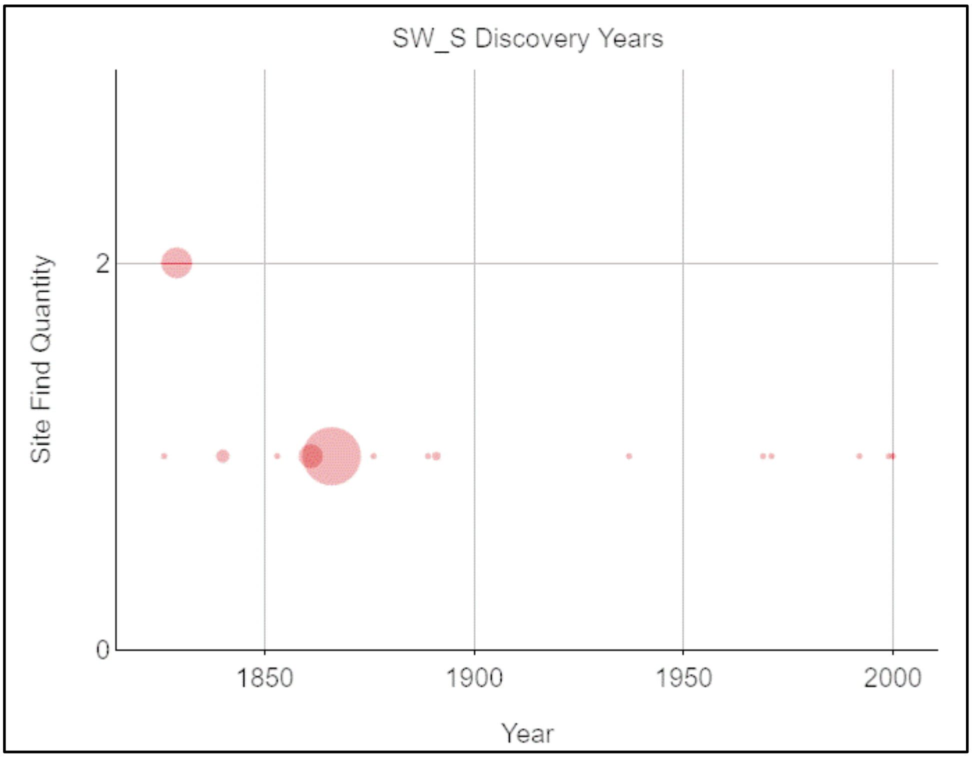


Figure 8.21. Scatter plot of Southwest find dates in years. The size of the red dots represents the quantity of objects discovered.

8.8.4 Southwest Summary

Deposition sites tended to concentrate in the southern portion of the sub-region, with only a few scattered to the north. The deposition activity in the sub-region, in comparison to the settlement density, suggests that the tradition was a popular practice. Overall, peatlands were the preferred landscape for deposition in the Southwest sub-region. This preference is more in line with the northern sub-regions. The sub-region has more single object site accounts than any other tradition type; nevertheless, most of the material produced was from multiperiod hoards. Blades were the most common object type chosen for deposition. Iron was the most common material type chosen for object composition. Lastly, most of the finds reported from the sub-region were discovered in the eighteen-hundreds. The wide variety of traditions, object types, and materials could be a by-product of a more widespread but concentrated practice in the sub-region.

8.9 Sub-regional Comparisons

Sub-regional comparisons were reviewed for common characteristics of deposition traditions from wetland contexts within the contemporary borders of Scotland. Important variables considered in this chapter's analysis of Iron Age wetland deposition are environment, materials, traditions, periods of activity, and rediscovery.

8.9.1 Environment

The wetland environment played an important role in the deposition traditions in some of the sub-regions. Likewise, the environment can be considered a factor in many different variables, such as sub-regional and deposition trends. However, the wetland environment should not be considered alone when reviewing statistical trends, but also the sediment context. Perhaps holistically assessing these factors may indicate some aspects of common traditional practice.

The primary wetland depositional landscape for the Highlands and Southwest sub-regions was peatland (Figure 8.22). In contrast, the primary depositional wet landscape for the Central and Southeast sub-regions was river floodplain. Peatland and river floodplains were the primary landscape for deposition in the Northeast sub-region. Overall, peatland was

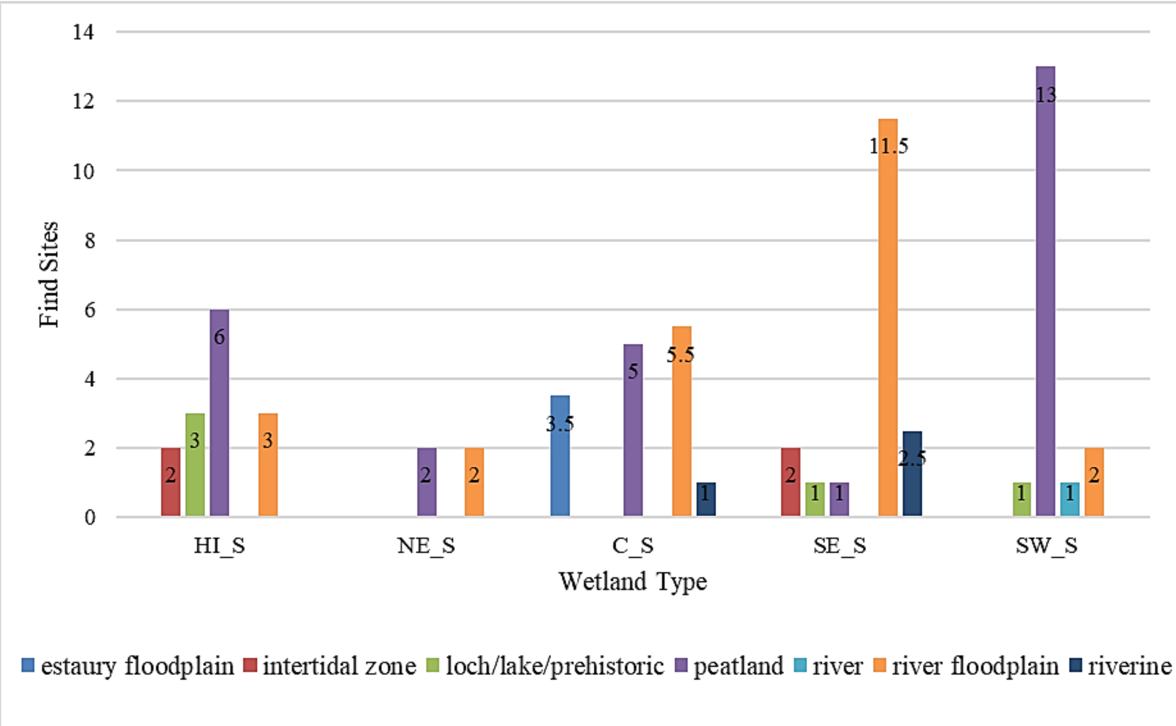


Figure 8.22. Wet landscape preference by sub-region for deposition.

the most common landscape observed for wetland deposition activity in Scotland based on site reports.

When deposition traditions are compared for their relationship with certain wetland landscapes, associations do slightly shift. Single object deposits were most commonly reported from river floodplains. This observation is in contrast with all other traditions which have been predominantly reported from peatland landscapes (i.e. multiperiod single, paired, hoard, and multiperiod hoard). The areas that reported the highest accounts of floodplain deposition come from the Central and Southeast sub-regions. This concentration of deposition is therefore unsurprising provided the extensive eastern river valleys. As stated previously, finds reported from floodplain contexts could result from deposition in a river, and current movement has caused its final resting place to be in a floodplain. However, it is also possible that floodplains were chosen because they were seasonally or annually inundated; this could be an important factor if we consider how individuals viewed changes in the landscape based on water tables.

Observation of associated sediment type related to wetland landscapes revealed that peat was the most common context (32%). However, when peat compounds are considered, the percentage increases to 59% of reported context (i.e. peaty gleys, peaty alluvium, and mixed with brown soils). Perhaps the sediment in which the objects were placed was just as crucial as the wet landscape chosen. Nevertheless, it is also likely that peat was prevalent throughout Scottish wetlands, and it is due to its land coverage that this figure is produced. Today, peatland covers 20% of Scotland's landmass (Scottish Government 2018: 18), and would have been more extensive in the past.[24] Based from Scotland's Soil's map (2019),[25] modern peatland is widespread from the Highlands and Islands to the southern sub-regions with less concentration in the Northeast and Central sub-regions, which is reflective of peat deposition activity. Therefore, it is possible that the statistics that support Iron Age activity in peatlands is actually reflective of a common environment type throughout Scotland as opposed to a selected one sought to practice wetland deposition.

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[24] For more on why peatland coverage has been reduced in pre- and modern times see Appendix 4.3.4 and 4.3.10.

[25] See Figure 8.1b.

8.9.2 Single, Paired, Hoard, and Multiperiod Comparisons

Observation of the sub-regional depositional traditions has allowed for local trends to become more conspicuous. However, these trends may merely reflect modern collection methods rather than prehistoric activity. Depositional traditions noted in Scotland include single object deposits, multiperiod single object deposits, pairs, hoards, and multiperiod hoards. Single object deposits were the highest reported tradition for wetland deposition in Scotland, with 45 site cases. However, in terms of material produced from Scottish wetland deposits, most objects come from hoards with 143 pieces. All sub-regions had sites which contained single objects and paired deposits. Hoards were observed in the Highlands and Islands, Southeast, and Southwest sub-regions. Multiperiod hoards were noted in Central and Southwest sub-regions. The Southwest sub-region was the only sub-location that contained both hoarding tradition types. Yet multiperiod single object deposits only occur in Highlands and Islands, Northeast, and Southwest sub-regions of Scotland. The sub-region with the most material reported was the Southwest with 166 pieces (Table 8.6).

	Single	**Multiperiod Single**	**Paired**	**Hoard**	**Multiperiod Hoard**	**Totals**
HI_S	8	6	4	12	0	30
NE_S	1	1	4	0	0	6
C_S	13	0	2	0	10	25
SE_S	14	0	2	103	0	119
SW_S	10	4	2	28	122	166
Totals	45	12	14	143	132	346

Table 8.6. Quantified Deposition Traditions. The table shows the quantities of material for each tradition type from all Scottish sub-region locations.

The southern sub-regions of Scotland showed high levels of depositional activity compared to the rest of the country. There are several possible explanations for this concentration of activity. First, wetland archaeology is or has been performed at a greater level than the rest of the country. However, these locations are not settlement or production-related, which is where the archaeology, especially in a wetland context, tends to concentrate. Therefore, human disruption of these environments may have been more excessive, leading to more finds that are considered 'isolated.' Second, the southern sub-regions experienced more environmental shifts (e.g. Dumayne 1993), and consequently the frequency of deposition also increased. Third, wetland depositional traditions are more broadly performed in these areas and have a stronger affiliation with local social identity. While all the above is speculative, what remains clear is the trend that the level of activity increased sub-regionally north to south.

8.9.3 Depositional Practices

The previous sections have illustrated how each sub-region has similar trends in location and deposition tradition preference, some that are unique to the area. Further observation of both object types and materials, likewise, has shown continued regional and sub-regional preference. The northern sub-region communities showed a preference for massive armlets (i.e. Highlands and Islands, Northeast). The Central sub-region communities equally preferred armlets and torcs. The Southwest sub-region showed blades as the standard object for deposition. Lastly, groups in the Southeast sub-region preferred vessels. An observation to be made is that groups from the Central sub-region to the north preferred objects of adornment. Overall, blades, regionally were the common item chosen for wetland deposition.

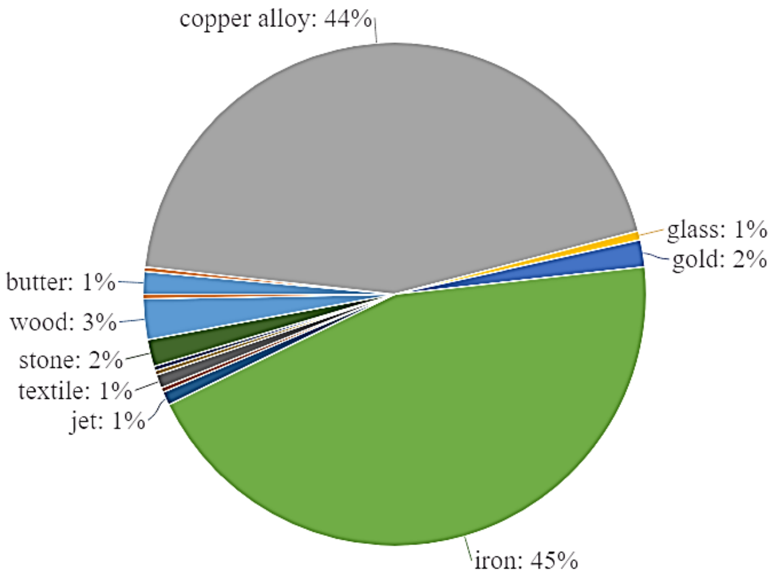

Figure 8.23. Material types reported from site reports throughout Scotland.

The overall primary manufacture material reported is iron (43%). This statistic supports Armit's (1997b) statement of a new dependence on iron in Scotland (Figure 8.23). However, copper alloy is also of note as it comprises about 42% of the material. Single object, multiperiod single, and paired deposits were primarily comprised of copper alloy.

Objects made of iron appear to be preferred for deposition in hoards and multiperiod hoards for deposition.

Interestingly, most of the iron recorded was recovered from the southern sub-regions of Scotland. The Highlands and Islands, Northeast, and Central sub-regions all preferred copper alloy for material composition. Therefore, it is possible that new preferences in material were beginning to replace old favourites in the south, while the northern half of Scotland retained its traditions.

Periods of deposition were also reviewed. These periods are more of a reflection of object manufacture than actual dates of deposition because there is minimal or no radiocarbon dating of the pieces or findspot location sediment context. Due to the application of the 'long Iron Age' for the Highlands and Islands sub-region, this review extended from 800 BC to 800 AD with the inclusion of all mainland sub-regions (whose Iron Age is 800 BC to 500 AD). This review was broken into four 400-year increments to provide a stark increase or decrease in activity (Figure 8.24).

Entering into the Iron Age, there is a notable amount of deposition sites from wetland contexts, evenly dispersed throughout Scotland. There is a slight increase in sites from 400 BC to the end of the first century BC. Thereafter, there is a spike in activity, with what appears to be an increase in the southern sub-regions (i.e. Southwest, Southeast, and Central) from the first to the fourth century AD. However, there is a marked decline in deposition locations from wetland sites from the fourth century to eight century AD. Thus, the majority of depositional activity occurred from the first to fourth century AD.

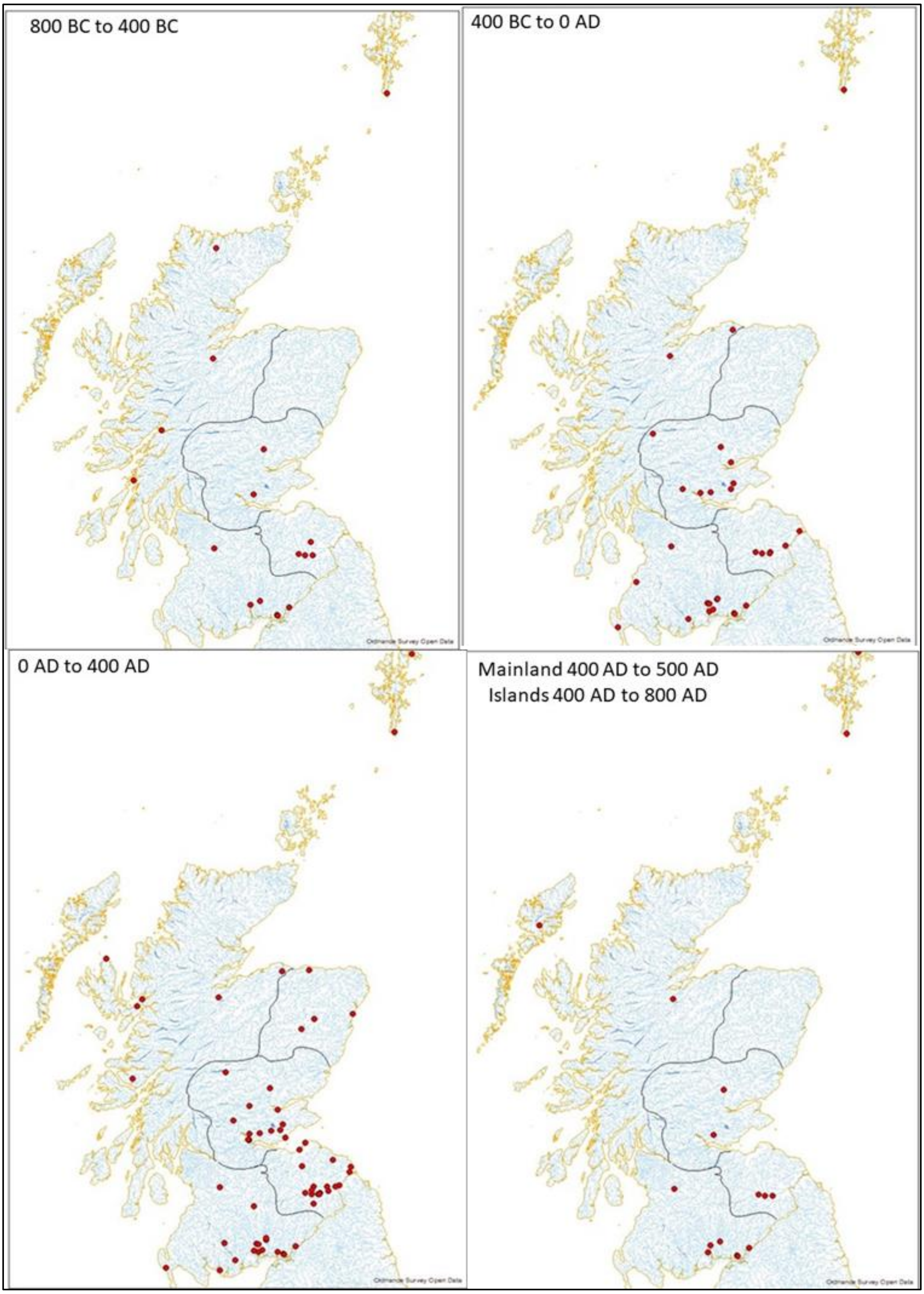

Figure 8.24. Maps illustrating the progression of deposition during the Iron Age. The markers represent deposition find spots.

8.9.4 Summary

Scottish deposition traditions vary based on sub-regional preference, as has been illustrated. However, there are some overall patterns reflected in the data. The preferred landscape for deposition was peatland. Observation of associated wetland sediment also shows a preference for peat or mixtures thereof. This observation suggests that peatlands were not only preferred, but that peat itself was also important. Thereby the wetland landscape has a clear preference and a recognisable consistency of the associated wet sediment that can be or would have been tangibly touched in areas of accessibility. However, it is possible that peatland locations were chosen for deposition simply for the fact that peat covers a large mass percentage of Scotland.

While iron was the most common material overall, there is a clear divide of preference from the north to the south. With an increase of activity from the south along with an economic preference for iron, and the over-saturation of the material from the first to the fourth century AD represents a stark contrast from their northern counterparts. The communities of the north retained their preference for copper alloy, which aligns itself with continued tradition from the previous period.

In addition, while there are more single object site reports, most of the material from Scotland was produced by hoards (i.e. 245 objects). However, single object deposits are the second most popular tradition (i.e. 45 objects). The amount of material recovered from single object deposits proves their value in holistic analyses of depositional traditions.

Chapter 9 – Study Zone 2, Welsh Case Studies

9.1 Introduction

Similar to Chapter 8, analyses of wetland depositional practices were performed for Wales. Object records were amalgamated from museum archives and literary sources (Appendix 1). Digital heritage sites supplemented missing information to maintain the level of integrity and consistency throughout the study (Chapter 2). Thereafter, object records and site reports were categorised into sub-regions to quantify possible patterns and recognise outliers of practice (Section 9.3). As cautioned in Chapters 2, 3, and 8.1, regional and sub-regional comparisons are prone to bias. Efforts to negate biases were applied throughout the study; however, taphonomic biases remain in the analyses.

Analyses of the environment, deposition traditions, object types, materials, and dates were performed sub-regionally before cross-comparison of Wales. This holistic approach allowed for a more statistical representation of practice, regardless of a fragmented archaeological record. Descriptions of sites and their assemblages can be found in Appendices 7 and 9.

9.2 Research Questions

The categories and research questions are the same as those provided in Chapter 8. The research questions developed were designed to provide an understanding of differences and similarities in wetland deposition in Wales throughout the British Iron Age. These questions are the same as those reviewed in the methodology. However, there are more detailed questions provided within the sub-regional analyses.

Primary Research Questions:

- What role did wetland landscapes have for depositional practices?
- What trends can be identified for depositional practices in wetland areas?
- What are the sub-regional and inter-regional differences or similarities in depositional practices?
- What do these practices reflect about local communities and shared cultural traditions regionally?

However, more detailed questions are also explored for the sub-regional analyses:

- In which wetland environments were objects discovered?
- What are the predominant deposition traditions, as described in Chapter 7, for the region? What are the sub-regional variations for depositional practice?
- What is the material composition of objects deposited in wet landscapes? Is this a reflection of modern methods of recovery or prehistoric preference?
- What are the dates of deposition? How does this reflect periods of deposition activity regionally and sub-regionally?

9.3 Sub-Regional Analysis

The regional analysis compared depositional trends or anomalies in the collected data. The sub-regions were allotted into four regional non-equivalent groups, which reflected the established Welsh Archaeological Trusts' boundaries (i.e. archwilio.org.uk/arch) (Figure 9.1a, 9.1b). As stated in Chapter 2.3, the Trusts' boundaries follow the local topography, reflecting the wetland depositional activity of the sub-regions. These groups were assessed for possible depositional patterns unique to the sub-region. It is expected that each region will have a range from minor to major differences given the variability of object reports and object survival based on landscape, curation and recording, and date of discovery. The same Iron Age period is applied to the entirety of Wales. However, we must remain conscious that the Roman conquest did not immediately impact the northern or western portions of Wales. Nevertheless, the Iron Age begins around 800 BC (Ritchie 2018) and ends around the late first century AD in Wales, not 43AD (Davis and Gwilt 2008). However, the chronological and typological-chronological sequences for many object types suggest they continued to be used into the second century AD.

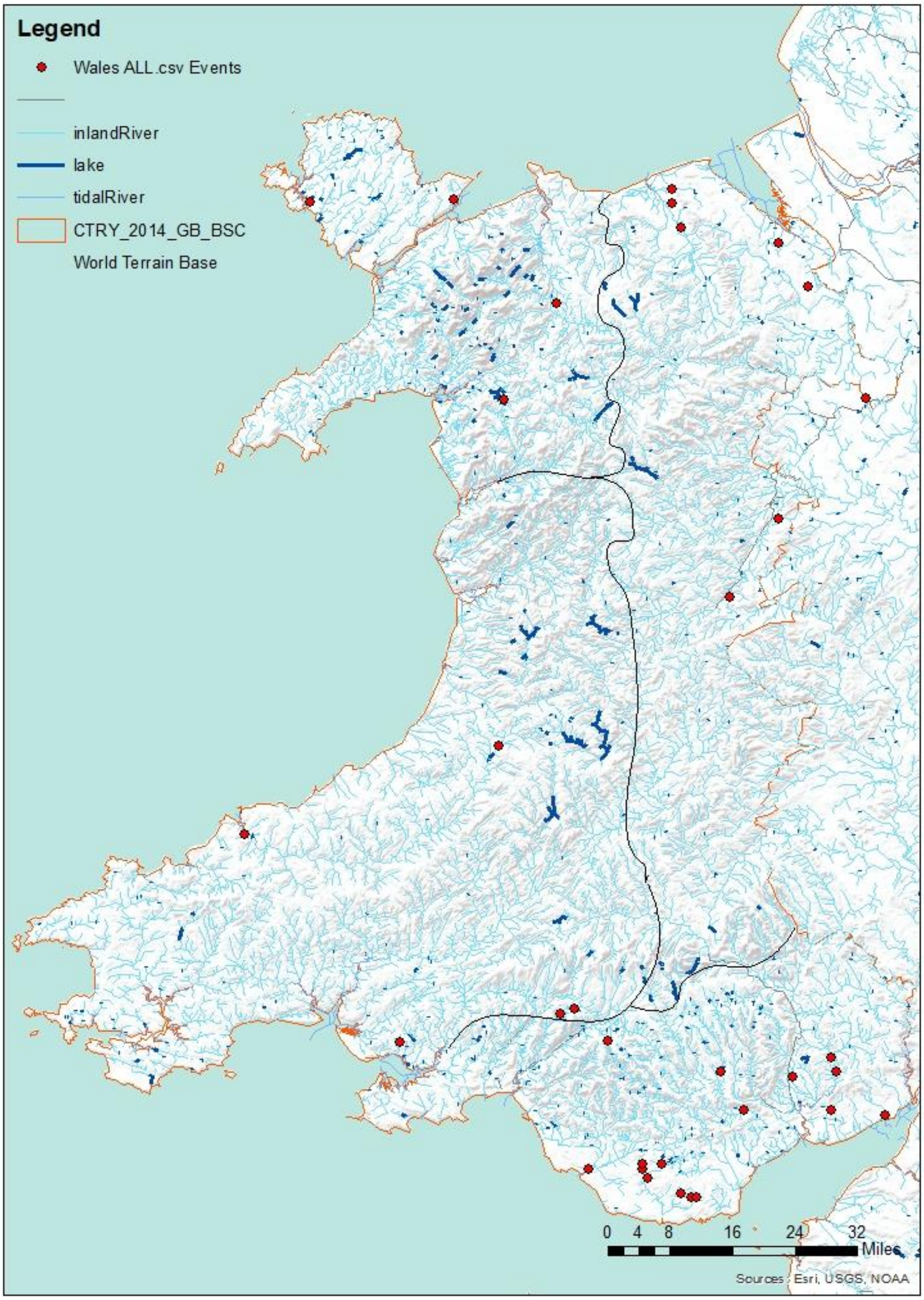

Figure 9.1a. Map of all site reports from a wetland context in Wales showing river and lake features overlayed on the topography. The black lines indicate the sub-regional divide; the red markers are representative of deposition sites.

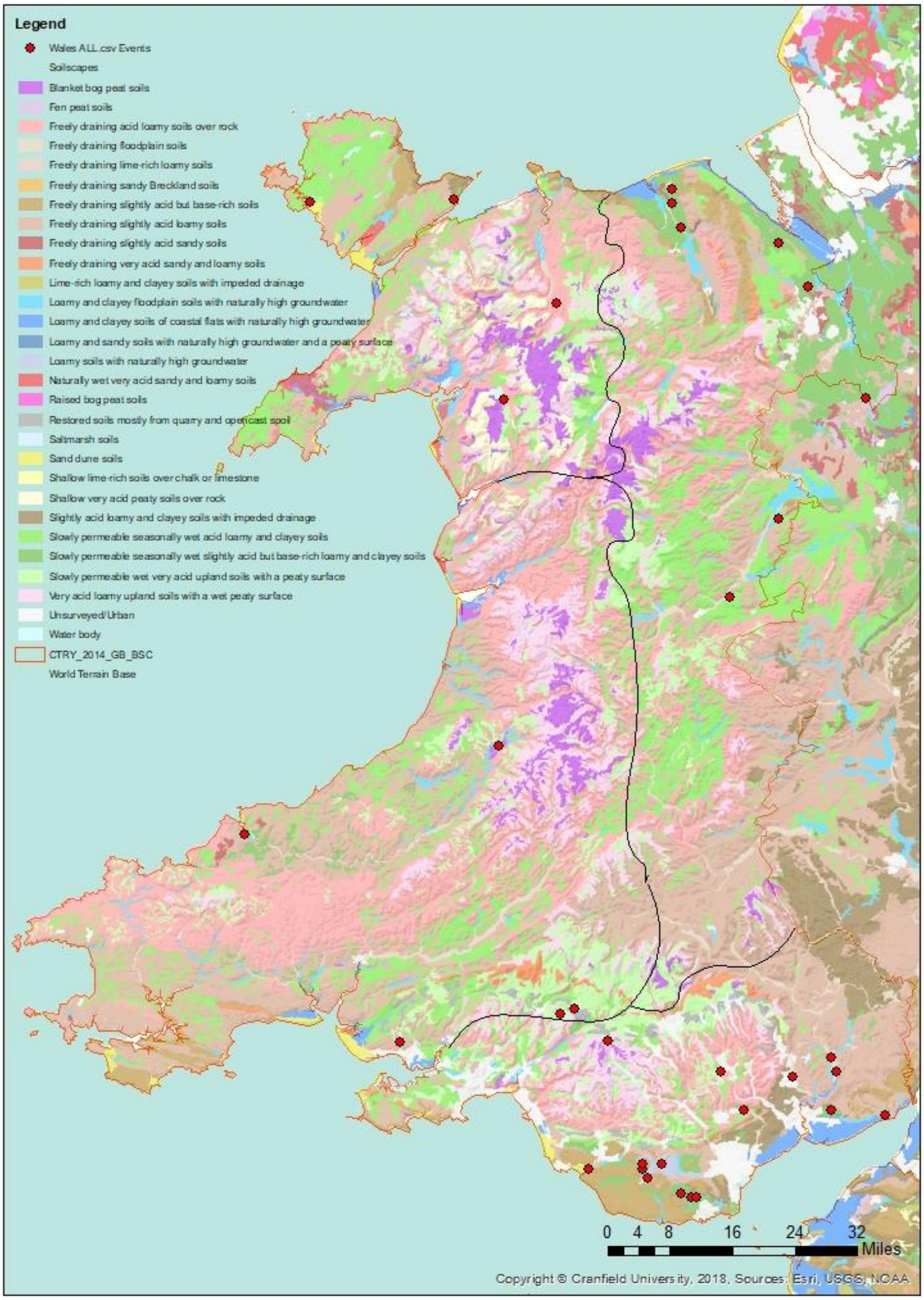

Figure 9.1b. Map of all site reports from a wetland context in Wales overlayed on a modern soil map produced by LandIS. The black lines indicate the sub-regional divide; the red markers are representative of deposition sites.

9.4 Northwest

From the Northwest sub-region, 168 objects were reported from four sites applicable to this study's scope (Figure 9.2, Table 9.1).

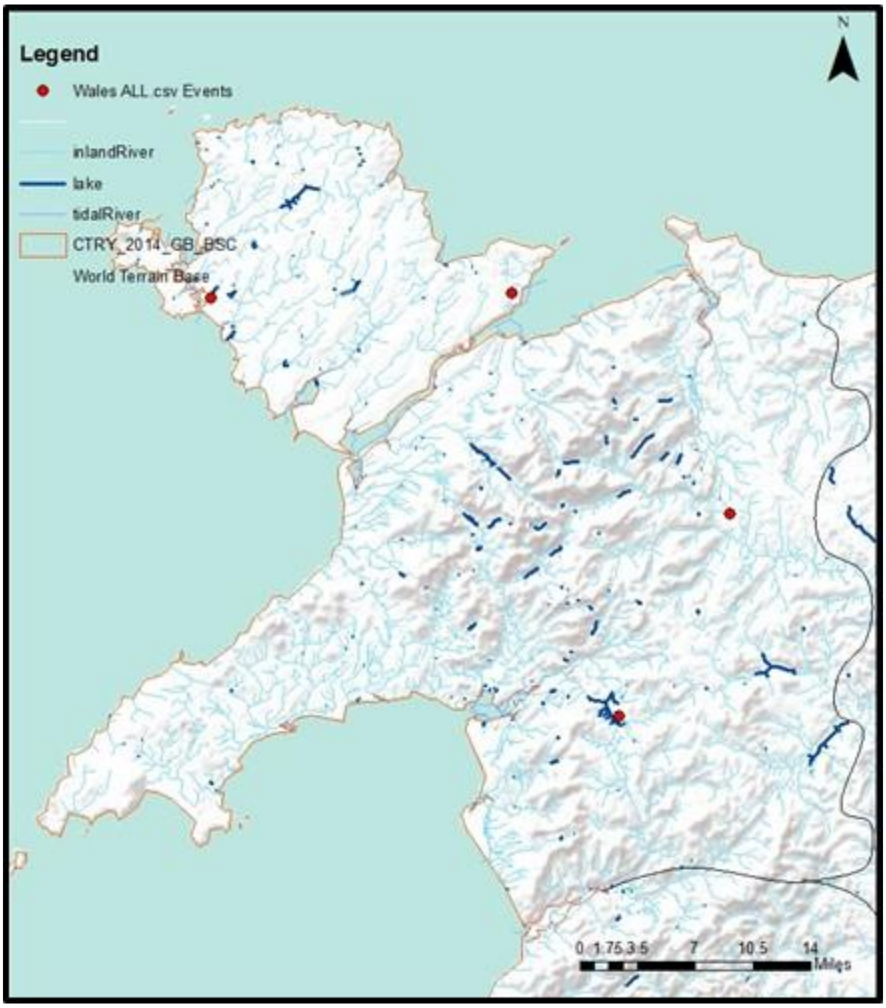

Figure 9.2. Map of all sites represented by red markers from a wetland context in the Northwest sub-region. The map includes a sub-layer map with modern rivers and lakes.

Thesis Number	Study Site	Dates	Type of Deposit	Simplistic Landscape Type	Soil or Compound Type
NW_W1	Beaumaris	0 AD to 100 AD	Single	Wet Grassland and Woodland Floodplain	Wet Acid Loam and Clay
NW_W2	Capel Garmon	50 BC to 50 AD	Single	Prehistoric Peatland	Peat
NW_W3-NW_W167	Llyn Cerrig Bach	390 BC – 100 AD	Multiperiod Hoard	Prehistoric Lake	Peat
NW_W168	Trawsfynydd	50 BC - 75 AD	Single	Peatland, Bog	Peat

Table 9.1. Northwest case study. The study sites according to place, type of deposit, and landscape type. For the complete details of each object entry, see Appendix 7.1.

9.4.1 Environment

Wetland landscapes and their associated soil types will be discussed here for the Northwest sub-region. Wetland landscapes noted in the sub-region associated with deposition traditions are wet grass and woodland floodplains, prehistoric lakes, and peatland. As previously defined in Chapter 4, wet grass and woodlands are a form of seasonal floodplain with modern encroached vegetation growth. Additionally, the prehistoric lake noted in this sub-region has since evolved into a peatland with mixed brown soils from heavy drainage. Half counts were used for dual environments so as not to over-represent a particular wetland landscape. For this reason, the Llyn Cerrig Bach site will be counted for both peatland and lake landscapes. Therefore, the primary wetland landscape type for deposition in the Northwest sub-region is peatland (62.5%, 2.5/4). This figure is unsurprising, given the large landmass occupied by peat. Thereafter, the following wetland landscapes were wet grass and woodland floodplain (25%, 1/4) and lakes/lochs (12.5%, 0.5/4) (Figure 9.3).

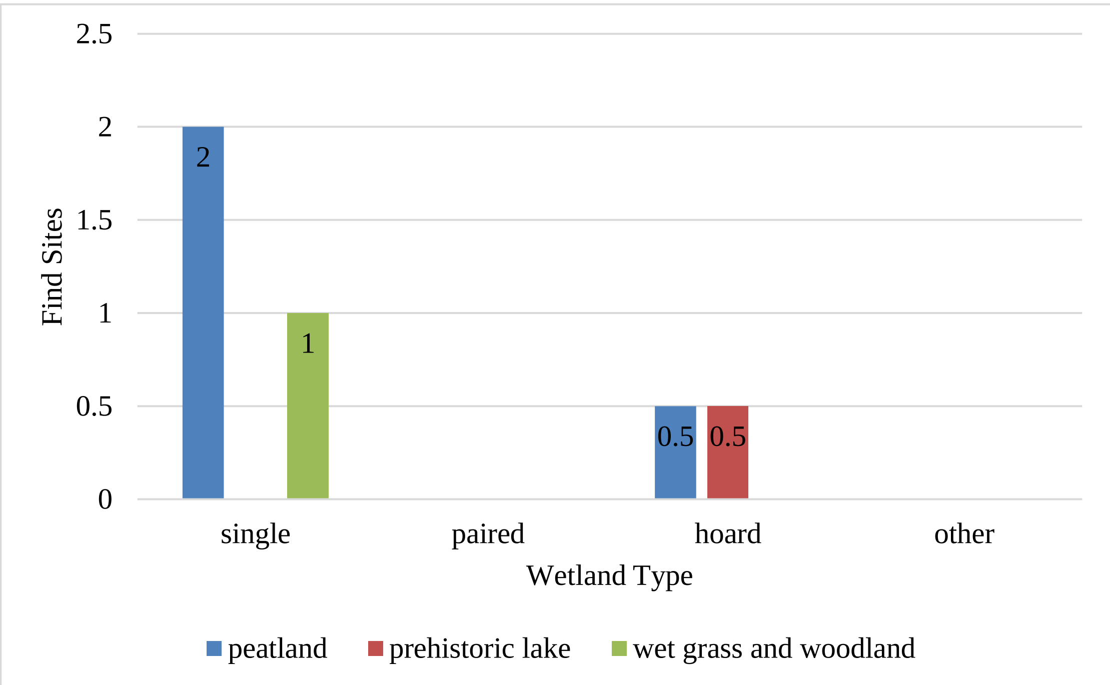

Figure 9.3. Comparison of wetland types with deposition traditions observed in the Northwest sub-region.

The associated sediment context of the object findspots in these wetland locations is also noted. The primary sediment type is peat (75%). The following sediment type noted is wet acid loam (25%).[26] However, due to the low number of findspots, these observations may

[26] Wet acid loam is indicative of wet grass and woodland floodplain areas in Wales.

not be statistically representative of the sub-regional wetland deposition practice or preference.

9.4.2 Single, Pairs, and Hoard Comparisons

According to Smith (2018), survey of the Llŷn peninsula and Meirionnydd has revealed Iron Age forts, defended sites, and settlements in a greater density than was previously considered. In addition, this settlement concentration is also reflected in Anglesey (Smith 2018). The number of deposit sites in the sub-region is low, especially if settlement density is considered, and therefore may not be statistically representative of the sub-region's deposition traditions and relations with wet landscapes.

As a result, notable depositional practices in the Northwest sub-region are restricted to only single object deposits and a multiperiod hoard. There are more accounts of single object deposit sites. However, most material produced from depositional traditions is from the multiperiod hoard of Llyn Cerrig Bach. The repetitious deposit at Llyn Cerrig Bach probably accounted for the intermittent practice for the general area due to the abundance of material reported, not only from the Iron Age but with evidence of Bronze Age practice as well (see Appendix 7.1.2). Therefore, wetland deposition was perhaps practised through utilising one site over generations that held high regard in the local communities' memories.

Each case study has been summarised in Appendix 7.1, detailing the site context along with associated finds. Case numbers were applied based on object quantities with the addition of each sub-region underscored (e.g. NW_W#).

9.4.3 Depositional Practices

The observed depositional practices of the sub-region are limited due to the small number of reported findspots. However, there is diversity in the object types reported from the sub-region. Through Llyn Cerrig Bach's quantity and typological-sequences, multiperiod deposition is the preferred means of practice for the sub-region. As a result, the multiperiod deposit may result from a communal contribution, whereas the single deposits are more intimate illustrations of practice. Anglesey is thought to have been a 'special' location through its abundant settlement, historical, and finds evidence (e.g. Fox 1946; Aldhouse-Green 1994, 2004a; Longley 1998; MacDonald 2000, 2007; Smith et al. 2014); therefore, it should not be surprising that most of the activity of the sub-region concentrates in that area. It would be beneficial, however, to investigate wetland areas of the island to see if other Iron Age deposits like these exist.

9.4.3.1 Objects

Analysing the relationship between object types and the deposition traditions they are commonly associated with, allows for a better understanding of communal practice (Figure 9.4). The correspondence analysis shows clear clusters in regard to these relationships using the estimated minimum number of objects. Single object deposits, though few, show a relationship with coin, firedog, and tankard object types. For Llyn Cerrig Bach’s multiperiod hoard, the assemblage spread was diverse, showing strong relationships with tyre, bar and strip, and sword types.

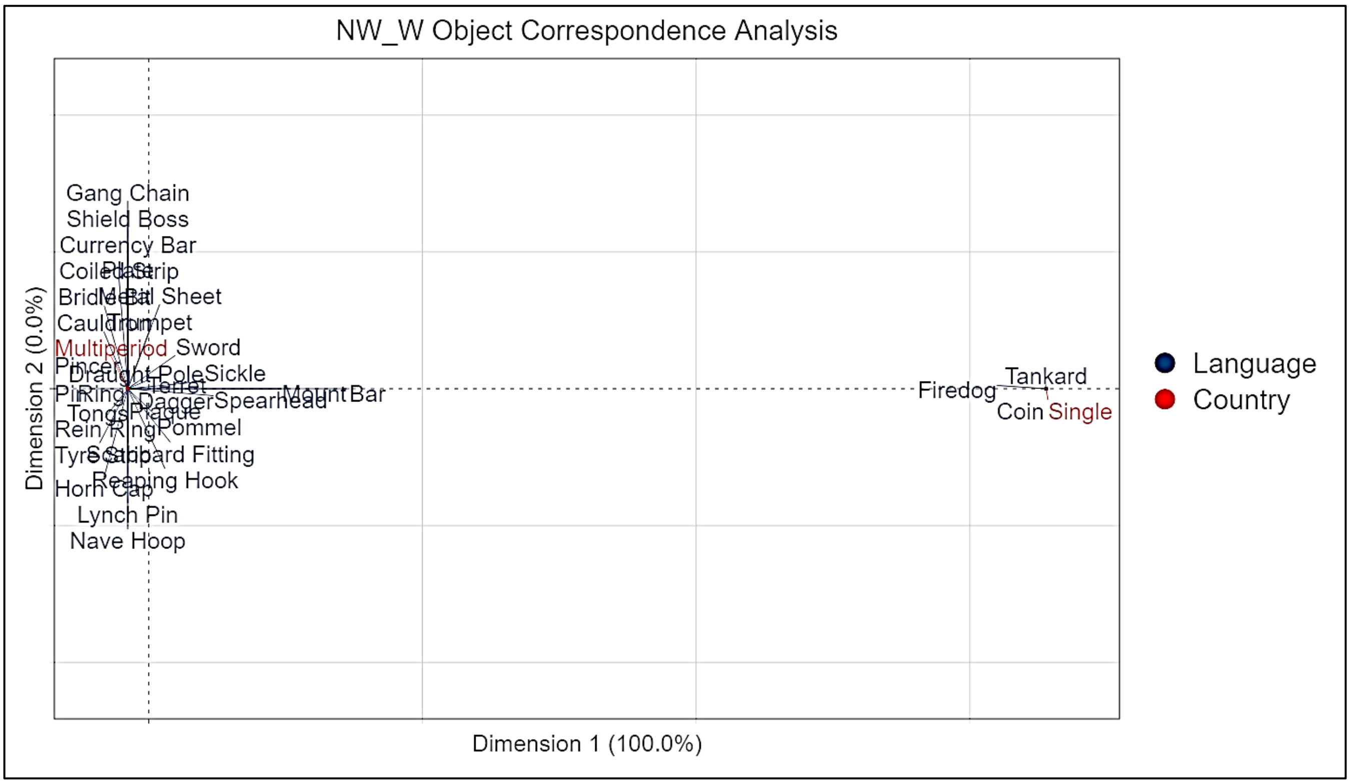

Figure 9.4. Northwest object correspondence analysis comparing the relationship between object types and deposition traditions. Objects with strong associations with specific deposition traditions are tightly clustered.

Of the object types noted, there is no partiality amongst single object deposits. This lack of common items for single objects is again attributed to the small number of this tradition reported from this sub-region. Perhaps future finds will provide more information on the primary object type for single object deposits in the sub-region. For multiperiod hoards (i.e. Llyn Cerrig Bach), the common object type is tyres. The tyres were fragmented with 60 individual pieces, some more complete than others. This fragmentation may have been due to purposeful destruction before deposition; however, it is far more likely that the tyres broke under the weight of the peat. As a result, at least 18 tyres were deposited at Llyn Cerrig Bach according to size and weight (Lynch 1970: 264; Roberts 2002: 36).

Overall, tyres were the most common object type reported from the subregion at 14%. The number of tyres could be attributed to a strong association with chariot culture and carts. However, Roberts (2002) has proposed that the deposit was instead the result of a shipwreck. Nevertheless, as Creighton (2000) points out, horses were symbols of the elite, and the overwhelming deposition of equestrian wear and chariot fittings could be indicative of status and chariot culture.

9.4.3.2 Material Composition

The material composition of the objects reported from the sub-region has been copper alloy, iron, unspecified alloy, and wood (Figure 9.5). The correspondence analysis is limited to two dimensions, comparing the relationship between material composition and tradition type. However, the correspondence analysis is skewed for multiperiod hoards because of the substantially larger representation of data. However, copper alloy has a strong association with single and multiperiod hoards in this sub-region, despite the small sample size. Wood has only been associated with single object deposits. Single object deposits and multiperiod hoards also have associations with iron and unspecified alloy materials.

Iron, copper alloy, and wood are all associated with single object deposits. However, for multiperiod deposits, the primary material is iron. This shift in metal preference could signify a sub-regional change in the economy. The transition from copper alloy to iron is evident in the Late Iron Age wetland deposits, showing the evolution of practice based on contemporary economic and social changes. Overall, iron is the primary material composition for objects chosen for deposition in the Northwest sub-region, but this is skewed by the small data set and may not be statistically representative of practice. The proportion of metal finds compared to organic could be disproportionate because of when they were discovered and the recovery methods.

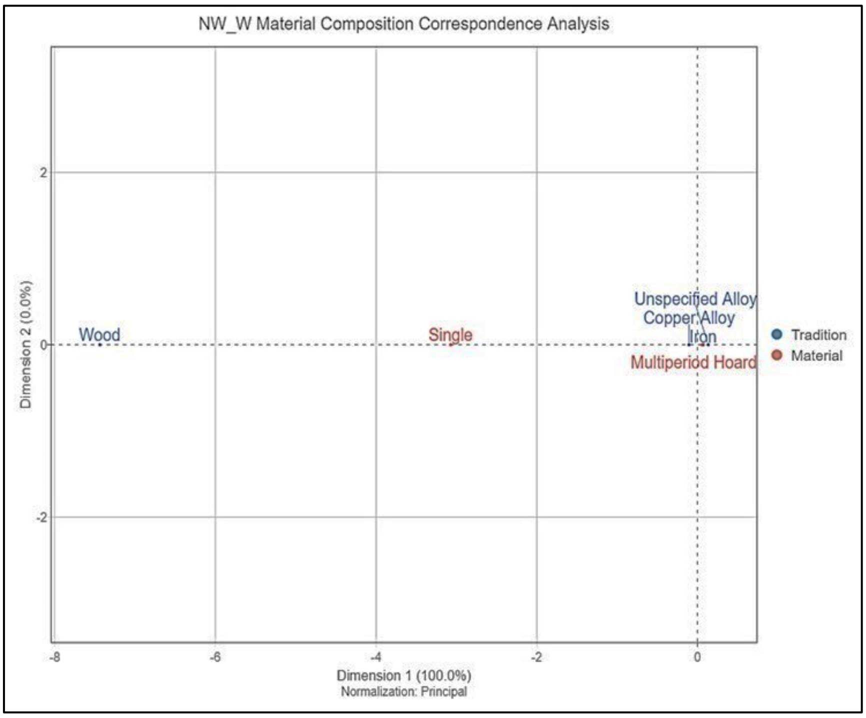

Figure 9.5. Northwest material composition correspondence analysis of material type with deposition tradition.

9.4.3.3 Dates of Activity

The dates of activity observed here and elsewhere in the chapter review typological-chronological sequence and discovery dates. As many of the objects lack formal provenience, it is difficult to date beyond their distinguishing typologies if no radiocarbon date is supplied. Therefore, what is reflected is the manufacture and economic circulation periods instead of the dates of deposition. A review of the discovery dates allows us to understand the extent of the archaeological gap found in certain records and what needs to be performed to make a cohesive catalogue of wetland depositional material for future comparisons.

9.4.3.3A Typological-chronological Sequence and Radiocarbon Dates

Manufacture dates based on typologies for the Northwest sub-region begin around 390 BC and end around 100 AD. Most of the items were dated using typologies except for the Trawsfynydd tankard. Single object deposits reported from a wetland context had manufacture dates between the beginning of the first century AD and ended in the late first century AD. The tankard, firedog, and coin all have similar periods of manufacture which could be attributed to a short period of single object deposits for the area in contrast to other sub-regions. As the sub-region only has one multiperiod deposit (Llyn Cerrig Bach), the successive deposition dates occurred from 390 BC to 100 AD. Thus, the period that contained the most activity for the sub-region spanned from the first century BC to the first century AD.

9.4.3.3B Discovery Years

Most of the objects were discovered in the first half of the nineteenth century. For find dates that provided a range, the mean was used. For example, exact dates for the Trawsfynydd tankard and the Llyn Cerrig Bach hoard have extended periods. The find date for the tankard is an estimate. However, the Llyn Cerrig Bach hoard was found during the development and construction of a World War II airfield, so a range was applied (i.e. 1942 – 1945). Llyn Cerrig Bach predominately yielded the highest rate of material recovery and therefore the statistic is skewed.

9.4.4 Northwest Summary

The Northwest sub-region contained few findspot reports and predominantly sourced from peatland landscapes. Nevertheless, the sub-region reported the highest deposition object concentration for Wales. The multiperiod site of Llyn Cerrig Bach served as a significant epicentre for depositional activity for the surrounding area. Therefore, the deposit site's influence in the area has shown that iron is the standard material for wetland depositional practice. Likewise, the deposit site has influenced the sub-region's periods of activity, extending from 390 BC to 100 AD.

Regardless of the limited findspots, there is considerable sub-regional variability in the number of objects reported. However, the number of tyres from the Llyn Cerrig Bach deposits may suggest their cultural representation in the hoard and the sub-region. Tyres, in addition to the equestrian equipment reported, could be representative of a close connection with horse and chariot culture through its donation.

9.5 Northeast

Eight objects from the Northeast sub-region were reported from eight sites applicable to this study's scope (Figure 9.6, Table 9.2).

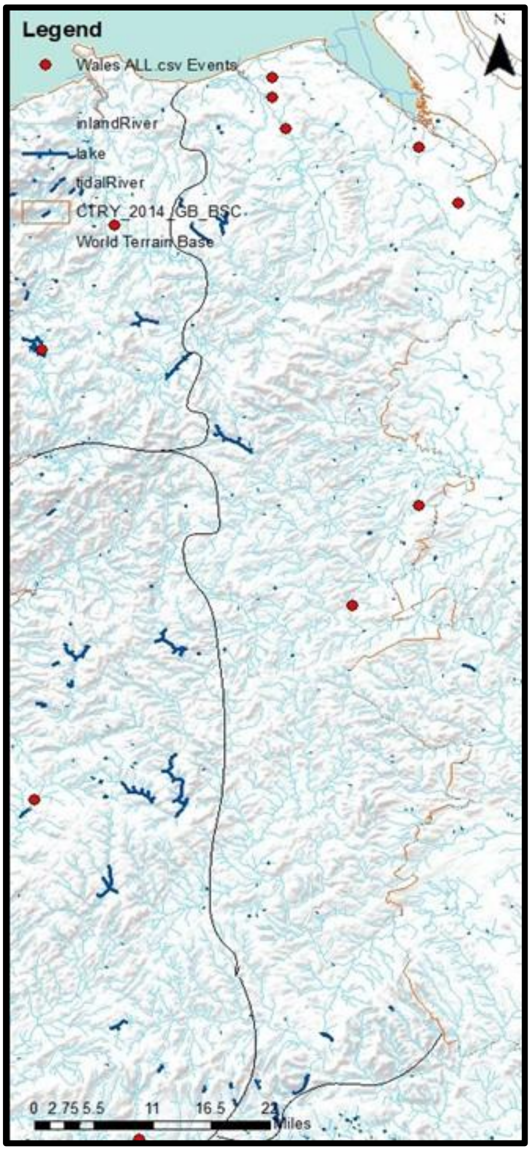

Figure 9.6. Map of all sites reported from a wetland context in the Northeast sub-region. The sub-layered map shows all the modern rivers and lakes of the area. The black and orange lines represent the borders of the sub-region and the red markers are the deposit sites.

Thesis Number	Study Site	Dates	Type of Deposit	Simplistic Landscape Type	Soil or Compound Type
NE_W1	Bronington	200 BC to 60 AD	Single	Wet Grassland and Woodland Floodplain	Wet Acid Loam and Clay
NE_W2	Dyserth	100 BC to 100 AD	Single	Wet Grassland and Woodland Floodplain	Wet Acid Loam and Clay
NE_W3	Llandyssil	100 BC to 100 AD	Single	Wet Grassland and Woodland Floodplain	Wet Acid Loam and Clay
NE_W4	Northop Hall	60 BC to 50 AD	Single	Wet Grassland and Woodland Floodplain	Wet Acid Loam and Clay
NE_W5	Rossett	50 BC to 100 AD	Single	River Floodplain	Wet Acid Loam and Clay
NE_W6	Tremeirchion	0 to 200 AD	Single	Wet Grassland and Woodland Floodplain	Wet Acid Loam and Clay
NE_W7	Trewern	100 BC to 100 AD	Single	Wet Grassland and Woodland Floodplain	Wet Acid Loam and Clay
NE_W8	Waen	300 BC to 100 AD	Single	Wet Grassland and Woodland, River Floodplain	Wet Acid Loam and Clay

Table 9.2. Northeast case study. The study sites according to place, type of deposit, and landscape type. For the complete details of each object entry, see Appendix 7.2.

9.5.1 Environment

Wetland landscapes noted in the sub-region associated with deposition traditions are entirely floodplains. The primary sediment contexts are wet acid loam and clay with impeded drainage. Therefore, there is a notable association between floodplain landscapes with wet acid loam and clay context for deposition.

There are only accounts of single object deposits from the sub-region, with the majority sourced from wet grass and woodland floodplain locations (7/8 accounts). Perhaps these locations were sourced because the participating group has modified the practice to be performed in floodplain locations (e.g. wet grass and woodland, river) in the absence of localised peatland. While the region lacks extensive peat cover, it does contain widespread floodplains, and therefore the more common landscape type available for wetland deposition.

9.5.2 Single, Pairs, and Hoard Comparisons

For the Northeast sub-region, only single objects have been reported. This sub-region, like the Northwest, contains a small sample size. Certainly, more wetland deposits have yet to be discovered in the sub-region. However, it is also likely that this tradition was performed on a smaller scale and (or) by select households, but this can only be speculated. As Ritchie (2018) states, this portion of Wales has a '…shared tribal culture with the Cotswolds and the chalk downs off Wessex and Sussex.' However, the Welsh borderland was more densely settled and occupied from Wrexham down to the bottom of Powys County than the English Shropshire to Herefordshire counties (Britnell and Silvester 2018). Consequently, depositional activity perhaps was performed more often in terrestrial landscapes than wetlands for the sub-region.

Each case study has been summarised in Appendix 7.2, detailing the site context along with associated finds. Case numbers were applied based on object quantities with the addition of each sub-region underscored (e.g. NE_W#).

9.5.3 Depositional Practices

There are a limited number of findspots for the Northeast sub-region, similar to what has been reported from the Northwest sub-region. However, object quantities and tradition types are limited as the Northeast sub-region only has a few single object deposits. Another difference between the two sub-regions is the limited object variation reported in the Northeast. Therefore, it is possible that there were very strict rules of deposition and only selected object types were deemed acceptable. In contrast, the dataset is biased because of the limited number of finds. More discoveries in the future will provide a better understanding of the sub-region's traditions and preferences as they pertain to wetland deposition.

9.5.3.1 Objects

No correspondence analysis was performed for the sub-region because there is only one tradition type reported. The prominent object type for the sub-region and single object deposition is equally terrets and escutcheons. The terrets have two noted forms: trumpet (50%) and miniature (50%). In reference to escutcheons, one piece was an almost complete hanging bowl with escutcheon fittings, and the other was an escutcheon piece.

9.5.3.2 Material Composition

The material composition of objects was copper alloy and gold. Again, no correspondence analysis was performed for the sub-region because there is only one tradition type reported. However, due to the small sample size, the analysis is not statistically representative.

9.5.3.3 Dates of Activity

The periods of activity analysed the proceeding sections review typological-chronological sequence and radiocarbon dates, along with discovery dates. The analysis of prehistoric depositional activity is dependent solely on typological-chronological sequences.

9.5.3.3A Typological-chronological Sequence and Radiocarbon Dates

All the deposits reported from wetland contexts in the Northeast of Wales derived from single object deposits. Evidence suggests deposition from wetland contexts for single object deposits began around 300 BC and ended about 200 AD. Most deposits occurred between 100 BC to 100 AD.

9.5.3.3B Discovery Years

Reports of finds from this sub-region are as early as 1902 and continued until 2010 (Figure 9.7). Most of the site finds occurred from 2004 to 2006 with the majority of reports sourced from the Portable Antiquities Scheme. Northop was excluded from the evaluation because no find date was provided. Three of these sites were discovered by metal detectorists, which may explain the concentration of metal objects from the sub-region.

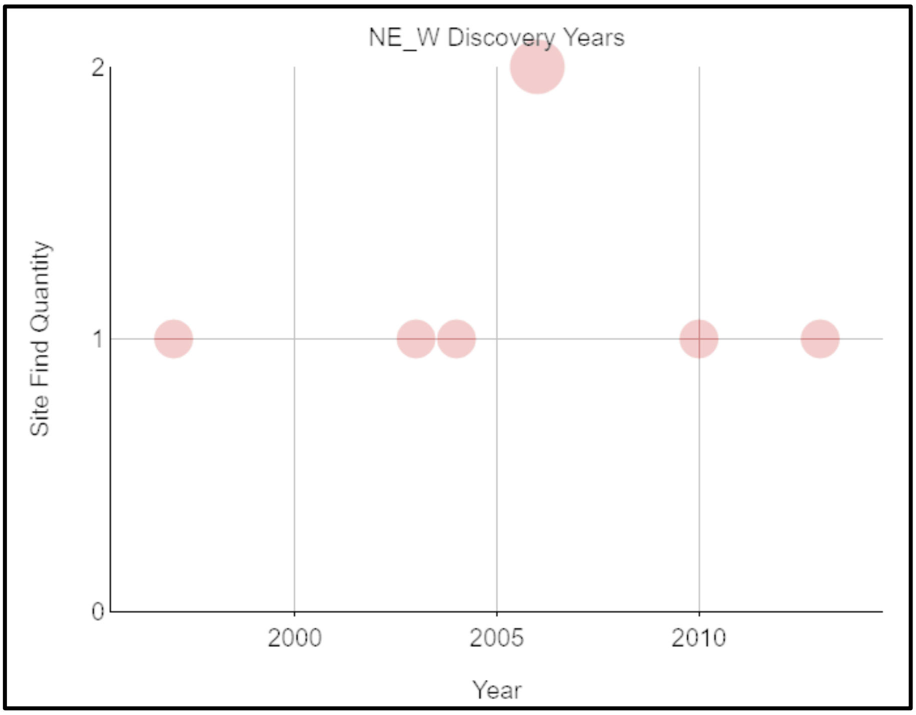

Figure 9.7. The scatterplot of discovery years with findspots in the Northeast sub-region. The size of the red dots represents the object quantity found within those events.

9.5.4 Northeast Summary

It is probable to assume that wetland deposition was not a popular practice in the Northeast sub-region. Objects that were deposited were small in size and may denote a special sub-regional variation to the practice. However, because of their size, they can also be speculated as unintentionally lost objects.

Overall, the preferred wetland for deposition is wet grass and woodland floodplain with impeded drainage in acid loam and clay context. As stated previously, floodplains may have been utilised as an alternative deposition landscape due to the sub-region's limited peatland. Likewise, not all wet grass and woodland floodplains have an obvious connection to an external water source. Perhaps another reason as to why these locations were chosen was for their seasonal or intermittent waterlogging. Therefore, the floodplain's intermittent appearance during heavy rainfall would have transformed the landscape and may be the reason why they were chosen for deposition.

The standard objects chosen for deposition are equally terrets and vessels. While the terrets denote both local and foreign manufacture or influence, the vessels are from Roman sources. As a result, the sub-region must have had internal and external trade networks to the area, or these objects may have just been traded to these communities. In addition, the primary material for object composition is copper alloy. However, because of the small sample size, the analysis here may not be statistically representative of the sub-regional practice.

9.6 Southwest

Five objects from the Southwest sub-region were reported from sites applicable to this study's scope (Figure 9.8, Table 9.3).

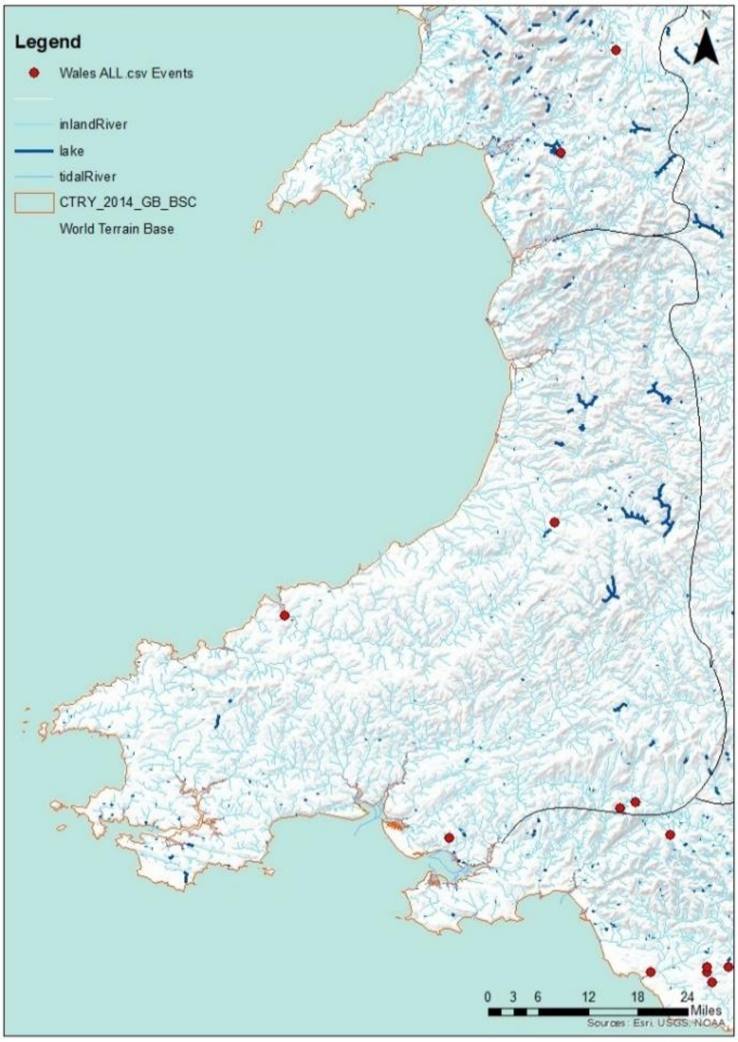

Figure 9.8. Map of all sites reported from wetland contexts for the Southeast sub-region. The sub-layered map shows all the modern rivers and lakes of the area. The black and orange lines represent the borders of the sub-region and the red markers are the deposit sites.

Thesis Number	Study Site	Dates	Type of Deposit	Simplistic Landscape Type	Soil or Compound Type
SW_W1	Cardigan	45 BC to 25 BC	Single	Wet Grassland and Woodland Floodplain	Wet Acid Loam and Clay
SW_W2	Cors Caron	43 BC to 67 AD	Multiperiod Single	Peatland, Bog	Peat
SW_W3	Llanelli	0 AD to 200 AD	Single	Wet Grassland and Woodland Floodplain	Wet Acid Loam and Clay
SW_W4	Onllwyn	100 BC to 43 AD	Single	Peatland, Moor	Peaty Loam
SW_W5	Trelech	30 BC to 15 BC	Single	Peatland, Moor	Peat

Table 9.3. Southwest case study. The study sites according to place, type of deposit, and landscape type. For the complete details of each object entry, see Appendix 7.3.

9.6.1 Environment

Wetland landscapes and their associated soil types will be discussed here for the Southwest sub-region. Wetland landscapes noted in the sub-region associated with deposition traditions are wet grass and woodland floodplains and peatland. Overall, the primary wetland landscape type most utilised for deposition is peatland (60%, 3/5). Thereafter, the following wetland landscape noted was wet grass and woodland floodplain (40%, 2/5).

The sub-region’s single object deposits have been mostly sourced from peatlands. The primary sediment type is wet acid loam and clay (40%). However, if all peat-sediment combinations are considered (i.e. peat, peaty loam, wet acid soil mixed with peat), peat becomes the predominant context (60%). Therefore, the primary wet landscape type and soil type demonstrate that communities preferred peatland for deposition in the Southwest, which is interesting because floodplains occupy a larger portion of the sub-region.

9.6.2 Single, Pairs, and Hoard Comparisons

The deposition traditions practised in the Southwest sub-region are single and multiperiod single object deposits. Like the Northeast sub-region, perhaps the small sample size indicates less widespread practice or that select households only performed wetland deposition. Wetland deposition was not new to the sub-region as shown at Cors Caron, with unassociated deposits dating back to the Bronze Age.

As previously stated, perhaps the single object depositions observed in the sub-region's wetlands reflects a much smaller scale of practice. Settlements in this sub-region are composed mainly of farmsteads (Ritchie 2018), and therefore the demand for large or lavish wetland deposits was perhaps not required. However, the size and development of defended enclosures point to social stratification (Ritchie 2018). Nevertheless, it is also just as likely that wetland deposition was simply not a popular practice in the sub-region.

Each case study has been summarised in Appendix 7.3, detailing the site context along with associated finds. Case numbers were applied based on object quantities with the addition of each sub-region underscored (e.g. SW_W#).

9.6.3 Depositional Practices

Due to the limited findspots and object quantities reported from the sub-region, the figures are not representative of the practice. More fieldwork in wetland locations is needed for this sub-region to determine if wetland deposition was a significant practice, or marginal with only a handful of families practising the tradition on a smaller and intimate scale.

9.6.3.1 Objects

Correspondence analysis was performed to better understand the relationship between object types and deposition traditions. However, due to the small sample size a graph representation was not needed. Coin and tankard handles were closely associated with single object deposits. The representation of multiperiod single object deposits is bias because there is only one deposit in the sample, the Cors Caron figurine. Therefore, due to the small sample size of the sub-region, the figures here may not be statistically representative.

Overall, coins were the most common object type deposited (60%, 3/5). The typological categories noted from the coins reported are equally Addedomaros Corded type (Mack 273, BM 2543ff, ABC 2544), Corio gold starter (VA 1035-1, Mack 393, CCIN 991061, ABC 2048), and indistinguishable (CCIN 930664). These coins represent networks both within and external to Britain. Due to the fact that all of the items reported are small in size, perhaps the need to have tiny, portable pieces was more in-trend with wetland deposition traditions of the sub-region.

9.6.3.2 Material Composition

The material composition of objects reported is copper alloy, gold, and wood. The correspondence analysis showed that single object deposits in the sub-region have a relationship with copper alloy and gold materials. Multiperiod single object deposits only have a relationship with wood material, but this figure is skewed and therefore is not statistically representative. Due to the small sample size, a graph was not needed to demonstrate the relationships between object materials and traditions. Overall, the standard material type noted was copper alloy (60%, 3/5). Copper alloy, likewise, was the most common composition in single object deposits.

9.6.3.3 Dates of Activity

As stated in previous sections, a review of depositional activity sourced from typological-chronological sequences and radiocarbon dates, along with a comparison of rediscovery dates is required to better understand patterns of activity. However, as this is a small sample size, the observation of the tradition and discovery periods may not be statistically representative.

9.6.3.3A Typological-chronological Sequence and Radiocarbon Dates

Manufacture dates of the objects range from the late first century BC to around the first century AD. Single object deposit typologies place them from the late first century BC to 15 AD through observed typologies. As there is only one account of multiperiod single object deposit from Cors Caron, the radiocarbon date places the object from about 43 BC to 127 AD (GrA-15317) (1990 ± 50 BP, 43 BC – AD 67 (1 sd) or 111 BC – AD 127 (2 sd)) (Van der Sanden and Turner 2004: 91).

9.6.3.3B Discovery Years

Reports of finds from this sub-region are as early as 1902 and have continued until 2010 (Figure 9.9). Most of the site finds reported from this sub-region occurred from the early 2000s, and three of these sites were discovered by metal detectorists, which explains the concentration of metal objects from the sub-region.

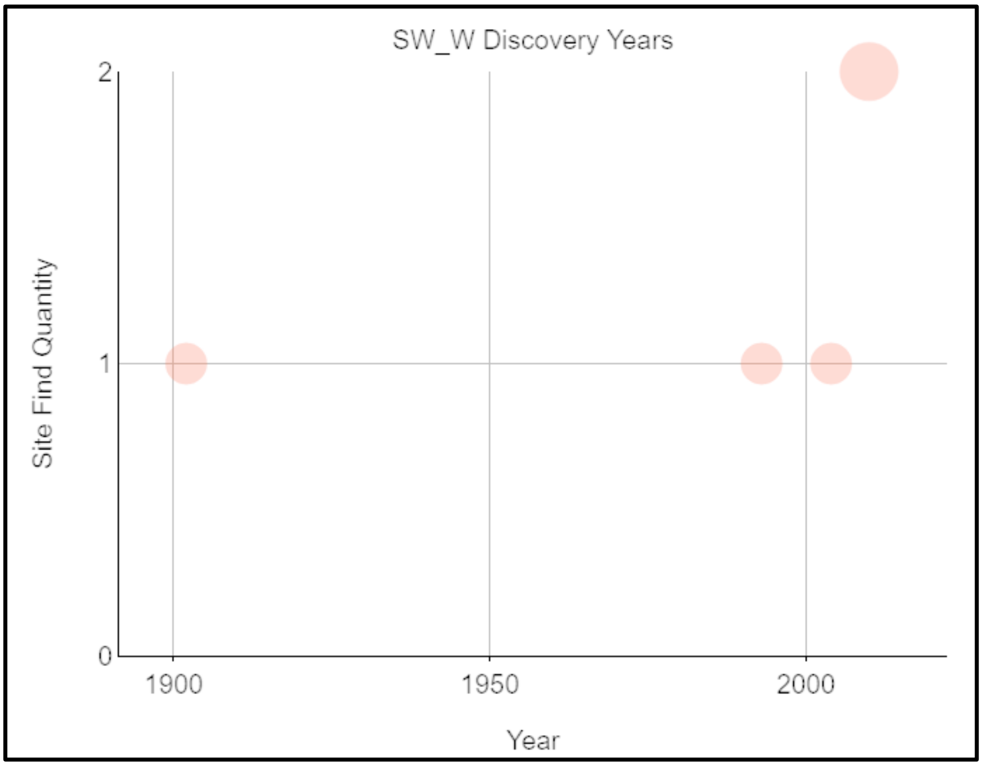

Figure 9.9. Southwest discovery years. The red dots represent the quantity of objects found.

9.6.4 Southwest Summary

Overall, because of the small sample size, no definitive conclusions could be drawn from these analyses because they may be statistically representative of the sub-region's deposition practice. The preferred wet landscape for deposition in the Southwest sub-region is peatland accompanied by peat compound mixtures as associated sediments. Single object deposits are the most reported tradition for the sub-region and have produced the most material. The sub-region's objects were manufactured from 100 BC to around late first century AD, based on typologies and radiocarbon dates. Coins appear to be the most popular item chosen for deposition. Copper alloy is the standard material for object composition. However, because most of these finds are from metal detectorist reports to PAS in the early 2000s, there may be copious material still to be discovered from this sub-region's wetlands.

9.7 Southeast

From the Southeast sub-region, 83 objects reported from fifteen sites applicable to this study's scope (Figure 9.10, Table 9.4).

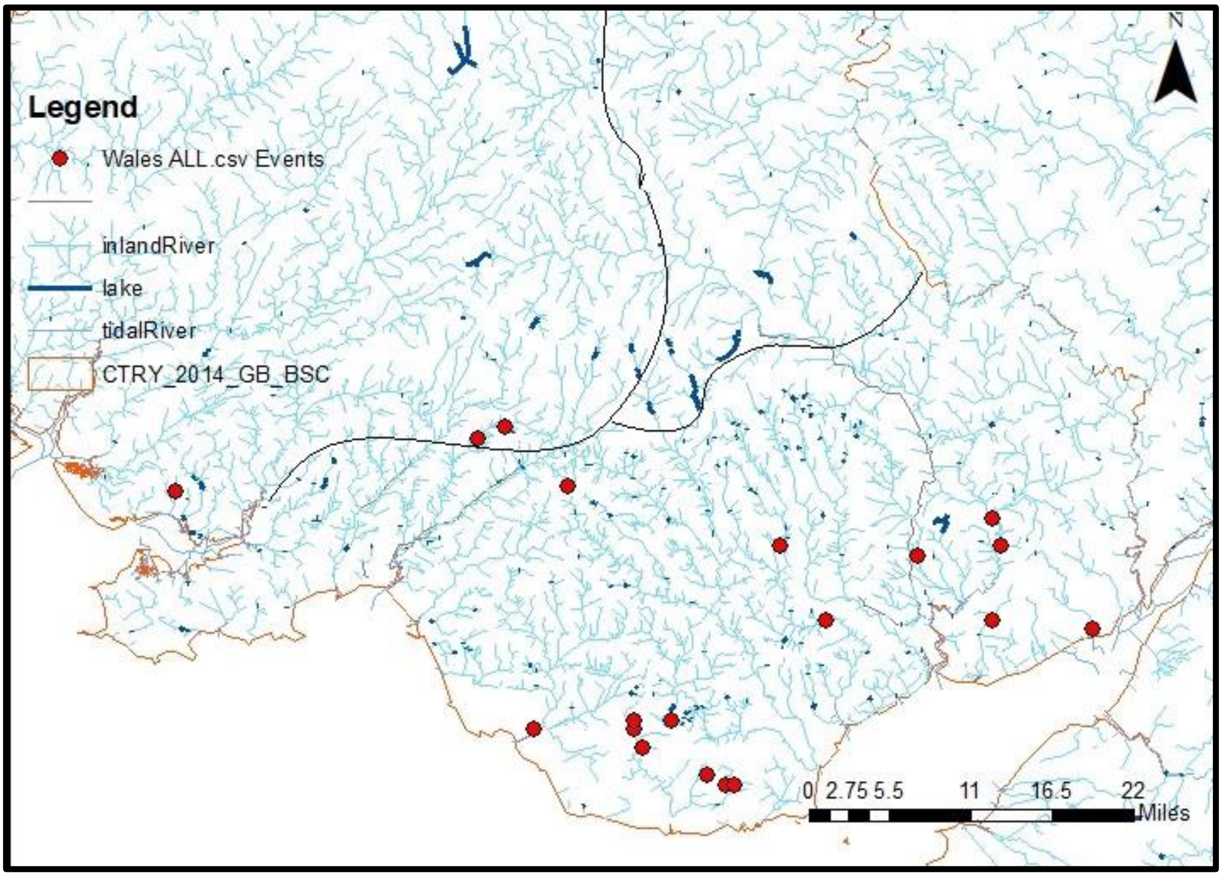

Figure 9.10. Map of all wetland deposits from the Southeast sub-region. The red markers represent the findspots of wetland deposition activity.

Thesis Number	Study Site	Dates	Type of Deposit	Simplistic Landscape Type	Soil or Compound Type
SE_W1	Bedwas	0 AD to 100 AD	Single	Wet Grassland and Woodland Floodplain	Wet Acid Loam and Clay
SE_W2	Caldicot	10 AD to 15 AD	Single	Wet Grassland and Woodland Floodplain	Wet Acid Loam and Clay
SE_W3	Cowbridge wit Llablethian	100 BC to 100 AD	Single	River Floodplain	Wet Acid Loam and Clay
SE_W4	Croesyceiliog	100 BC to 50 AD	Single	River Floodplain	Wet Loam
SE_W5-SE_W10	Langstone	25 AD to 75 AD	Multiperiod Hoard	Peatland, Bog	Peat
SE_W11	Llantrisant Fawr	800 BC to 600 BC	Single	River Floodplain	Wet Loam
SE_W12-SE_W36	Llyn Fawr	700 BC to 500 BC	Hoard	Peat, Prehistoric Lake	Peat
SE_W37	Merthyr Mawr	100 BC to 90 BC	Single	River Floodplain	Wet Loam
SE_W38-SE_W74	Nant-y-Cafn	50 AD to AD 75	Hoard	River, Stream	Wet Acid Upland Soil Mixed with Peat
SE_W75	Pengam	60 BC to 20 BC	Single	Wet Grassland and Woodland Floodplain	Wet Acid Loam and Clay
SE_W76	Pendolylan	100 BC to 100 AD	Single	Wet Grassland and Woodland Floodplain	Wet Acid Loam and Clay
SE_W77-SE_W78	Penllyn	100 BC to 100 AD	Multiperiod Single	Wet Grassland and Woodland Floodplain	Wet Acid Loam and Clay
SE_W79-SE_W80	St. Nicholas	100 BC to 200 AD	Multiperiod Single	Wet Grassland and Woodland Floodplain	Wet Acid Loam and Clay
83SE_W81	Usk	15 BC to 60 AD	Single	River Floodplain	Loamy Alluvium
SE_W82-SE_W83	Wenvoe	0 AD to 200 AD	Multiperiod Single	Wet Grassland and Woodland Floodplain	Wet Acid Loam and Clay

Table 9.4. Southeast case study. The study sites according to place, type of deposit, and landscape type. For the complete details of each object entry, see Appendix 7.4.

9.7.1 Environment

Wetland landscapes observed in the sub-region associated with deposition traditions are wet grass and woodland floodplain, river floodplains, rivers, prehistoric lakes, and peatlands. Overall, the primary wetland landscape type most utilised for deposition is wet grass and woodland floodplains (47%, 7/15) (Figure 9.11). Thereafter, the following wetland landscapes were river floodplains (27%, 4/15), prehistoric lake (7%, 1/15), rivers and streams (7%, 1/15), and peatland (7%, 1/15).

Single object deposits were commonly reported from river floodplains (Figure 9.11). Multiperiod single object deposits were predominantly reported from wet grass and woodland floodplain locations. Hoards appear to be commonly found in and along the shores of rivers. However, prehistoric lakes in this sub-region have transitioned into peatlands. Therefore, hoards are equally found in peatlands and river locations. Multiperiod hoards, represented through one site account (i.e. Langstone), were reported from a peatland environment.

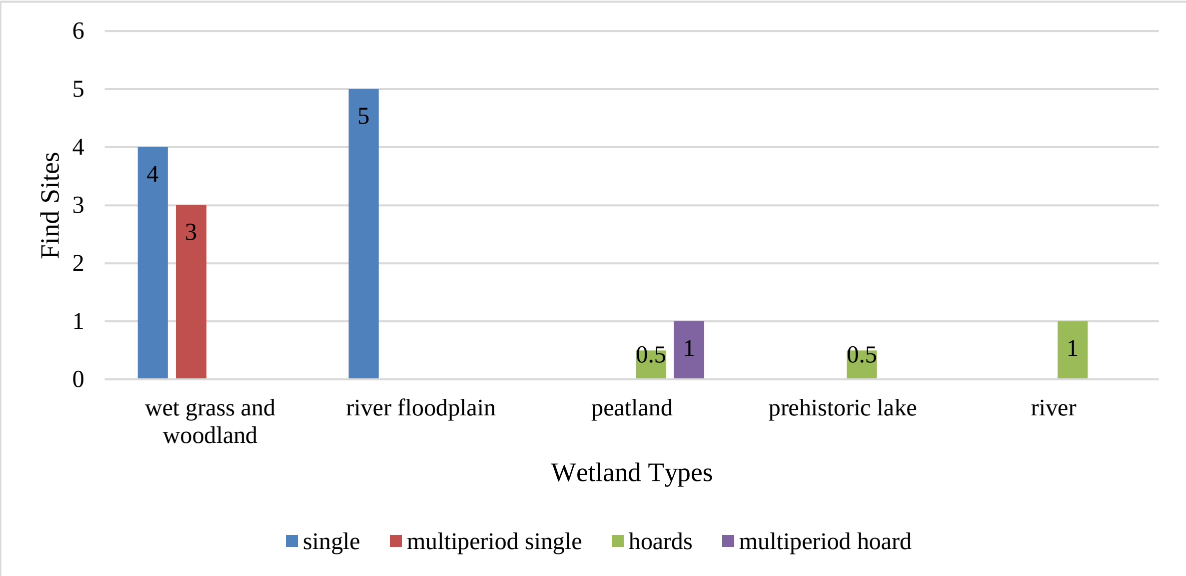

Figure 9.11. Comparison of wetland environments and deposition traditions in the Southeast sub-region.

The sediment context of the object findspots in these wetland locations is also noted. The primary sediment type is wet acid loam and clay (53%). Overall, the communally preferred wet landscape for deposition in the Southeast sub-region is wet grass and woodland with associated wet acid loam and clay sediment.

9.7.2 Single, Pairs, and Hoard Comparisons

The Southeast sub-region is geographically inclusive of the Marshes, and therefore considered to share the same cultural affiliation as the Northeast. However, differences in depositional traditions from north to south make the Southeast sub-region archaeologically distinctive from the Northeast. In addition, the concentration of hillforts, defended settlements, and developed economies noted by Cunliffe (1991: 272), Ritchie (2018) and

Evans (2018) corresponds with the high volume of wetland deposition activity observed in the sub-region.

Wetland deposition traditions practised in the Southeast sub-region were single, multiperiod single, hoards, and multiperiod hoard deposits. There are more site accounts of single object deposits. However, most of the materials reported from the sub-region are from hoard sites. Perhaps communal contribution, as opposed to a single item representation, was the preferred sub-regional practice for wetland deposition.

Each case study has been summarised in Appendix 7.4, detailing the site context along with associated finds. Case numbers were applied based on object quantities with the addition of each sub-region underscored (e.g. SE_W#).

9.7.3 Depositional Practices

The observed wetland depositional tradition of the sub-region has evidence of large-scale diversity of practice. The sheer amount of material produced from this sub-region easily overshadows those from the Northeast and Southwest. Therefore, there are two possible reasons for this difference. The first is that wetland deposition was a common practice in the Southeast both at the beginning and end of the Iron Age. Varied traditions, along with the preferred objects and materials, showed different aspects and thresholds of engagement, especially in such a densely settled area. The second is that there has been more modern development in the Southeast in comparison to other sub-regions. Housing complexes are being built in areas prone to flooding, and other wet landscapes are being drained for further development or farming. However, it is likely to be a combination of the two that has brought forth such an abundance of evidence for prehistoric activity and wetland deposition in this area.

9.7.3.1 Objects

Correspondence analysis was performed with only two dimensions to view the relationship between object type and wetland depositional traditions (Figure 9.12). Single object deposits were associated with object types such as coins, lynch pins, and harness rings. Brooches shared affiliations with both multiperiod single and single object deposits. Axes, ingots, metal sheets, and phalerae were primarily found in hoards. Terrets have associations with both hoard and multiperiod single object deposits. Multiperiod hoards are affiliated with bowls and fasteners. Tankards and their handles are associated with both hoard and multiperiod hoard traditions.

Overall, coins are the primary object chosen for single object deposits. This observation appears to be in trend with a communal preference for coins in the Northeast. Therefore, perhaps single object deposits of coins in wetland context were an eastern tradition in Wales. For multiperiod single hoards, the common object is terrets. Again, there is a continued representation of the horse through coin iconography and may be representative of wealth and power (Creighton 2000; Giles 2012). Hoards show that the common item chosen for deposition was axes. The representation of axes could be a continuation of Bronze Age traditions noted by Bradley (1990) but adapted to the transitioning Iron Age form. Sompting axes, according to Megaw and Simpson (1979) and Roberts et al. (2015), represent the Llyn Fawr transition period into the Iron Age. These axes were not created for use and were purely ceremonial (Megaw and Simpson 1979: 337). Lastly, for multiperiod hoards, the common items chosen for deposition are bowls. Review of the object types without comparing associated wetland deposition traditions indicates that the common item chosen for deposition in the Southeast sub-region is axes. The types noted for axes in this sub-region are Sompting (90%) and plain (10%).

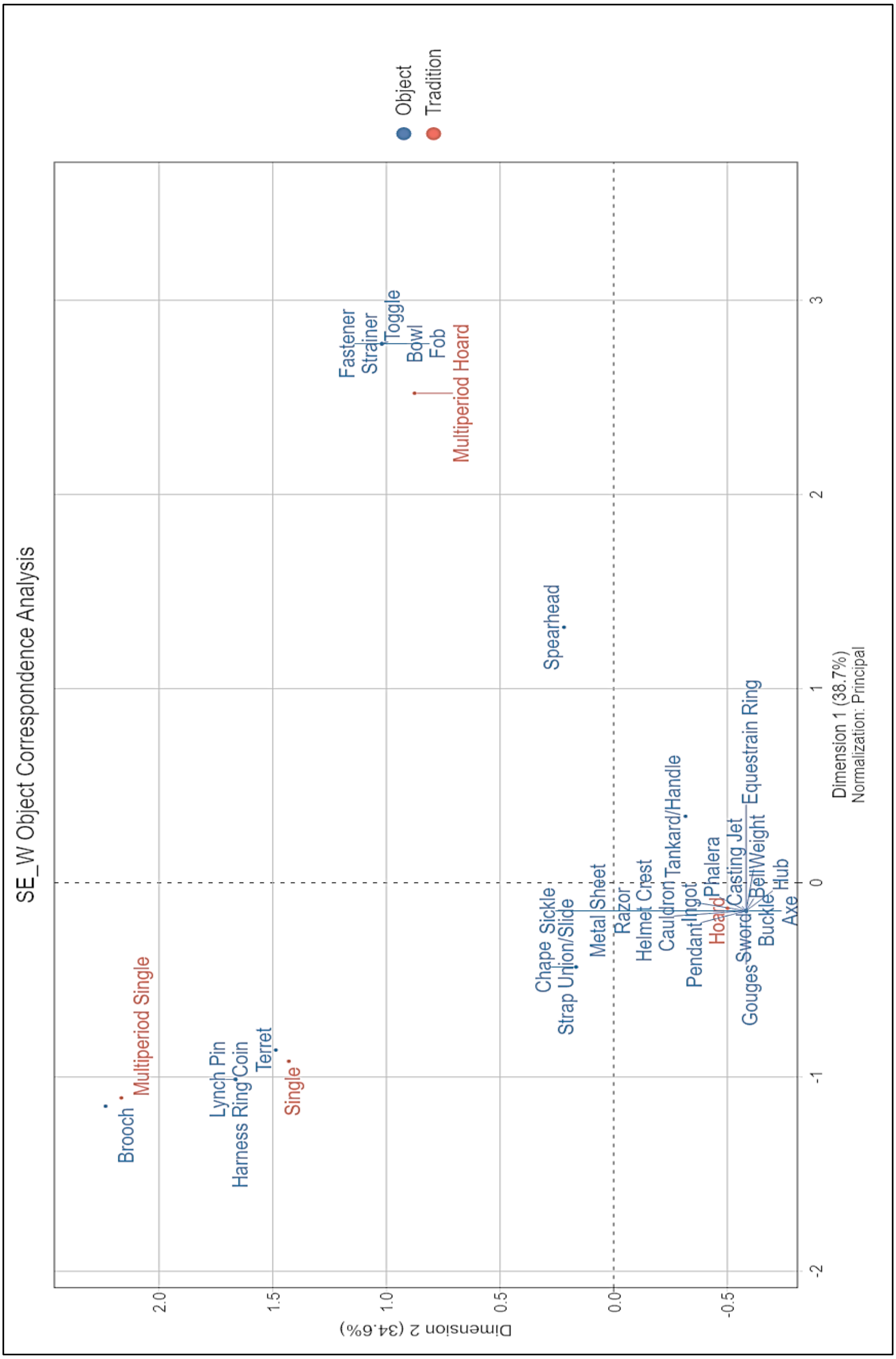

Figure 9.13. The Southeast correspondence analysis shows the relationship between material composition and deposition traditions. Clusters around the tradition type demonstrate the extent of affiliation.

9.7.3.2 Material Composition

The primary or external material composition of objects reported was copper alloy, gold, iron, and wood (Figurine 9.14). Correspondence analysis was performed to view the relationships certain objects had with differing wetland deposition traditions. Copper alloy shared affiliations with all tradition types but held the closest with hoarding traditions. Gold was only associated with single object deposits. Iron is associated with both hoards and single object deposits; however, the value is more skewed towards hoards. Copper alloy (including brass accounts from Nant-y-cafn), was associated with hoards. Lastly, wood is likewise only affiliated with multiperiod hoard deposits.

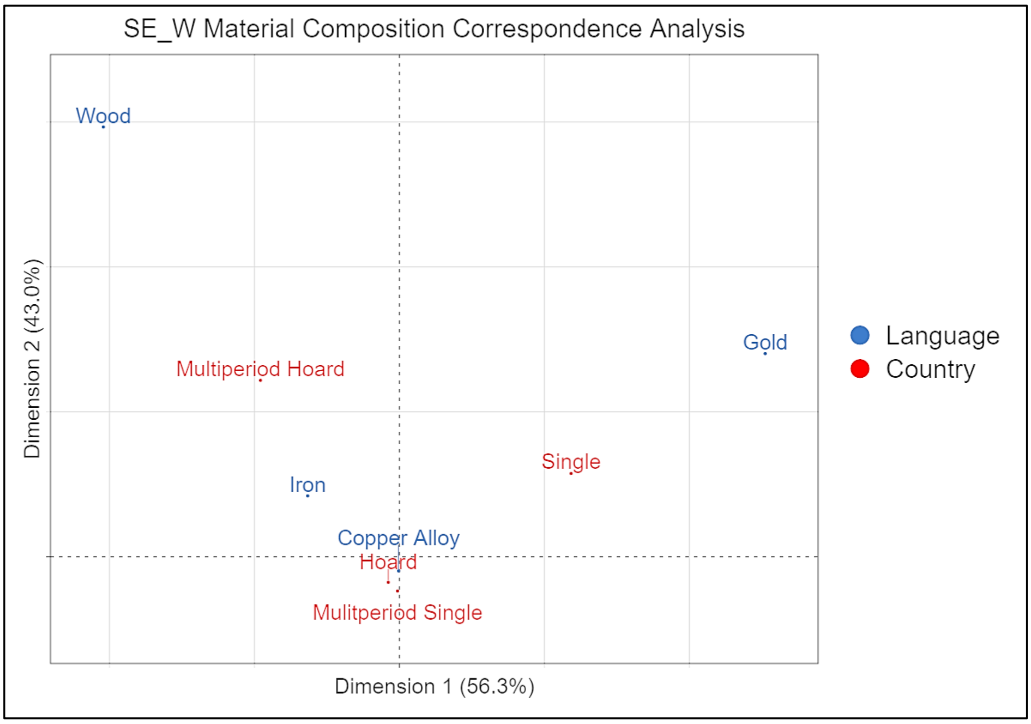

Figure 9.14. The Southeast correspondence analysis of material composition with deposition traditions. Clusters around the tradition type demonstrate the extent of affiliation.

Overall, the most common material type was copper alloy (92%). This majority is skewed by the volume of copper alloy objects from hoards. However, iron does appear as a sub-layered material in hoards that have been XRF analysed (e.g. Davis and Gwilt 2008). Therefore, it is probable that some objects comprised of copper alloy may have internal iron structures; further investigation is needed, however, to establish this trend. Nevertheless, for the purpose of analysis, it is assumed that all objects have been made only of copper alloy unless stated otherwise in object reports.

9.7.3.3 Dates of Activity

Due to the large volume of material reported from the Southeast, it is essential to analyse the dates of activity for later comparison to other sub-regions. Understanding when and why material was deposited and subsequently rediscovered, can provide a better understanding of why so much material has been reported in this area in comparison to others.

9.7.3.3A Typological-chronological Sequence and Radiocarbon Dates

Object manufacture dates occurred from as early as 800 BC and ended around 200 AD. The first horizon of activity occurs from around 700 to 500 BC with the Llyn Fawr assemblage. Thereafter, there is a noted gap in typological-chronological sequences of deposited materials from 500 to 100 BC. The second horizon of wetland deposition activity—again based on typological periods—occurs from the first century BC to the second century AD. However, there is a concentration of pieces that date from the first century BC to the first century AD within the second horizon.

9.7.3.3B Discovery Years

Find reports occur as early as 1911 and extend until 2013 (Figure 9.14). Bedwas, Croesyceiliog, and St. Nicholas were not included in the analyses because no find date has been provided. Most of the finds of the sub-region are reported from the early 2000s. Few of the pieces have mention of discovery through metal detection; however, most of the objects do not disclose how they were discovered.

While there are more reports from the 2000s, the larger object quantities are reported from the late 1800s to early 1900s. However, the increase of smaller but more consistent finds reports in the 2000s was because of metal detecting activity.

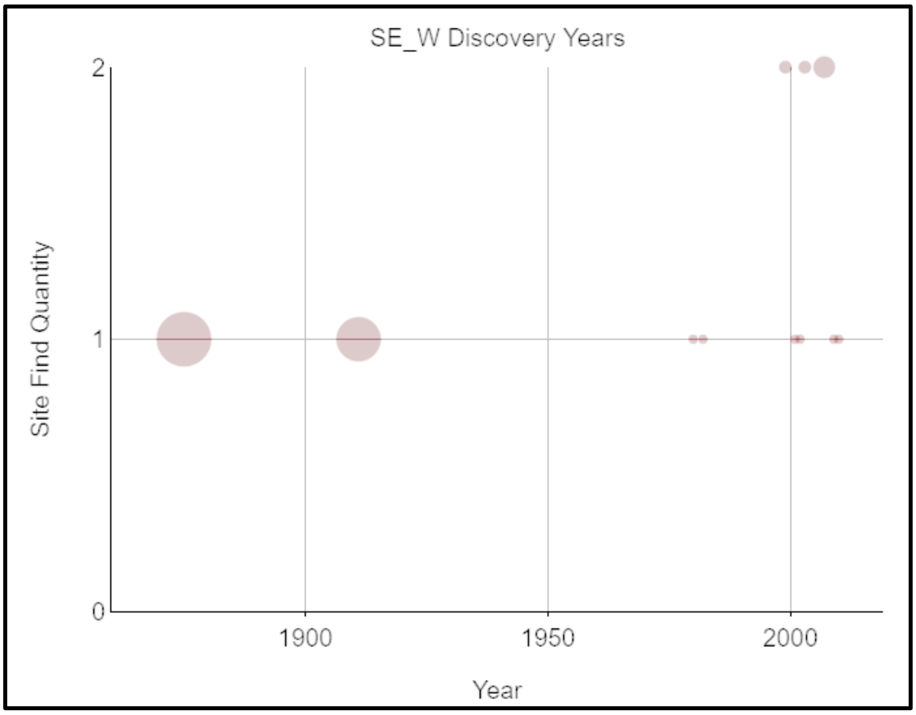

Figure 9.15. A scatter plot of the discovery years and their object quantity comparisons for the Southeast sub-region. The red dots represent the quantity of objects found.

9.7.4 Southeast Summary

The Southeast sub-region contained more diversified wetland depositional practices than any other sub-region in Wales. Diversification was achieved through the high level of wetland depositional activity reported from the sub-region. This variation may have been due to greater urbanisation, wetland archaeological excavation and survey, and metal-detectorists' reports in the sub-region compared to the others. Although it is also likely that the sub-region had strong connections to wetland depositional practices, which is reflected in the archaeology.

Overall, wet grass and woodland floodplain with associated wet acid and clay sediment characterised by impeded drainage are the preferred landscapes for deposition. While there are more accounts of single object deposit sites, most of the material reported from this sub-region sourced from wetland contexts comes from hoards. Axes are the most common object type chosen for deposition, but this is bias due to the Llyn Fawr hoard. Lastly, copper alloy is the standard material type for object composition.

9.8 Sub-Regional Comparisons

Similarities and differences between the sub-regions are quite apparent when reviewed holistically. Marked differences and expression of individuality was evident through the deposition traditions used, selected wetland environments, the objects and material type preferred, and typologies. These observations were not made without caution, as metal objects are far easier to identify in wetland locations, and materials do have different survival rates in different environments (see Appendix 4). Likewise, variation in collection policies and poorly staffed museums were unable to fulfil requests for a collection catalogue, and has impacted the study's biases (see Chapters 2 and 3).

This section analyses common characteristics of wetland deposition traditions throughout Wales. The results reflect the data collected, but may speak more to the current methods of extraction and cataloguing procedures than prehistoric activity. However, analyses of the different defining characteristics of wetland deposition provide evidence of their significance when reviewed holistically. Overall, these characteristics provide a broader understanding of wetland deposition traditions, both sub-regionally and inter-regionally.

9.8.1 Environment

The chosen wetland environments play a key role in communal interaction with these landscapes and their importance as a resource, as well as the significance they held in the collective memory through events including deposition. To review, the common depositional landscape type for the Northeast and Southeast sub-regions was floodplain (Figure 9.16). In comparison, the primary depositional landscape type for the Northwest and Southwest sub-regions was peatland. Overall, based on individual site reports, floodplains were the most common landscape for wetland deposition. However, deposition in peatlands remained constant and the preferred subsequent location inter-regionally. Wet grasslands and woodlands seasonally flood; therefore, seasonal or annual inundation may have been essential for deposition.

Of the tradition types observed, single and multiperiod single object traditions were most commonly reported from wet grass and woodland floodplains across the regions. Hoards have been primarily reported from both river floodplains and river locations.

Multiperiod hoards are predominately reported from peat landscapes. Overall, it appears that variations of floodplain types are the favoured landscapes chosen for deposition.

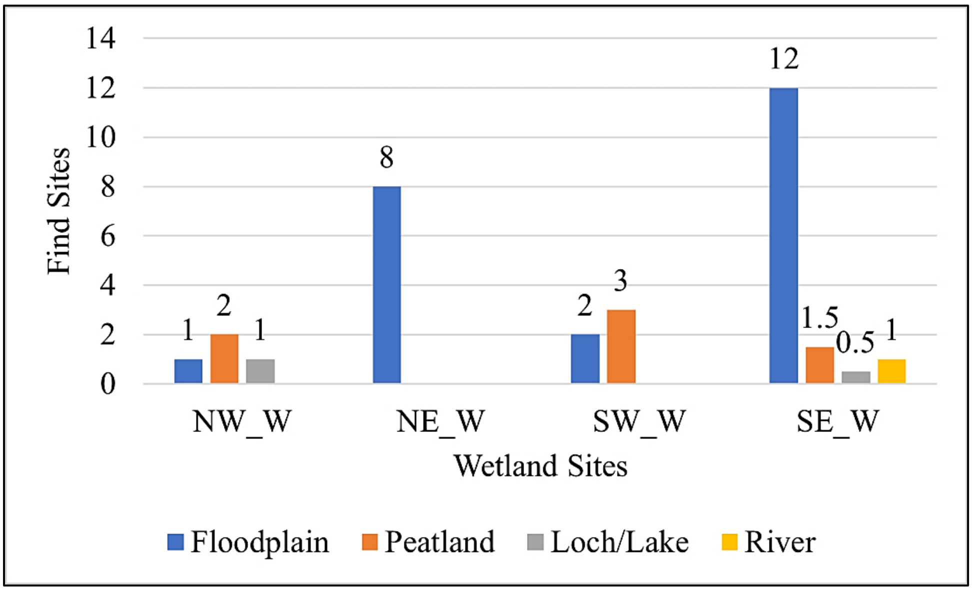

Figure 9.16. A bar graph of the relationship with wet landscape and findspots by Welsh sub-region for wetland deposition.

Observation of associated sediment types related to wetland landscapes revealed wet acidic loam and clay soil was the most common context (56%). This type of soil is slowly permeable and mostly drains into stream networks. Their characteristic impeded drainage means that the area floods during seasonal watershed. Therefore, the corresponding sediment type may be as important as the preferred wetland for deposition. This aspect of the research will be further explored in Chapters 10 and 11.

9.8.2 Single, Paired, Hoard, and Multiperiod Comparisons

Wales, like Scotland, has differing wetland deposition traditions. Wales has all the same traditions of deposition apart from the paired traditions only exhibited in Scotland. Single object deposition is the highest reported tradition for wetland deposition in Wales, with 25 site cases. However, in terms of material produced from Welsh wetland deposits, the majority come from multiperiod hoards with 130 objects. All sub-regions had accounts of single object and paired deposits. Multiperiod single object deposits are noted only in the Southeast sub-region of Wales. Hoards are also only observed in the Southeast sub-region. Multiperiod hoards, however, are only reported from the Northwest and Southeast sub-regions. The sub-region with the most material reported is the Northwest with 124 objects (minimum number, 169 pieces total with tyre fragments) (Table 9.5).

	Single	Multiperiod Single	Hoard	Multiperiod Hoard	Totals
NW_W	3	0	0	124	127
NE_W	8	0	0	0	8
SE_W	9	6	62	6	83
SW_W	5	0	0	0	5
Totals	25	6	62	130	223

Table 9.5. Study Zone 2 Quantified Deposition Traditions. The table shows the quantities of material for each tradition type from all Scottish sub-region locations.

These results suggest that single object deposits were the common form of deposition; and may have been a more understated or small-scale performances. Minimalist practice of deposition traditions may explain multiperiod single object deposits in that important wetlands are revisited, but only a small contribution was needed or desired. In contrast, hoards may have required communal contributions for a single event deposit. This type of single event hoard depositing practice appears to be popular in the Southeast sub-region, with large donations assumed to have been amassed by the local community. Large scale contributions for deposition have also been mentioned in studies such as Needham (1988), Davis (2014), Hunter (2006, 2007), and Chadwick (2012). Multiperiod hoards, likewise, may have been a product of communal contribution. They do, however, differ from single period hoards because they are contributed over time through the repetitious placement of objects in a known wetland. Both large and small contributions are better represented when analysing the common object types and materials. Object typologies further clarify regional and communal identity, along with social and economic networks.

9.8.3 Depositional Practices

Each sub-region showed local preferences for object types, materials, and periods of activity. However, we must remain cautious of the biases in the identification, collection, extraction, and cataloguing of prehistoric materials despite established schemes. However, as illustrated throughout the chapter, other biases have presented themselves. Likewise, these biases have also occurred through regional analyses. For example, as illustrated in the previous section, the large number of single object deposit sites has potentially skewed the data, favouring the practice. Nevertheless, trends in potential communal preference have been highlighted through a holistic review of the commonly reported object and material types, along with deposition and rediscovery dates of activity.

In terms of common object trends, very prominent patterns emerged after statistical analysis of the sub-regions. The groups from the Northwest showed a preference for tyres, but this is a bias from the Llyn Cerrig Bach hoard. Terrets and vessels were both the common object types chosen for deposition in the Northeast. The Southwest showed coins as the common object type; whereas the Southeast communities demonstrated a preference for axes, but this is bias from the Llyn Fawr hoard.

These object types obviously have a practical function, but they can also be considered for their potential symbolic roles. Tyres and terrets could be considered components of equestrian and chariot equipment. Vessels can be considered as both an intimate donation and communal pieces used during feasting events. The vessels themselves could be interpreted as more of a communal object than individual representation because of the assumed nature of sharing. Coins were pieces of monetary exchange but could also serve as symbolic items if only one or few are found as representative of networks and relationships, as provided in previous sections. Axes also have a dual utilisation as a tool or weapon. However, the axes found here proportionally have no evidence of wear and therefore were created and are assumed to have been used in a purely symbolic fashion. Overall, the observed common object type for the entirety of Wales is tyres (8%). Lastly, the overall primary manufacture material reported is copper alloy (51%).

Periods of activity were also reviewed. These periods are more of a reflection of object typologies and chronological sequences than dates of deposition, because there has been minimal radiocarbon dating of the pieces and findspots. There is a stark change to the activity in Wales around 43 AD in response to the Roman conquest, but this study follows Davis and Gwilt’s (2008) view that the Iron Age continued until the second century AD after the military retreat from the region. As stated previously, the Iron Age is thought to extend into the first or second century AD. This review divided the Iron Age into four 250-year increments to see increases or decreases in depositional activity (Figure 9.17). Some markers do not move for the entirety of the Iron Age because only a broad date could be applied to these sites.

Entering into the Iron Age, there is a notable lack of deposits which extends until 300 BC. Deposition traditions substantially increase from 300 BC to 50 AD. Thereafter, a spike in activity is observed from 50 AD to 200 AD. Thus, the majority of activity occurred around 50 AD to 200 AD.

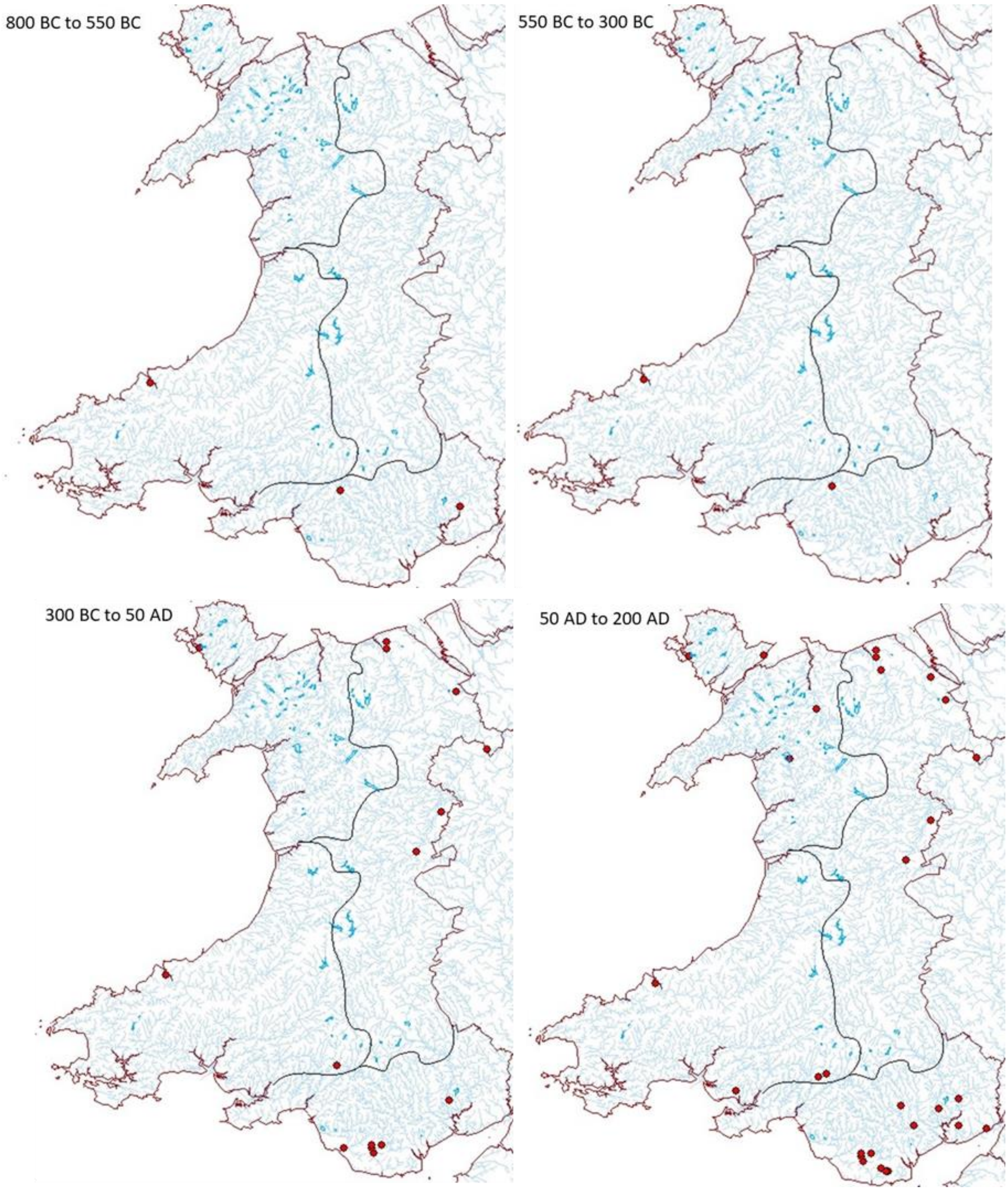

Figure 9.17. Maps illustrating the progression of deposition during the Iron Age. The red markers represent individual findspots.

9.8.4 Summary

Welsh deposition traditions vary sub-regionally, as has been illustrated. However, there are some overall patterns reflected in the data. The most common regional landscape for deposition was floodplains which primarily have wet acid loam and clay sediment. Slow permeable soils, such as acid loam and clay sediment mixture, allowed for gradual absorption of the seasonal watershed. These floods would have visibly and dramatically altered the landscape by becoming inundated by water. Perhaps this visual change of an environment with seasonal or annual floods, or periods of excessive inundation, may have invoked the need or desire to perform a deposition. However, as floodplains are prevalent throughout Wales, perhaps these landscapes were chosen because of their commonality.

Copper alloy was the most common material used for deposition in Wales. Burgess (1979), Needham (2007), Cunliffe (2004) have argued that the presence of copper alloy in deposits was an attempt to purge and (or) regulate excess material after its initial devaluation. Conversely, if we consider the effort to retain a copper alloy aesthetic, even externally, it indicates the material's continued prestige.

The majority of objects were sourced from the Northwest sub-region, but the Southeast had the most findspots. Single object deposits appear to be the most common deposition tradition; however, if object quantity is concerned, then multiperiod hoards were the most popular practice. The amount of material recovered from hoards and multiperiod hoards is perhaps evidence of large-scale and communally contributed deposition. *Landscape* and *location multiperiod deposits* were the localised tradition of deposition, which may mean people may travel to known spots, like Llyn Cerrig Bach, for these performances instead of having a local wetland which served the immediate local communities.

These representations of traditions are expected to change as more material is found and catalogued. The finds here represent the current archaeological record until 2019. The finds are likely to be partially representative of modern archaeological methods and discovery rather than prehistoric practice. However, establishing trends found in the data helps observe changes in practice over time as more material becomes available to depositional studies.

Chapter 10 – Cross-regional Analyses

10.1 Introduction

Assessment of sub-regional wetland deposition traditions has allowed variations in practice to become clearer. Therefore, this chapter seeks to analyse cross-regional trends of wetland depositional practices. The attributes of wetland depositional practice examined are tradition type, landscape preference, object and material types, periods of manufacture, socio-economic relations through observed typologies, and modern discovery periods. Specific characteristics of wetland deposition may remain unknown due to the lack of data. Nevertheless, the application of specified research parameters has allowed Iron Age wetland deposition traditions in Wales and Scotland to be further defined and refined.

10.2 Wetland Traditions

As described in Chapter 7, wetland deposition traditions practised in Iron Age Wales and Scotland have been single, multiperiod single, hoards and multiperiod hoards. Pairs are unique to Scotland; however, more period evidence is required to support this activity in Wales for wetland areas. Quantities of deposits from specific traditions based on site reports for Wales and Scotland are provided in Table 10.1. Overall, single object deposits are the most common tradition observed in both regions. Multiperiod single object deposits and hoards are the second most frequent site tradition. Paired and multiperiod hoards have the lowest reported instances.

Deposition Regions	Single	Multiperiod Single	Paired	Hoard	Multiperiod Hoard	Totals
Scotland	45	5	7	8	5	70
Wales	25	3	0	2	2	32
Totals	70	8	7	10	7	102

Table 10.1. Table of all site accounts according to tradition for each region (i.e. Wales and Scotland).

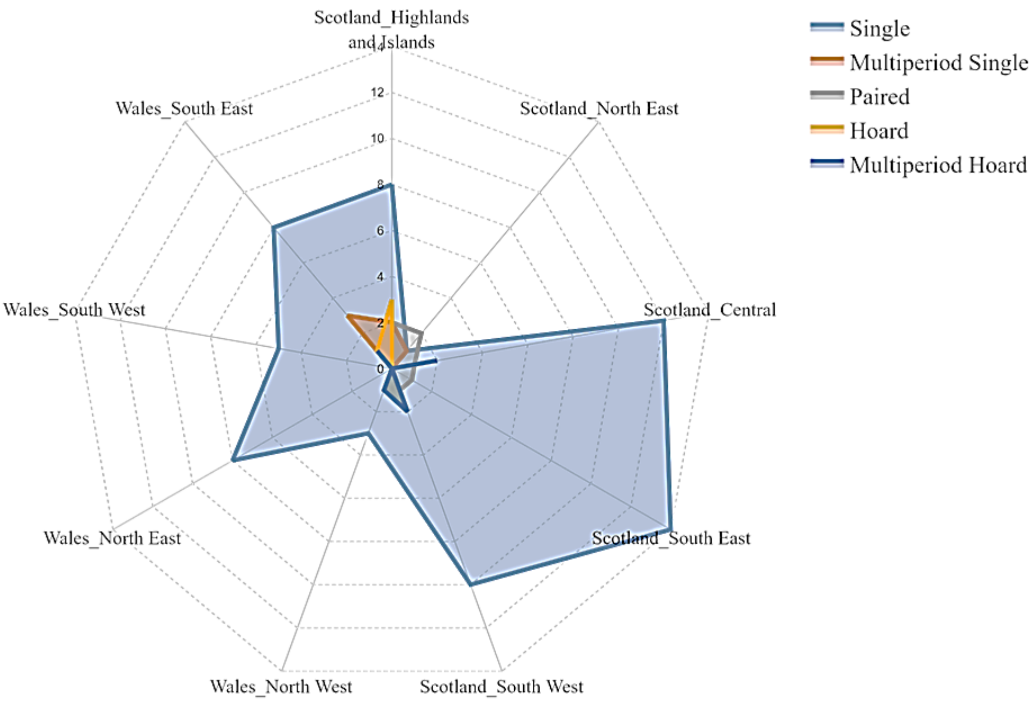

Figure 10.1. A radar graph of the number of sites with different depositional traditions per sub-region. Sub-regions for Wales are located on the left, and for Scotland the right. Different colours indicate different quantities of the deposition traditions per sub-region.

Depositional traditions noted in the sub-regional analyses will be reviewed here for regional trends. The radar graph demonstrates the quantity and diversity of wetland depositional traditions noted during sub-regional analyses (Figure 10.1). Single object deposits are the most common type of tradition, having 70 accounts. Multiperiod single object deposits are rare but appear in the Highlands and Islands, Northeast, and Southwest sub-regions of Scotland in addition to the Southeast sub-region of Wales. In contrast, paired objects only occurred in Scotland, but were more common in the north than those from the Central and southern sub-regions. Hoards only occurred in a few select sub-regions – the Highlands and Islands, Southeast and Southwest of Scotland, and the Southeast of Wales.

Very few sub-regions exhibit both multiperiod and single period hoards, apart from the Welsh Southeast and Scottish Southwest. As a result, sub-regions generally preferred to practice either single period hoards or multiperiod hoard deposits. Multiperiod hoards occurred in the Central and Southwest sub-regions of Scotland in addition to the Northwest and Southeast sub-regions of Wales. However, when considering all the periods of deposition, activity was the highest for multiperiod hoards because of its repetitive nature (based on object quantities).

The quantity of objects from each sub-region was organised by deposition traditions to provide a better understanding for the scale of contribution (Table 10.2). Overall, most objects were reported from multiperiod hoard traditions with a minimum number of 262 pieces. Thereafter, hoards had the second-highest object count with 205 pieces.

Deposition Regions	Single	Multiperiod Single	Paired	Hoard	Multiperiod Hoard	Totals
Scotland	45	12	14	143	132	346
Wales	25	6	0	62	130	223
Totals	70	18	14	205	262	569

Table 10.2. Object quantities from each deposition tradition in Wales and Scotland.

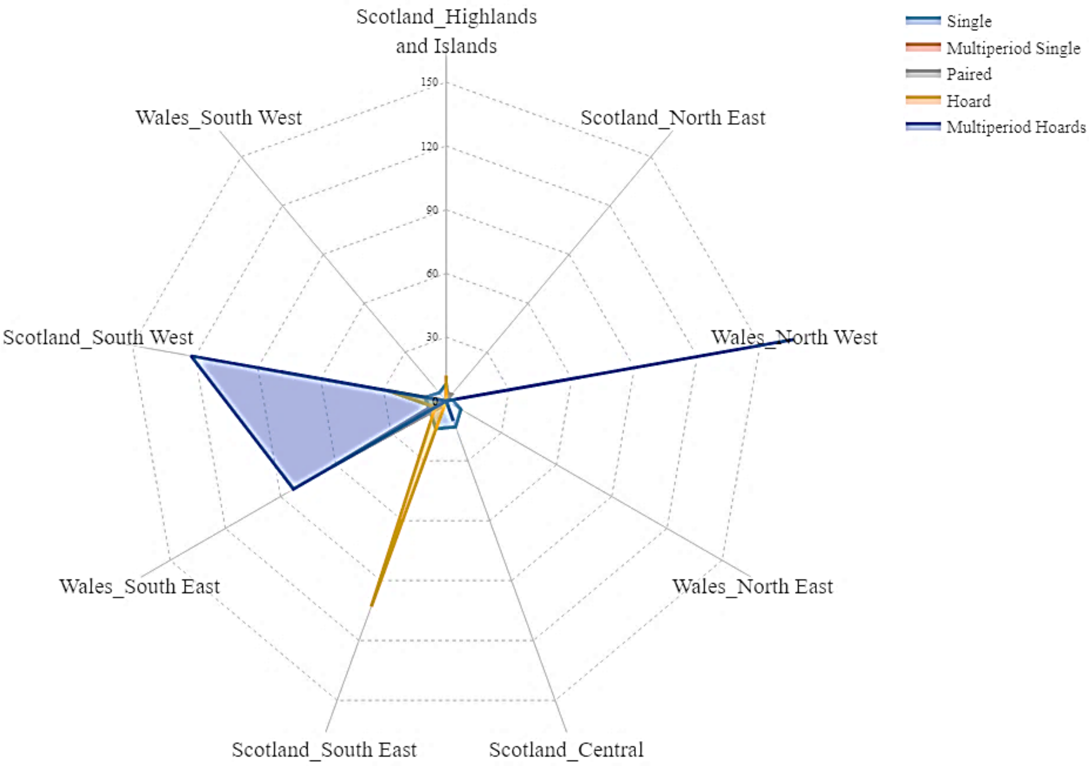

Figure 10.2. A radar graph of the affiliation each tradition type has sub-regionally based on object quantity. Different colours show the degree in which the quantities of object types based on tradition noted sub-regionally.

While single object deposits were the most reported tradition type, understandably, they do not have the same quantity of material as other observed tradition types (Figure 10.2). For Scotland, hoards have the highest object quantity, whereas for Wales it is multiperiod hoards.

The quantity of objects donated or placed by the group or community may be indicative of reaffirmation of social identity; however, these large hoards may also be elaborate demonstrations of power and elitism. Likewise, these deposits indicate a level of 'costly signalling' (Bleige-Bird and Smith 2005), whereby object donation through deposition creates an economic deficit, but provides social reaffirmation of identity and community. Returning to the same location or wetland was not as important as the demonstration for wetland deposition of the Northeast and Southwest sub-regions of Wales and Highlands and Islands and Northeast sub-regions of Scotland. In contrast, multiperiod hoards in the south of Scotland and the Northwest and Southeast sub-regions of Wales provide evidence of the reverence the local communities held for particular wetlands. Nevertheless, the scarcity of further archaeological investigation after certain hoards were reported[27] might have attributed to additional undiscovered material in the same wetland. This also explains why several hoards and multiperiod finds have several discovery dates. Deposition practice differs in Wales, where multiperiod deposits appear to be the preferred method of deposition based on the number of objects reported. Revisiting known sites for depositional practice over generations is evident in both the Northwest and Southeast sub-regions of Wales.

10.3 Wet Landscapes and Sediments

Variable use of specific wetland environments for depositional practices may reflect communal and (or) regional traditions. Certain wetlands or locations could hold important collective memories or communal significance (e.g. resource extraction, travel, associated folklore). While these associations and intentions may not be known, the archaeological evidence has provided clues to the prehistoric environment and interactions within these landscapes.

[27] The date of the find also contributed to this lack of further survey of areas. It is a modern method to scan areas after initial finds have been reported, but not so in the 1800s or early 1900s.

Overall, peatlands were the most common landscape in which deposition sites have been reported (Figure 10.3). However, when the different floodplain types (i.e. river, estuary, or generic) are combined, these landscapes show a higher level of deposition. Nevertheless, the high figures of floodplain depositions may result from original river deposition that has since drifted to the peripheral floodplains. These figures differ from preconceived theories that wetland deposition was primarily focused on rivers and lakes.

Associated sediment types recorded from deposition sites were also assessed (Figure 10.4). Sediment contexts were sourced from excavation reports and findspot soil maps. Soil maps allowed for the examination of both the parent material and the modern environment. There was minimal alteration from the prehistoric sediment context in wetland locations apart from a few minor river migrations in many instances. Minor alterations were generally the natural evolution and succession of different ecosystems for locations that showed variation in the environment. However, find spots that have shown significant alteration of the environment were generally subjected to modern human alterations (e.g. deforestation, agriculture, and urbanisation).

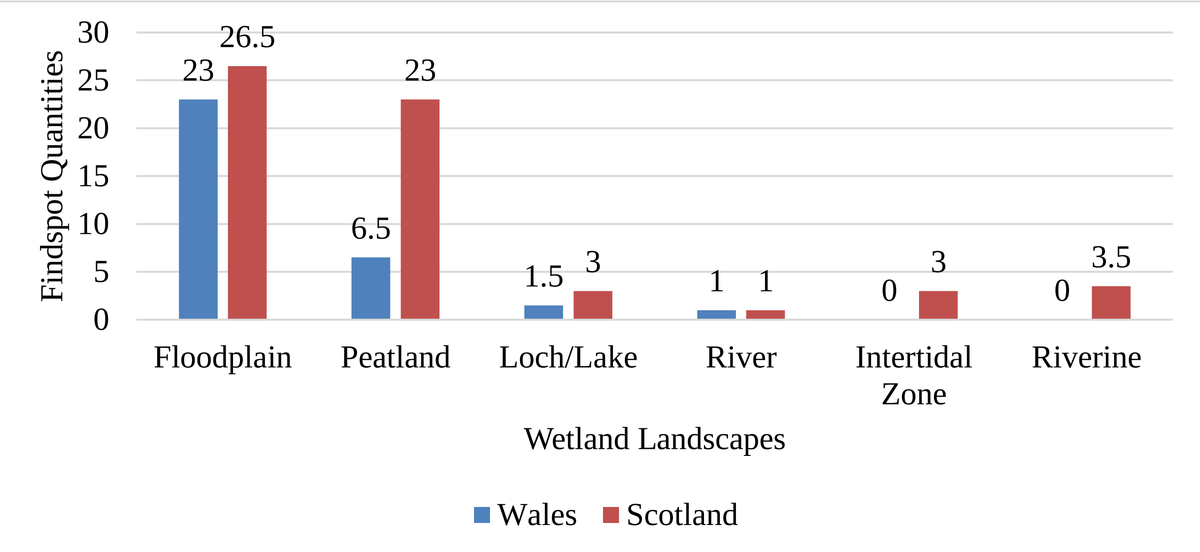

Figure 10.3. Comparison of wetland landscapes with findspot quantities in Wales and Scotland.

A review of the associated sediment types in correspondence to the wetlands where the objects have been reported shows that deposition in peat is the most common context (Figure 10.4). Wet acid loam and clay are the second common sediment context for Wales, whereas gley soils are more prevalent for Scotland, both having 19 accounts. Perhaps when peatlands were not accessible, alternative wet landscapes that also contain anaerobic qualities like wet acid loam with impeded drainage or gley soils were sought for deposition.

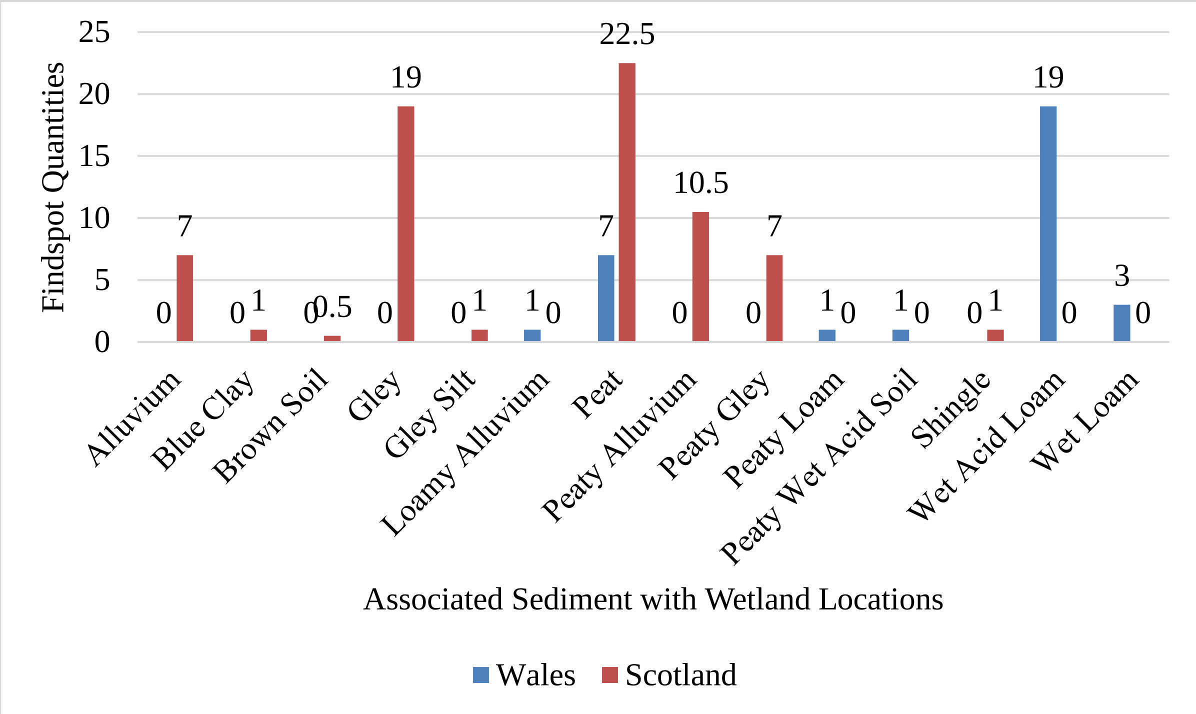

Figure 10.4. Comparison of wetland landscapes sediments with findspot quantities in Wales and Scotland.

10.4 Object Types

Common object types identified in wetland deposition traditions are essential to understanding communal preferences and reflections of regional identity through chosen objects. The project catalogued a total of 611 entries (minimum number of objects 569) (Appendices 6, 7, 8, 9). To briefly review, the northern regions of Scotland preferred armlets. Armlets and torcs were both the common object type for the Central sub-region. The Southeast sub-region preferred vessels, whereas the Southwest's common item was blades.

For Wales, the Northwest sub-region's common item was tyres. The Northeast's common items were both terrets and vessels. The Southeast analysis showed that coins were the most frequently deposited objects. Lastly, axes were the common item in the Southwest sub-region.

For Scotland, the northern regions' common item was armlets. The Central sub-region's common object was both armlets and torcs. The Southeast's common item was vessels, and the Southwest was blades. The northern and Central sub-regions of Scotland objects of deposition were predominantly of personal adornment for deposition. This preference contrasts with the northern sub-regions of Wales, where chariot and equestrian equipment was selected for deposition. The Southeast sub-regions for both Wales and Scotland show individuality in their preference for vessels and coins. Perhaps this is representative of their commodities and trade networks. The commonality of sharp instruments from the Southwest sub-region in Scotland and Southeast sub-region in Wales is fascinating, with items being of various blades types and axes.

Object types showed clear sub-regional trends. For single object deposits, fasteners were the common item chosen for deposition for both regions at 14%. Multiperiod single object deposits appear to equally favour bog butter, cauldrons, fasteners, stone balls, and terrets at 11%. For paired deposits, which have only been confirmed in Scotland during this period for wetland deposition, the common item is armlets at 37%. Ingots were the most common object type for hoards at 9%. Lastly, for multiperiod hoards, swords were the most common at about 10%. Overall, the object type with the highest frequency of deposition regionally was terrets at about 6%.

Due to the breadth of object types reported from wetland context, categories were assigned based on their proposed function (even if purely ceremonial) to review common associations with wetland and material types (Figure 10.5). Tankard handles are included in ‘vessels’ as they are representative of tankards. Likewise, escutcheons were included in ‘vessels’ as they are component pieces. Axes for this project were categorised as tools instead of as weapons. However, the study does take note that this is a possible secondary function (see Appendices 8 and 9). Lastly, mirrors and razors are interpreted as vanity tools, though there have been arguments for other functions such as rituals to access liminal spaces and magic (e.g. Giles 2008; Joy 2009, 2010, 2011c).

Analysis of objects based on categorical function showed equestrian equipment was the standard item type chosen for deposition (17%). Overall, certain landscapes did show correlations with particular utility categorisation. Intertidal zones showed a strong correlation with items of personal adornment (e.g. jewellery and accessories). Object data shows peatlands have the closest association with vessels, including tankard handles. Items of personal adornment were the most common object type found in river floodplains. Lakes and lochs, including prehistoric landscapes, had a strong association with weapons.

Riverine locations have a strong association with equestrian equipment and items of personal adornment. For rivers and floodplains, equestrian equipment was the most common object. Lastly, estuary floodplains show a preference for the deposition of items of personal adornment.

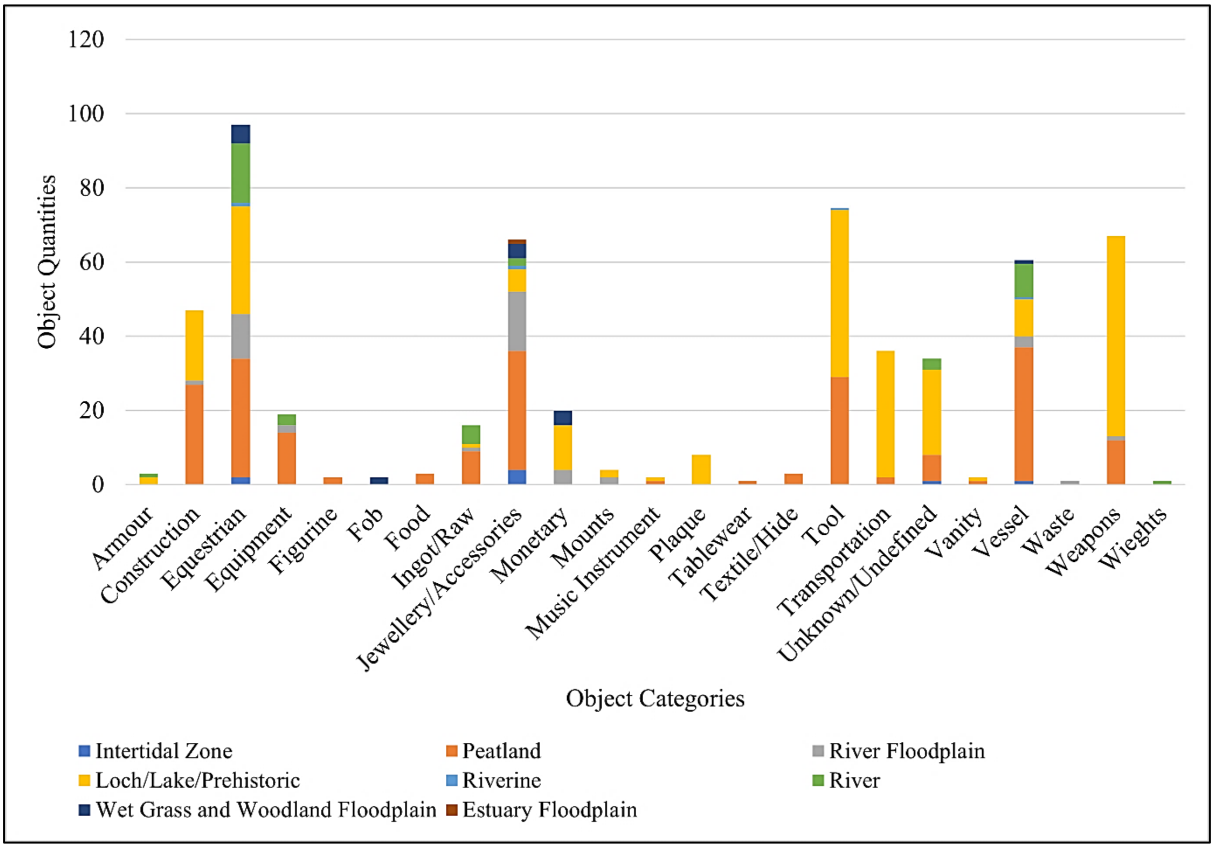

Figure 10.5. Comparison of object types based on categorisation of utility and compared with noted wetland context.

The objects and associated landscapes are important for identifying wetland deposition and the material composition of the pieces. Overall, equestrian equipment was the most reported utility type for wetland deposition.

10.5 Material Types

Analyses of common Iron Age material types reported are valuable because the trends express generational and economic continuity of preceding periods or transitions into evolved preferences for the desired objects produced. To review, the standard material for object compositions in Scotland's northern and Central sub-regions was copper alloy. Communities in the southern regions preferred objects composed of iron; only one region in

Wales held this same preference, the Northwest. The other three Welsh sub-regions all preferred copper alloy for material composition.

Overall, the primary material across regions is copper alloy at 48% (Figure 10.6). Brass was incorporated into copper alloy (as it is a variant of the alloy), due to a lack of consistent analysis across collections like those performed for the Deskford carnyx or Nant-y-cafn hoard. Materials that contained less than 1% are not shown on the graph but are listed in the table. Roberts (et al. 2015: 365-367) states that the peak period for deposition of copper alloys in Britain was the Ewart Park metalwork phase (1000 BC to 800 BC), just before the Early Iron Age. Thereafter, deposition of copper alloy objects is believed to have been drastically reduced (Roberts et al. 2015: 365). Copper alloy has become accepted as a 'socio-political' currency (Needham 2007: 39). However, with the collapse of the 'bronze standard' (Needham 2007: 39), the significance of the continued presence and volume of copper alloy, especially in the Late and Later Iron Age, in wetland deposits is debatable. For example, Cunliffe (2015: 12) states that the continued use of copper alloy and its notable presence in Iron Age deposition was instead due to a surplus of material and a lack of demand. Nevertheless, the use of copper alloy could be indicative of the sustained socio-cultural value the material still held in British Iron Age communities. Likewise, the material may have been

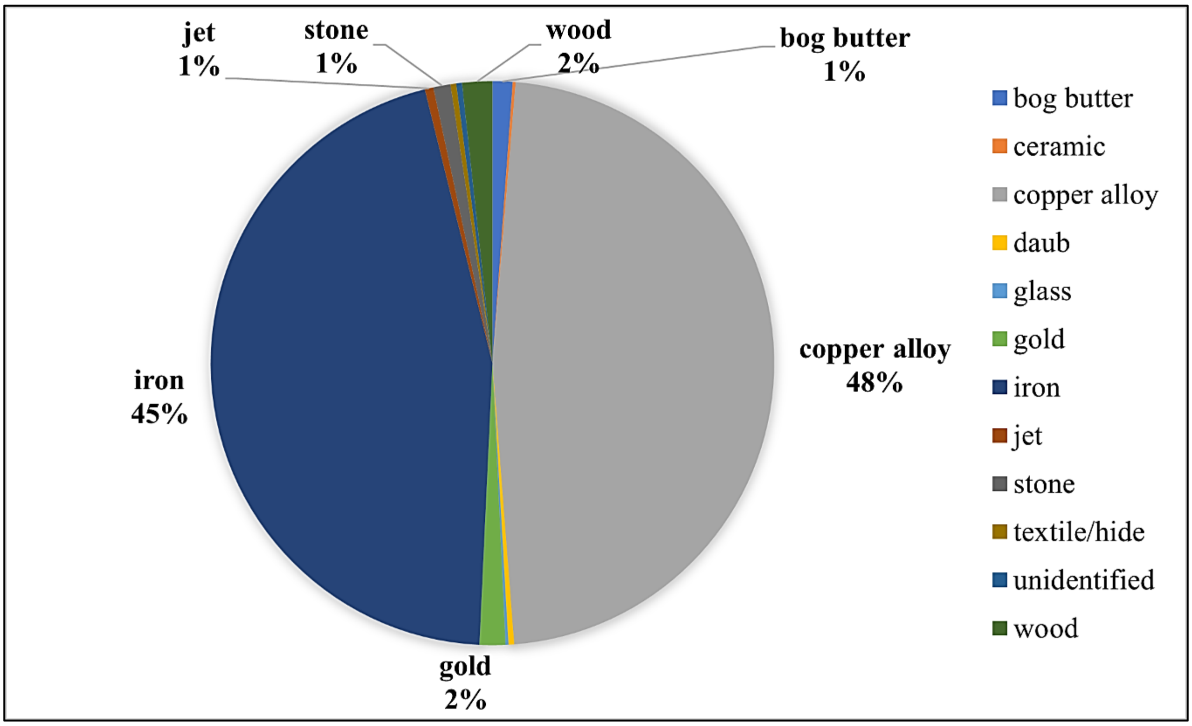

Figure 10.6. Materials observed for all objects noted for Wales and Scotland from wetland contexts.

preferred to be deposited in wetland areas, but more research would need to be performed to confirm this hypothesis.

Reviewing materials by their relation to deposition traditions showed some variation in preference (Figure 10.7). Single, multiperiod single, paired, and hoards are predominantly composed of copper alloy material. Multiperiod hoards, however, have more items composed of iron. The change in preference may represent a period shift in the kind of material preference which characterises the British Iron Age. For example, iron begins to be present in depositions in the south of Scotland from the early first century BC to the late second century AD. In Wales, iron is introduced to wetland deposition with the Llyn Fawr hoard, but the small quantity of only three pieces is not a substantial shift in material preference. However, with Llyn Cerrig Bach in the Northwest sub-region, and Langstone and Nant-y-cafn in the Southeast sub-region, iron becomes more common in deposits from the early fourth century BC to the late first century AD. Nevertheless, with only eight sites reporting iron materials out of 102 does create a bias, and therefore may not be statistically representative of the practice. Nevertheless, iron material in select deposits overwhelmed copper alloy in hoards[28] and multiperiod hoards the Late Iron Age and thereby represent most of the material presented.

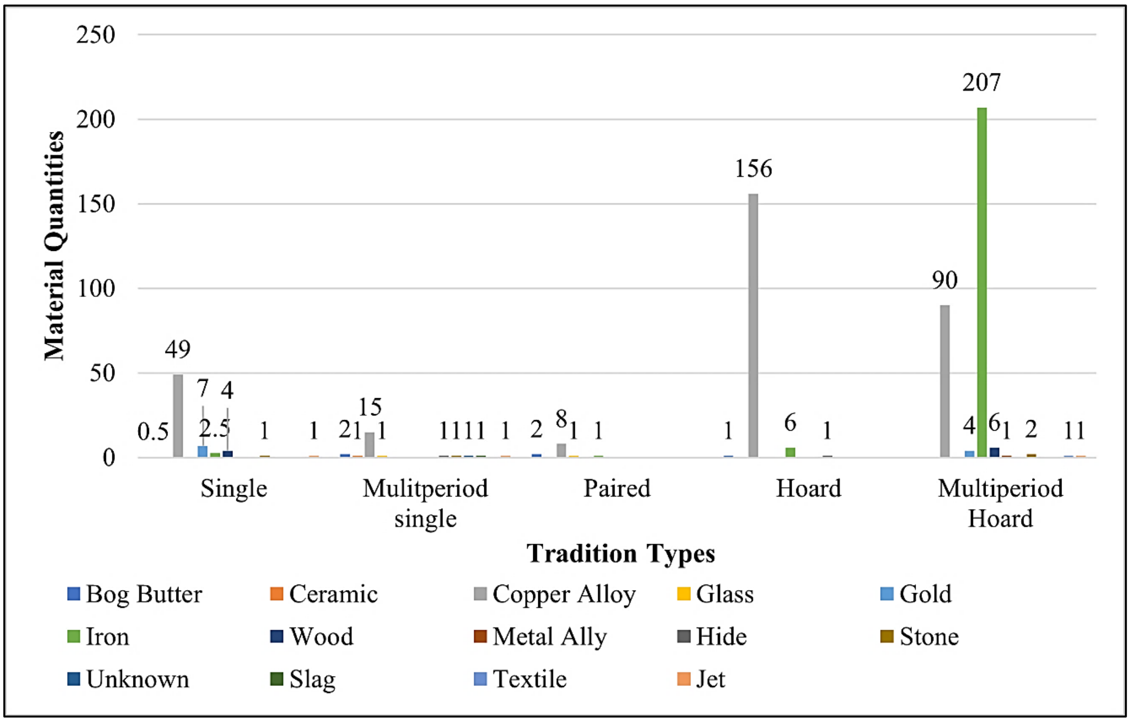

Figure 10.7. Comparison of object materials and deposition tradition types.

[28] It is understood that the surface presentation of Nant-y-cafn is copper alloy. However, in this regard, the XRF has shown that iron is a significant material of the hoard and therefore needs to be considered when discussing iron material preferences in the Late and Later Iron Age.

Materials were also assessed by their association with wetland environments (Figure 10.8). Copper alloy was the preferred material composition for peatland deposition. Iron, however, was the most common material found in both lakes and prehistoric lakes. Prehistoric lakes, however, are challenging because of their common transitions into marsh and peatland. As most objects were found in peat, it was important to determine if they were sourced from a prehistoric lake with peat sediment or peatland environments. As some of these items were deposited during a period in which a lake would have been present, they are treated as lake deposits. Copper alloy was also the common material type reported from wet grass and woodland, river, and estuary floodplains, along with intertidal zones, and rivers.

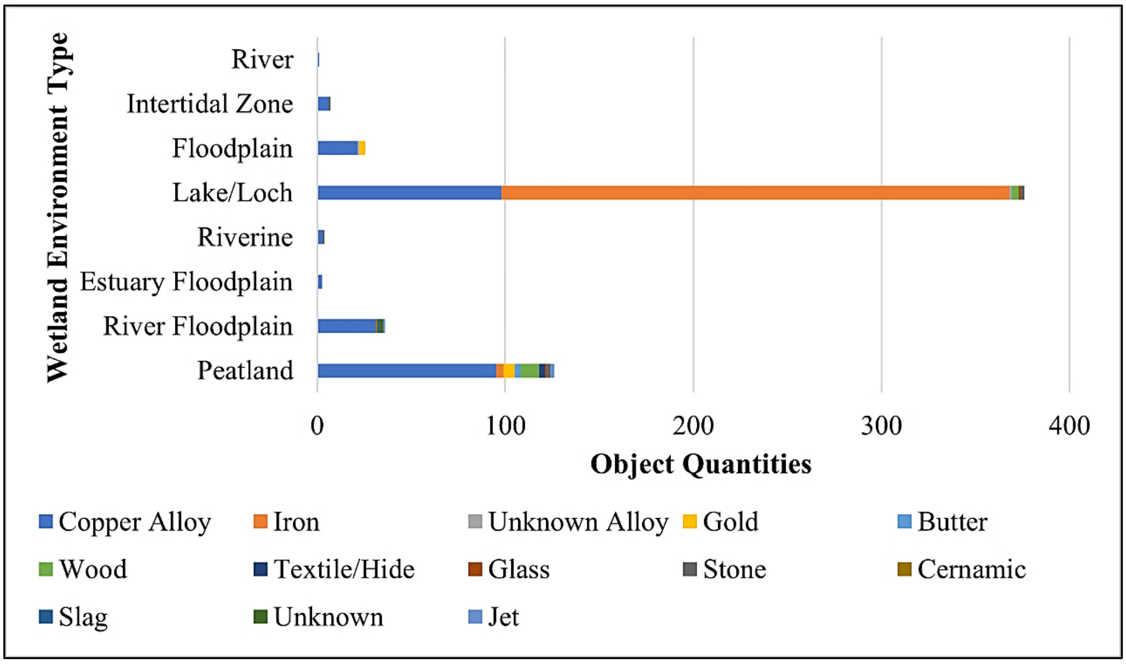

Figure 10.8. Comparison of object material and wetland type.

Overall, copper alloy is common in peatland, floodplains, intertidal zones, and rivers. Iron is the common material reported from lakes. Material types show a shift in preference for object composition, but also confirm continued pre-existing practices. Therefore, periods of deposition should also be reviewed to better understand the retention or evolution of wetland deposition practices in certain regions of Wales and Scotland.

10.6 Periods of Activity

A review of periods of depositional activity allows us to understand if there were continuous or episodic periods of practice. Likewise, a review of the discovery dates enables a better understanding of the methods and potential biases related to finding, excavating, and recording of findspots—especially those that are antiquarian related.

10.6.1 Typological-chronological Sequence and Radiocarbon Dates

Periods of deposition were reviewed sub-regionally using typologies and applied radiocarbon dates. To caution, the dates assigned to pieces based on typology only reflect their manufacture period and not their proposed time of deposition. Objects which have pre-existing radiocarbon dates were assumed to be deposited near their production date, like bog butter. However, organic pieces like the wooden figurines could have remained in circulation for extended periods before their deposition. It is important to consider these dates compared to the political and climate changes experienced in these regions during the Iron Age.

Timelines were created to compare both regions' periods of activity with object quantities. The graph for Wales, sourced from 32 sites, shows a high level of elaborative practice of deposition traditions from the beginning of the Early Iron Age until the first century BC (Figure 10.9). A spike in activity occurs around 100 BC to around 60 BC; this rise in deposition and object quantities could be representative of a few generations of intensive practice. After this spike, there is a drop in all forms of depositional activity, apart from systematic single object deposits at low quantities. Following this period, another spike occurs from around 15 BC to 60 AD, until approximately 125 AD. The second horizon of activity corresponds with the Roman conquest of Wales, starting from 48 AD and lasting until 78 AD, but not withdrawing completely until 383 AD.

The graph for Scotland, with 70 findspots, shows a continuous practice of wetland deposition throughout the Iron Age (Figure 10.10). The correlation between object and deposition quantities shows a spike in activity from around 800 BC until about 700 BC. Thereafter, activity stays consistent with correlating object and deposition quantities. The second horizon of activity occurs from the beginning of the first century AD and lasts until 200 AD. Again, this activity corresponded with the initial period of Rome's attempted conquest around 71 AD and lasted until around 120 AD, but without complete withdrawal until after 139 AD with the failure to maintain the Antoine Wall.

Despite Roman military efforts to retain occupation in certain regions of Scotland and Wales, it did not disrupt local wetland deposition traditions. Instead, there is evidence of fusion between Romano-British and local styles in the material chosen for deposition (e.g. Langston and Nant-y-Cafn). The increase in manufacture activity related to wetland deposition during this period almost appears to be a reaffirmation of social identity. While deposition in wetlands has remained consistent through the Iron Age—apart from the initial spike in the Early Iron Age—the second spike in activity corresponds during periods of attempted Roman conquest. Therefore, it is possible that this spike in activity was an effort to reaffirm social identity due to the attempted cultural disruptions and foreign imposition of the Romans. It is also likely that the increase in the volume contributed could have also been the result of preventative action to make sure enough material would remain despite possible efforts of looting by Romans (e.g. Caesar, Commentāriī dē Bellō Gallicō - Book 5, Chapter 12 and Book 6, Chapter 17). Another possibility is that many of the Romans saw the wetlands as taboo locations. Thereby, localised traditions that had connections with wetlands became more socially charged for the invisible protection they provided, thus increasing activity in these select locations.

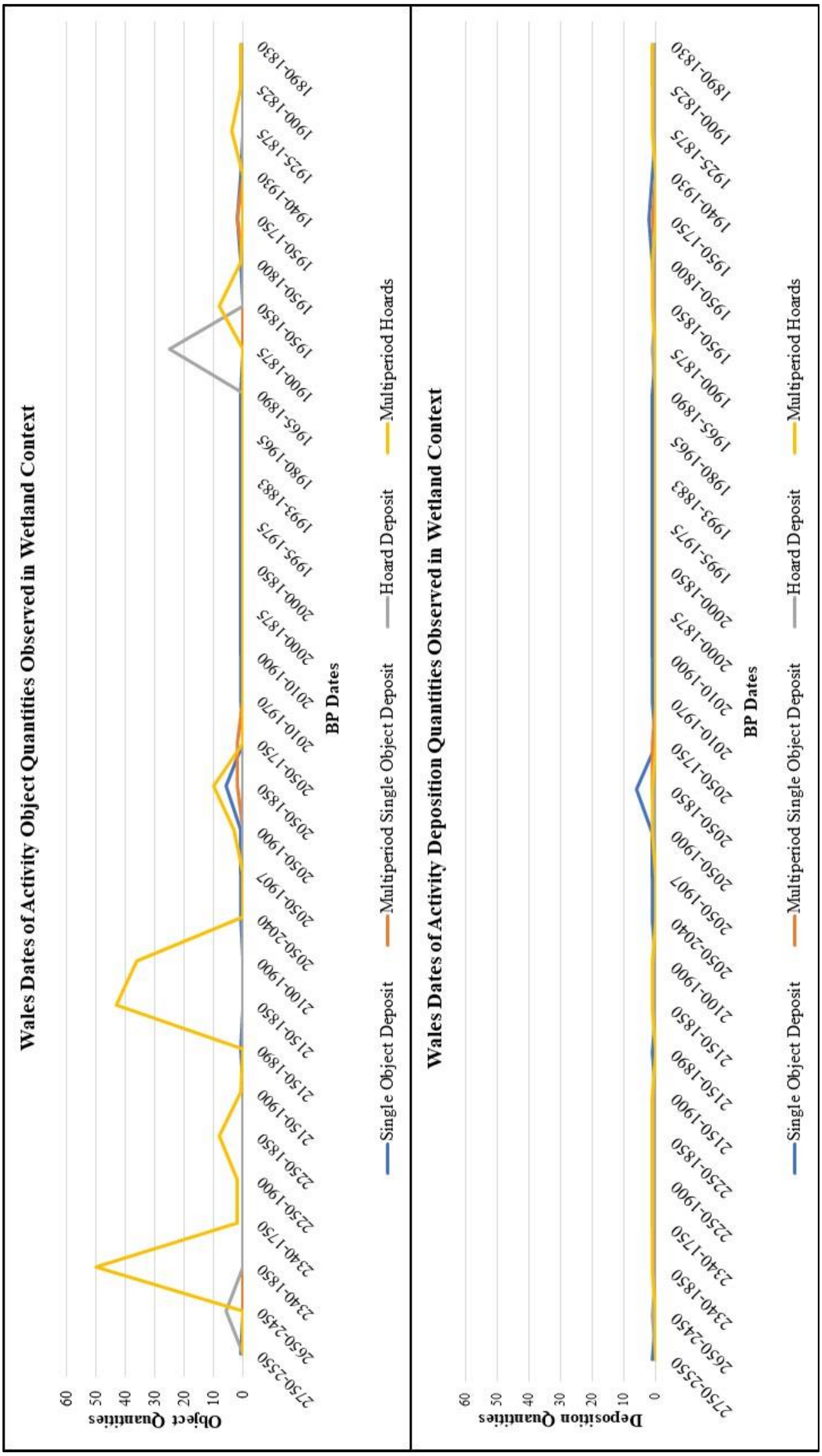

Figure 10.9. The paralleled line graphs demonstrate periods of activity in Wales. The top line graph compares object quantities with BP dates. The bottom line graph compares findspot quantities with BP dates. The different coloured lines demonstrate the different deposition traditions.

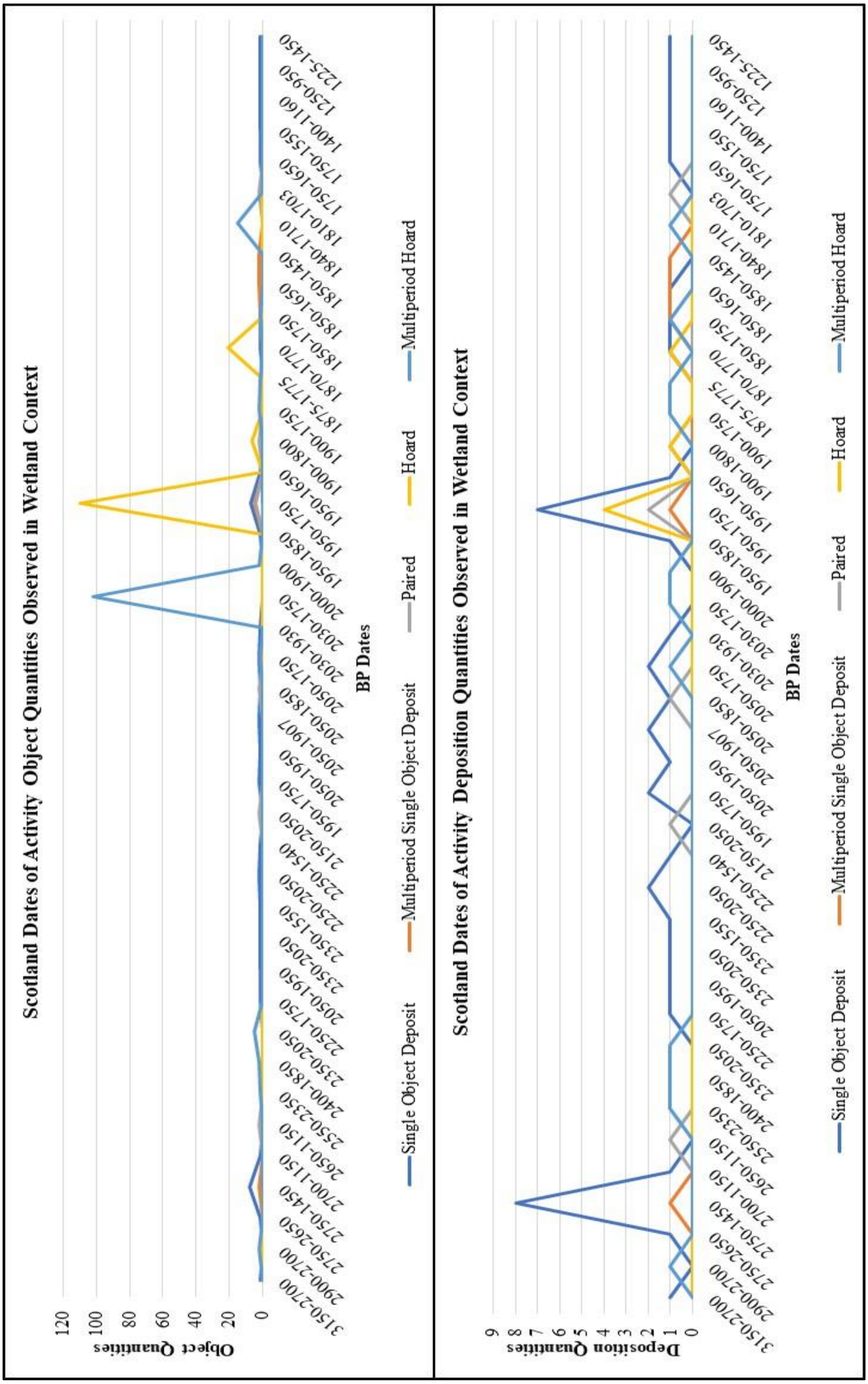

Figure 10.10. The paralleled line graphs demonstrate periods of activity in Scotland. The top line graph compares object quantities with BP dates. The bottom line graph compares findspot quantities with BP dates. The different coloured lines demonstrate the different deposition traditions

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10.6.2 Discovery Dates

Discovery dates were analysed for possible introduction of bias in the data (e.g. no coordinates, lack of description, disintegration through exposure to oxygen). This review of discovery dates excludes settlement and production dates, and therefore claims of limited discovery periods are not inclusive to all archaeology but subjected to include only wetland deposition sites. These dates are important as certain archaeological standards were still in development in different periods. The method in which these objects were found explained variation in object preservation and intentional or unintentional excavation issues. For example, one of the Lindow woman was thought to have been a deflated football, rumoured to have been kicked around until someone noticed it was a head (Stead and Turner 1985). Other more prevalent examples are cloth-wrapped hoards in which the fabric disintegrates upon exposure to oxygen after excavation (i.e. Lamberton and Balmaclellan). Or, the loss of bog butters after notifying and returning to the site like Kyleakin and Kincardine Moss.

For dates that were assigned ranges, the median of the find years was used to represent the period of the largest quantity of reports (Figure 10.11). Locations excluded due to lack of a discovery date have been disclosed in the previous chapters. The first discovery reports were in 1743, extending until 2018.

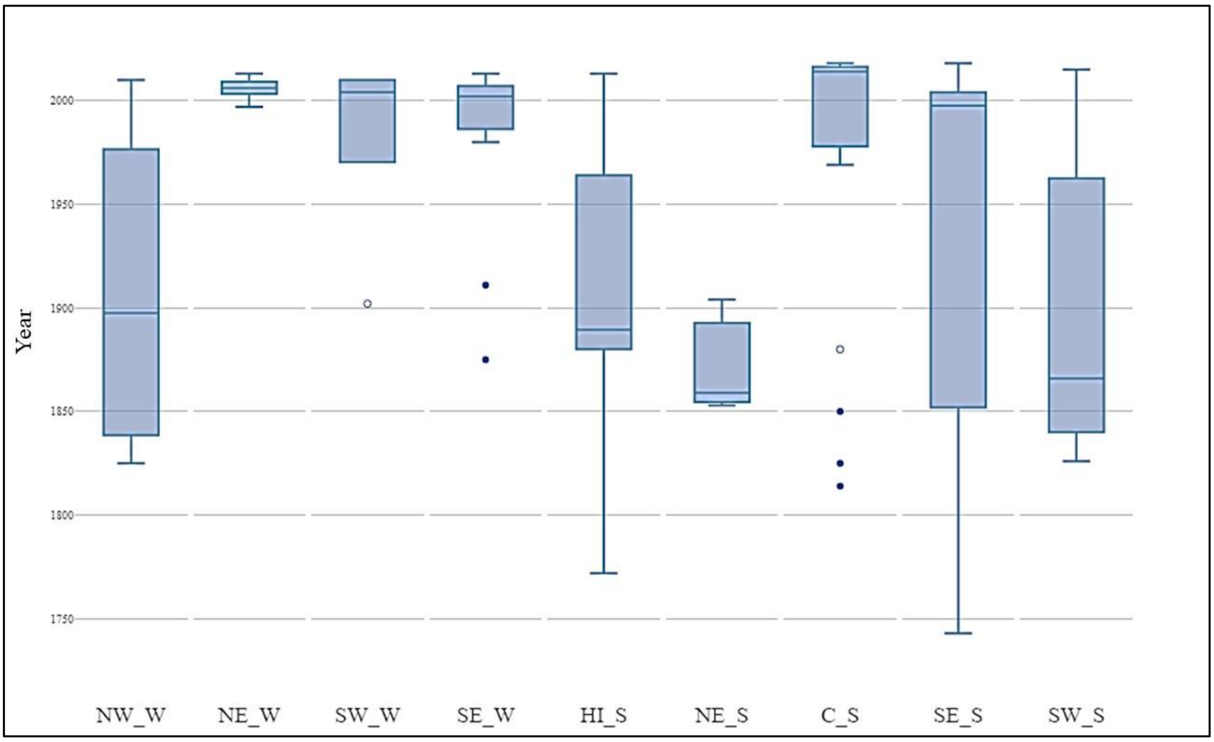

Figure 10.11. Box plot of the reported find dates per site. The dots are the outlier discovery dates that are not within the median range. The whiskers represent the maximum and minimum values of the dates within a sub-region and exclude outliers.

To review, there was sub-regional variability of discovery dates. The majority of find dates for the Northwest sub-region in Wales was in the nineteenth century; however, the findspot with the most objects was reported in 1942 (i.e. Llyn Cerrig Bach). For the Northeast sub-region in Wales, the majority of discovery findspots occurred from 2004 to 2006. The majority of discovery dates occurred in the early twenty-first century for the Southwest sub-region in Wales. Lastly, for the Southeast sub-region in Wales, most discovery dates occurred in the early 21st century. Scotland, likewise, has variability sub-regionally for discovery date periods. For the Highlands and Islands sub-region, most of the findspots were found from 1850 to 1900. There is no median period of discovery dates for the Northeast sub-region, however based on object quantity per findspot the majority of finds were reported in 1853. The majority of the finds for the Central sub-region occurred in the early twenty-first century. The majority of the findspots for the Southeast sub-region came from the early twenty-first century. Lastly, for the Southwest sub-region, the majority of findspots were reported in the nineteenth century.

The majority of findspots reported from wetland contexts for Wales and Scotland are from the twenty-first century due to an increase in metal detecting. The rate of discovery in the south of Wales in the early 21st century is unsurprising due to the increase of metal detecting and urbanisation. Laws have contributed to the rise in discovery, especially within Wales, with the Treasure Act established in 1996 and subsequent amendments in 2003 and 2020. However, the implementation of the Treasure Trove (est. 1969) and the Treasure Act did not significantly affect the discovery rates immediately in these regions but instead attributed to the rise in reports in the early 21st century. It was not until metal detecting became a more widespread practice in addition to the new amendments in the Treasure Act that discovery rates increased in the late 20th and early 21st century AD. However, the nineteenth century resulted in the largest quantity of material reported from the findspots discovered. These finds were generally accidentally because of drainage operations or peat extraction.

10.7 Summary

The regional and sub-regional observations provided a broad framework with which wetland deposition traditions in the British Iron Age can be defined. Depositional traditions noted in wetland locations were single, multiperiod single, paired, hoard, and multiperiod hoard. Newly established depositional traditions observed through this research are pairs and multiperiod single object deposits. However, paired deposits could only be confirmed for Scotland. Likewise, multiperiod single object deposits were also of note for both Wales and Scotland. Of the traditions listed, single object deposits had the most site reports for the two regions. The tradition with the highest object quantities was reported from hoards in Scotland and multiperiod hoards in Wales. Peatlands and floodplains were the favoured wetland landscapes for deposition overall, but this may be because of the fact that large portions of surface area in these two regions are dominated by these two wet landscape types. Nevertheless, when all floodplain types (e.g. river, estuary, grass, and woodland) are combined, this becomes the primary landscape chosen for deposition.

Regional trends have revealed patterns of practice, but there are differences to these performances sub-regionally, as has been mentioned. Associated sediment types of wetlands observed provide evidence for communal preference of deposition in peat or peat-compounds, even if the landscape was not peatland (e.g. floodplain variation or lake).

The objects chosen for deposition likewise showed sub-regional differentiation, meaning that communities had distinct preferences for the pieces chosen for deposition. To review, in the Northwest sub-region of Wales, the common object chosen for deposition was tyres; and for Northeast, terrets and escutcheons. For the Southeast, the common object type was axes; and for the Southwest, coins. The common object chosen for deposition in the northern sub-regions of Scotland was armlets; and for the Central-subregion armlets and torcs. For the Southeast sub-region, the common object chosen for deposition was vessels; and for the Southwest it was blades.

Due to the vast amount of categorical object types, the study organised individual object types by sorting them into proposed utility. Equestrian equipment, overall, was the common object category for deposition when all the sub-regional accounts were combined. The material composition of the objects also proved to be important.

The analysis of material composition was restricted to observation of external structure. However, this observation served the purpose of the analysis, as it still allowed for sub-regional and regional trends to be identified. To review, the analysis provided evidence that communities in Scotland had a near equal preference for copper alloy and iron. However, the iron deposits from the south overwhelmed the copper alloy. For Wales, the communal preference of material type was copper alloy. In comparison, most of the material reported from multiperiod hoards was iron. This change in material composition was interpreted as an evolution in material type preference, whereby iron soon overwhelmed the copper alloy deposits in select hoard and multiperiod locations due to continued and repeated activity.

Another interesting characteristic that developed came from the observation of material concerning wetland types. Overall, copper alloy was the common material type reported from peatlands, floodplains, intertidal zones, and rivers. Iron was the most common material type reported from lake locations, both contemporary and prehistoric. The transition in material preference reflects the spike in deposition activity for the two regions around the first century AD. The second horizon activity continued into the fourth century AD for Scotland and the second for century AD for Wales. Nevertheless, this spike in activity may reflect manufacture dates, and not necessarily when these pieces were taken out of circulation and deposited based on assigned typologies.

Find dates of certain pieces and hoards could have contributed to taphonomic bias in the study. Findspots and object reports have occurred as early as 1743. Most of the finds reported from wetland contexts have been from the twenty-first century, but they have likewise been reports from metal detectorists. The second period of reports come from the nineteenth century. The hundred-year gap between the discoveries of the antiquaries and the metal detectorist boom created a gap in recording consistency and reflected in the archaeological record.

It is highly likely that, as more material is found and (or) catalogued, the conclusions drawn here will change. However, this project intended to provide foundational patterns for holistic analyses of wetland deposition in Wales and Scotland, and this has been achieved.

Chapter 11 – Discussion and Summary

11.1 Introduction

Evidence of prehistoric settlement, production, grazing, transportation, and deposition has proven wetland landscapes to be a viable multifaceted arena that evidences complex social activities. While no landscape can be dedicated entirely to one interest or another, especially in prehistory when such partitions were more fluid, this study focused on deposits which were isolated or not associated with other types of activities. Interpretive 'isolation' of a specified archaeological activity is a modern construct used to define wetland depositional traditions that were not associated with settlement or production spaces. As stated in Chapter 3, it is recognised that biases exist in the data, and not all wetland sites and associated landscapes have been analysed to their full capacity. The limitations of the study presented here will change with future fieldwork and topographic surveys. However, regarding the current limitations and taphonomic bias, this thesis presents a more developed understanding of wetland deposition with object reports as recent as 2019.

The evidence suggests that the act of deposition is a repetitive generational performance, imbued in tradition. This study aimed to explore the defining archaeological characteristics of wetland deposition during the British Iron Age within the modern boundaries of Wales and Scotland. Both regions are considered part of the same broad cultural representation, but their archaeology would suggest that they had independent characteristics that are contrasting despite sharing the same landmass. Sub-regional divides were also allocated, however, in recognition of Chester-Kadwell (2008), Brindle (2013), and Robbins' (2013) concerns for variation in collection and recording schemes, a methodology was created to maintain cataloguing standards. To further reduce disparities and inconsistencies during the collection period, defining characteristics and descriptions were decided upon using predecessors' cataloguing systems for prehistoric artefacts (i.e. Earwood 1993; Fox 1946; Garrow and Gosden 2012; Horn 2015; MacGregor 1976; Martin 2003; Savory 1976). Object records were first extracted from museum collections and published site reports. Additional literature and digital heritage schemes were used to supplement missing information. Landscape, deposition tradition, and object and material types were all reviewed to help define Iron Age wetland deposition traditions for both Wales and Scotland and their sub-regions. These characteristics were considered for their possible significance to these communities for creating memories relating to wet landscapes, which is presented later in this chapter.

11.2 Wetland Landscape

Wetland landscapes are locations that have intermittent, seasonal, or continuous waterlogged soils (Coles and Coles 1994-5: 1), which includes ecotones between terrestrial and marine areas (Denny 1994: 250). Supporting evidence in this study suggests that wetland locations were chosen for deposition because of their fluctuating nature, and seasonal or intermittent transformation.

Overall, peatlands and floodplains were the most reported landscape when quantifying each site’s context. Peatland is shown to be the primary landscape for deposition. However, when all floodplain sub-types are combined, floodplains are considered to be the primary landscape for deposition. These landscapes may be the predominant location for wetland deposition because peatland and floodplains make up a large portion of the landmass in Wales and Scotland. Therefore, the common wetland may be the result of the dominant landscape of the regions. However, as there is regional variation to the primary wetlands chosen for deposition, the common wetland types reported sub-regionally may in fact be communal preference for deposition.

In Scotland, the communities in the Highlands and Islands and Southwest sub-regions favoured peatlands. The Northeast showed an equal preference for both peatland and floodplains. However, the Central and Southeast sub-regions preferred only floodplains; whereas in Wales, the western sub-regions had deposits that were commonly reported from peatlands. The eastern sub-regions, in contrast, showed a preference for floodplains. Traditionally, wetlands and associated depositional practices have been primarily considered within the realms of lakes and rivers. Variations in floodplains have been largely ignored in depositional studies. Nevertheless, research performed for example by Bradley (1990, 2000, 2017), Buckland (1993), Goldberg (2015), Murray (2011), and Yates and Bradley (2010) has brought attention to the importance different wetland landscapes and their utilisation held in prehistory. Overall, the data presents peatlands and floodplains as the common landscapes for wetland deposition within this study.

Bradley (2000: 155) proposed that,

‘On a superficial level, this might suggest that the use of watery locations for votive deposits was quite a stable process, in contrast to the changing history of settlements and monuments in the wider landscapes, but this is not the case. There is evidence that the earliest deposits in these locations were immersed in shallow water and that the local environment changed during this lengthy history, so that some of the later offerings were placed in peat bogs.’

Perhaps environmental transitions from a primary wetland type such as a lake to another (e.g., peatland) may explain why peat deposition has been considered subordinate (or second most common), as opposed to primary for British wetland traditions. However, according to the data collected, very few lake sites have transitioned into peatlands, and therefore it is believed that deposits were intentionally placed in peat during an active or dormant state.

Floodplains have proved to be important depositional landscapes. While the floodplains observed in the study derived from river and estuary runoff or seasonal rainfall, this visual transformation of the landscape may prove to be necessary, and part of the performance in which extreme transitions of the environment call for a deposition to be enacted.

Evaluation of associated wetland sediments was also considered. Most objects do not stay afloat after their deposition but sink or are purposely buried in accessible wetland sediment. Therefore, it is also pertinent to take note of the associated wetland sediments, what this represents in wetland deposition activity, and how these sediments contributed to object preservation in these environments.

11.2.1 Associated Wetland Sediments

Sediment association was observed for its correlation with wetland landscapes, object types, and what trends in the data could reflect in terms of depositional traditions regionally and sub-regionally. However, there is a degree of complexity in this analysis because of minor to major fluctuations of certain wetland environments through natural river migrations and successive ecology to human alterations such as deforestation, large-scale agriculture and drainage, and urbanisation. The level of preservation is affected by both saturation and sediment relationships. Goldberg (2015: 45) proposes that it was highly probable that prehistoric individuals knew of the preservation qualities of these environments, as shown through bog butter, which would mean associated sediment would have also been relevant to determine the correct location for deposition.

In Scotland, peat sediment was the primary context for reported finds in the Highlands and Islands, Northeast, and Southwest sub-regions. Gley sediment was the primary context for finds reported from Central and Southeast sub-regions. For Wales, only the Northwest showed a strong affiliation for peat. However, the Southwest does show a connection with peat if peat-mixtures are considered (e.g. peat-alluvium, peat-acid loam and clay). Otherwise, the sub-region had higher instances of sites reported from wet acid loam and clay contexts with impeded drainage. Both eastern sub-regions had more reported sites from wet acid loam and clay contexts with impeded drainage. Overall, peat—and mixtures thereof—were the primary sediment in which objects were found.

Peat is partially decomposed plant material that has accumulated at the soil's surface profile in waterlogged anaerobic environments (Bruneau and Johnson 2014: 1; Lindsay and Immirzi 1996: 3).[39] Peat is also semi-carbonized because of the deoxygenation process from organic degradation, which provides a unique chemical composition that directly affects submerged artefacts. If the object is made from organic matter, the internal chemical structures are replaced or altered depending on their reaction to peat and acidic pH. For metal, especially iron, the material is not altered, but rather the corrosion process is slowed because of the anaerobic properties of peat.

Gley soils are hydric and develop because of continuous or intermittent waterlogging, which also provides anaerobic conditions (Lily 2019). Gley is predominantly found in Scotland and has a sticky consistency and texture. In Wales, wet acid loam and clay sediment were observed for deposits in locations with impeded drainage. The clay mixture gives the soil a similar sticky quality when wet that is comparable to gley. This sediment type may have been used as a substitute when peat or peat mixtures were not available in the immediate area. Therefore, perhaps what was an important indicator of the appropriate environment for deposition was not only the wetland landscape, but also the associated sediment anaerobic qualities. It is also likely, however, that these sediments happened to be the dominant type for the sub-region in wetland locations.

These wetland locations would have been sought for many reasons, the primary of which is raw material and dietary resources. Peat, gley, wet acid loam and clay sediments in wetland environments have the ability to support seasonal or intermittent grazing sources (Britton et al. 2008; Van Dijk 2016: 45). The biodiversity achieved through encroaching flora makes these locations prized grazing grounds, specifically peatlands (Van Dijk 2016: 45). In a study performed by Britton et al. (2008), isotopic evidence confirmed salt marsh grazing along the Severn Estuary dating back to the Bronze Age. Therefore, wet locations would have been interacted with, and observed through the seasons over generations. Perhaps in periods of excessive flooding or directly after, deposition would occur because extreme inundation disrupted the natural cycles of the seasons. These phenomena may also explain why there are such large gaps in between deposits at certain sites or entire sub-regions. If deposition were linked to events of excessive inundation, this could also explain why there was an increase of activity closer to the Roman conquest (Cunliffe 2004) coinciding with an increased water table in certain areas. Excessive deforestation would alter the environment considerably, allowing peat to expand into these areas in addition to less vegetation to handle seasonal rains. However, this speculation may be too functionalist in its application.

Wetland landscape type and sediment both play a pivotal role in wetland deposition. However, it is not the location alone that defines wetland deposition traditions. Archaeological recognition of wetland deposition is characterised considerably by how and what objects were deposited. Collective preference of topography is reflective of communities' relationships with wetlands and their associated significance through social learning and method of loci (Treadway, in press). This is because social learning is achieved through observing what is beneficial to the group and learned through mimicry (Cousin 2006; Jeanes 2019). Therefore, whatever connotations connect deposition and its placement within the chosen wetland is generationally observed and has been deemed beneficial. Likewise, method of loci enables objects to be connected to the topography through collective memory. The topography itself would aid in recall of an event or object associated with the developed mental imagery of a familiarised location (McCabe 2015). As a result, wetland topography was well known by the local communities and used as a mnemonic to fortify collective and (or) individual memories.

11.3 Wetland Deposition Traditions – How are Objects being Deposited

Wetland deposition practices have been typically characterised by hoards or objects of status placed into watery contexts. However, as shown in previous chapters, there is considerable organisation involved in choosing the location and environment, the nature, quality, and quantity of the objects for deposition. When applied to a holistic model, certain wetland depositional trends become apparent and have likewise been observed by other scholars such as Bradley (1990, 2005, 2007), Fontijin (2002), Hunter (1997), Martin (2003), and Needham (1988). This study supports and confirms preceding studies of the organisation of depositional assemblages; but it has also broadened current conceptions of new emerging traditions, while providing archaeological evidence to support these claims. The wetland deposition traditions observed in this study were single and multiperiod object deposits, pairs, hoards, and multiperiod hoards. Paired deposits have been noted outside of Britain. However, the significance of pairs has not been appreciated within Britain, with the exception of Hunter's review of armlets (2006). Multiperiod single object deposits are another tradition first observed in the study. This study has also provided new contributions to multiperiod deposition organisation through the development of *location* and *landscape dependent* multiperiod deposition.

11.3.1 Single Object Deposits

Single object deposits have been shown to be the most reported deposit in every sub-region for both Wales and Scotland. Likewise, single object deposits had the highest site number of any tradition noted in the study. Fitzpatrick took note of the abundance of single objects reported from wetland contexts in his study performed in 1984. However, instead of interpreting single object deposits as chance losses simply because they are not found with associated contextual material like hoards, he and others (e.g. Fontijin 2002; Hutcheson 2004; Haselgrove and Hingley 2006) identified their importance by the quality and (or) typology of the object deposited. Additionally, Fitzpatrick also called for the recognition of multiperiod hoards because deposits tended to build up over time.

In contrast, arguments presented by Garrow and Gosden (2012: 156) conclude that single objects are chance losses or that they cannot provide enough information about their contextual history in comparison to hoards. However, as shown in previous chapters, this is untrue. In accordance with Haselgrove and Hingley (2006: 147), accidental loss was relatively small, meaning that single objects were predominently the result of purposeful deposition. Single object deposits in this study show a broad application for wetland depositional traditions in both Wales and Scotland. Bradley (1987, 1988) has repeatedly stated depositional traditions had obvious value due to their lineage dating as far back as the Neolithic in Britain. Needham (1988: 240) states that certain approaches to depositional study confirm that single object deposition is not random but planned; the data in this study likewise supports his position. Cross-regionally, single object deposits have been reported from river floodplains and were commonly fasteners.

Single object deposits have served as vital clues to prehistoric deposition practices because, holistically, they can tell us a lot about what was considered for placement and where, as well as what that object could represent through its manufacture and craftsmanship, locality, and material composition. The necessity for the recognition of the social and economic value of single object finds is essential because to exclude them would potentially be ignoring many pieces of the same cultural expression as those sourced from hoards (Hingley 2006: 216).

11.3.2 Pairs

Paired deposits are two objects placed together or in close proximity and associated. There are no confirmed cases in Wales. However, it is currently the protocol to list two or more objects as a hoard and not separate pairs from the tradition. Consequently, the tradition may not have been noted in different periods or terrestrial locations simply due to differences in terminology.

Pairs were observed in every Scottish sub-region. With seven accounts, this study considers pairs to be an emerging tradition from the first to second century AD, with one exception from Dores. This tradition could be an important indication for the representation of an individual or couple through object placement. Depending on the pair, for example – the sword and scabbard could represent a legacy of handlers, individuals, or community. Armlets, especially those that are not identical, could represent life transitions, or even two individuals or ancestors. Bog butter could be an individual, nuclear family, or small communal donation. However, for prehistoric depositions, both terrestrial and wetland archaeological records need to start to separate and identify paired deposits from hoards. Current protocol labels object finds of two or more as a hoard instead of this project's suggestion of three. It is through Hunter's work on Scottish armlets that has brought to light this variation of deposition practice, as discussed in Chapter 7. No equivalent study has been conducted reviewing both terrestrial and wetland deposits, and therefore the practice remains unconfirmed for Wales. Providing further considerations for identification of British deposition traditions will make pairs more recognisable in the data because it is likely they are more frequent than what is presently known.

11.3.3 Hoards

Hoard deposits are three or more objects deposited at a single event together or within proximity and associated. Hoards differ from multiperiod hoards whereby they are characterised by repetitious deposits. As previously discussed,[42] association in this context also refers to *landscape* and *location dependent deposits*, however, these tend to be more reflective of multiperiod traditions.

Hoards have produced the largest quantity of objects in Scotland than any other deposition tradition type. Single period deposits are more common than multiperiod deposits performed over generations. This statistical trend suggests that individuals who practised wetland deposition were more concerned with the wetland type than the location itself. Additionally, multiperiod hoards—the repeated deposit in a specific location or wetland type—may not have been as important as the actual performance of the deposit in Scotland. However, it is also possible that areas of known deposits became too difficult to access, despite prehistoric people's adaptation to movement in wetlands with the use of extensive trackways. Then again, these trackways may not have been able to be maintained if large forest clearances significantly diminished that area's wood supply (e.g. Bishop et al. 2015; Coles and Coles 1994-5).

Single period hoards only appear in the Southeast sub-region of Wales. The Southeast is also the only sub-region in Wales that has examples of every deposition type apart from pairs. As a result, the Southeast was shown to have high levels of depositional activity in addition to more diversified traditional performances than any other sub-region in Wales.

Hoards are important because they may represent the community or a possible communal contribution. However, it is possible that single period hoards were an elite demonstration of wealth and power, similar to other 'costly signalling' activities (e.g. Sharples 2010; Madgwick and Mulville 2015). Collecting objects to be placed in a location in a single action does require access to abundant resources. Likewise, there would be additional resources to replace what was removed from communal circulation. Hoards are a costly initiative, but with nine examples from Wales and Scotland, it is a noted tradition within wetland locations. Even so, singular event hoards are not representative of the continuous deposition in a specific location in the same way as multiperiod deposits. Multiperiod deposits represent a greater continuity than hoards, regardless of having fewer site reports because of the repetitive activity.

11.3.4 Multiperiod Deposits

Multiperiod deposits consist of single, hoard, and combination deposits. Multiperiod single object deposits occur when multiple single objects are deposited at different periods in the same wetland and have no association with each other. A multiperiod hoard, likewise, contains one hoard deposit in addition to other deposit types in the same location or within the natural parameters of the wetland. Multiperiod deposits can be a combination of single and paired deposits, but for this study, they are categorised as hoards because of their remaining ambiguity.

Multiperiod deposits tend to be either *location* or *landscape* dependent traditions. Single object multiperiod deposits occur when multiple single object deposits are reported from the same wetland. They have no association other than their place of deposition in a common wetland. Multiperiod hoards, however, differ in that a hoard deposit has been observed in addition to other deposit types all within the same wetland. Alternatively, multiple deposit types like single object multiperiod deposition are observed but do not have any association other than a shared wetland. This association thereby creates a disjointed or abstract hoard through their shared placement within the same wetland.

Multiperiod hoards produced the largest quantity of material in Wales of all traditions. To review, multiperiod hoards have been reported from only the Central and Southwest sub-regions of Scotland, whereas single object multiperiod deposits have been observed in the Highlands and Islands, Northeast, and Southwest sub-regions. The Southeast is currently the only sub-region with no reports of any multiperiod deposits. In Wales, multiperiod hoards are reported from the Northwest and Southeast sub-regions. Single object multiperiod deposits have been reported from only the Southeast.

Bradley states the issue with hoards is that possible successive deposits may be interpreted as a single period hoard (1990: 6). This was the case for a few multiperiod hoards within this study, until recognition that other deposits of different dates in the same location or wetlands were not included in the initial review of the hoard. Peatlands throughout Britain show continued deposits dating back as far as the late Mesolithic and have continued cycles of deposition activity into the Medieval period. However, after the Iron Age, deposition activity observed in wetlands, particularly peatlands, was not performed in the same manner in succeeding periods. (Bradley 2000: 62). Repetitious and continued deposition in a selected location of the landscape is indicative of their extended histories (Bradley 1990; 2000: 62). MacDonald (2007: 170) recognised this continuation at Llyn Cerrig Bach after identifying faunal remains as potential deposits dating back to the Bronze Age, and differing deposits continue until after the Roman conquest.

Multiperiod hoards are important because there appears to be a strong, prolonged attachment to specific wetlands. Perhaps, as Bradley (2017) has suggested, the series of deposits reinforces established placenames and associated folklore. The continued contribution to these locations would bridge past generations alongside the present through the continuance of the ceremony. Lewis (2016: 131-132) does caution, however, that how these pieces were reported (i.e. through metal detectorist versus commercial or heritage organisation) does present biases to the landscapes explored. Giles (2020b), likewise, suggests that peat finds will diminish in the following years because of environmental restrictions that would result in saving these landscapes but also reduce archaeological salvage strategies as a result. Nevertheless, evolution or change based on period trends and preferences is visible in the material chosen throughout the Iron Age that is then further delineated by sub-regional practices. These differences are not only represented in the tradition types, but the objects and their material compositions thus far represented in the archaeological record.

11.4 What is being Deposited – the Objects

The objects chosen were deliberated with the same intensive selection as the landscape. The most common items sub-regionally show divergent communal expression through the intimacy and utility of objects, in addition to their source and manufacture. To review, the northern sub-regions of Scotland showed a preference for armlets, specifically those of massive typologies, for deposition. The Central sub-region showed the centre divergence from the northern regions, favouring both armlets and vessels. This is significant because vessels, especially cauldrons, were once widely believed to have been absent from Britain and Ireland from 600 BC to 200 BC, which has since been disproven by Joy (2014). The Southeast sub-region continues with this preference for vessels, but the Southwest favoured blades (i.e. swords, knives, and other forms). Armlets are considered pieces of personal adornment and have close associations with the individual(s) that wore or owned the armlet and its possible legacy from production to its deposition (i.e. an object's life cycle). Vessels, however, are more communal pieces, closely connected with feasting culture, storage, and funerary practices (e.g. Baldwin and Joy 2016; Fitzpatrick 2007; Joy 2014; McCormick 2009; Pitts 2005). Therefore, the transition from the north to the Central and Southeast sub-regions shows a shift in focus from the individual and repositioned on communal pieces.

For object types reported from Wales, tyres are the most common object type in the Northwest sub-region. The donation of tyres is unsurprising given the additional amount of equestrian gear reported from the sub-region. This area shows a strong social identity with chariot and horse culture, which is reflected in the items chosen for wetland deposition. The deposition of equestrian equipment continues into the Northeast with terrets. This preference differs from the southern sub-regions. The Southwest showed that coins were the selected object type for deposition. Coins during this period, however, were not necessarily used for monetary transactions like they were in later periods, but were instead representations of social networks and trade agreements (Creighton 1995, 2000). The discard of such items could represent the end of the agreement or network because the tangible form was no longer needed. Coins have also been suggested as representative of boundaries (Creighton 1995: 298). All coins from the sub-region have horse iconography; however, this is unsurprising as this motif dominated coins at this period. Creighton (1995) associates horses as symbols of power, but, in keeping with the tradition of equestrian equipment noted in the northern sub-regions, perhaps these coins were deposited as representatives of the horse in the localised and preferred material form.

The Southeast object types reported from wetland deposition context in the sub-region were most commonly axes. Again, axes can be used both for personal use and weapon. Therefore, axes serve both personal and communal utility depending on the context. However, studies performed by Bradley (1990, 2017) show that both stone and metal axes have long been a prehistoric commodity associated with social networks, hierarchy, and deposition. The deposition of certain object types with obvious connections to previous periods, like the axes, in addition to the continued use of precious metals like copper alloy, does provide evidence for a continued influence. An overwhelming majority (90%) of axes reported from the sub-region were of the Sompting type. This type of axe, according to Megaw and Simpson (1979: 337), was purely ceremonial and not meant to be used as a tool.

Another important aspect of Iron Age wetland deposits to consider is that many pieces are whole. As MacDonald (2007: 178) states in reference to Llyn Cerrig Bach, breakage was not considered a prevalent tradition because many of the pieces have been found whole, and the damage that has been observed was usually due to the weight of the peat or exposure to oxygen after anaerobic conditions. The fragmentation of the tyres was considered to be primarily the result of the weight of peat as opposed to purposeful destruction. There are, however, pieces within hoards dating to the Iron Age that have evidence of purposeful damage, but these tend to be only a few items in a hoard that is mostly compiled of component pieces of objects.

Swords in this study, for example, have predominantly been reported as broken or bent for both Wales and Scotland. Perhaps this is representative of the different rules implied for different object types which are chosen for deposition. The continuation of such rules which can also be reflective of Bronze Age traditions is prevalent in wetland depositions (Bradley 1990: 21; York 2002: 83-87). However, the same treatment was not found to have extended to other blade types such as knives or daggers in this study. Therefore, the prevalent tradition in wetland locations for the British Iron Age in these two regions is the disassembly of objects and depositing component pieces, for example, tankard handles or parts of equestrian gear.

If we are to include Bradley (2000), Hingley (2006), and Waddell's (2014) interpretation of object-landscape relationships, then we would expect to see a certain trend in the landscapes chosen and the types of objects reported from these areas (i.e. method of loci). The practice of social and generational learning would have provided the associative context relationship of landscape and object. This relationship would in theory, be reflected both sub-regionally and regionally with a stronger association for certain object types with specific wetland landscapes dependent upon the degree of associated recall and benefit to the group or individual.

Objects were organised into categories based on their utilities because of the volume of different object types, as demonstrated in Chapter 10. Peatlands were shown to have a strong correlation with vessels (e.g. pottery, cups, cauldrons). Equestrian equipment was predominantly sourced from rivers, and river and estuary floodplains, whereas items associated with monetary exchange were mainly sourced from floodplains. Intertidal zones had a strong correlation with objects of personal adornment (i.e. jewellery or accessories). Lakes and lochs, including prehistoric landscapes, were associated with objects of transport.

Therefore, there are associations between specified object types and the landscapes in which they have been reported. For example, as aforementioned, tools are more associated with peatlands and lakes than any other wetland type, meaning that the rules which guide deposition in relation to specific context would define tools as a restricted object category suitable to limited wetland types. In contrast, there are also common object category associations with multiple landscape types, as seen with equestrian gear. Hence, equestrian gear may have been a more commonly produced item type and was appropriate for deposition in several different wetland locations; what is likely is that there was more of this object type in circulation.

Many archaeologists have cautioned that the reporting of prehistoric materials suffers from inherent biases. These biases include how the material was collected, who reported it, method of discovery, follow-up examination, and the subsequent archaeology performed. Certain objects are more recognisable to the layman, whereas an archaeologist would have a broader recognition of prehistoric object types. Brindle (2013) and Robbins (2013) discussed how this bias exists in the Portable Antiquities Scheme, as well as the direct correlation with find reports derived from arable land. Wetland landscapes which have been extensively surveyed in comparison to those that have not, created a bias in the material reported. Similarly, the material composition may also play a large part in this partiality simply because it is more easily discernible than other material types. Caution needs to be applied with the recognition that the finds stated here are and will be subject to change as more pieces and associated materials are catalogued and organised in similar holistic analyses of prehistoric traditions.

However, in creating a database that focuses on a singular period set within a specific environment does enable a more focused analysis of the prehistoric trends of depositional practice. The creation of such a large database has provided a baseline of deposition tradition that can be built upon with future discoveries and more in-depth review of inventories in existing curated collections (with extended permissions). Therefore, while this database is not fully representative of past wetland depositional behaviour, it does provide the common trends from pre-existing object records that have not been analysed in a holistic manner.

11.5 Materials

The material composition of the objects chosen was often high-quality and reflected their importance or significance to the individuals who commissioned, used, and deposited the pieces. To review, copper alloy was the most common material observed for object composition in the northern and central regions of Scotland. Iron, however, was preferred by communities in the southern regions, showing a transition in commodity and economic focus. Most of the deposits in Scotland occur from the early first century to late second centuries AD, and it is based on regional preference at this period that we see a transition to iron in the southern regions, but not in the northern or central areas. For Wales, only the communities of the Northwest sub-region showed a preference for iron. This preference, however, was skewed by the Llyn Cerrig Bach deposit. All other Welsh sub-regions showed a preference for copper alloy materials for object composition. However, iron is noted in the Later Iron Age deposits in the Southeast region. Periods of substantial iron deposition occurred from the mid first to late second centuries AD.

Armit (1997a: 90) explains that copper alloy materials deposited in watery contexts were abundant from the Bronze Age well into the Roman period. Richards (et al. 2015) have stated that the use of copper alloy and subsequent objects placed in depositions was indicative of thriving communities, rather than decline. However, many archaeologists such as Needham (2007), Sharples (2007), Haselgrove and Pope (2007), and Madgwick and Mulville

(2015) have argued that the devaluation of bronze led to new systems of socio-economic interactions and gift exchange networks. While this all may be true, the continued use of copper alloy would suggest that production and trade of the material never ended; it simply evolved and was used in different contexts depending on that period's demands. The material representation shifted from an economic commodity that represented relationships with the elite (Sharples 2007), to a depositional mnemonic which recalls prior generations' form of practice. Hill (1995: 65) states that copper alloy ceased to be deposited in terrestrial hoards at the beginning of the British Iron Age and was only found thereafter in wetland locations such as rivers, lakes, and bogs.

11.6 Discussion

Wetland deposition held a key role in the local communities. Evidence as far back as the Mesolithic, and its continued practice into the Medieval – though slightly altered in form, shows a tradition that represents the identity of the local people. These regional and sub-regional preferences, which reflect social identity, can be theoretically contemplated through depositional trends.

For Iron Age Scotland, the northern sub-regions' focus shifted from representations of the community to the individual towards the Late Iron Age with the circulation of items of personal adornment. Nevertheless, the large hoards of the south, especially those which date to the Late to Later Iron Age, show the continued reverence for communal representation in wetland object deposition. Overall, the practices of wetland deposition in Scotland focus on the representation of the community; however, this differs sub-regionally as previously discussed. The Central sub-region began to reflect individuality within wetland deposits through chosen objects of adornment such as torcs and armlets. Torcs, like other objects, according to Chittock (2019), can be interpreted as heirlooms, especially those with wear patterns and repair, like Blair Drummond. However, not all torcs produced have wear patterns and therefore can be interpreted as signal production pieces, meaning manufactured to show status, wealth, and prestige. Armlets have been reported from every sub-region in Scotland (see Chapter 8), with marked production from the Northeast sub-region (Hunter 2006). Hunter (2006: 151) has described these armlets as representations of influential figures within the community and possibly denote a level of power. However, Hunter (2006: 151) is of the opinion that armlets' production, due to their individualised ornateness, was exclusive, and power was at a localised, not regional level. I agree with this position and further his interpretation that armlets instead represented power alliances for localised communities with those in the Northeast and were worn by influential individuals who served as proxies.

Scotland is considered to have held a more communal focus in most sub-regions due to the presence of cauldrons (9 sites). Cauldrons, according to Joy (2014: 1), depending on size, were rarely used for everyday use but large communal gatherings. Cauldrons have been noted in all the Scottish sub-regions for wetland object deposition apart from one - the Northeast. However, there is one account of a cauldron in the Northeast dating to the Iron Age period in a terrestrial deposit, Tarland (Hawkes 1951; MacGregor 1976); therefore, this absence was only in wetland practices. Thus, it is possible that the Northeast during the first to the third century AD, in relation to wetland deposition traditions, was attempting to influence other sub-regions through the trade of armlets which acted as signifiers of extrinsic networks. In contrast, cauldrons represent the local community and feasting culture, an intrinsic network that includes extrinsic systems. For example, many of these cauldrons, like Abercairney and Elvanfoot, have evidence for repair and can be assumed to be loved and treasured items that held a prolonged use life within these communities. Symbols of a community can also be represented through objects of local industry; thus, tools can be interpreted as a communal representation of a localised or monopolised trade, as shown in the southern sub-regional hoards. Nevertheless, as discussed earlier in the chapter, equestrian equipment is represented in wetland object deposition in the southern and Central sub-regions. Again, the collection of equestrian items shows an affiliation with a prolonged use life like the Middlebie hoard (Davis 2014).

Wales, in contrast, shows a strong affiliation with cultural identity through the representation of equestrian equipment. This affiliation has only strengthened through archaeological evidence over the years, especially with the recent discovery and excavation of the chariot burial in Pembrokeshire. However, equestrian and chariot gear are not the only object types associated with horses, such as coin designs and other items like the Capel Garmon firedog. Davis (2014:247) states how horses and their representation through equestrian gear or artistic motifs is a tradition that has been noted from the Late Bronze Age through the Roman conquest. She continues that the functionality or representation of equestrian gear in deposition changes to a symbol of military resistance in areas of high conflict with Roman armies, as shown in the Seven Sisters hoard. Regarding chariot gear,

Davis (2014: 247) proposes that the representation of chariots drawn by two horses may be emphasising ‘traditional Iron Age customs’ as opposed to the emphasis of single riders. Supporting Creighton (2000:16-19), she further asserts how single riders symbolised ‘warrior bands in England’ (2014: 247). Therefore, there is a possible representational duality in Welsh wetland deposits of equestrian and chariot gear, whereby these objects reflect both and (or) either the individual and (or) the group dependent upon the chosen items. Likewise, Creighton (2002) proposes that the unique representation of and on objects shows the development of kingdoms, as shown with coin iconography in the South-East of Britain. Creighton (2000: 22-23) makes the connection between horses and the ruling class, utilising the Irish vernacular literature, whereby the horse represents the natural world and the ruler – the world of man, and their relationship to embody the marriage between the two. Unlike some terrestrial sites containing both faunal remains and equestrian pieces, like Gussage All Saints (Creighton 2000: 23), Iron Age wetland deposits thus far in Wales and Scotland have only reported equestrian or chariot equipment. Therefore, the upper class is represented in wetland object deposits instead of communal or tradespeople groups like those observed in Scotland.
Consequently, depositional representation in Welsh wetlands appears to be centred around power rather than connections or communal networks.

Object deposition observed in wetland locations provides limited but important insights to regional differentiation of traditional practices and characteristics of Iron Age society. Sharples (2010) discusses the ‘internal social variability’ through architecture and the deposition of objects in hillforts and settlements. Similarly, these wetland deposits denote a level of social variability whereby their representation could range from an elite demonstration to nuclear families or the individual. Wealth and prestige are expressed in these deposits, but not all objects are considered valuable in the same way. While the presence and perceived value of bronze diminished in terrestrial deposits and sites (e.g. Haselgrove and Pope 2007; Sharples 2007, 2010; Madgwick and Mulville 2015), the alloy remained a strong characteristic of the metalwork that has been reported from wetland locations in Wales and Scotland. Similarly, as Sharples has stated in reference to burials in the Middle Bronze Age (2010: 244), wetland object deposits convey ‘complex messages’ about social identities both sub-regionally and regionally through their choice of selected items and placement or assemblage in the desired environment.

Bradley (2000: 155) highlights that depositional practices continued despite the unstable and fluctuating nature of politics and economic networks. He believes these experiences were celebrated by later generations, whereby stories and place names were repeated, preserving the performances in the communities over long periods (Bradley 2000: 158). So, how does a tradition maintain its defining characteristics while creating a memorable event for the individual and community? The answer lies in creating a sensory experience in which all senses are engaged in a way that the landscape, objects, and actions create an abstract mnemonic which can be easily recalled, and thus creating a generation effect.

The performance of deposition was itself a sensory experience prior, during, and after the activity. Visual changes in the wetlands and environmental shifts could have sponsored a need to perform depositional activities. Studies and discussions, such as those provided by Dark (2006), Dumayne-Peaty (1998a, 1998b), Henderson (2007: 34-36), and Giles (2020a) all provide evidence of major and minor environmental shifts both external (e.g. watershed and temperature changes) and internal (e.g. large-scale forestry and vegetation clearance). This visual recognition of a transforming environment would have been marked by excessive seasonal flooding and (or) longer durations of waterlog, inability to drive cattle to their seasonal grazing grounds, and trouble navigating waterways which may have developed stronger currents. The visual stimulus would incur through the physical limitations of accessibility to desired locations, but also through simply observing seasonal change. However, wetland deposition is not only subjected to a possible functionalist response to external or internal factors and (or) events, but also symbolic in the representation of social identity through cognition and traditionalism.

Sense of touch plays a crucial role in wetland deposition for both environment type and object derived somatosense. Wetlands provide abundant resources which people throughout time have harvested and hunted (see Chapter 4). Travelling, holding and finally placing the object into the wetland or community collection for deposition is part of the cutaneous experience. The object itself is charged with memories from its living context, therefore providing mnemonic recall every time it is thought about or touched. The object would remain in the donator’s memories and they would then pass on these reminiscences to the following generation. This inheritance from the previous generation would keep the object’s memory in connection with the donor in an abstract form. The activities that an object provided or represented, the material's origin and appropriation, how the object was manufactured, and where it was sourced, all hold value in the contributor's memory. To feel the object in their hands no doubt worked like a mnemonic before transferring it to another medium which was cold and wet.

For groups providing large deposits the activity would have also invoked a series of collective emotions and memories, shared by the community, and may be dependent on *hazard-precautions, action parsing*, or a combination thereof (Boyer and Liénard 2006: 595). However, it is more likely that deposition was performed in wetland environments to reaffirm resource locations or significant mnemonic landscapes tied to collective memory. Creation of a sensory and cognitive related experience would not only have re-enforced past-generational memories through the deposition of mnemonic objects, but also created new ones founded in a shared social experience which unified the group contributing to the performance.

The act of deposition in wetland areas has many components beginning with an object's life cycle, to the group's performance, to the interaction of the environment. Each carries an essential element which works towards creating a socio-cultural identity that is also ingrained using mnemonic techniques. The depositional cycle reinforced cultural behaviours, beliefs, and associations through its performances.

As a result, development of wetland deposition traditions has affected how objects were conceptualised, handled, and connected with chosen wet landscapes. Their assemblage for deposition, likewise, is reflective of the donating group or groups' social identity and preferred method of depositional practice. The selected wetland landscape and associated topography also created a sensorial experience which would have fortified generational practice through the development of cognitive and collective memory.

Therefore, deposition practice has strong ties to cognitive recall from the object's initial creation to its use and handling within its living context and purpose, to its initial removal through associated performances; for example, the object selection, possible dismantling, and carrying it through the landscape. The object(s) is therefore transformed from an active and tangible mnemonic to the abstract through its deposition. For those who participate, the shared physical and emotional event would likewise create further social bonding and assimilation into society through active participation, thereby creating a powerful collective memory.

In conclusion, cognitive development theory with the assistance of mnemonics can help archaeologists begin to deconstruct wetland deposition practice and the resulting development of social and communal identity. This deconstruction of wetland deposition tradition can be achieved through utilising a holistic methodology and thoroughly reviewing the collected mega-data. Prolonged periods of wetland deposition create more elaborate practice, which can be represented in the number of deposit sites to the quantity donated. However, each is reflective of the community and their identity. Wetland depositional traditions do not have exclusively symbolic or functionalist purposes, but are intertwined whereby collective memory serves to benefit both the group and individual.

11.7 Summary

We will never know the intention of deposition and can only surmise why certain elements were performed over others. However, what can be deduced is the by-product or result of these performances. The consequence of deposition can be manifested in several ways through social functions. Social learning is perhaps the most representative outcome of the performance, because learning is achieved through observation and imitation (Jeanes 2019). The individuals, depending on their prior knowledge of the event, will take away different observations of social cues and acceptable behavioural patterns. While some individuals may be entrenched in the understanding of the performances, others may only have a surface knowledge and therefore recall the memory based on personal experiences of the event and their inclusion with the group and others of the participating party.

As Liberman et al. (2018: 42) have demonstrated, children will often imitate—and sometimes poorly or slightly derivative of its original form—without fully understanding the performance’s significance. This is why certain traditions may become more embellished over time. The collective involvement, the sentiments shared and expressed, and the loss or removal of the object would develop a strong emotional support network. Like Power’s study (2018) suggests, evidence for social bonding was the strongest in recurrent, low stimulus, and co-participation rituals. Therefore, common communal identity would inadvertently be developed during these performances, which would enact shared physical experiences. These performances do have some element of symbolism, but this would not be known to external groups.

Objects can be personified, but there is still a relative degree of hypothetical interpretation for prehistoric creation, purpose, and use. In the case of wetland deposition, the object is both active and static. It is active because of the memories attached for the individual or group; it is real because it can be seen and touched. However, it is static because it is not animated in the way it was used during its lifecycle. All these factors and influences would affect regional and sub-regional cosmologies. In utilising Chadwick's (2012: 284-285) definition, wetland deposition does provide some form of social organisation to be able to remain continuous through the prehistoric periods.

Wetland depositional studies are important to the understanding of social complexities of both localised and regional groups. While regions appear to have similar practices on a communal level, they reflect the individuality of certain peoples and the shared cultural practices of others. We will never know if the intention for deposition was the same for those of shared practices and preferences. Likewise, we cannot be sure if trends in the data are a representation of the prehistoric activity in these areas or a result of modern collection methods. However, by understanding where disparities arise in the collection and catalogue of these objects, we can begin to create a methodology, as presented in this study, to navigate around information gaps and biases during the creation of big data sets.

Chapter 12 - Conclusion

The project's overarching aim was to observe, analyse, and interpret wetland depositional practices for Iron Age Wales and Scotland. This aim was achieved through the collection of object and site reports, extraction and reconfiguration of data, and analyses of statistical trends. As mentioned throughout the results chapters (8, 9, 10), some sub-regional evaluations were not statistically representative. However, as the project created a catalogue of sites and objects with 611 entries (minimum number of objects 569) (Appendices 6, 7, 8 and 9), the analysis has provided a foundation for wetland deposition practices in Iron Age Wales and Scotland, in addition to identifying new and confirming pre-existing depositional traditions. The analysis provided trends in wetland location, tradition assemblages, object types, and materials have become more discernible, aiding in future research of deposition practice and survey of wetland areas. Understanding sub-regional practices and their configurations within select environments enables archaeologists to understand socio-cultural diversity and variability cross-regionally. Therefore, as wetland areas become further endangered by urbanism, pollution, environmental shifts, husbandry and agriculture, we can now identify key areas of potential archaeological activity in select wet environments with a higher chance of recovery. Highlighting the heritage of wetlands would also benefit these environments, whereby added heritage protection legislature and further environmental protection would preserve these environments for centuries to come.

Previous interpretations of prehistoric object deposition, specifically those from wetland locations, have often fetishized metalwork. As discussed in the preceding chapters, this bias in concentrated material focus has been due to several factors, mainly preservation and recovery bias. However, with 'big data' studies like this, it quickly becomes apparent that wetland object deposition in the Iron Age for Wales and Scotland possess a wider range of object types and materials. Likewise, there is a noted change in manufacturing objects for the sole purpose of deposition, as evident in the Bronze Age (e.g. Bradley 1990, Knight 2019), to choosing objects that have a prolonged use life and (or) evidence of repair. Therefore, 'big data' studies are essential to understanding depositional practices for its holistic approach in interpreting trends and patterns of behaviour through its comprehensive nature.

The practice of wetland deposition served as a reaffirmation of social identity, tradition, and cultural mnemonic. Deposition practices served both functional and symbolic purposes, which is unsurprising in prehistory, as these roles tend to coincide. In the case of wetland deposition, we can surmise that the tradition linked these theoretical roles, whereby collective memory benefited both the group and the individuals who participated, even marginally. Evidence for the reaffirmation of social identity is reflected in the characteristics of wetland deposition practised in Wales and Scotland. This evidence has been observed through the communal preference of wetland deposition location, tradition, object and material type.

Single object deposits have shown to be important deposition traditions, making up the majority of the findspots than any other tradition type. As a result, single object deposits are more likely to have been purposeful placements as opposed to accidental losses. However, the majority of objects have been sourced from multiperiod deposits. Multiperiod deposits were likely a combination of communal or individual donations, given over time, in a specific location that held collective memories. These locations would have been important to the local communities for both their resources and the mnemonic qualities of the topography and objects donated.

Communal preference for peatland and floodplains shows a connection to the topography. The local people would have been familiar with these wetland topographies through resource extraction, and collective memories would have been tied to specific locations. While not every wetland may have served such a purpose, specific locations are evident through their continued multiperiod deposition. Therefore, it can be argued that these wetlands were chosen for deposition simply because they were the dominant landscape in the sub-region. However, it does not negate the statistical trends and continued placement of objects in specific locations (e.g. Airth, Balmaclellan, Kincardine Moss, Langstone, Llyn Cerrig Bach).

Equestrian equipment was shown to be the common object type for deposition. However, sub-regional communal preference did vary for objects associated with identity and collective representation, as discussed in Chapters 8, 9, 10 and 11. The pieces chosen for deposition are likely to have been charged with individual or collective memory. Similarly, the continued presence of copper alloy in deposits for wetland locations denoted that the material still retained some form of its importance, regardless of its potential devaluation as a commodity. Copper alloy must have held some other representation that served as a mnemonic, explaining its retention of use in wetland deposits throughout the Iron Age.

However, the material preference may have been manifested through modern recovery methods along with the recent increased popularity of metal detecting.

Wetland deposition showed to be a continuous practice throughout the Iron Age. However, periods that showed elevated and prolonged wetland deposition demonstrated the development and modification of practice that led to its elaboration. The elaboration of practice was demonstrated through both the quantity and quality of the material donated. Nevertheless, the frequency, intensity, and degree of contribution did reflect the community, culture, and socio-cultural identity.

The performance of deposition has strong associations with cognitive recall from an object(s) initial creation, to its handling and living context or purpose, to the initial removal of associated performances, and its final procession to the chosen topography for placement. The object(s) was then transformed from an active and tangible mnemonic to the abstract through the act of deposition. Those who actively participated in the placement of the object(s) into the desired wetland would share a joint physical and emotional event. This collective memory would likewise create further social bonding and assimilation into society through active participation, thereby creating a collective and generational memory.

The second horizon of wetland deposition activity in Scotland and Wales was most likely the result of efforts to reaffirm locally perceived cultural identities. In regions where efforts of Roman conquest were the most prevalent, larger deposits were reported. These deposits may have been attempts to counteract Roman efforts to disrupt the practice. Likewise, the continued and elevated concentration of deposits sourced in marshland areas show they were specifically sought not only because of their precursory veneration, but also the consolidation of generational practice associated with identity and memory in response to Roman efforts of assimilation over localised culture. The continuance and increase in practice served to reaffirm cultural identity through mnemonically charged landscapes. The veneration of these locations perhaps likewise also increased due to the Roman fear of accessing landscapes they deemed taboo (i.e. marshland or areas of brackish water), thus serving as natural areas of protection against the foreign invader.

Future work is required to provide further comparisons of wetland deposition traditions. First, the study needs to be extended to include England and Ireland. Sub-regional variability will be assigned to the two countries in a similar fashion that has been applied in this research. Thereafter, a comparison of trends in the data would be reviewed for regional and sub-regional practice. Second, the study needs to be extended to the Bronze Age better to understand transitions in wetland deposition traditions and why. Third, the study needs to extend to terrestrial zones to compare how different landscape types were utilised for deposition and review for any diversity in practice. Lastly, a holistic re-evaluation of the Iron Age periodisation would also be of benefit.

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Appendix 1. Museums

Of the 193 museums contacted, 22 museums and trusts had relevant collections. There are potentially more sources, but several museums were poorly staffed, overworked with limited schedules, closed for refurbishment, or seasonal limitations. For the raw notes of every museum contacted, please see Appendix 10 excel sheet located on the disc.

#	Museum Name	Country	Contact	Notes
1	Annan Museum	Scotland	Heather Paxton	Part of the Dumfries curation.
2	British Museum	England	Julia Farley	Sent a catalogue.
3	Ceredigion Museum	Wales	Andrea DeRome	Sent a catalogue.
4	Cultural NL (North Lanarkshire Museums)	Scotland	Michael Allen	Sent a catalogue.
5	Dick Institute, Kilmarnock	Scotland	x	Catalogue online at Future Museum.
6	Dumfries Museum	Scotland	Joanne Turner	Visited to extract digital catalogue.
7	Elgin Museum	Scotland	Janet Trythall, Heather Townsend	Visited to extract record cards in exchange for digitalisation.
8	Falkirk Museum	Scotland	Geoff Bailey	Relevant literature, waiting for Hunter artefact write up, sent a small catalogue.
9	Fife Cultural Trust	Scotland	x	Online catalogue at onfife.com.
10	Gwynedd Museum	Wales	Helen Gwerfyl	Relevant collection on loan from NMW.
11	Montrose Museum	Scotland	John Johnston	Also connected with the Meffan Museum. Advised to use Canmore and DES.
12	National Museum of Scotland	Scotland	Dr. Fraser Hunter	Advised project and provided key literature.

13	National Museum of Wales	Wales	Adam Gwilt, Jody Deacon	Advised project, provided key literature, sent relevant catalogue.
14	Orkney	Scotland	Gail Drinkall	Unable to fulfil request due to high volume of research request but tried their best to answer questions.
15	Perth and Kinross Museum	Scotland	Mark Hall, Gavin Lindsay	Online database, email confirmation.
16	Portable Antiquities Scheme Wales	Wales	Mark Lodwick	Sent a catalogue.
17	Shetland Museum	Scotland	Jenny Murray	Sent relevant collection and thesis.
18	Stranraer Museum	Scotland	Christina Makinson	Records at online catalogue for Future Museums.
19	The Scottish Crannog Centre	Scotland	Frances Collinson	Visited and recorded collection.
20	The Stewartry Museum	Scotland	x	Part of Annan and Dumfries Curation.
21	Timespan Museum	Scotland	Sadie Young, Jacquie Aitken	Directed to Susan Cruse with SCARF.
22	The Treasure Trove	Scotland	Emily Freeman	Sent a catalogue.

Appendix 2. Categorial Organisation

This list breaks down the characteristics recorded for each object in the data set. The list provides the header and an explanation for their purpose in Appendices 8 and 9.

1. **Deposition type**: This category was used in preliminary excel sheets before organisation into final regional areas. It refers to the wetland depositional landscape the object was reported (i.e. deposition, settlement, or production site). To be considered within the study's scope, the object must be sourced from a depositional landscape. Deposition landscapes are when the piece(s) is not associated with settlements or production sites and instead found in isolation. Both settlements and production sites are noted but were not the focus of analyses, and therefore were not included. Those sourced from a settlement or production site were organised into a separate excel sheet and saved for a later project. This category does not appear in the final regional excels but on previous excel sheets earlier in the project.
2. **Project Number**: For Appendix 6 and 7, project numbers were assigned to the pieces determined relevant to the project. The numbers contain abbreviations for the country, region, and numbers per object (e.g. sub-region_ number). This categorisation was performed to index artefacts the developing database.
3. **Object**: States object type or label name prescribed by the source(s) for identification (e.g. cup, pottery, nail, torc). Certain object labels were changed due to the various names associated with the piece to establish common terminology and identification throughout the data set.
4. **Category A, B**: Objects are organised by their primary and possible secondary functions. The dataset contains A and B columns as many objects have more than one role or utility. Category A is a possible primary function. Category B is the second function or suggestion.

   These categories are (in no specific order):

FOB	Construction
Weapon	Transportation
Monetary	Ingot
Figurine	Tool
Equestrian	Basketry
Jewellery/ accessories	Toy
Cutlery	Vessel
Weights (whorls)	Musical Instrument
Mount (wall mounts)	Remains
Unknown	Food
Tableware	Vanity
Textile	Equipment

5. **ID or Accession Numbers**: ID or accession numbers are the numbers assigned to an object accessed in curation or excavation. These numbers are generally attached to a record for the object detailing excavation, current curation, and sometimes analysis. This title will also have an A and B column, since some objects are assigned more than one number in their lifetime or given different numbers when re-recorded in different systems.
6. **Dates:** Dates were provided through prior carbon dating or artistic typological analysis of the object. Most objects are dated from their typology as opposed to carbon dating. The carbon dating performed is usually from the object itself as opposed to surrounding environments. Therefore, dates revolve around manufacture periods as opposed to dates of deposition.
7. **Parish, town, or city**: Parishes will be the primary residence for places. If a parish is not offered or applicable, a town or city will be recorded in its place to provide a geographical reference in the landscape.
8. **Counties**: Counties were recorded for sub-regional comparison.
9. **Country:** Clarifies the object(s) origin by contemporary country (i.e. Wales or Scotland). This divide aided in cross-regional comparison on the objects.
10. **Environment**: Provided the environmental context in which the pieces were reported on a spectrum of wetland landscapes.
11. **Spatial Coordinates**: NGR, Easting and Northing, Latitude and Longitude. All coordinate types are provided due to the variance of object record standards.
    * Spatial Coordinates will not be included in the appendices following PAS protocol agreements to keep confidentiality of these prehistoric sites.

12. **Primary and Secondary Material**: The primary and secondary materials reported from object reports. Some objects were made from one type of material, so two columns were made to note the primary and secondary elements of the piece.
13. **Manufacture**: How the piece was made if noted in the object record.
14. **State of Completeness**: Provides if the record or visual analyses have confirmed the object is complete, fractured, or incomplete.
15. **State of Object**: State of completeness. For example, if the object is listed as complete, but broken in antiquity, the state would be broken. If all that survives of an object is fragments, then it will state fragments.
16. **Percentage of Completeness**: The state of object states if the object is complete (100%), mostly complete (> 75%), semi complete (>50%), or incomplete (<50% to 0%).
17. **Characteristics of Use**: Organised into six further separate columns: worn, use, repair; whole; bent; broken, fragment/ed; whole but broken, no missing bits; and damaged.
18. **Dimensions**: Dimensions provides the length, width, and diameters of objects. All dimensions are recorded in millimetres.
19. **Weight:** If weight was provided, then it was also recorded. All weight is measured in grams.
20. **Decoration**: This column states yes, no, or unknown (x) if decoration is present in the design or applied to the object.
21. **Hoard**: This column states if the object recorded was or was not found in a hoard.
22. **Description**: Provides details of the object. The description will be a variation of personal observation and amalgamation of sources, quotes from literary sources, or direct quote from the original document to provide the most accurate account of the object.
23. **Notes**: Include anything extra information or observations of the object.
24. **Museum**: Provides the current or last known record of curation from a museum or personal owner.
25. **Acquired:** States how the person discovered, or how the museum acquired, the object.
26. **Date of Discovery**: Recorded to analyse for trends and potential biases of discovery periods and acquisition.
27. **Literary Sources**: Literary sources in which the objects have been recorded, reported or analysed.
28. **Digital Sources**: Digital source(s) or catalogue(s) in which the object was recorded.

Appendix 3. Dates, Typologies and Justifications

As stated in the thesis, the activity dates observed were primarily through typological sequences and few radiocarbon dates. This lack of contextual dating means that periods of deposition activity are instead reflective of manufacture and circulation periods. Appendix 3 provides what typologies and authorities were used to determine periods of activity.

Brooch type typologies were identified using several different authorities. The knee brooch from Maxton, Scotland, was dated based on Eckardt’s (2008: 125) assessment. The two strip bow brooches reported from Wenvoe, Wales was dated according to Hattatt’s typology (1985) and reaffirmed by Lodwick (2003). A Langdon Down type brooch was reported from Usk found by Wheeler and Wheeler (1932), assessed by Hattatt (1982), and reconfirmed by MacDonald (2001b).

For cauldron types reported from Scotland, several authorities were used to provide manufacture dates. The Santon type, reported from Loch Gamha, used dates provided by Joy (2014). The Battersea cauldron discovered in Abercairney used dates provided by Joy (2014). The other Battersea cauldron reported from Whitehills was first assessed by Piggott (1955) and confirmed by Joy (2014).

The coins reported from Wales were determined primarily from the Celtic Coin Index and Van Arsdell (1989) categorisations. Those that fell outside these sourced were determined using PAS sources.

Escutcheons have differing authorities for assessment. The escutcheon from Tremeirchion was assessed by Herepath (2004).

Ewart typology manufacture dates were sourced from several authorities. The Shuna Island Ewart swords manufacture periods were used from Coles (1960) and Scott (1966). Ewart Park type was also noted in the Carlingwark hoard with the leaf-shaped sword identified as North step 1 by Burgess and Colquhoun (1988).

For fastener typologies in Scotland, Wild, Hunter, Worrell’s authority was used. Class III button and loop fasteners reported from Elgin used the dates provided by Wild (1970). Hunter (2015b) dated the Class III duck fastener from Barmuckity. The tear-drop loop fastener from Craigsford Main was dated using Worrell’s (2008) Class III. Another tear-drop loop fastener was reported from Melrose and assessed according to Wild’s (1970) Class Vc. A dumbbell fastener was reported from Fala, and as it lacked any formal dates in the object record, I determined its type based on similar finds reported to PAS (e.g. Griffiths 2016, 2019; Forman 2019; Rawson 2019; Tilly 2019).

The Llyn Cerrig Bach assemblage was first dated by Fox (1946), re-examined by Savory (1976), and readjusted by MacDonald (2007).

MacGregor (1976) and Hunter (2006, 2014) were the primary authority for massive or Donside forms found in Scotland. The massive armlets reported from Feltar were dated by Hunter (2006). The massive terret reported from Ballestrade was dated by MacGregor (1976) and reconfirmed by Hunter (2014). The mini Donside terrets reported from Springwood Park was assessed by MacGregor (1976) and reconfirmed by Lewis (2015).

Different authorities also assessed other armlets with varying forms. MacGregor (1976) provided the dates the palmette armlet reported from Belhelvie, Scotland. Armlets with longitudinal fluting, like the one reported from Belhelvie, have been assessed by MacGregor (1976), Simpson (1968), and Coles (1960).

Other terret types have been noted in Wales. The terret reported from Penllyn was originally dated using Spratling's (1972) Group 1. This date has since been readjusted according to Lodwick's (2009) suggestion. The trumpet terret reported from Trewern was assessed by Watson (2012). The mini plain terret was dated by Herepath (2006a).

For mounts, several authorities were used to provide the manufacture periods. The mounts reported from Leslie and Alloa, Scotland were assessed and dated using Benet's typology (Murawski 2000).

Sompting axes were dated using several different authorities. The axe reported from Corsbie Tower, Scotland was dated using the assessment of Coles (1960) and Schmidt and Burgess (1981).

The strap union from Cowbridge wit Llablethian has curvilinear typology, assessed and dated by MacDonald (2001a). The other strap union, reported from Pendolylan, was in accord with Taylor and Bailford's type (1985).

The sword and scabbard reported from the River Tweed, Scotland is dated according to Piggott's (1955) Group III. The scabbard reported from Barganny is Piggott's (1950, 1955) type IIIa. The hoard reported from Middlebie, Scotland contained horse trappings that are in the North British boss style typology (Childe 1935), and the hilt is Piggott's Group IVB

(1950). The scabbard chape from Llantrisant Fawr is Prüllsbirkig, Type A1 as determined by Cowen (1967).

The Trawsfynydd tankard's form was first determined by Fox (1946), readjusted by Spratling (1972), and reaffirmed by Horn (2015). However, most of the tankard handles used in the project relied on the dates provided by Horn (2015) apart from Onllwyn. The handle from Onllwyn was dated by Battye (2005).

Unique items such as the carnyx and firedog required specialised evaluation. The Deskford carnyx was excavated and provided the typological sequence by Hunter (2001, 2019). The firedog reported from Capel Garmon was assessed and dated by Piggott (1948).

However, for certain objects that did not have an applied period but obvious typology or form, I used similar objects to determine their manufacture periods. The slider from Auchterderran, Scotland was dated using similar examples from Barmby Moor (Marshall 2004) and Barkston (Staves 2005) reported through the PAS system.

Appendix 4. Preservation, Conservation, Global Climate Change, and Urbanisation Impacts for British Wetlands

4.1 Introduction

Wetlands are a fragile ecosystem which can quickly become unstable due to global climate change and urbanisation. Internal and external environmental factors affect underlying archaeology. Ironically, much of the recent archaeology reported has been due to urbanisation and development efforts. Wetland archaeology is very much a 'salvage' effort as opposed to proactive conservation. As a result, wetland archaeologists are perpetually in combatants with time itself—not only in terms of developer's timelines, but exposure and fragility of wetland sites as well. Therefore, this chapter will review the conservation and preservation efforts for wetlands, environmental impacts, and the effects of global climate change and urbanisation for both wetlands and underlying archaeology.

4.2 What are the conservation and preservation efforts performed for wetlands?

The survival of wetlands is dependent on ecological schemes for both conservation and preservation, without them the archaeology therein would perish. Heritage sectors have made efforts to analyse wetland monuments at risk since the early 2000s (e.g. MAREW, see Chapter 4), but these alone are not enough to preserve British wetlands. Therefore, conservation of wetland landscapes is desperately needed, not only for ecological habitat, but also for protecting historical sites and material remains preserved in unparalleled states. However, conservation and preservation methods for ecology and archaeology differ from maintaining prehistoric archaeological materials *in situ*. Due to these differences, the two disciplines often try to act together, as certain methods which can sustain the archaeology may damage the ecological community and vice versa. Thus, archaeologists must consider the various wetland types, geographical placement, water sources, weathering, human impact, and chemical reactions within a singular environment. All these variables denote the degree to which natural or monitored conservation of prehistoric sites and materials are achievable within a wetland landscape.

Different wetland landscapes require different conservation methods, which will be expanded upon later in the chapter according to wetland type. All wetlands, however, maintain a level of saturation or hydroperiod to retain a 'wetland' status, or are subjected to invading or encroaching terrestrial vegetation. Equilibrium or stabilisation of the water table in these environments is required to ensure artefact conservation and preservation. Stabilisation of the water table ensures a continuous state of hydric sediment. Without this stabilisation, water begins to evaporate, leaving air pockets within the soil or organic matter (i.e. peat) exposing artefacts to oxygen for the first time in centuries, thus accelerating their rate of decay. Certain formulas can help identify the hydraulic levels, leading to different management schemes, such as Eggelsmann's (et al. 1993) and Darcy's Law (Menció et al. 2014).

Water sources such as groundwater, precipitation, and surface water need to be greater than or equal to the output of evapotranspiration, runoff, and ground soil absorption (Corfield 2007: 144). Maintaining various approaches to water table measurement allows authorities to monitor changes, especially those due to urban development or manipulation of the natural environment (e.g. drainage, sea walls, dredging). One example of formulas used to monitor water sources is Eggelsmann *et al.* (1993). Eggelsmann *et al.* (1993) has monitored input and output of water sources creating the formula $P+I = D+E+(R\text{-}C)mm$[29], revealing water deficits. Corfield (2007: 144) points out that archaeological material can survive below the ground surface water source in wetlands that have been drained long ago. Archaeological material can survive if it remains undisturbed and *in situ* of the organic matter or soils that helped maintain an anaerobic environment. Some decay still occurs; however, the overall rate is reduced due to limited exposure to oxygen.

Water retention in wetlands, especially those that are not in a constant state of flooding, are dependent on hydraulic conductivity and the permeable nature of the soil to allow for hydraulic flow (Corfield 2007). The level of flow utilising sediment can be measured using Darcy's Law.[30] Darcy's Law (Menció et al. 2014: 158) is best applied to methods analysing groundwater movement in 'terrestrial aquifers.' Wetland archaeologists should consider terrestrial aquifers when analysing prehistoric people's interaction with the landscape because these aquifers have fed, or still do feed, into wetland areas. Throughout a

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[29] P+I = D+E+(R-C)mm means: P (precipitation); I (intrusive water inflows); D (discharge); E (evapotranspiration); R (reserve); C (consumption); and (R-C) is storage.
[30] For more on Darcy's Law, see Menció, A., Galán, M., Boix, D. and Mas-Pla, J., 2014. Analysis of stream–aquifer relationships: A comparison between mass balance and Darcy's law approaches. *Journal of hydrology*, *517*, pp.157-172.

hydroperiod, the outflow from terrestrial aquifers can cause flooding to the adjacent landscape. During these periods of prolonged flooding and disruption of permeation of the water table, gley soils with anaerobic properties are often created. By using Darcy's Law in a known flood area of an aquifer, archaeologists will have a better idea of what types of settlements and technologies the prehistoric peoples used to compensate during annual, seasonal, or random flooding. Knowledge of the hydraulic conductivity of wetland soils is important for archaeologists because the water level present in the soil denotes the possible relation to a stabilised water table. If there is an annually stabilised water table, preservation of artefacts in this area can be projected to be more stable.

The Wildfowl and Wetlands Trust (WWT), Wildlife Trust, Royal Society for the Protection of Birds (RSPB), and Joint Nature Conservation Committee are among the conservation groups who specialise in wetland conservation and promote public awareness. Likewise, Likewise, Historic England has sponsored ongoing wetland archaeological preservation strategies concerning Exeter University's Centre for Wetland Research (Heathcote 2012). Other projects such as SWAP (Scottish Wetland Archaeology Project) have developed to provide archaeological research for wetlands in Scotland. However, no such program currently exists for Welsh wetland archaeology. These groups and strategies are important because they provide in-depth studies on the impact of global climate change and urbanisation on the survival of wetlands and preserved heritage.

4.3 Effects of Global Climate Change and Urbanisation

Conservation is needed to ensure the survival of wetlands. England has lost more than 90% of its wetlands in the past 400 years (WWT 2018). Estimation for wetland loss has yet to be published or performed on a large scale in Wales and Scotland. This lack of analysis can perhaps be attributed to insufficient funding and attention equivalent to English studies on the topic.

The rapid decline of wetlands is due to a deficient understanding of the variations in wetland ecosystems, the elements needed to maintain these subtype wetlands, funding, and their role in the larger cultural and geographic stages (Menotti 2013). One of the leading issues for wetland decline is apathy towards the destructive nature drainage causes for the landscape. Large-scale drainage is a major cultural and widespread agricultural practice throughout the United Kingdom. Wetlands cannot function properly when invasive flora and fauna establish themselves or the drying out of soils and organic compounds.

In addition, the continued acceleration of modern peat extraction, chemical pollution, global climate change, urbanisation and alterations to the natural landscape are all factors in wetland decline. Therefore, it is important to define, identify, and understand ecological stresses and combative preservation measures for differing wetlands types throughout Britain.

Urbanisation often alters the course of rivers and their flow (i.e. dams). These alterations can cause severe erosion to riverbanks due to new pressures introduced. These alterations can also affect adjacent wetlands that receive river runoff, introducing numerous previously stated issues. For example, in 2019, the high level of development along the River Taff in Wales caused extreme flooding of development housing in what was previously floodplains. For archaeologists, mapping of developing urbanisation is important to pinpoint prehistoric sites that have otherwise been altered or endangered by development (i.e. Scottish crannogs, lake dwellings, platforms). This type of pre-emptive study, paired with evaluations of current agricultural practice impact on wetland environments, enables to monitor the degree to which the surviving archaeology is endangered through attitudes, drainage, pesticides, and trampling of surviving peat systems that current agricultural practices have on wetland environments (Lindsay et al. 2014; Robinson et al. 1990; Sutherland 2010).

4.3.1 Pollution

Pollution, such as liberal use of agricultural fertilisers, residual metal permeation from mining, and micro-plastics, has caused freshwater sources to be one of Britain’s most endangered habitats (Byrne et al. 2010; Fitter and Manuel 1994: 21). Pollutants infiltrated the water systems, harming aquatic flora and fauna, and they have also disturbed these landscapes’ chemical compositions. Pollutants are often introduced into major water reservoirs through rivers and can completely alter a wetland landscape. Likewise, pollutants can also alter the survival rate of artefacts found in wetland landscapes. The chemicals introduced can speed up the deterioration of an artefact’s internal structure, especially when it is already in a location prone to abrasion (e.g. soil drag from strong currents) and exposure.

Similarly, in stagnant water, these chemicals can settle in the soils and penetrate deep-lying archaeology. For example, synthetic pyrethroids used in pesticides are often found in river runoff. The pesticide is extremely toxic to aquatic flora and fauna (Scottish Borders Council: 3). Synthetic pyrethroids can upset an entire ecosystem, killing off key species that consume algae or bacteria that would otherwise grow rampant in low-energy streams and stagnant sidebars of rivers and lakes. However, in terms of archaeological deterioration, objects that have absorbed a high level of synthetic pyrethoids—such as wood—are susceptible to microstructural changes (Wörle et al. 2011). These changes can make the artefact hazardous to handle (i.e. absorbed toxins), and in cases of wooden objects - causing crystallisation to occur along the surface.

Pollution through sediment runoff is also an issue. Excessive sediment runoff from husbandry or forestry into rivers can cause sediment pollution. These runoffs can ‘lead to smothering of in-stream substrates with fine silt and sand’ (Perfect et al. 2013: 25). Excessive sediment is harmful to native species, such as salmonids, reducing the quality of salmon spawning habitats (Perfect et al. 2015: 25). By removing spawning habitats, we can no longer identify areas that may have been in use by salmon for generations, thus taking away vital clues to prehistoric economies.

In Scotland, large urban areas are located on estuaries (Scotland’s Environment 2011: 2). Like many estuaries located near or on urban centers, they are subject to large quantities of human-produced waste due to their location. Many water management schemes treat water before re-introducing it to a natural source. However, the quality of treated water introduced into estuaries have been compromised because they no longer contain the correct salinity, pH, or nutrients required for a stable environment. An unstable environment causes the reduction or instability of the wetland landscape, allowing for invading flora and fauna species to thrive. However, estuaries that have a high flush from large freshwater sources are not as affected as those that do not have access to high volume water flow. In areas such as these, artefacts have a higher survival rate. Regardless, the change in salinity, pH, chemical compositions, bacteria, or nutrients to a once balanced environment can disrupt the stability of artefacts in these locations.

Dumping has been restricted over the years in Britain. Today, legislature like the 2010 Marine Act of Scotland restrict dumping of certain materials, however, the Act only allocates the dumping of dredged material from ports, harbours, and marinas, but not other sediment locations (Scotland’s Environment 2011: 10). Dumping copious amounts of sediment in estuaries can disrupt the sediment flow of the area, and add additional and foreign soil and indirectly micro or macro flora can cause internal disruptions to an estuary’s flow cycle. This disruption can result in a collapse of estuarian cycles, causing a shift in the environment parameters, thereby jeopardising the remaining archaeological material due to a change in the water table, oxygen content, sediment movement, salinity percentages, and other various factors.

4.3.2 Forestry and Afforestation

Forestry is destroying peat sources because of the introduction of flora that is not compatible with acidic vegetation and changes to the water table (Buckland 1993; Murphy et al. 2015). This point is demonstrated by Brooks and Stoneman (1997), who state that ‘Until recently, the primary threat to the Scottish upland bogs came from afforestation and associated invasive works, together with the consequent lowering of the water table.’ Buckland (1993) uses the Flow Country in Scotland to exemplify the vast quantity of burial mounds destroyed before they could be recorded due to disruption of the archaeology brought on by deep ploughing. Vegetation is also altered through drainage. Certain species can only survive at various levels in the water table. Without semi-submersion, many plants are unable to sustain themselves. With key species not available, certain minerals are no longer introduced or absorbed, and the resulting pH balance of the soil is no longer maintained.

4.3.3 Water abstraction and drainage

Water abstraction used for urban centers or energy generation significantly impacts estuaries’ health when not monitored correctly. In Scotland, water abstractions are used for cooling (Scotland's Environment 2011: 9). Chemicals, such as biocides, are introduced into the water to retard the growth of particular flora and fauna (Scotland’s Environment 2011: 9). Usually, water introduced has been treated before returning to a natural source. Additionally, fish extraction significantly impacts the estuary's ecological health, disturbing essential functions (Scotland's Environment 2011: 9). The removal of large quantities of water causes major shifts in an estuary’s water table. Changes in the water table can cause peripheral edges of the estuary to dry, exposing soils to oxygen. Prolonged exposure to air dries these soils, allowing oxygen to penetrate deeper sediment levels. The re-introduction of oxygen to soils and peat causes rapid degradation of exposed artefacts as they are uncovered after centuries of hemostasis in an anaerobic environment.

Engineering and drainage operations hold a great deal of influence on the biodiversity of rivers. These operations cause a reduction in catchment capacity and an increased rate in which precipitation filters into the river system (Scottish Borders Council 2007: 3). As stated previously, this can affect the flora and fauna that are dependent on natural river mechanisms, and are further threatened by invasive species altering the chemical stability of the deposited archaeology.

4.3.4 Peat Extraction

Extraction of peatland has proven to be detrimental to the growth and survival of these environments. When the rate of extraction exceeds the rate of growth, peatlands cannot recover, resulting in the loss of habitat. In Scotland, prolonged peat cutting for fuel has altered peat landscapes and unearthed ‘accidental archaeological remains’ (Crone and Clark 2007: 19). Although the level of commercial peat harvesting in Scotland has decreased over the years, harvest is higher in areas like the Somerset Levels (Crone and Clarke 2007: 22). While peat extraction has positive attributes for revealing unknown archaeological sources, it is also detrimental, specifically to archaeological features. This is because, once a known or unknown site or object is exposed, there is no guarantee for its survival—even with extensive conservation efforts.

Mineral and water extraction are still primary threats to peat landscapes (Crone and Clarke 2007: 23). However, because Scotland is a region so abundant in water sources, there is a lack of comprehensive legislature for resource management. Perhaps it is this perspective that has produced the nonchalant attitude to certain conservation procedures in Scotland. Consequently, this lack of legislature has resulted in water shortages in areas such as Fife, Dumfries, and the Spey valley (Crone and Clarke 2007: 23). Water shortages in Scotland have also led to some rivers drying out due to a prolonged lowered water table (Crone and Clarke 2007: 23).

Agricultural intensification resulted in extensive draining in the 19th and 20th centuries, greatly contributing to the erosion of peatlands throughout the United Kingdom (Countryside Council 2004: 13). Peat is a continuously growing entity, even in a deactivated state, however, the lack of submerged materials in these conditions halts the peat-forming process. When peat becomes dry, it forms a water-repellent barrier making it subject to erosion and wind, unable to rewet (Bruneau and Johnson 2014: 2). If peat is no longer able to rehydrate itself, it begins to rapidly decompose, releasing greenhouse gases and cached carbon into surrounding water sources (Bruneau and Johnson 2014: 2).

4.3.5 Effects of Dredging?

Historically, dredging has been performed to improve drainage, reduce erosion, and control river migration and energy flow (Perfect et al. 2013: 25). During the Second World War, a demand for increased agricultural production drastically increased dredging in Britain (Perfect et al. 2013: 25). Removing sediment accumulation exposes crucial riverine gravels needed to support 'rare plant and animal species' (Perfect et al. 2013: 25). The removal of these accumulations can interrupt sediment supply further downstream, causing the riverbed to lower and sediments to be pushed into downstream reaches (Perfect et al. 2013: 25).

Ironically, dredging is also considered 'good' for archaeology, as many artefacts in rivers and other wetland landscapes have been discovered through the process. For example, dredging performed in the Thames has brought about the discovery of hundreds of objects, specifically the Iron Age Waterloo Helmet (Acc. No. 1998, 1004.1) (British Museum 2018b), and the sword and scabbard of Little Wittenham, Oxfordshire (Acc. No. AN1982.1096) (Glover 2012). It becomes a paradoxical argument that, though dredging is harmful to the environment and causes issues for conservation, it is beneficial to archaeological studies because of the copious material discovered.

Major estuaries, such as the Forth and Dee, are dredged regularly to 'maintain navigable channels' (Scotland's Environment 2011: 10). However, estuaries such as the Tay are dredged to remove sand for commercial use (Scotland's Environment 2011: 10). Dredging of estuaries deepens the channel, resulting in deeper water. Estuaries are not static in their depth, but the hindrance of a natural sediment drift cycle puts stress on the estuary's mouth, and supports flora and fauna. Displacement of sediment can be both positive and negative for archaeology. While dredging brings forth artefacts deposited deep in the sediment, the practice can also disrupt an estuary's cycle and put the remaining archaeology at risk.

4.3.6 Impact on Rivers

Preservation and conservation of rivers and the prehistoric artefacts deposited within them have different methods in accordance with different objectives. Rivers have been altered by natural geographic and environmental fluctuation. However, within the last two millennia, rivers have mostly been altered because of human urbanisation, agricultural intensification, hydro-electric projects, and management against natural flood and erosion cycles.

Development pressures can also alter river courses. River courses are altered for potential new pathways or to minimise the river's breadth for more building space (SEPA 2018a; Scottish Borders Council 2007: 4). An example of this is the River Tweed, where urbanisation and development pressure has led to the disruption or downsizing of 'floodplains, wetlands, meander and oxbow systems.' These disruptions have led to increased flooding along areas of the River Tweed (Scottish Borders Council 2007: 4). This fluctuation can affect the underlying or deposited archaeology because of changes to the water table, introduction or removal of key chemical compounds, and disruption of flora and fauna that helped maintain an equilibrium state that enabled the preservation of certain artefacts. For example, the removal of certain fish can cause explosive growth of certain algae and bacteria that can alter the chemical composition of fluids that have the potential to eat away at remaining structures. Additionally, the encroaching urban infrastructures and delineation of specified river routes can again disrupt the equilibrium of artefact preservation, sometimes exposing these pieces to large quantities of oxygen for the first time in centuries.

In Wales, human impact has drastically altered the rivers, especially after the extensive mining of the nineteenth and twentieth century (Brewer et al. 2009: 30-34). Due to human alterations of the wetland landscape from Roman to modern periods, archaeologists need to take note of how the river courses have potentially been altered. Discovery of wetland archaeological sites and material finds may be higher along prehistoric river routes as opposed to the modern meander of the same river. Additionally, by studying modern impacts of river migration, archaeologists have a better understanding of preservation methods needed to sustain these waterways. For example, the 'sustained large gravel removal' in Wales has caused channel incisions up and downstream from mine locations. Different river and adjacent wetland areas are affected differently but could include '… undermining bridges, destabilisation of channel banks, loss of riparian vegetation, and lowering of the local water tables' (Williams and Duigan 2009: 34). Urban projects further impact rivers through the development of 'several large-scale reservoirs, water transfer and hydro-electric schemes' (William and Duigan 2009: 14). One such impact was the 1950s flood of Capel Celyn in

Cwm Tryweryn due to efforts for the creation of a water supply reservoir to Liverpool, England (Williams and Duigan 2009: 14).

The increase in agricultural activity, hydro-electric projects, and management against flooding and bank erosion has caused heavy deterioration of Scottish rivers (i.e. biology, morphology, geography, and hydrology) (Perfect et al. 2013: 33). There have been extensive efforts in Scotland towards conservation and preservation of rivers. Legislation such as the European Union Water Framework Directive of 2000 and the Scottish Water Environment and Services Act of 2003 requires rivers to be of ‘good ecological status’ by 2015 (Perfect et al. 2013: 33). As of 2013, an estimated 44% of the rivers in the Scotland have achieved this status. Perfect *et al*. (2013: 33) suggest that adopting softer solutions would be more effective in managing Scotland's rivers than hard engineering.

Despite previously stated efforts, however, Crone and Clarke (2007) believe that a lack of comprehensive control over water sources in such a ‘water abundant region’ has resulted in resource shortages in certain areas. This lack of regulation has resulted in certain rivers drying out because of the lowered water table (Crone and Clarke 2007: 23), which in-turn endangers potential waterlogged archaeological remains.

Floodproofing is the process in which the foundations of urbanised centres is raised to avoid designated flooding (Bedient et al. 2008: 401). However, floodproofing can be problematic as water can seep into the foundations and erode structures from the bottom. Therefore, floodproofing needs to be paired with local river management schemes to enable regulation of flood flow, and minimise potential water damage over short and long periods.

Urban rivers have been, and continue to be, frequently heavily modified (Perfect et al. 2013: 26). As stated before, re-enforcement, dredging, and prevention of erosion put enormous pressure on river systems (Perfect et al. 2013: 26). Construction of anti-erosion walls and embankments has prevented river channel migration and natural flooding cycles which can result from overbank flooding, as has been observed at the River Tay in Scotland (Perfect et al. 2013: 26).

4.3.6.1 Effects of Erosion?

The erosion of riverbanks is part of a healthy cycle for rivers. Erosion helps to recycle habitat and refresh ecosystems. The banks themselves are used for nesting by birds and insects that help regulate and keep a healthy aquatic system (Perfect et al. 2013: 24-25). Therefore, if the erosion is occurring naturally, it is healthy. However, if bank erosion is too sudden, artificial, or not allowed, the river and its ecosystem suffer (Perfect et al. 2013: 15). Often, rivers that are prohibited their natural erosion cycle can result in habitat diminishment in order to retain prime farmland (Perfect et al. 2013: 14). Without key species to support specific fauna, unnatural erosion can cause a change in the morphology of the river. This change in morphology can affect the water table. As a result, changes in the water table could theoretically expose the sediment wall that was once submerged, drying the soil layers. These dried or drying soils no longer provide an anaerobic environment, thus allowing for artefacts and remains to be exposed to oxygen, and thereby an accelerated rate of decay.

4.3.7 Impact on Floodplains

Floodplains are one of the most productive landscapes due to their water and nutrient availability. The level of productivity is subject to latitude and climate (Brown and Brown 1997: 104). However, due to their sensitivity to human activity, such as ‘changes in catchment conditions’ also affects a floodplain’s productivity and overall health (Brown and Brown 1997: 105).

River modification, agricultural and husbandry modifications, and deforestation are major threats to floodplains (Benstead et al. 1999: 11). Floodplains were relatively stable until Roman river modification in Britain (Benstead et al. 1999: 11). Large portions of rivers were also heavily modified from the 1800s to 1900s, causing disconnection of wetlands to their water sources (Benstead et al. 1999: 11). It was not until the 1970s that wetland conservation consciousness became a prevailing theme in river management schemes. Presently, there are still disconnections of wetland landscapes, intensification of agriculture, and modification of rivers. The majority of modern lowland wet grassland is used for grazing or silage (Gallagher and Cornish 1988: 1). However, there is currently small-scale rehabilitation of floodplains and relating ecosystems (Benstead et al. 1999: 11).

Floodplain management is the process of fully utilising floodplains to benefit natural and urbanised systems (Bedient et al. 2008: 712). Management must balance ‘moisture, nutrient availability and disturbance’ of the environment (Benstead et al. 1999: 27).

Floodplain zoning restricts land use in floodplains dating from ten to over one hundred years of age (Bedient et al. 2008: 401). These restrictions are enacted to stop damages to urban infrastructures such as parks, agriculture, and buildings (Bedient et al. 2008: 401).

Wet woodland regeneration is most successful in new landscapes rather than new growth of established woodland, and requires new open areas for which it can invade and germinate. However, wet woodland that is newly planted is less valuable ecologically than naturally established communities. The extent of its ecological value is not necessarily an archaeological issue, and therefore this will not be discussed here. However, established woodland is less detrimental to the underlying archaeology due to the already established root system. The balance of encroaching woodland into established wetland areas is difficult, and the encroaching woodland needs to be considered in terms of aiding or harming the invaded wetland. Encroaching woodland can be beneficial to wetlands as they act as a buffer to cultivated fields and river systems (Forest Commission 2003: 17).

British ecological management of wet grasslands aims to implement low-intensity agricultural systems, suitable rates of flooding, water regimes, routine grazing, minimise fertiliser input, outlaw use of pesticides and herbicides, and no-reseeding (Benstead et al. 1999: 2). Routine grazing or cutting prevent invasive woodland species from re-invading the wet grassland (Benstead et al. 1999: 27). Other environmental factors that affect wet grasslands' health and stability are: 'degradation of flood defence, river regulation, urban and industrial development, mineral extraction and pollution leading to eutrophication, and hydro-electric scheme modifications' (Benstead et al. 1999: 2). However, floodplains are not the only standing water environments to be affected by global climate change and urbanisation in Britain. External factors have greatly affected lakes as well.

4.3.8 Impact on Estuaries

Estuaries are one of the most modified wetland landscapes in Britain. They are often located close to urban conurbations and are subjected to numerous alterations, disruptions, and waste. They are modified to satisfy urban concerns such as land reclamation, littering, sewage treatments, and dredging, in addition to the constructions of harbours and sea wall defences.

Estuaries are slowly becoming shallower as sea levels rise due to global climate change. As sea levels rise, the rate of erosion escalates due to increased tidal return intervals. The increase in tidal intervals in turn increases frictional progression inland, causing the channel to deepen. With increased sea levels, the wave penetrates further inland, increasing salinity and thereby affecting biological processes of the area (Pethick 1993: 163). Depth increase allows for less bed friction and wave-current velocities, resulting in erosion of upper channel banks where intertidal mudflats and salt marsh develop (Pethick 1993: 163). Over time, the erosion causes an increase in channel width, resulting in decreased estuary depth and loss of surrounding salt marshes (e.g. Blackwater Estuary) (Pethick 1993: 163-4). The fluctuation in sea level is natural, but can be disrupted due to human interaction. As in Blackwater, 'flood embankments line almost the entire estuary channel' and cause further erosion (Pethick 1993: 164). The resulting erosion initiated the loss of mudflat and saltmarsh habitat, and further wave penetration inland led to increased flooding of urban and natural areas (Pethick 1993: 165).

4.3.9 Impact on Lakes

Outside factors and internal (i.e. trophic type), need to be considered as well for conservation methods and the natural stability of preserving artefacts *in situ*.

For oligotrophic lakes, acid rain and mining conditions have severely impacted lake health and maintenance (Hatton-Ellis 2014: 8). Acid rain is particularly detrimental to Welsh oligotrophic lakes because it kills many key flora and fauna that support the lake's ecology (Hatton-Ellis 2014: 8). Occurrences of acid rain have been reduced due to regulations of sulphur emissions from power stations and other industrious production within Wales (Hatton-Ellis 2014: 8). Acid rain also destroys artefacts, regardless of material type, though some materials may take longer to degrade than others (i.e. wood vs metal vs stone). For example, a study performed by Gianni *et al.* (2003) exposed three bi-component bronzes with different percentages of patina to measure levels of degradation and instability correlating to exposure. All bronze experiments of differing purity percentages exposed to acid rain showed a significant rate of damage, along with the dissolvement of patina and metal (Gianni et al. 2003: 1836). Other effective restoration methods for oligotrophic lakes are ditch blocking, reduced grazing along shorelines and inflow areas, restoring altered inflow and outflows, 'planting broad-leafed woodland', filtering and diverting polluted mine water, and nutrient management (Hattin-Ellis 2014: 8). Additionally, all naturally fishless lakes should remain as such, as the introduction of a species disrupts the DO cycle of oligotrophic lakes (Hattin-Ellis 2014: 8).

Dystrophic lakes are generally located in remote regions and are less impacted by human activity (Hattin-Ellis 2014: 12). Acidification and drainage are the primary threats to dystrophic lakes (Hattin-Ellis 2014: 12), which generally have an average of 0.5 pH balance. Therefore, increased acidification of the water system could disrupt the lakes ecological cycle. Drainage is also a considerable issue for dystrophic lakes because the peat begins to dry, thus allowing for oxygen to reach deep laying artefacts.

Eutrophic lakes' primary danger is nutrient enrichment. Nutrients introduced into the water source are often from treated sewage, farmland fertiliser, septic tanks, and agricultural runoff (Hattin- Ellis 2014: 26). Actions to reverse eutrophication and limit foreign flora and fauna invasion are crucial to keeping these lakes healthy (Hattin-Ellis 2014: 26). While eutrophic lakes are not prime locations for the preservation of organic material artefacts like wood, there is a slight chance other types of artefact material types could survive, though they are expected to be in a state of severe damage and decay. Stone artefacts are more likely to survive in eutrophic lakes unless certain chemical components are not compatible with specific stone types.

Mesotrophic lakes are the most common trophic type to be threatened in the United Kingdom (Hattin-Ellis 2014:14). In Wales, of the 21 mesotrophic lakes, 13—or 62%—need restoration (Hattin-Ellis 2014: 16). Large scale management of the catchment with land and farm owners is crucial to minimise nutrient inputs and restricting access to grazing on shorelines and inflow areas (Hattin-Ellis 2014: 16). Preservation qualities of a lake are difficult to predict because certain object survival is dependent on a wide variety of variables in an uncontrolled environment. This is also true for estuaries: preservation in these environments that are easily influenced by external-human sanctioned factors are significantly reduced with the high level of urbanisation.

4.3.10 Impact on Peatlands

Preservation and conservation of bogs and fens are crucial to providing healthy and stable ecotones. Due to urbanisation, peat cutting, draining, and other destructive human activities, bog and fenland landscapes have changed drastically from the medieval to the modern period. In general, these habitats have been shrinking, rather than growing, due to these disruptions and increased extractions. According to the North Wales Wildlife Trust, 94% of lowland bogs have been destroyed in the United Kingdom (North Wales Wild Life Trust 2018). Dyfi, Wales, for example, a southern floodplain, has been estimated to contain 1,450 ha of peat soil. However, only 640 ha of this soil has been retained bog habitat (Williams and Duigan 2009: 51).

4.4 Conclusion

Human impact and negligence have caused major disruptions to wetlands globally. Britain needs to consider alternative countermeasures to save wetlands that are not only invaluable to the economy (e.g. powerplants, agriculture, dams, hydro-electric power plants) but could also potentially prevent the collapse of entire biospheres. The loss of these wetlands would not only be catastrophic for the flora and fauna that depend on their very existence, but the surviving heritage that is increasingly at danger of exposure and consequently rapid decomposition as well. Without wetlands, the archaeology sourced there would all but disappear. The loss of such material would be detrimental to British archaeology, as wetland sites, objects, and context cores are quickly showing their value through their extreme preservatory states. This level of preservation has provided copious new and in-depth knowledge previously unknown about the prehistoric periods.

Appendix 5. Toponymy

Toponymy is vital for considering the classification of wetland types. Regional differences can generate alternative concepts of widely established terminologies and variation in defining a region’s wetland type changes. To create a comprehensive understanding and terminology for wetlands, archaeologists need to consider variation in the meaning of the term and the regional diversification to describe a singular landscape type.

For example, in Wales, place names that include ‘aber’ (mouth of the river) and ‘rhyd’ (ford) are reflective of riverine features (Williams and Duigan 2009: 1). Other toponymic root words for Welsh place names are afon (river) and clun (river meadow) (Irwin 1973; Darvill 2010: 246). Gaelic toponymic root words for river are abhainn, aibhne, caol, caolas, caochan, gil (ravine or watercourse), glais, inbhir (place meeting of rivers), kyle (narrow sea channel) (Irwin 1973). Scandinavian terms for the river were also considered given their historical interactions with Britain. These terms are a, laxa, thurso, bekkr, and os (river mouth) (Irwin 1973).

Lakes are identified through different toponymy throughout Britain, with terms borrowed from both local and external sources. Lakes are classified through their geographical development and location in the British landscape. ‘Lake’ is the common term used throughout Britain. The Dutch term for a lake, meres, is also used as a common English prefix (National Geographic 2018). As for Wales and Scotland, local dialects are utilised in for lakes. Welsh terms for the lake are 'llyn' and 'llywch' (Irwin 1973) and included in a location's title. The Scottish term for lake is 'loch' (National Geographic 2018), but locals alternatively use the term lake to identify such locations.

The term estuary originated from aestus, meaning tide (Elliot and McLusky 2002: 818). However, other terms identify estuaries in the United Kingdom, such as Welsh ‘aber’ and ‘moryd’ (Irwin 1973).

Table 5.1. Place names from the Ordnance Survey (Irwin 1973).

Gaelic		Welsh		Scandinavian	
river	abhainn, aibhne	aber	estuary, confluence, stream	a	river
allt	burn, stream	afon	river	laxa	river
amhach	neck	berw	rush of water	thurso	river
aonach	moor or market place	brwynog	places of rushes, marsh	bekkr	stream, appears as beck
bac, bhaic, bacaichean	bank ridge, bank, peat bank	cors , corsydd	bog	meir	sandbank
bagh, bhaigh	bay	clun	river meadow, halm	myrr	swampy moorland, mire
baidhte	drowned, liable to flooding, liable to drowning (e.g. sheep)	dwfr	water	os	river-mouth, inlet
cabhsair	causeway	ffynnon, ffynhonnau	spring, well	rost	whirlpool, strong sea current
caraidh	weir; fish-pound	dyn (as in treudynn, creudynn)	enclosure	vagr	bay, creek, voe
camas	channel, bay; in inland places a bend	(g)eirw	rush of waters	vik	bay, creek
carach	winding	gian	riverbank, hillock		
caochan	streamlet	gwaun, gweunydd	moor, mountain, meadow, moor-land field		
caol, caolas	narrow, strait, firth, kyle	gwlyb, gwleb	wet		
cladach, chladaich	shore, beach	mawn	peat		
coinneach	moss	mawnog	peat bog		
coinneachan	place of moss	merddwr	stagnant water		
dobhar	water	merllyn	stagnant pool		
easg(A), easgaidh, easgainn	marsh, swamp				
eileach	mill-lade; narrow shallow stream joining two lochs; arrangement for				

	catching fish in a stream
fadhail	ford in sea channel
faoilinn	beach
fliuch	wet
goath	wind; marsh
gil	ravine; water-course
glais	stream
inbhir	place of meeting of rivers, where a river falls into the sea or lake, confluence
lub, luib	bend
marg	merk-land
moine, mona, monach	peat
mointeach	mossy ground, moor
mol, mal, mul, malar	shingly beach
monadh	hill, mountain, moor
muir	sea
ob, oba, oib	bay
oitir, oitre	sand bank
sruth, srutha	current, stream, streamlet
traigh, traighe, traghad	(tidal) beach
uidh	isthmus, ford, slowly moving water

llyn	lake
llwch	lake
mign, mignen, mignedd	bog, quagmire
morfa	marsh, fen
moryd	estuary
mynydd	mountain, moorland
panwaun, panweunydd	bog where cotton-grass grows
rhaeadr	waterfall
rhyd	ford
rhos	moor, promontory
sigl, siglen	quagmire
sugn	quagmire
ton, tonnau	wave
trallwng, trallwm	wet bottom land
tro	turn, bend
ynys, ynysoedd	island; holm, river meadow
ysgwd	waterfall
ystrad	valley, holm, river-meadow
ystyum	bend shape

uisge water		

Appendix 6. Study Zone 1, Scottish Case-studies Catalogue

6.1 Intro

As stated in Chapter 2 and 8, Scotland was divided into sub-regions based on Hunter's (2007) divide. Each sub-section is a different intra-region of Scotland with summaries of each case-study reported from a wetland context and interpreted as a deposition. Index numbers were assigned to each object with the intra-region initials and object number.

6.2 Highlands and Islands Case-studies

Each case-study is summarised below, detailing the site context along with associated reported finds. Patterns in the data are presented and discussed in Chapter 8.

6.2.1 Single Deposits

1HI_S. Ath Linne, Lewis – A mount (NMS X.2006.4) of a brooch was reported from an intertidal zone along Loch Shiphoirt. The find was decorated in gilded copper alloy with an animal motif of the Vendel period (i.e. 550 AD to 790 AD) and later adapted as a brooch (Canmore 2019a). The piece has a single cord wrapped to have two outlying loops and a central knot, and floral decorations overlay the outside loops. Due to its typology, the piece represents a transition period from the Iron Age to Norse settlement of the islands. While the origins of discovery are not provided, the find is at the mean low water spring mark of the intertidal zone. The findspot was in shingle contexts of the intertidal zone (Scotland's Soils 2019). The beach's surrounding terrestrial area is composed of peaty gleyed podzols with dystrophic semi-confined peat, which may suggest two potential outcomes to its placement. The brooch was deposited in the periphery peat that has since oxidised and disintegrated, or the piece was washed to the shoreline. Its survival and deposit on a shingle beach are rare because the formations of such intertidal zones this far north result from intense beach wave activity.

2HI_S. Ballachulish Moss, Inverness-shire – The oak figurine of Ballachulish (NMS X.KL 54) was found face down in peat moss at a depth of 130 cm below the topsoil and dated from 725 BC to 500 BC (SD ± 70, 2678-2474 Cal BP, HAR – 6329) (Coles 1990: 326). The figurine was found while peat harvest in 1880. Extraction of the figure noted the presence of interwoven twigs (Christison 1881), suggesting a wattled enclosure (Coles 1990). The figurine measures about 137 cm and carved to reveal a pubescent female with quartz inlaid eyes. Further investigation around the immediate findspot demonstrated that there were no other significant archaeological features were found.

However, a topographic radar survey found a nearby prehistoric site complex about 198 meters from the figurine (Site Number NN06SE 23) (Clark 1996, 1998; Haines 2007). Excavation has been performed around the moss by Clarke and GUARD (1996, 1998) for a potential occupation site on the north end of the bog. As a result, this figurine was considered a separate site from NN06SE 23, and thereby evidence for landscape activity allocation. Topographic survey of the region showed that the bog originally had three lake basins, connected with strips of peat bog (Clark 1998). The findspot context is composed of humus-iron podzols with peaty gleyed podzols derived from fluvioglacial and raised beach sands and gravels (Scotland's Soils 2019).

8HI_S. Cunnister, Shetland – An oblong wooden bowl or trough (NMS X.SHC6) filled with bog butter was reported from moorland, 0.9 meters deep in the peat in 1887 by unknown means (Murray 2011). There is not much known about the trough because it is part of the Burgh Collection, according to Murray (2011). Due to its 'nut' shape, the bog butter container dates the bowl to the late first millennium AD (Earwood 1993: 276). The container still had a mass of preserved butter and remnants of a lid. The bog butter was found in the peat on the East side of Basta Voe, an inlet tributary to the Harmars Ness. The trough was found in a mixture of mineral gley and peaty-gleys (Scotland's Soil 2019). Due to the wetland and associated sediment's anaerobic properties, the trough was preserved to a good standard.

11HI_S. Duntulm, Inverness-shire – A copper alloy armlet (X.FA 98) was reported in 1952 by crofter Matheson from a peat bog in Duntulm (Highland HERS 2019a). The piece was found in the second layer of peat, about 76 cm from the surface (Highland HERS 2019a). The massive armlet is shaped in the form of a double-headed snake, one of five ever found in Scotland, and is dated from 0 to 200 AD (Hunter 2006; MacGregor 1976: 215). The armlet is heavily worn, and the noted casting flaws are believed to have caused longitudinal cracks (MacGregor 1976: 215). The findspot's general soil type is peaty gleys with dystrophic blanket peat developed from drifts derived from basaltic rocks (Scotland's Soils 2019).

12HI_S. Elgin, Moray – A copper alloy fastener (2013/086) was reported from the floodplain south of the River Lossie. A metal detectorist found the piece in 2013. The button and loop fastener with a broken attachment are a lentoid shape with a central dome, which is in accordance with Wild’s (1970) class III, dated from 300 BC to 200 AD. The findspot was reported from alluvial sediment derived from riverine floodplain deposits (Scotland's Soils 2019).

23HI_S. Loch Gamhna, Inverness-shire – A copper alloy cauldron (no known accession numbers) was reported from Loch Gamhna. The cauldron fragment is a partially disintegrated portion of a potential Santon type, dated from 0 to 300 AD (Joy 2014). The piece is thought to have been found by fishermen in 1964, about 244 cm from the loch’s edge which is around 274 meters from the loch’s out-flow (Canmore 2019b; Forsyth 1966). The cauldron’s exact findspot is unlikely to be its original place of deposition due to water and sediment flow into the loch from its neighbour Loch an Eilean, and extracted by fishermen elsewhere on the loch (Forsyth 1966). The lakes of this area are oligo-mesotrophic, subject to mixtures of peat and alluvium (JNCC 2020). These lakes will have a moderate to high oxygen concentration in the hypolimnion, which may explain the cauldron’s fragmented and partial disintegration.

24HI_S. Loch Loyal, Sutherland – A copper alloy chisel or punch (no known accession numbers) was reported from peatlands a half-mile from the north end of Loch Loyal (Laoghal) in 1880. Anderson (1894: 207-213) proposed that zinc mixed in the alloy indicates the chisel is from the Early Iron Age. The National Museum of Scotland dates the punch from 1200 to 750 BC based on the square cross section. The exact findspot is not reported; however, the soil type from this area is comprised of peaty gleys and dystrophic peat (Scotland's Soils 2019), which would have ensured preservation.

30HI_S. Virkie, Shetland – A decorated sandstone stone disc (Shetland Museum 2011/80) was reported along the intertidal zone of the tidal lagoon, Pool of Virkie. The piece could only have a broad regional Iron Age date applied because these object types are almost impossible to date unless associated with other known typologies (i.e. 700 BC to 800 AD). Found in 2011 as a chance discovery, it has a lattice pattern produced from incised lines on one side with a variated pattern on the other (Treasure Trove 59/11). The piece was found in non-calcareous gley context that originated from drifts that were derived from sandstones, flagstones, and conglomerates of Middle and Upper Old Red Sandstone age (Scotland’s Soils 2019).

6.2.2 Pairs

9HI_S-10HI_S. Dores, Inverness-shire – A copper alloy fastener and blue glass bead was reported from Loch Ness (TT 26/03, Inverness Museum) in 2004 by a metal detectorist. The pieces are considered associated due to their proximity at the time of discovery, and are also considered an unlikely or *unnatural* pair. However, due to their size, it is possible they were chance losses as opposed to deposition; this, of course, is impossible to determine. Due to the unusual rectangular shape of the fastener and the bead's broad production type, the date can only be assigned a broad Iron Age date of the region (i.e. 700 BC to 800 AD). The loch is oligotrophic (Jones et al. 1996), so the survival of the copper alloy piece is surprising. The loch's associated soil is alluvium derived from fluvioglacial raised beach sands and gravels sourced from acid rocks (Scotland's Soils 2019).

26HI_S-27HI_S. Plockton, Ross and Cromarty – Expanded in Chapter 7, pages 121-122.

6.2.3 Hoards

13HI_S-18HI_S. Feltar, Shetland – A hoard was reported in 1772 from peatland discovered in Feltar containing six copper alloy massive armlets wrapped in rawhide. Unfortunately, only one armlet has survived (D.1912.63), but the rest are assumed to be of the same massive style dating from 0 to 200 AD (Hunter 2006). The armlets were found near a broch tower, but are not associated with the settlement. Three of the armlets reported are jointed, and the others were whole (Hunter 2006). The primary sediment type where the hoard was discovered was peaty gleys, with parent material derived from drifts which developed from schists, gneisses, granulites, and quartzites, principally of the Moine Series (Scotland's Soils 2019). The find site has since been developed with the construction of Brough Lodge (Shetland News 2014).

21HI_S-22HI_S. Kyleakin, Inverness-shire – In 1884, kegs of bog butter and a cauldron was discovered 2.3 meters in the peat from a peatland in Kyleakin. While there is currently an associated pair (cauldron – X.DU 5, keg of bog butter X.SHC2) in curation, the object record mentioned other kegs at the time of discovery. There is no mention in the record if there was an effort to extract these kegs, merely that they existed. Therefore, the full number of finds is unknown, and as a result, the deposits at Kyleakin are considered to be a hoard. The bronze cauldron is of globular form or 'Battersea' type, dating from 100 AD to 200 AD (Piggott

1955; Joy 2014). The condition, as referenced by MacGregor (1976), is disastrous, with 30 patches applied in antiquity. A radiocarbon date of the alder keg from its contents places the hoard from 246 AD to 346 AD (1730±35 BP, UB-3186) (Stuiver and Pearson 1986; Earwood and O'Neil 1991: 203; 1993). Considering both typology and carbon-date supplied, the deposit was probably from 250 to 400 AD. The pair's findspot was in peaty gley context, which was derived drift developed from Torridonian sandstones and grits (Scotland's Soils 2019). The anaerobic qualities of the peat context probably allowed for the preservation of lipids of the bog butter.

27HI_S-29HI_S. Shuna Island, Argyll – A hoard was reported in 1875 after ditch-digging the peat in Shuna Island. The three copper alloy swords were dated between 800 BC to 700 BC, of the Ewart Park type (Coles 1960; Scott 1966). The swords (X.DL 21, 1977.198, 1874.28.a) were found close to each other with their tips pointed downward into the peat (Coles 1960). Additionally, the pommel of one sword had been broken off (Burgess and Colquohoun 1988). While the modern soil has evolved to brown soil, the neighbouring peat deposit is a compound of peaty gleys with peaty gleyed podzols and dystrophic semi-confined peat derived from drifts of slate, phyllites, and other weakly metamorphosed argillaceous rocks (Scotland's Soils 2019).

6.2.4 Multiperiod Single Object Deposits

3HI_S-7HI_S. Barmuckity, Elgin - A copper alloy zoomorphic button and loop fastener (2014.22) was reported from the river floodplain at the junction of Burn Linkwood and the River Lossie. The fastener is considered to be of class III, according to Hunter (2015b) and dated based on style from 0 to 200 AD. This fastener is in the playful zoomorphic form of a duck, which is very fitting as it was found in a wetland landscape. Several other finds have been reported from the floodplain such as a pottery sherd, slag, and daub—all of an unassigned Iron Age date. The record was unclear if these pieces were associated, and therefore, in that absence, will be considered unassociated. Consequently, these pieces are considered *landscape dependent multiperiod deposits*. The floodplain these finds were reported from is comprised of mineral alluvial soils mixed with peaty alluvium (Scotland Soils 2019).

19HI_S-20HI-S. Gleann Geal, Argyll – The deposits at Gleann Geal are an interesting case. The dystrophic blanket peat bog runs through, or is encompassed in, the boundary lines of several local towns (i.e. Morvern (SHC 1) and Kilmaglaug (lost)). Two kegs of bog butter have been reported from this bog. Ritchie (1941: 6-7) suggests they were sunk as opposed to buried because of tilting of the butter mass. The keg reported from Kilmaluag is dated to the first century AD based on other similar forms from Kyleakin (Ritchie 1941). The keg from Movern has been radiocarbon dated from 140 AD to 247 AD (1802±35 bp, UB-3185) (Stuiver and Pearson 1986; Earwood and O'Neil 1991). These dates suggest that the two kegs were deposited around the same period. Therefore, with consideration of the radiocarbon dates, the deposits most likely occurred from 150 to 300 AD. The deposit is not a pair due to the distance between the two placements, but is instead considered part of the *Landscape Dependent Multiple Period Deposit* tradition.

6.3 Northeast Case-studies

6.3.1 Single Deposits

1NE_S. Ballestrade, Aberdeenshire – A copper alloy terret (BM 59.12-27.1) was reported from the floodplain of Logie Burn. The terret is manufactured in the 'massive' style with a simple decoration of a hump invading the ring's interior and no signs of wear (MacGregor 1976; Hunter 2014), dating it from 0 to 200 AD. The findspot consists of alluvium sediment mixed with peaty-alluvial soils. This sediment is derived from flood plains with river terraces and former lake beds (Scotland's Soils 2019).

6.3.2 Pairs

2NE_S-3NE_S. Belhelvie, Aberdeenshire – Copper alloy armlets (X.FA 16) were discovered in the prehistoric floodplain north of Eigie Burn. The casted armlets are made in the 'massive' style in an oval shape (Hunter 2014; MacGregor 1976) and dated from 0 AD to 200 AD. The lyre palmette decoration has evidence of enamel settings in the terminals (MacGregor 1976). The armlets were found three yards apart, but, due to their identical nature, are assumed to be associated. The exact findspot is unknown, but the gley soils of the general findspot developed from red lacustrine silts and clays derived from Old Red Sandstone sediment, which signify prehistoric rivers or alluvial plain (Scotland's Soils 2019).

5NE_S-6NE_S. Tillychetly Moss – The copper alloy armlets (both lost) were reported from marshland in Tillychetly Moss in 1853 and dated from 50 AD to 150 AD based on typology

(Coles 1968; MacGregor 1976; Simpson 1968). The armlets are an oval shape with longitudinal fluting. Antiquarians in 1853 identified the alloy as brass, but as this has been a common misdiagnosis for metal material and may be mislabelled. However, if correct, brass has generally been sourced from Roman imports and(or) production (Bayley 1984, 2000). Exact findspot is unknown, but its discovery in the moss was assumed to be in a peat context.

6.3.3 Multiple Period Single Object Deposits

4NE_S. Deskford, Moray – A carnyx (X.FA 76) was found in a sub-layer of peat in Deskford, dated from 80 AD to 200 AD based on construction (Hunter 2019). The carnyx head was constructed with recycled Roman copper alloy and brass (Hunter 2014, 2019b). The prehistoric bog location in which the war trumpet was discovered has numerous other deposits from other periods such as a pot, butchered animal bones, and quartz pebbles (Hunter 2014, 2019b). The bog's location is also situated adjacent to a promontory cut-off from the settlements by a palisade and set aside, free of domestic utility (Hunter 2001). Therefore, the carnyx and other period object deposits can be considered part of the *Location Dependent Multiple Period Deposit* tradition. The landscape has since been drained and used as farmland, resulting in the evolution of brown soils for the area. However, pockets of peat still survive in the sub-layer, and it is here that artefacts have been found.

6.4 Central's Case-studies

6.4.1 Single Deposits

1C_S. Abercairney, Perth and Kinross – A copper alloy cauldron was reported from the peat bog of Abercairney (IE/1946). The cauldron was manufactured in the Late Iron Age, dated from 100 AD to 200 AD based on its Battersea typology (Joy 2014). The cauldron was formed from a single copper alloy sheet, which remains in good condition apart from a missing rim and handles, all thought to be made of iron. The cauldron has two paper clip repairs, showing a long or heavy life span of use. The piece was found in peat, at the edge of a small pond in the bog.

7C_S. Alloa, Clackmannanshire – A copper alloy mount (TT 2017/016) was reported from the floodplain between Kirk Burn and River Ore. The piece is dated from 100 BC to 43 AD based on Benet's (Murawski 2000) typology. The mount has a lozenge-shaped body containing two pointed central extensions and the rear two possible attachment prongs. The mount contains a circular cast motif with red and white enamel. The mount was found in non-calcareous gleys created by drifts derived from Carboniferous sandstones, shales, and limestones (Scotland's Soils 2019).

8C_S. Auchterderran, Fife – A copper alloy strap slider (TT 2018/087) was reported from the floodplain located north of Kirk Burn. The piece was dated from 100 BC to 100 AD through analysis of other similar sliders elsewhere in Britain, such as Barmby Moor (Marshall 2004) and Barkston (Staves 2005). The slider has a complete loop and raised circular feature in the centre of a pointed oval. The slider was found in noncalareous gley soil contexts created from drifts derived from Carboniferous sandstones, shales, and limestones (Scotland's Soils 2019).

15C_S. Bows of Doune, Stirling – A copper alloy armlet (X.FA 113) was reported from the peat bog. The piece was dated from 0 AD to 200 AD based on style (Hunter 2006). The armlet is a 'massive' style with three joined strands ending in closed loops. The casting was poor and has badly pitted surfaces (National Museum of Scotland Catalogue 2019). The armlet was found in peaty gleys with dystrophic semi-confined peat created from drifts derived mainly from sandstones of Lower Old Red Sandstone age (Scotland's Soils 2019).

18C_S. Carpow, Perth and Kinross – A copper alloy strap mount (TT 37/17) was reported from the floodplain in Carpow where the River Earn exits into the River Tay estuary. The piece was dated from 0 AD to 200 AD based on Hunter's (2006) massive typology. The strap mount is in the 'massive' style, in a figure-eight shape with an enamelled central circular field containing a triskele design (Hunter 2017d). The rings of the mount contained trumpet decoration. The findspot was discovered in noncalareous gley soil sourced from estuarine and lacustrine raised beach silts and clays (Scotland's Soils 2019).

19C_S. Delvine, Perth and Kinross – A copper alloy sword hilt (TT2013/184) was discovered in a stream floodplain between Witches and Delinie lochs, both of which border the River Tay. Lack of notes on typology type and materials beyond a copper alloy composition has resulted in an inability to apply dates beyond the broad Iron Age of the region (i.e. 800 BC to 500 AD). The piece was found in alluvial soils derived from floodplains with river terraces and former lake beds (Scotland's Soils 2019).

20C_S. Errol, Perth and Kinross_– A copper alloy toggle (TT 2015/105) was found in the River Tay estuary floodplain. The piece was dated from 100 BC to 0 AD based on topology. The toggle is an eyelet style with a broken attachment. The toggle was found in noncalareous gley soils created from estuarine and lacustrine raised beach silts and clays (Scotland's Soils 2019).

21C_S. Kelty, Fife – A copper alloy terret (TT 2013/082) was reported near a drain at Berryknowe, between the Tay and Earn rivers. The findspot is believed to have been a floodplain for the two rivers. The piece was dated from 0 AD to 100 AD based on type. The terret is in the 'massive' or Donside tradition, but has been proposed by the Treasure Trove to have been a full oval as opposed to being horse-shoe shaped. The terret was reported from noncalareous gleys created from drifts derived from Carboniferous sandstones, shales, and limestones (Scotland's Soils 2019).

22C_S. Leslie, Fife – A copper alloy mount (TT 2015/139) was reported from a river floodplain north of Lotherie Burn. The piece was dated from 100 BC to 43 AD based on Benet's (Murawski 2000) typology. The mount is cast in an eye shape with a central boss and rear bar attachment or slider. The piece was found in gley soils associated with the river floodplain with deposits derived from drifts developed from Carboniferous sandstones, shales, and limestones (Scotland's Soils 2019).

23C_S. Rannoch Moor, Perth and Kinross – A gold torc or armlet (X.FE 32) was found in a blanket peat bog at Rannoch Moor. The piece was dated from 300 BC to 100 BC based on typology (Coles 1960). Due to the size, it is debated to be an armlet or a child's torc (Anderson 1886). The moor in which the find was located is comprised of peaty gleyed podzols with dystrophic semi-confined peat with peaty gleys (Scotland's Soils 2019).

24C_S. Saline, Fife – A copper alloy harness fitting (TT 2017/197) was discovered in the riverine west of Foulburts Burn. As button and loop fasteners were common throughout the Iron Age and without specified characteristics, the date cannot be confirmed beyond the period (i.e. 800 BC to 500 AD). There is corrosion to the face, and the slide to the rear is now missing. The piece was found in non-calcareous gley context derived from drifts developed from Carboniferous sandstones, shales, and limestones (Scotland's Soils 2019).

25C_S. Seafield Tower – A copper alloy armlet was found in the intertidal zone of Gosford Sands Beach. The armlet has a folded or spiral pattern (MacGregor 1976) and dated from 100 AD to 300 AD based on typology.

6.4.2 Pairs

16C_S-17C_S. Bunranoch, Perth and Kinross – Expanded upon in Chapter 7, page 122.

6.4.3 Multiperiod Hoards

2C_S-6C_S. Airth – Expanded in Chapter 7, pages 114-115.

9C_S-14C_S. Blair Drummond (Kincardine Moss), Stirling – Expanded in Chapter 7, pages 110-112.

6.5 Southeast Case-studies

6.5.1 Single

SE_S73. Bowden, Roxburghshire – A copper alloy fastener reported was from the floodplain of intersecting burns Holydean, West, and Bowden. Due to its unusual lentoid style of button and loop, with the loop replaced with a rectangular plate, the fastener has been unable to be dated with the exception a broad Iron Age date (800 BC to 500 AD) (Hunter 2017b). The findspot landscape consists of peaty alluvium that developed as part of the floodplain system created by river terraces and former lake beds (Scotland's Soils 2019).

SE_S74. Coldstream, Berwickshire – A copper alloy finger ring (X.2005.7, TT 50/04) was reported from the northside River Tweed floodplain. The ring is a hybrid of Iron Age decoration with Roman styled bezel, dating from 0 to 200 AD (Hunter 2005: 123). The piece was discovered in non-calcareous gley context (Scotland's Soils 2019).

SE_S75. Corsbie Tower, Berwickshire – A copper alloy socket axe (X.DE 81) was discovered in the peat moss near Corsbie Tower. The axe is a socketed Sompting type (Schmidt and Burgess 1981) and dated from 800 BC to 700 BC. The National Museum of Scotland's online catalogue records the axe as having 'raised mouldings encircling the mouth of the socket.' The copper alloy material is believed to have been recycled (Coles 1960). The axe was found in the peat moss now mixed with brown soils from modern farming disruptions (Scotland's Soils 2019).

SE_S76. Craigsford Mains, Roxburghshire – A copper alloy fastener (X.FA 146, TT 57/17) was reported from the floodplain of Leader Water. Due to the teardrop-shaped loop, the fastener is considered to be Worrell's Class III (2008) and dated from 0 AD to 200 AD (Hunter 2017c: 172). The piece was found in mineral and peaty alluvial soil context which are mixed with peat derived from floodplains with river terraces and former lame beds (Scotland's Soils 2019).

SE_S77. Edrington, Berwickshire – A copper alloy toggle (X.2003.30, TT 29/30) was reported from a riverine next to Whiteadder Water River. The toggle is cast into a dumbbell shape with facetted edges and dated from 400 BC to 400 AD (Heald 2004: 115). The toggle was found in mineral gleys derived by drifts developed from Lower Carb sediments and basic lavas, Upper ORS sandstones, and Silurian greywackes (Scotland's Soils 2019).

SE_S78. Fala, Midlothian – A copper alloy fastener (TT 2016/078) was discovered along a riverine floodplain of Dean Burn. The piece was dated from 100 BC to 100 AD based on similar types found elsewhere in Britain. A fragmented portion of the toggle shows a dumbbell fitting with globular ends which expose the iron core. The toggle was dated in accordance with other globular dumbbell toggles reported to PAS (e.g. Griffiths 2016, 2019; Forman 2019; Rawson 2019; Tilly 2019). The toggle was reported from a noncalareous gley context (Scotland's Soils 2019).

SE_79. Gullane, East Lothian – Portions of a copper alloy cauldron (X.DU 14) were reported from a beach in Gullane, dated from 100 BC to 200 AD based on Joy's (2014) typology. The two cauldron fragments were made from sheet metal, rivet holes at the top, with the handles missing but assumed to be iron (National Museum of Scotland 1992a). The cauldron was reported from an intertidal zone from a sand and alluvium context (Scotland's Soils 2019).

SE_S101. Lindean Mill, Selkirkshire – A stone cup or lamp (TT 155/98) was reported from a riverine on the north side of the Ettrick Water River (Hunter 1999a: 97). The cup or lamp is from the Iron Age, but exact dating is unknown due to its variance and lack of soil core upon discovery (i.e. 800 BC to 500 AD). The piece was found in brown soils mixed with mineral alluvial and peaty-alluvial soils (Scotland's Soils 2019).

SE_S102. Littledean Tower, Scottish Borders – A copper alloy fastener (X.FA 141, TT 217/15) was reported from the floodplain located where the Ploughlands Burn feeds into the River Tweed. The fastener is in a dumbbell shape and dated from 300 BC to 410 AD (Hunter 2016). The findspot was found in non-calcareous gleys mixed with brown soils (Scotland's Soils 2019).

SE_S103. Maxton, Roxburghshire – A copper alloy knee brooch (TT 14/96) was reported from the floodplain of Littledean Burn. The Treasure Trove provided that the piece is dated from 200 AD to 300 AD. According to Eckardt (2008: 125), knee brooches show a strong correlation with Roman military distribution. The exact location is unknown, but a general area of discovery suggests the piece was found in mineral gley context (Scotland's Soils 2019).

SE_S104. Melrose, Roxburghshire – A copper alloy fastener (X.FRA 671, TT 99/16) was reported the floodplain south of Malthouse Burn. The teardrop loop and fastener have an enamelled central boss design (Wild Class Vc). The style of fastener is thought to be produced from the first to second century AD (Wild 1970); however, the National Museum of Scotland has dated the fastener from 80AD to 180AD for its manufacture. The fastener could have been utilised for either clothing or an equestrian harness (Hunter 2018: 173). The piece was found in alluvium mixed with peaty-alluvial soils (Scotland's Soils 2019).

SE_S105. Ploughlands, Roxburghshire – A copper alloy bridle bit (TT 41/02) was reported from the floodplain in between Broomhouse and Ploughlands Burn. The bit was broken and therefore unable to be dated beyond a broad Iron Age period of the region (i.e. 800 BC to 500 BC) (Hunter 2003: 116). The mineral gleys in which the bit was found were derived from drifts developed from Old Red Sandstone Silurian and Ordovician sediments (Scotland's Soils 2019).

SE_S112. Springwood Park, Roxburghshire – A copper alloy terret (X.1996.277, TT 36/96) was reported from the river floodplain terrace located at the West edge of Springwood Park next to the River Teviot. The small terret is of 'massive' or Donside type, worn and distorted (National Museum of Scotland 1996), dating it from 200 to 400 AD (Keppie 1997: 412). Lewis highlights in compliance with Macdonald (2007) and MacGregor (1976) that these 'mini terrets' are too small to have functioned as reign-guides and the wear observed further supports this argument. This type of terret is suggested by Lewis (2015: 18-19), Palk (1992:

71-72), and Spratling (1972: 51) to have a different function than 'true terrets' as strap unions or junctions. The alluvial context in which the terret was found is comprised of both alluvium and peaty-alluvial sediments (Scotland's Soils 2019).

SE_S119. Teviothaugh, Roxburghshire – A copper alloy strap mount (X.FA 143, TT153/16) was reported from the floodplain between How Dean stream and Minto Glen. The piece has been dated from 0 AD to 200 AD (Hunter 2017d: 173-174). The strap mount has oval openwork that has conjoined double-end trumpets and minimal ridge with no recognisable wear. The mount was found in gley sediment of the floodplain (Scotland's Soils 2019).

6.5.2 Pairs

SE_S106-SE_S107. River Tweed, Berwickshire – A pair comprised of a sword and scabbard (BM 80 8-2 114) was reported from the floodplain of the River Tweed and dated from 100 BC to 100 AD. The bronze scabbard is Piggot's Group III type, dating the pair from 100 BC to 100 AD. The scabbard contains the sword's encased iron tip (Piggott 1950; MacGregor 1976). The pair was discovered in alluvium mixed with peat (Scotland's Soils 2019).

6.5.3 Hoards

SE_S1-SE_S72. Blackburn Mill, Berwickshire – A hoard of seventy-three pieces was reported from the peat moss in Blackburn Mills (Appendix 4). Based on typologies noted in the hoard, it is estimated to have been dated from 0 AD to 200 AD (Manning 1972: 232-233; MacGregor 1976; Piggott 1955). In 1852, a hoard was reported, compiled of both Roman and native pieces found in two Battersea type cauldrons when digging a drain through Blackburn Mills peat moss, once a prehistoric lake (Manning 1972). The hoard consists of eleven pieces of iron (including ingots), nine staples, six implements, four lynch pins, two spades, two rods, two rings, two nails, two handles, two gouges, two ferrules, two chains, two cauldrons, two bridle bits, two bolts, two blades (including a knife), one adze, one anvil, one bowl, one clasp, one disc, one goad, one hinge, one hipposandal, one hook, one hoop or tire, one key, one pick, one plough, one plough mount, one quern, shears, one shield boss, one sickle, and a vessel. The discovery's primary soil material was peat, but the area has since been stripped to brown and gley sediments (Scotland's Soils 2019).

SE_S80-SE_100. Lamberton, Berwickshire – A hoard of twenty-one pieces was discovered in 1845, digging a drain through the peat moss of Lamberton (Anderson 1905; MacGregor

1976). The hoard has been dated from 80 AD to 180 AD and consists of six bowls, four paterae, three paterae handles, two head studs, two spiral rings, two brooches, one cup, and a torc. All objects are comprised of copper alloy materials, and a few with enamel inlays. Upon discovery, the hoard was wrapped in an unknown material (possibly leather or cloth) that disintegrated upon exposure (Anderson 1905: 367-376). The modern soil profile is currently dominated by brown soils, though upon its discovery the area was moorland and still named for its preceding geology.

SE_S108-111. Seton Sands, East Lothian – A dispersed hoard of two terrets and two finger rings (X.FA 115-117) was reported from an intertidal zone in Seton Sands. The two terrets are of the 'massive' Donside type (Lewis 2015; Hunter 2006). One finger ring is plain while the other is a spiral style (National Museum of Scotland 1992b). The hoard has been dated from 0 AD to 200 AD based on observed typologies. However, it is also possible that the finger ring is part of the harness equipment according to the National Museum of Scotland. These objects were not found in the same deposit due to intertidal location and were possibly exposed to tidal shift movement, and therefore believed to have been associated. Further investigations performed by the National Museum of Scotland revealed that the findspot held an isolated wooden building thought to have housed the torcs.

SE_S113-SE_S118. Stichill, Roxburghshire – A hoard was discovered in Stichill in 1743, while digging for a subterranean well (Smellie 1782), close to a well-known spring. The hoard consists of three copper alloy pieces, two armlets and a collar, and dated from 50 AD to 150 AD (RCAHMS 1956) (MacGregor 1976: 100, 106-108). The massive styled armlet was imported from the north of Scotland and the collar from the West Midlands, England (RCAHMA 1956). The other associated armlet has been lost, but are believed to have been of the same style and associated as a pair (Hunter 2006). The findspot was in non-calcareous mineral gley sediment (Scotland's Soils 2019).

6.6 Southwest Case-studies

6.6.1 Single

SW_S1. Awhirk, Dumfries and Galloway – A copper alloy bowl (L.1946.24, X.2010.9) was reported in 1937 from the prehistoric marshland in Awhirk. The lathe-turned bowl is assumed to have been a clepsydra with an iron plug manufactured from a single sheet of beaten bronze

(Anderson 1938: 137 - 142; Hawkes 1951: 187; Hunter 2019b) and dated from 100 BC to 200 AD. According to Hawkes (1951), the use of clepsydras was adopted by the locals from the Romans. The find site has since been drained, turning the marshland into brown soil for agriculture (Scotland's Soils 2019).

SW_S18. Canonbie, Dumfriesshire – A copper alloy harness ring (TT 61/99) was reported from the periphery of Closses Burn. The ring's style does not fit conventional types and cannot be dated beyond a broad Iron Age date (i.e. 800 BC to 500 AD). The piece was found in non-calcareous gley sediment (Scotland's Soils 2019).

SW_S121. Dalscone, Dumfries and Galloway – A piece of jet (DUMFM:1963.70) was reported from the floodplain of the River Nith. The piece is believed to have derived from the Iron Age (Truckell 1966), but without distinctive typology or C14, only a broad date can be applied (i.e. 800 BC to 500 AD). Jet was often used to make prehistoric jewellery (Sheridan and Davis 2002). This piece is considered significant because it was not located near any mining locations or production sites. The jet's findspot was found in mineral alluvium mixed with peaty alluvial soils (Scotland's Soils 2019).

SW_S122. Elvanfoot, South Lanarkshire – Expanded in Chapter 7, page 133.

SW_S123. Lochmaben, Dumfries and Galloway – A leather shoe (DUMFM:1965.117) was reported from the peat moss in Lochmaben. The shoe has not been tested for C14, and because it lacked any known typology, it can only be provided a broad Iron Age date (i.e. 800 BC to 500 AD). However, it is possible that the shoe was made from the late Mid Iron Age to the Romano-British period. The shoe was formed from a single piece of leather drawn up with a leather lace with a seam on the heel (Black and Bisset 1894: 72). Douglas (2015) proposes that the replica is slightly incorrect with the application of the t-seam, which is why it is not comparable to other shoes of possible Roman influence. The findspot's modern soil has now transitioned to brown soils but still contains components of dystrophic peat with peaty alluvium sediment (Scotland's Soils 2019).

SW_S130. Loudoun Hill, East Ayrshire – An iron axe (KIMMG:AG/C40a, KIMMG:AG/C40b) was found in a peat bog at Loudoun Hill. Due to the basic nature of the axe, with a slight flared tip and a wooden shaft, its type is too basic to assign a date and can only be provided a broad Iron Age date (i.e. 800 BC to 500 AD) (Hunter 1982; Kilmarmock

Museum 2019). The axe was found under several layers of dystrophic blanket peat (Scotland’s Soils 2019).

SW_S163. Pluton Castle, Dumfries and Galloway – A copper alloy bracelet (X.FA 36) was reported from the turbaries near Pluton Castle. The bracelet is made of two portions connected by a hinge, and the enamelling technique provided the date of 0 AD to 200 AD (MacGregor 1976: 102, no. 211). There are no signs of wear, but maybe a small correction in the back near an attaching rivet to strengthen the bracelet with a patch-like washer. The findspot area has since been drained, and the peatland is now succeeded by brown soils (Scotland’s Soils 2019).

SW_S164. Torrs, Dumfries and Galloway – Expanded in Chapter 7, pages 124-125.

SW_S165. Whitehills, Dumfries and Galloway – A copper alloy cauldron (X.DU 6) was reported from the Moss at Whitehills. The globular cauldron of the Battersea type was made from a single piece of sheet metal, dating the piece from 400 BC to 100 BC (Joy 2014; Piggot 1955). The rims and handles were missing and assumed to have been manufactured in iron. The cauldron was found in a peat and gley sediment mixture within the Moss (Scotland’s Soils 2019).

SW_S166. Whitereed Moss, Lochmaben – A wooden plough beam (DUMFM:1949.51) was reported from the Moss at Whitereed Moss, and carbon-dated to 80 BC to 20 AD (Dixon 1981; Lerche 1972). The beam is believed to have been long enough to attach to a yoke (Rees 1979, 1984). This is an interesting object to find in isolation in a wetland because they are often associated with settlements and buried under the floor of the home. The beam was found during drainage operations of the Moss. The findspot is comprised of basin peat derived from organic soils (Scotland’s Soils 2019).

6.6.2 Pairs

SW_S16-SW_S17. Bargany, Aryshire – Expanded in Chapter 7, pages 121-122.

6.6.3 Hoards

SW_S133-SW_S160. Middlebie, Dumfries and Galloway – Expanded in Chapter 7, page 119.

6.6.4 Multiperiod Hoards

SW_S2-SW_S15. Balmaclellan, Dumfries and Galloway – Expanded in Chapter 7, pages 112-113.

SW_S19-SW_S120. Carlingwark, Dumfries and Galloway – A hoard of 102 objects was reported from Carlingwark Loch. Piggott dates the hoard from 80 BC to 200 AD based on typologies noted. The hoard placed within a cauldron consisted of: one adze, two anvils, one auger, two axes, one axe-hammer, one bar, one bowl, one bridle bit, two chainmail, one chisel, two cooking pots, one core, one file, eight hammers, one hand saw, five handles – unclassified, two hinges, sixteen hooks, one hoop, one implement tool, one iron fragment, six knives, two knives or sickles, one latch lift, one mirror handle, seven nails, four punches, two rings, two saws, three scythe blades, two sheets of metal, nine staples, nine swords/sword tips, and one tankard handle. Most pieces were manufactured locally, but the deposit did contain a few Roman pieces that were a mixture of both bronze and iron materials. There is a possibility that deposits reported from the loch are part of the *Landscape Dependent Multiple Period Deposit* tradition. The evidence for this comes from another deposit of a broken copper alloy sword (X.DL 26) dated from 950 BC to 750 BC, based on the leaf-shaped typology (i.e. Ewart Park type – Northern step 1) (Burgess and Colquhoun 1988). The sword's tip was broken off before deposit; however, it is unknown if this was purposeful or accidental. Both deposits were placed into the loch, but the hoard was positioned near Fur Island, and the sword was located closer to shore near Furbier Hill on the West bank.

SW_S124-SW_S129. Lochar Moss, Dumfries and Galloway – Two pairs and two single object deposits are reported from Lochar Moss. The first pair is a La Tène sword with the maker's mark and shoulder yoke (accession number unknown) reported from Lochar Moss and dated to 450 BC to 100 AD. The second pair is a copper alloy torc (X.FA 99, BM 18,531,105.20) found inside a copper alloy bowl (BM 53 11 5) near Cumlangan Castle at Lochar Moss, dated from 50 AD to 200 AD based on typology. Both deposits were discovered in peat context.

The two single object deposits are a jet finger ring (DUMFM:1965.64) and a wooden canoe (DUMFM:1974.182) (Truckell 1964). Neither of these pieces has a specified date other than a broad Iron Age application (i.e. 800 BC to 500 AD). The large jet ring is polished with a flattened section chipped off the side. The ring was reported from the peat at Lochar Moss in 1840, and the exact findspot is unknown. The canoe was found on the shoreline of the Lochar Water Cold Course. No C14 date has been conducted on the canoe, and it is therefore impossible to verify its date beyond the Iron Age. The canoe may be the result of abandonment, but its relinquishment to the environment can also be representative of deposition. There are many recordings of canoes; this one was included because it was found in an area with many possible deposits.

Lochar Moss appears to have been a significant location for deposition. The multiple deposits reflect a *Landscape Dependent Multiple Period Deposit* tradition. However, instead of including a hoard (deposit of three or more objects in association) in the deposition tradition, the area appears only to contain single and paired objects. Therefore, the deposits here are considered loosely associated with hoard mentality, or 'an abstract hoard', based on recognition of known wet landscape boundaries and continued deposition.

6.6.5 Multiperiod Single Object Deposits

SW_S131-SW_S132. Mabie Moss, Dumfries and Galloway – Two single object deposits were reported from Mabie Moss, a piece of jet and the hilt of a sword (Hunter 2008). The piece of jet (DUMFM:1967.257) was reported from the peat at Pict's Knowe. The piece is likely raw material to be utilised for jewellery, but whether its deposition was purposeful or accidental is unknown. The copper alloy hilt (TT 70/07) was also reported from the peat, dated from 100 AD to 500 AD based on Piggott's group IV typology. This sword hilt is unique as it is reported to be the first of its type with a D-shaped handle in Scotland comprised completely of metal. If both objects were the product of purposeful deposition, then they are likely part of the *Landscape Dependent Multiple Period Deposit* tradition. The findspot for these was recorded for inclusion of the broad area for Mabie Moss which developed from organic deposits just South of Mabie Burn.

SW_S161-SW_S162. Nutberry, Dumfries and Galloway – Expanded in Chapter 7, pages 125-126.

Appendix 7. Study Zone 2, Welsh Case-studies Catalogue

7.1 Northwest Case-studies

7.1.1 Single Deposits

NW_W1. Beaumaris, Isle of Anglesey – A coin (NMW 99.1047, CCI-991047) was reported from seasonally wet pasture and woodland floodplain. The coin is attributed to the Carnutes tribe from West Central Gaul and made from copper alloy, dated from 0 to 100 AD (Celtic Coin Index 2010b). The findspot consists of a mixture of seasonally wet acid loam and clay soils with wet pastures and woodland vegetation sourced from a nearby stream network (LandIS 2019).

NW_W3. Capel Garmon, Conwy – An iron firedog (NMW 39.88) was reported from peat context at Carreg Goedog farm. Fox (1939) dated the firedog from 50 BC to 50 AD based on typology. The firedog is not paired but rather a single standing or double-ended (Peate 1942; Piggott 1948). Upon discovery, two fire-back stones were placed on the feet of the firedog. The original findspot in the peat has been thoroughly drained and is now comprised of free draining acidic loamy soils with acid upland pastures containing dry heath and moor (LandIS 2019). There is no evidence reported of a collapsed structure around the firedog, which is usually customary when a house is abandoned.

NW_W168. Trawsfynydd, Gwynedd – Expanded in Chapter 7, page 124.

7.1.2 Multiperiod Hoard

NW_W3-NW_W167. Llyn Cerrig Bach, Isle of Anglesey – Expanded in Chapter 7, pages 105-108.

7.2 Northeast Case-studies

7.2.1 Single

NE_W1. Bronington, Wrexham – A copper alloy toggle (CPAT-6BF207) was reported from wet grass and woodland floodplain. The toggle has two adjoined ‘capstan’ and centrally attached with a sub-loop, dating it from 200 BC to 60 AD (Trevaskus 2009). The findspot consists of a mixture of seasonally wet acid loam and clay soils with wet pastures and woodland vegetation (LandIS 2019).

NE_W2. Dyserth, Denbighshire – A copper alloy fob (LVPL-AAD3D1) was reported from wet grass and woodland floodplain in Dyserth. The fob has an openwork disc with a triskele design from the centre and a small perforated centre, dating it from 100 BC to 100 AD (Herepath 2006b). As Jope (2000) has stated, the purpose of fobs is unknown other than to serve as a dangling decoration for either clothing, jewellery, accessories, equestrian gear, perhaps even chariot ornamentation. The findspot contains seasonally wet slightly acid loam and clay soils with grassland and woodland vegetation (LandIS 2019).

NE_W3. Llandyssil, Powys – A copper alloy bridle bit (CPAT-F49988) was reported from wet grass and woodland floodplain in Llandyssil. The surviving bridle bit consists of only a fragment of the three-ring bit with a portion of the cheek ring. The three-ring dated from 100 BC to 100 AD based on type (McCullough 2014). The flattening of the projection suggests it lay flat on the cheek. The findspot consists of a mixture of seasonally wet acid loam and clay soils with wet pastures and woodland vegetation (LandIS 2019).

NE_W4. Northop Hall, Flintshire – A gold coin was reported from wet grass and woodland floodplain in Northop Hall. On one side, the coin has a stylised head of Apollo, and the other, a stylised horse above one or more exergual lines and a pellet (Pevely 2009). The official issues were struck in Lincolnshire dating from 60 BC to 50 AD for manufacture (Pevely 2009). The findspot has a mixture of wet slightly acid loam and clay soils with seasonal wet pastures and woodland vegetation (LandIS 2019) adjacent to the Dee Estuary tributary.

NE_W5. Rossett, Wrexham – A copper alloy hanging bowl (2003.152.1) was reported from wet grass and woodland floodplain. The escutcheon bowl is near complete, with a globular form with an incomplete loop where the handle would secure, dating it from 50 BC to 100 AD (PAS 2003c). The vessel is decorated with two moulded semi-circular arcs with a slight gap between the two. The findspot has a mixture of wet slightly acid loam and clay soils with seasonal wet pastures and woodland vegetation (LandIS 2019).

NE_W6. Tremeirchion, Denbighshire – A copper alloy vessel (LVPL-A72343) was reported from the River Clwyd floodplain. The Roman escutcheon vessel is the shape of a bull or ox head in worn condition and no longer complete, dated from 0 to 200 AD (Herepath 2004).

The findspot was reported from the wet loam context in the River Clwyd floodplain (LandIS 2019).

NE_W7. Trewern, Powys – A copper alloy terret (CPAT-1B23A1) was reported from the floodplain of the River Severn. Only a small fragment of the trumpet terret survives and is comprised of the hoop and bar junction. The terret is decorated with an acanthus flower, dating it from 100 BC to 100 AD (Watson 2012). The findspot is mixed with wet loam and clay floodplain soils fed by naturally high groundwater that supports wet flood meadows and carr woodland vegetation of the River Severn (LandIS 2019).

NE_W8. Waen, Denbighshire – A copper alloy terret (LVPL-3214A3) was reported from wet grass and woodland floodplain on the west side of the River Clwyd in Waen. The miniature terret is flattened on the back and contains expanded and defined collars on either end of the strap bar but do not continue to the back, dating the piece from 300 BC to 100 AD (Herepath 2006a). The findspot has a mixture of wet slightly acid loam and clay soils with seasonal wet pastures and woodland vegetation with impeded drainage (LandIS 2019).

7.3 Southwest Case-studies

7.3.1Single

1SW_W. Cardigan, Ceredigion – A copper alloy coin (NMWPA 2010.74.1) was reported from the River Teifi Estuary floodplain in Cardigan. The coin was struck the North of Thames and possibly attributed to the Catuvellauni tribe (Johnson 2011a). The coin is considered ‘Haselgrove Phase 6’ type, and is characteristic of the ‘Addedomaros Corded’ type, dating it from 45 BC to 25 BC (Johnson 2011a). This coin type is usually found in Hertfordshire, Bedfordshire, and Cambridgeshire (Johnson 2011a). The findspot has a mixture of wet slightly acid loam and clay soils with seasonal wet pastures and woodland vegetation with impeded drainage (LandIS 2019).

3SW_W. Llanelli, Carmarthenshire - A copper alloy coin (CCI-930664) was reported from wet grass and woodland along the River Lliedi. The coin is very corroded, and denomination is indistinguishable (Celtic Coin Index 2010a). The typology is undetermined, but the manufacture of the coin in copper alloy places it from the first century AD to around 200 AD. The findspot has a mixture of wet slightly acid loam and clay soils with seasonally wet grassland and forestry vegetation with impeded drainage (LandIS 2019).

4SW_W. Onllwyn, Neath Talbot – A copper alloy tankard handle (NMGW-EB2CB8) was reported from moorland in Onllwyn north of Cellwen Stream. The fragment of the cast handle remains and is decorated with raised moulding in the shape of two inwardly pointed arcs embellished with lentoid leaf-moulding and enamel, dating it from 100 BC to 43 AD (Battye 2005). There are no known paralleled examples of the handle (Battye 2005). The findspot is comprised of acid upland soil mixed with peat derived from moor and heather with flush communities (LandIS 2019).

5SW_W. Trelech, Ceredigion – A gold coin (CC-99106) was reported from wet grass and woodland east of Afon Dulais in Trelech. The Corio gold starter, which is attributed to the Dobunni tribe, is plain except for the emblem of a tree-like form and pellet at the bottom (Celtic Coin Index 2010c). Based on Van Arsdell typology (1989, VA 1035.1), the coin is dated from 30 BC to 15 BC. The findspot of the coin was slowly permeable wet acid upland soil with a peaty surface with grass moor and heather vegetation with flush and bog communities (LandIS 2019).

7.3.2 Multiperiod Single Object Deposits

2SW_W. Cors Caron, Ceredigion – The Strata Florida figure (Ceredigion Museum 2012.33.1) was reported from Tregaron Bog in Cors Caron. Previously believed to have been of foreign manufacture from the Americas, the object has been confirmed to be of native manufacture from the Late Iron Age (Van der Sanden and Turner 2004). C14-AMS performed by Nayling provided that the piece dates from 43 BC to 127 AD (GrA-15317) (1990 ± 50 BP, 43 BC – AD 67 (1 sd) or 111 BC – AD 127 (2 sd)) (Van der Sanden and Turner 2004: 89). The style is gender fluid, but the hole suggests an adolescent female identity. The piece was whittled from boxwood with eyes inlaid with quartz. As boxwood only grows in portions of England as opposed to whole of Britain, the wood used or the figure itself was an import. While the piece was found in isolation, it was discovered close to a Bronze Age site. The figurine’s findspot was wet heather moor with flush and blanket bog communities (LandIS 2019). Periphery Bronze Age funerary sites and Iron Age hillforts surround the bog (Poucher 2009).

7.4 Southeast Case-studies

7.4.1 Single

1SE_W. Bedwas, Caerphilly – A copper alloy harness ring (NMGW-533AAE) was reported from wet grass and woodland just north of Rhymney River in Bedwas. The near-complete ring has an oval cross-section, dating from 0 to 100 AD (Domscheit 2014). The ring's findspot was comprised of slowly permeable seasonally wet acid loam and clay soils with impeded drainage that support seasonally wet pastures and woodlands (LandIS 2019).

2SE_W. Caldicot, Monmouthshire – A gold stater (NMWPA 2009.244) was reported from the floodplain of Nedern Brook, Caldicot. The coin is a gold starter attributed to the Dobunni tribe and inscribed with 'Catti' (Johnson 2011b), dating it from 10 AD to 15 AD based on Van Arsdell typology (1989) (Mack 391, VA 1130-1 Allen CATTI). The coin is extremely fine with little wear. The findspot was found in loam and clay coils derived from floodplains of the stream network (LandIS 2019).

3SE_W. Cowbridge wit Llablethian, Vale of Glamorgan – A copper alloy strap union (NMGW3289) was reported from the floodplain South of where the River Thaw meets Nant Aberthin. The cast union decorated in the curvilinear style is 'two conjoined and perforated sub-triangular loops which form a figure-of-eight shape and are flanked on each side by a vertical bar attached to each loop,' dating it from 100 BC to 100 AD (MacDonald 2001a). The findspot consists of wet loan and clay contexts derived from floodplain sediment flow (LandIS 2019).

4SE_W. Croesyceiliog, Torfaen – A copper alloy and iron lynchpin was reported from the floodplain East of the Afon Lwyd. The surviving components of the pin are the copper alloy head and the end fragment of the iron pin, but it is heavily corroded. The pin is decorated with a three-armed central motif, raised pelta-shapes, and concentric grooved border, dating it from 100 BC to 50 AD based on other similar finds (Domscheit 2015; Lodwick 2014b; MacDonald 2000). The findspot was in wet loam contexts derived from floodplain flow (LandIS 2019).

11SE_W. Llantrisant Fawr, Monmouthshire – A near-complete copper alloy scabbard chape was found in the free-draining floodplain of Llantrisant Brook. The piece is dated from 800 BC to 600 BC based on the winged Prüllsbirkig, Type A1, with no applied decoration

(Cowen 1967). Winged chapes are rare discoveries in Wales (Lodwick 2014a). The findspot was in wet loam contexts derived from floodplain flow (LandIS 2019).

37SE_W. Merthyr Mawr, Bridgend – A copper alloy coin (CCI-920114) was reported from the floodplain where the rivers Ogmore and Ewenny converge. The corroded surface has made the design illegible. However, the denomination is potin made from cast bronze and attributed to the Cantii tribe, dating it from 100 to 90 BC based on Van Arsdell's typology (VA 1402) (Celtic Coin Index 2010d; Van Arsdell 1989). The area is prone to flooding, and the findspot was in wet loam contexts derived from floodplain flow (LandIS 2019).

76SE_W. Pengam, Caerphilly – A gold coin (CCI-820363) was reported from the wet grass and woodland floodplain west of the Rhymney River, Pengam. The starter is attributed to the Trinovantes tribe and contains a horse and chariot wheel on the front of the coin, but the design on the back is too worn to decipher, dating it from 60 BC to 20 BC based on Van Arsdell's typology (VA 1402) (Celtic Coin Index 2010e; Van Arsdell 1989). The findspot is comprised of slowly permeable seasonally wet acid loam and clay soils with impeded drainage which supports seasonally wet pastures and woodland vegetation (LandIS 2019).

77SE_W. Pendolylan, Vale of Glamorgan – A copper alloy strap union (NMGW-3F88F4) was reported from wet grass and woodland east of Nant Dyfrgi. The cast union contains a flat back with a raised reverse S-scroll shape (PAS 2003a). Due to its design, it is considered to be Taylor and Bailford's type 2 (1985: 247-259) dating it from 100 BC to 100 AD. The findspot is in loamy soil context with naturally high groundwater which supports wet acid meadow and woodland vegetation (LandIS 2019).

82SE_W. Usk, Monmouthshire – A copper alloy brooch (NMGW3205) was reported from the floodplain of Usk River. The brooch is a Langdon Down type (Wheeler and Wheeler 1932: 71-74) with a flat bow of a small curvature and decorated with fluted reeding along the entire terminal, dating it from 15 BC to 60 AD (Hattatt 1982). The brooch has a missing foot, and the catch plate is deformed. The brooch is bent at ninety degrees, but it is uncertain if this was performed at deposition or later (MacDonald 2001b). The findspot was in wet loam and alluvium contexts derived from floodplain soils (LandIS 2019).

7.4.2 Hoards

12SE_W-36SE_W. Llyn Fawr, Vale of Glamorgan – Expanded in Chapter 7, pages 116-117.

38SE_W-75SE_W. Nant-y-Cafn, Vale of Glamorgan – Expanded in Chapter 7, pages 117-119.

7.4.3 Multiperiod Hoards

5SE_W-10SE_W. Langstone, Monmouthshire – Expanded in Chapter 7, pages 109-110.

7.4.4 Multiperiod Single Object Deposits

78SE_W-79SE_W. Penllyn, Vale of Glamorgan – Two copper alloy terrets were reported from wet grass and woodland along the River Thaw in Penllyn. The *multiperiod single deposits* are comprised of one simple and one elaborate terret. The simple terret (NMGW-6E2371) is worn and contains prominent collar mountings which divide the bar and hoop (Lodwick 2008). The simple terret is dated from 100 BC to 100 AD based on Spratling's group 1 (1972). The other piece (NMGW-FD38C2) reported from Penllyn is a knobbed tear shaped terret and shows signs of wear (PAS 2003b). The terret is similar to that found in St. Donats and thought to have come from the same workshop (Lodwick 2009), but because the piece does fit into either of group IV or IX of Spratling's knobbed terrets, Lodwick (2009) suggests that they were manufactured from 0 to 100 AD. Due to the proximity of deposits and manufacture dates, it can be proposed that these objects were placed in the landscape around the same time, which would suggest *Landscape Dependent Multiple Period Deposit* tradition. However, because they are not associated and considered two separate single object deposits, they are *multiperiod single object* deposits. In addition, there is evidence of an abundance of Bronze Age finds around this area as well, and therefore this deposit may be part of a far more extensive multiperiod tradition in connection to the topography.

80SE_W-81SE_W. St. Nicholas, Vale of Glamorgan – Two objects were reported from wet grass and woodland next to one of the many reaches of Nant Llancarfan in St. Nicholas. The deposits consist of a copper alloy fastener (NMGW-12A821) and fob (NMGW-43E1D4). The pinhead button and loop fastener was broken at the top of the shaft. The pinhead design has close parallels to those found in Ireland (Williams 2006a) and dated from100 BC to 100 AD, based on similar types (Jope 2000: 300). The fastener's head is decorated with three hemispherical lobes with raised tricone, which are enhanced with punched circles (Williams 2006a). The fob or dangler, found a close distance away, contains an openwork design. The head is decorated with a triskele design and dated from 0 AD to 200 AD based on similar styles (MacGregor 1976: 37; Jope 2000: 285; Williams 2006b). The findspots' area comprises slowly permeable seasonally wet slightly acid loam and clay soils with impeded drainage that supports seasonally wet pastures and woodland vegetation (LandIS 2019). Due to the proximity of deposits and manufacture dates, it can be proposed that these objects were placed in the landscape around the same time, which would suggest *Landscape Dependent Multiple Period Deposit* tradition. However, because their association cannot be validated, they are interpreted here as two separate single object deposits. Due to their deposition in the same wetland, they are also interpreted as *multiperiod single object* deposits.

83SE_W-84SE_W. Wenvoe, Vale of Glamorgan – Two brooches were reported from wet grass and woodland surrounding reaches of the River Waycock. The findspot for the brooches is comprised of slowly permeable seasonally wet slightly acidic loam and clay soils with impeded drainage which supports seasonally wet pastures and woodland vegetation (LandIS 2019). Their proximity may suggest a pair, but this is unable to be confirmed at this time. The find consists of two copper alloy bow brooches. The first (NMGW395) is a fragment of a brooch containing only the lower portion of the tapering bow with an embellished shallow channel on either side of the edge. Based on the brooch type, possibly a strip bow, the piece was dated from 25 AD to 65 AD based on Hattatt's typology (1985:68; Lodwick 2003). The other brooch (NMGW-44EAC7) is constructed in two sections and contains two grooves to accommodate wings and spring mechanism (MacDonald 2001c). The brooch was decorated with a column of raised dots inside a linear border. The catch plate was damaged upon discovery. The brooch's bow typology has been dated from 0 AD to 200 AD (Hattatt 1985; Williams 2006a). As the first brooch date easily fits within the date range of the second, it is possible that, due to the proximity of the finds, they were deposited at the same time and therefore part of the *Landscape Dependent Multiple Period Deposit* tradition. However, due to the inability to verify if this deposit is a pair, these finds as a result will be interpreted as *multiperiod single object* deposits.