# Archaeology and Environment in Northumberland

## TILL-TWEED STUDIES VOLUME 2

*David G. Passmore and Clive Waddington*

# ARCHAEOLOGY AND ENVIRONMENT IN NORTHUMBERLAND

## Till-Tweed Studies
## Volume 2

*by*
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*with contributions by*

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*For Cyril and Jan Passmore*

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# Acknowledgements

The Milfield Basin and Till-Tweed projects have been in-depth, long-term archaeological studies. They have taken a decade to complete, culminating in the drawing together of huge amounts of field data, scientific analyses, intellectual rumination, the commitment of pen to paper and the production of large numbers of line drawings, photographs and tables. Throughout the course of this work we have been assisted by many hundreds of people drawn from all walks of life. It has included volunteer fieldwalkers and excavators, students, professional field staff, specialist archaeologists and palaeoenvironmentalists, curators, museum staff, farmers and landowners and of course many from English Heritage and the publishers, Oxbow Books. Although the production of this second volume has sometimes seemed a far-off prize, it has been brought to completion despite the trajectories of both our careers conspiring to make it a challenging enterprise given so many new commitments.

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It has been a true pleasure, not only working alongside each other for the last 15 years, but also working with some outstanding people who have added so much to this study. With so many people having assisted in this endeavour it is not feasible to mention each and every person by name, but rest assured our thanks go out to you all. From the inception of this project we would like to mention our special thanks to Peter Forrester, local businessman and proprietor of the Milfield Country Café, who has supported our research and done so much to bring about the Maelmin Heritage Trail on the edge of Milfield village. Both his and Amanda Forrester's unflagging support and long-term friendship have been much appreciated and valued. Although we have worked on huge swathes of land owned by a multiplicity of individuals and trusts, we would like to mention particularly the generous support of the Armstrong and Fairbairn families of Milfield village on whose land we have undertaken a good deal of work, as well as Lord Joicey. The fieldwork underpinning this project took place over a period of more than a decade and we would particularly like to mention all those who assisted in supervising and undertaking work at a variety of sites, including Alan Biggins, Richard Chatterton, Ben Johnson, Jim Brightman, Jessika Sheppy, Steve Houghton and Tim van der Schriek. For their work during the most recent excavations we would like to thank Richard Aldous, Dan Amatt, Claire Carey, Philippa Cockburn, Brian Marshall, Bryan Murray, Louis Stafford, Alexandra Thornton and Stuart Winthrope, all of Archaeological Research Services Ltd.

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Over the past five years we have worked closely with Tarmac Ltd at various quarries in the region, which in the case of the Cheviot and Lanton Quarry sites have produced highly significant multiperiod remains that have made important additions to our knowledge of the region's past, and particularly for periods that were poorly served before. This study has benefited greatly from this work and we are proud to mention the support of Mike Young and Simon Phillips of Tarmac who have encouraged us to disseminate the results of this work and weave it into the wider historical story of the region, and to make the results relevant to our national heritage.

Finally, we owe a special debt of gratitude to Jim Brightman for his industrial-scale production of figures for both of the volumes, including the jackets, his support with the GIS and for assisting with taking the volume through the publication and printing process. This has been a considerable task and one most ably and patiently done. Ben Johnson and Jessika Shakarian have also kindly helped in some of these tasks and we thank Myra Wilkinson at Fine Line Archaeological Language Services for her assiduous copy-editing. This volume has also benefited from photographs kindly made available to us by various individuals including Lindsay Allason-Jones, Jenny Jones, Peter Forrester, Roger Miket, Jim Nesbitt, Pete Topping, Alex Thornton, Tyne and Wear Museums, the late Alan Vince, Graeme Young and, of course, Tim Gates, who has made available his wonderful aerial photographs.

*Clive Waddington and Dave Passmore*

# Summary

North Northumberland is host to some of the richest archaeological remains in the British Isles ranging from buried sites, visible in some cases as stunning cropmarks, to huge tracts of upstanding remains, particularly in the uplands, as well as a vast corpus of small finds and a remarkable diversity of palaeoenvironmental deposits whose potential is just beginning to be tapped. Any attempt to undertake synthesis of this material under one cover is, from the outset, an exercise in compromise, as a volume of this size could easily be filled by a synthetic narrative of any one period. Given that so much information is now available, the challenge facing archaeologists is to distill this ever-growing dataset into a coherent and succinct narrative. We have attempted to do this in the volume that follows, although we are very much aware that the style and content of this narrative is such that many issues that we would like to have examined in greater detail have had to be treated only cursorily. This is an inevitable consequence of attempting synthesis but one which we hope is worth the gain that accrues from achieving a long and more fluent history of a distinct geographical region.

The companion volume to this study ('Till-Tweed Studies Volume 1') documented associations between landforms and different types of archaeological sites and this is a theme that is picked up on and developed in Chapter 1 of this volume (see below). Chapter 2 presents new palaeoenvironmental information that has helped inform our understanding of climate change, landforms and the vegetation history of the region.

The third chapter in this volume is dedicated to organising and summarising the archaeological information from aerial photographs, specifically for the area known as the Milfield Basin which lies at the heart of the region under study. A total of 212 new sites was identified in the 225 square kilometres that were studied, of which 62% were cropmark sites and 38% upstanding earthworks. The recorded remains included sites from the Neolithic onwards. These include possible Neolithic mortuary enclosures, henges and related sites, pit alignments, ring ditches, unenclosed settlements, field systems, palisaded sites, forts, various types of enclosed sites as well as Anglo-Saxon sites, the latter including the royal estate centres at Yeavering and Maelmin with their halls and associated enclosures.

In Chapter 4 consideration of the patterning of Mesolithic archaeology in the study region has led to a wider appreciation of the impact of the drowning of the North Sea Plain, or 'Doggerland', and the spread of a maritime hunter-gatherer-fisher economy, represented by narrow blade microlith using groups, into Britain by way of the North East British coast and their subsequent spread west and south. This scenario accommodates existing data and is testable through further fieldwork and dating programmes, but it remains both controversial and exciting as it provides a new narrative for the period and a much richer set of possibilities for Mesolithic studies in Britain. The possibility of distinctive forest-dweller economies on the one hand, represented by insular broad blade microlith-using communities, is contrasted with maritime-focused economies on the other, represented by narrow blade-using communities displaced from Doggerland. This radical view is sure to generate debate and we look forward to engaging with it.

The volume of information now available for studying the Neolithic in Northumberland has grown enormously in recent years and this has allowed the Northumberland regional 'story' to be embedded within wider national debates. Of particular note are the early radiocarbon dates available for the start of Neolithic settlement in the region which are some of the earliest and most reliable in northern Britain. The undoubted focus of early settlement was on the flood-free sand and gravel terraces of the major river valleys not far from the coast, although as the Neolithic progressed settlement extended beyond these areas so that by the Beaker period the uplands experienced widespread activity, including the construction of burial cairns, tree clearance and the destabilisation of soils resulting in large-scale alluviation events in valley floor locations. There is evidence for dairying and 'secondary products' from the earliest Neolithic onwards, based on the analysis of residues on Neolithic ceramics, as well as the cultivation of cereals such as emmer wheat and 6-row barley, and the exploitation of various wild resources such as the fruits from hawthorn, bramble, cherry family, and nuts. Burial practices are diverse and reflect influences from a variety of regions further afield to the north and south. Direct evidence for long-distance contacts is provided by the presence of exotic artefacts, such as stone axe heads from the Lake District, chipped stone tools made from Arran Pitchstone and flint tools made from high quality mined flint that probably came from Norfolk. Being home to one of the most spectacular concentrations of open-air Neolithic rock art in North-West Europe there is scope to catch a glimpse, however fleeting, of the mindset of the Neolithic inhabitants. The results of recent studies are outlined and the new evidence for multiple phases of rock art inscribing on rock outcrops is discussed.

With the onset of the Bronze Age, in the first quarter of the second millennium cal BC, the first evidence for formalised farmsteads with associated field systems is described with the dating for roundhouse construction and other categories of site set out. A huge expansion and intensification of farming activity is posited, including discussion of the widespread establishment of farms across much of the uplands, and the debate concerning its eventual contraction. New evidence for mixed farming regimes is brought to the fore based on evidence from newly excavated sites. An argument is made for the Bronze Age heralding the transition to a more secular-orientated society anchored to an organised farming landscape. This is considered to be in contrast to the preceding Chalcolithic and Neolithic periods during which the needs of ritual and strict routines of observance appear to have governed the organisation of landscapes and farming activities. In this way the Bronze Age is viewed as a bridge to a new way of living and thinking whereby secular power, wielded by wealthy individuals and lineages, with access to the finery of a warrior class, emerges.

The study region also abounds with archaeological evidence for the 1st millennium cal BC. It forms part of the region with the highest density of 'hillforts' in Britain and has several hundred more buried sites known from cropmarks. The modern, and indeed conventional, concern for 'pacifying the past' is discussed and an argument is presented for acknowledging the martial and defensive character of many sites and the need to understand inter-personal violence and hostilities as a key aspect of this period. The dark centuries at the beginning of the 1st millennium cal BC still yield little archaeological evidence but in the ensuing centuries the growth in population, as evidenced by the explosion in known settlement sites, must have risen to a level that conceivably outstripped the modern population of the region. The uplands, as well as the lowlands, experienced widespread occupation, and agriculture was extended over huge swathes of land, the remains of which can still be seen as upstanding features in areas that have not been ploughed or developed since. Much less is known from the archaeological record concerning ritual and burial customs compared to the preceding Bronze Age and Neolithic periods, although a new inhumation burial of Late pre-Roman Iron Age date is reported from the valley floor of the Milfield Basin. The environmental evidence for a much-improved climate around the first centuries cal BC and AD is discussed, drawing on the results reported in Volume 1 of this study. This provides for an important convergence of independent evidence, the other being in the form of upstanding archaeological remains, for intensive farming, even in the uplands, at this time. The ebb and flow of centralised power structures throughout the millennium is briefly discussed and potential archaeological signatures of a 'Votadinian' tribal identity are touched upon. Differences between the archaeology of north Northumberland and that to the south are identified and it is argued that these differences could represent allegiances to different socio-political groups.

The arrival of Rome on the edge of, and latterly within, Votadinian territory is discussed as part of the consideration of the Roman Iron Age period. After presenting a brief overview of the politico-military background we review the dating evidence for small rectilinear enclosures and conclude that there is still no convincing evidence to suggest that these remarkably uniform farmsteads were built prior to the Roman presence. A survey of the Roman period archaeology is presented, but being north of Hadrian's Wall no attempt is made to discuss the archaeology of the Wall corridor in any detail as this lies outside our study area, and is an enormous area of specialist study in its own right.

Until recently little was known of the immediate post-Roman period in the region, but new evidence is presented for remains dating to the 5th–6th centuries cal AD which suggests that the British population is perhaps not quite as elusive as previously thought. In addition, new evidence for Anglian settlement at Lanton Quarry is also presented and the argument for a rapid military takeover is made. Despite the military dimension of Anglian settlement, a case is made for the deliberate attempt by king Ida and his followers to integrate their new authority with British customs and places and, in so doing, bind together their new kingdom. The politico-military history of the period is articulated from a north Northumbrian-centric view whilst the influence of the church in, ultimately, binding this new polity together is recognised. The rise of the kingdom of 'Northumbria' on the British and European stage provides testament to the vigour and underlying strength of this polity, particularly in the face of the multiple, hostile, threats it faced and the warlike character of the times. The flowering of Christian learning, art and architecture in the region owes much to Northumbria being a meeting ground of the Celtic-British, Anglian, Mediterranean, and ultimately Scandinavian, worlds.

The final chapter of this volume sketches out our thoughts on various topics which cut across time, although this has had to remain necessarily brief due to the considerable size of the volume. The main areas of discussion include the affects of climate change during the Holocene, a summary of the changing character of settlement through time, the importance of the physical geography of the region in contributing to the incredible history of warfare, and the role of ritual and religion in binding the different peoples of the region together at certain times throughout its history. A brief consideration of the region's changing role as a hub for communications, and its engagement with wider arenas of contact, is also presented.

Each of the period chapters includes a section on chronology and in this part we assemble the available radiocarbon dates from archaeological sites for the period under consideration. We have recalibrated all the dates using the most recent Oxcal programme and where we have deemed it appropriate we have applied some statistical modelling and Bayesian approaches. Amongst many other analyses we examine the progression of Neolithic ceramic styles, as well as the dates for the first use of roundhouses. As further dates become available these can be added to the date lists and new modelling undertaken, thereby providing an increasingly precise and accurate chronology for the archaeology of the region.

# Résumé

L'origine de cette étude remonte au milieu des années 1990, en réponse à l'impact du développement industriel, en particulier l'extraction de sable et de gravier, dans le bassin de la rivière Till-Tweed. C'est l'organisme britannique de protection du patrimoine historique, *English Heritage*, et *Aggregate Levy Sustainability Fund*, caisse du Ministère de l'agriculture britannique, *Defra*, qui ont financé cette étude. Pendant longtemps, le bassin de la Till-Tweed, zone renfermant des vestiges archéologiques et paléoenvironnementaux exceptionnels qui n'ont été en général qu'assez mal compris, a fait l'objet d'extractions intensives d'agrégats. Cette étude regroupe des données initiales détaillées qui serviront de plateforme aux recherches à venir sur les paysages et les sites, ainsi que des informations qui seront à la base de la gestion future de ce paysage riche en archéologie. La zone d'étude s'étend de la haute vallée de la Till jusqu'à la côte de la mer du nord à Berwick, en passant par le Bassin de Milfield et la basse vallée de la Tweed en aval de Coldstream.

À cette monographie s'ajoute un autre volume spécifiquement dédié à la présentation d'une synthèse archéologique et historique intégrée de la région entière. Les auteurs ont choisi d'adopter une démarche qui comprend un point de vue paysagiste, ou géoarchéologique, grâce auquel les relations entre vestiges archéologiques, configuration du terrain et informations paléoenvironnementales se retrouvent dans le choix de méthodes complémentaires. Celles-ci ont pour but de fournir une approche claire à la gestion des paysages archéologiques.

Cette étude a mis au point un outil de gestion qui sera utilisé par le conseil régional du Northumberland, afin de l'aider à l'administration future du patrimoine historique du nord de la région. La méthodologie et l'outil de gestion sont décrits dans le chapitre 6, et complètent le document d'information récapitulatif publié séparément (Waddington et Passmore 2005). Cette méthode est basée sur la division du paysage en éléments topographiques où il est reconnu que des restes archéologiques et paléoenvironnementaux de différents types et périodes ont de fortes chances de se trouver. Cet outil de gestion, ainsi qu'une copie de la ressource SIG qui contient toutes les informations cartographiées, est à la disposition des urbanistes, conservateurs, promoteurs, et exploitants de mines travaillant dans la région. De plus, cet outil de gestion du paysage fournira aussi un registre transparent et facile à comprendre des sites archéologiques et paléoenvironnementaux menacés, lequel permettra alors aux décisions adoptées d'être mieux comprises par tous. Cette information, disponible dans plusieurs secteurs, entraînera une prise de conscience des ressources archéologiques et paléoenvironnementales, et fournira une base commune sur laquelle le développement stratégique pourra s'appuyer.

# Zusammenfassung

Dieses Forschungsprojekt begann ursprünglich Mitte der 1990er Jahre als Reaktion auf die Auswirkungen von Extraktionsvorhaben, speziell der Gewinnung von Sand und Kies, im Einzugsgebiet der Flüsse Till und Tweed. Die Finanzierung übernahmen English Heritage und der Aggregate Levy Sustainability Fund der Defra. Rohstoffgewinnung hat eine lange Geschichte in den Einzugsgebieten des Till und des Tweed – einem Gebiet, das außergewöhnliche archäologische und paläoökologische Hinterlassenschaften umfasst, die im Allgemeinen nur unzulänglich untersucht worden sind. Die vorliegende Studie hat einen detaillierten Grundstock an Daten zusammengetragen, der einen Ausgangspunkt für zukünftige landschafts- und fundplatzorientierte Forschungen bietet, sowie Informationen erbracht, die die zukünftige denkmalpflegerische Verwaltung dieser archäologisch reichen Landschaft untermauern werden. Das Forschungsgebiet erstreckt sich vom oberen Tilltal über das Milfield Basin und das untere Tweedtal, dann stromabwärts von Coldstream zur Nordseeküste bei Berwick.

Der Begleitband zur vorliegenden Monographie befasst sich eigens mit der Präsentation einer ganzheitlichen archäologischen und historischen Synthese für das gesamte Gebiet. Der Ansatz der Autoren beinhaltet eine landschafts- bzw. geoarchäologische Perspektive, in der die Zusammenhänge zwischen archäologischen Hinterlassenschaften, Relief und paläoökologischen Informationen sich in der Wahl komplementärer Methoden spiegeln, die auf den Aufbau einer expliziten Strategie für die Verwaltung dieser archäologischen Landschaft abzielen.

Im Zuge dieser Studie wurde für die Behörden des Northumberland County Council eine neue Verwaltungsfunktion für die zukünftige denkmalpflegerische Betreuung der historischen Landschaften Nordnorthumberlands entwickelt. Methodologische Aspekte und die Funktion selbst werden in Kapitel 6 beschrieben und ergänzen das zusammenfassende und separat veröffentlichte Empfehlungsdokument (Waddington and Passmore 2005). Die Methode gründet auf der Aufteilung der Landschaft in Reliefelemente, die ein bekanntes Potential für das Vorkommen archäologischer und paläoökologischer Hinterlassenschaften bestimmter Arten und Perioden aufweisen. Die Verwaltungsfunktion, sowie eine Kopie der GIS-Anwendung, die alle kartierten Informationen enthält, ist Landschaftsplanern, Kuratoren und Bau- bzw. Extraktionsfirmen, die in der Gegend arbeiten, zugänglich. Zusätzlich erzeugt diese neue Methode zur Landschaftsverwaltung ein transparentes und leicht verständliches Archiv empfindlicher archäologischer und paläoökologischer Fundstellen, was die Gründe für bestimmte Entscheidungen in Zukunft verständlicher machen wird. Dadurch dass Informationen für verschiedene Sektoren zugänglich sind, schaffen diese Empfehlungen ein erhöhtes Bewusstsein für archäologische und paläoökologische Quellen, sowie eine gemeinsame Grundlage für weitere strategische Planungsvorhaben.

# Samenvatting

Deze studie startte in het midden van de jaren '90, als reactie op de effecten van projectontwikkeling, met name zand- en grindafgravingen, in het stroomgebied van de Tweed en haar zijrivier de Till. Het project werd gefinancierd door English Heritage en het Aggregate Levy Sustainability Fund van DEFRA (Department for Environment, Food and Rural Affairs). Het Till/Tweed-stroomgebied, reeds sinds jaar en dag afgegraven voor aggregaat, is rijk aan zeer goed bewaard gebleven archeologisch en paleo-ecologisch materiaal waarover tot nu toe nog maar weinig bekend is. Voor deze studie werden gedetailleerde basisgegevens verzameld die als pijlers kunnen dienen waarop toekomstig onderzoek kan rusten, zowel op landschaps- als op site-niveau. Bovendien kunnen deze gegevens de basis leggen voor het beheer van dit archeologisch zo rijke landschap. Het studiegebied strekt zich uit van de bovenloop van de Till via het Milfield Bassin en de benedenloop van de Tweed stroomafwaarts vanaf Coldstream, tot aan de Noordzeekust bij Berwick.

Bij deze monografie hoort een begeleidend deel waarin een synthese van de archeologie en historie van de gehele regio wordt gepresenteerd. De auteurs hebben gekozen voor een landschaps- of geo-archeologische benadering. Vanuit dit perspectief wordt de samenhang tussen archeologisch erfgoed, landschapsvormen en paleo-ecologische informatie weerspiegeld in de toepassing van methoden die elkaar aanvullen en die zich lenen voor een duidelijk gedefinieerde benadering van archeologisch landschapsbeheer.

Middels dit project is voor het county-bestuur van Northumberland een instrument ontwikkeld dat als hulpmiddels kan dienen bij het toekomstig beheer van het historisch landschap van noord-Northumberland. De methodologie en het beheersinstrument, beschreven in Hoofdstuk 6, vormen een aanvulling op een apart gepubliceerd samenvattend adviserend document (Waddington en Passmore 2005). Bij deze methode wordt het landschap opgedeeld op basis van landschapselementen waarvan de potentiële archeologische en paleo-ecologische waarde bekend is (zowel qua type overblijfselen als periode). Dit instrument voor landschapsbeheer, en de bijbehorende GIS-informatie die de ruimtelijke representatie van de gegevens bevat, staan ter beschikking van allen die binnen de regio werkzaam zijn in planologie, erfgoedbeheer en projectontwikkeling, waaronder delfstoffenwinning. Bovendien voorziet dit beheersinstrument in een transparant en voor eenieder begrijpelijk archief van bedreigde archeologische en paleo-ecologische sites, wat weer kan leiden tot een breder begrip van de beweegredenen achter beslissingsprocessen. Door deze informatie aan verschillende sectoren te verstrekken, wordt een bewustmaking van archeologische en paleo-ecologische informatiebronnen in gang gezet, en kan een gemeenschappelijke basis worden gelegd voor strategische ruimtelijke ordening.

# Samenfatning

Nærværende studie blev indledt midt i 1990'erne, først og fremmest som svar på udvindingen af sand og grus i Till-Tweed flodsystemets afvandingsområde. Arbejdet blev finansieret gennem English Heritage og Department of Environment, Food and Rural Affairs Aggregate Levy Sustainability Fund. Udvindingen af sand og grus i Till-Tweed systemet har en lang historie bag sig. Generelt indeholder dette område arkæologiske og palæo-økologiske levn, som kun er dårligt forståede. Dette studie har samlet grundlæggende data, som kan fungere som en platform for fremtidig landskabsorienteret og lokalitetsbaseret forskning, såvel som information, der kan benyttes i forbindelse med den fremtidige administration af dette arkæologisk set rige område. Det undersøgte område strækker sig fra den øvre del af Till-dalen, gennem Millfield-bækkenet og den nedre del af Tweed-dalen, forbi Coldstream til Nordsøkysten ved Berwick.

Denne bog er ledsaget af et bind, hvis formål er at præsentere en integreret arkæologisk og historisk syntese for regionen. Forfatternes indfaldsvinkel har et klart landskabs- (eller geo-arkæologisk) perspektiv, hvorigennem det søges at omsætte forbindelserne mellem arkæologiske levn, landskabsformer og palæo-økologisk information i specifikke metoder og tilgangsformer for arkæologisk landskabsadministration.

I forbindelse med dette studie blev der udviklet en management-model for Northumberland County Council af betydning for den fremtidige administration af det nordlige Northumberlands historiske miljø. De benyttede metoder og management-modellen er beskrevet i Kapitel 6, der komplementerer et tidligere publiceret dokument med summariske retningslinjer (Waddington og Passmore 2005). Fremgangsmåden er baseret på en indeling af landskabsformer med højt potentiale for at indeholde arkæologiske/palæo-økologiske levn i arkæologiske/palæo-økologiske typer og perioder. Denne model, såvel som en kopi af et GIS program indeholdende al relevant kortlagt information, står til rådighed for planlæggere, museumsfolk, byggefirmaer og sand/grus udvindingsfirmaer i regionen. Denne management-model tilbyder også en klar og let forståelig oversigt over udsatte arkæologiske og palæo-økologiske lokaliteter, og den gør baggrunden for beslutninger taget i forbindelse med landskabsadministration mere letforståelig. Det er forfatternes håb, at den fremlagte information samt de retningslinjer, der foreslås i nærværende værk, vil øge bevidstheden om landskabets arkæologiske og palæo-økologiske rigdomme, og udgøre et fundament for fremtidig strategisk planlægning.

# Till Tweed Volume I Erratum

Correct copyright attribution was omitted from a number of figures. The following lists the correct attribution by figure number:

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By an oversight, Appendix F Table 8 as printed is a duplicate of Table 6. Table 8 should have appeared as follows:

| **NT 83 NW** | | |
|---|---|---|
| 1382425 | NT 8313 3708 | Sunilaws SE. A curvilinear ditched enclosure with an E-facing entrance. The enclosure has internal dimensions of *c*. 45 × 60m and an internal area of 0.21ha. To the S of the main enclosure are two right-angled segments of ditch which may form part of a second enclosure spaced 20–30m beyond the first. |

# Part 1

# Setting the Scene

# 1 Introduction

## *Clive Waddington and David G. Passmore*

> It would be difficult to find any other part of Britain in which we can see at one view the characteristic monuments of Celtic Britons and Roman legions, of Saxons, Scandinavians and Normans
>
> From William Sydney Gibson's *An Historical Memoir on Northumberland* (1862, ix).

### SETTING THE SCENE

In 1862, William Gibson wrote a very accessible historical narrative of Northumberland, dedicated to the Duke of Northumberland, but with the expressed intention of the work being "condensed into an inexpensive handbook, (which) might be made acceptable to every class of inhabitants and form good secular reading" (Gibson 1862, v). Needless to say William Gibson evidently prized the virtue of study and self-betterment for all at a time when the Liberal movement was in full flow, though he sadly died in the same year that the book was published and was therefore not able to observe the fruits of his endeavour. We hope to emulate this aim 150 years on in this synthetic work, although the thrust of this study is unashamedly more academic than popular. That said, a deliberate attempt has been made to write in a clear and accessible way, and with comprehensive referencing of sources, so that the study can be accessed by specialists and non-specialists alike.

The genesis of this work has been the two research projects undertaken by the authors on part of North Northumberland known widely as the Milfield Basin and the catchments of the Till and lower Tweed rivers upstream and downstream of the Milfield Basin (Figs 1.1 and 1.2). The first 'Till-Tweed Studies' volume (Passmore and Waddington 2009a) presented much of the body of field data and was focused towards the provision of a geoarchaeology-based management framework for the archaeology of the region. Following on from this, the present volume aims to draw on past as well as present information, including some of the latest results from commercial archaeological investigations, to provide an archaeological and historical narrative for the region, set within its wider geographical and national context. Because the study was undertaken as two projects with different funding streams, separate outputs were required and this division seemed the least awkward. Nevertheless, certain anomalies remain, such as the splitting of the aerial photographic discussion across the two volumes, but it is hoped this does not detract from the overall narrative.

Writing a synthetic history of North Northumberland from its earliest prehistory up to the beginning of the Middle Ages is certainly ambitious, probably quite brave, and possibly foolhardy. Given the plethora of information now available it is a considerable challenge for archaeologists to develop sufficient expertise across multiple periods so that they are able to synthesise existing information, present new information, articulate informed arguments and identify new questions and avenues for future research. We are certainly not expert in every period covered by this volume and neither is it possible to be expert in all the sub-disciplines and specialisms that support the study of the past. We have, nonetheless, made a concerted effort at bringing together an informed and up-to-date narrative that we hope will inform, challenge and encourage others. To this end we hope that the reader will find the following account stimulating and enjoyable. Perhaps the single most important benefit of undertaking this study is the provision of an up-to-date historical narrative for a geographically discrete region that provides a consistent flow and approach to all periods so as to produce, we hope, an engaging multi-period synthesis that can be read as a narrative or delved into for reference. In addition, the depth of research underpinning this volume has brought much specialist and disparate information together. We hope that this will not only provide new and useful insights, but that it will also assist current researchers, and encourage a new generation, in accessing the archaeology of the region without having to spend several years chasing arcane references and unpublished reports in order to get to grips with the state of current knowledge and understanding. With such a broad scope this volume should also complement the recently produced regional research framework for the North-East (Petts and Gerrard 2006) and the popular synthesis recently

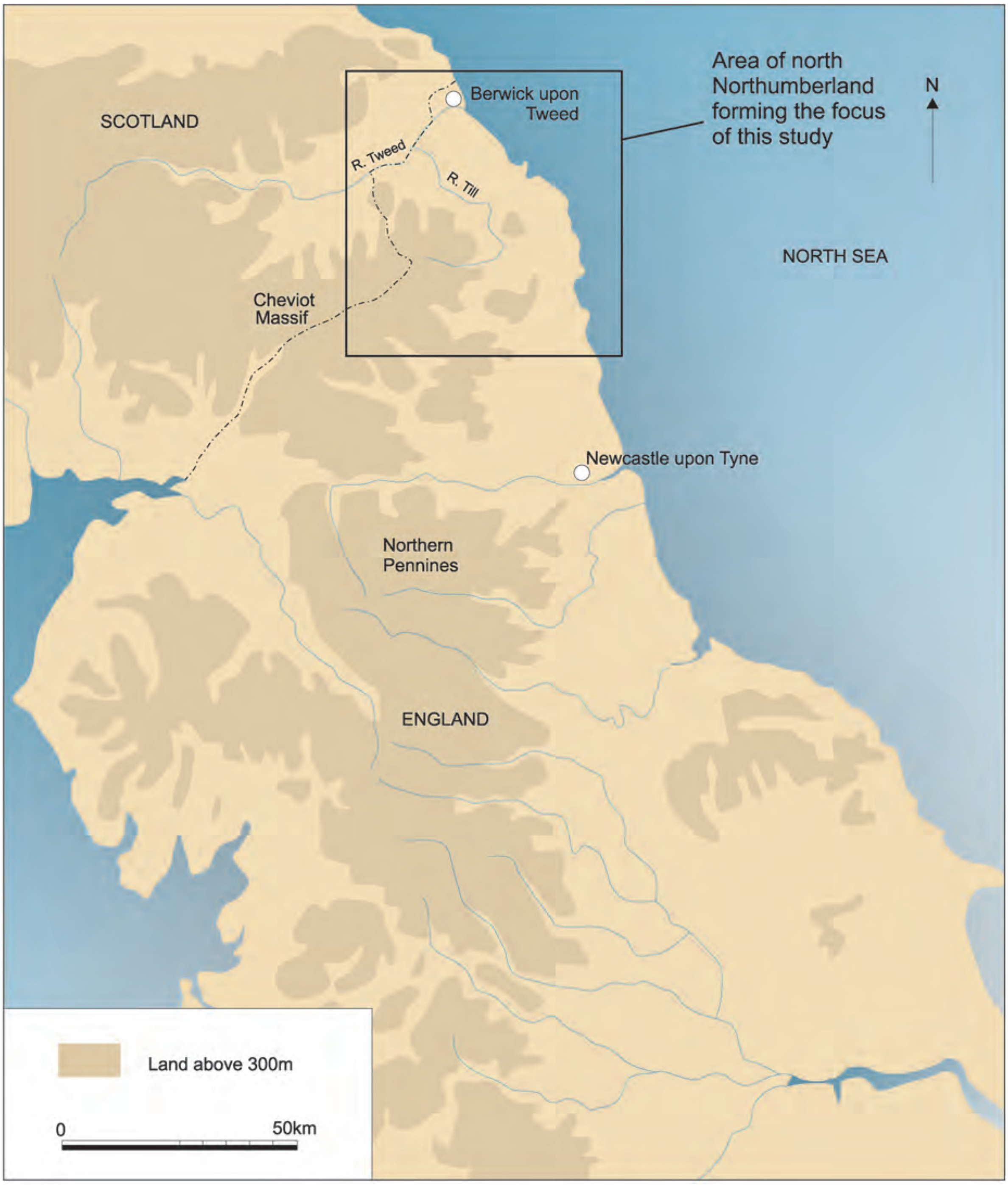



*Figure 1.1. Location of the Till-Tweed study area in North-East England.*

undertaken for the Northumberland National Park (Frodsham 2004).

At a time when knowledge and academic endeavour is becoming ever more fragmented, we think it is pertinent that a work of academic synthesis is produced for the region. Moreover, there has been a huge amount of new information acquired as a result of commercial archaeological investigations and fieldwork by the voluntary sector and it is timely that this is brought together. In recent years there has also been a trend in archaeological interpretation to emphasise the particular over the general, as can be seen by the focus on 'biographies' of individual monuments for example. Although such detailed insights can be instructive, this attempt at overview supplies a necessary counterpart to such studies. A concerted effort has been made to marshal all new information that has come to light up to the beginning of 2010. This includes not only a comprehensive synthesis, recalibration and modelling, where


*Figure 1.2. The Till-Tweed Study Area.*

appropriate, of the reliable radiocarbon dates for the region, but also reference to and results from several recent, commercially funded, archaeological excavations whose impact is significant and the results of which will feed into the wider milieu of archaeological research. It is hoped that this volume provides something to stir the curiosity of most archaeologists, as not only does it cover a huge time period, but the North Northumberland story has resonance for other regions, both neighbouring and beyond. To this end we have related our study area to wider regional and national contexts throughout. This should ensure that not only is Northumberland better embedded into broader narratives and that future studies accommodate the Northumbrian evidence as a matter of course, but also that experts in other geographical areas will have access to useful regional comparanda and a work of reference.

The following chapters are arranged in two sections: the first consists of those chapters that set the scene and the second comprises those chapters that form the synthetic narrative arranged in chronological order. In the final chapter we have developed a short discussion of certain themes that grew out of the study and pursue these themes across different time periods. The volume extends across the prehistoric and historical divide so that the period chapters commence with earliest prehistory where we are solely reliant on objects, structures and environmental evidence to construct our understanding. For the latest periods, however, the archaeology can be considered alongside a small number of historical events and individuals, our knowledge of which comes from quarrying some classical and early medieval texts, which of course come with all their attendant caveats. The early text sources have been read only in their translated, published form and not in the original Latin, Welsh or Old English.

The most recent academic syntheses that have dealt with Northumberland are those of Burgess (1984) and Higham (1986), although the former only covered the prehistoric period and the latter covered all of northern England. Since then, there have been attempts to draw information together for the wider North-East region as part of strategic assessments (Clack and Gosling 1976; Brooks *et al.* 2002), the most recent being the regional research framework for the North-East (Petts and Gerrard 2006). In addition to these multi-period syntheses, period-specific syntheses have also been produced, which are referred to in the various chapters that form Part 2 of the volume. These early works were of considerable use in their time and were regularly referred to in subsequent research. Since the early 1980s, however, there has been a considerable increase in the amount of data available. In particular, from the 25 radiocarbon dates from specifically archaeological contexts (as opposed to those derived from palaeoenvironmental investigations) dating to the prehistoric and Roman Iron Age periods within Northumberland listed by Burgess in his 1984 article, this volume presents more than 230 radiocarbon dates for the same periods and types of contexts. To this can be added a further 33 dates from the Mesolithic house at Howick which are not included here as they have already been published in full elsewhere (see Waddington 2007a), bringing the current total to around 270. Although in some ways a crude measure, this vast increase in dates provides a sense of the scale of increase in artefacts, structures and scientific data now available for the archaeologist to study since the publication of these earlier synthetic works. As a result the need for synthesis has now become acute.

The approach adopted for this study follows on from that outlined in Volume 1 with the focus placed on human-landscape interactions. This is not to deny the importance of contextual study, social theory and so forth but, rather, to place centre stage throughout this sweep of human history the sense of how people have interacted with their environment. Though it cannot be denied that landscape and environment, at certain levels, provide a backdrop for human action (the inexorable rise in sea levels and the drowning of the North Sea basin being a case in point; see Gaffney *et al*. 2009), landscape and environment in other contexts formed an arena of interaction where both landscape and human actions became agents, promoting either change or continuity in the other. Over short timescales human action in relation to the environment is often, though not always, a culturally mediated set of behaviours. When viewed over long time scales, however, the trajectory of human interactions and adaptations can sometimes be seen as a reaction to, or consequence of, environmental change. In the case of the drowning of Doggerland by the North Sea, the displacement of human groups inhabiting this area was undoubtedly a consequence of environmental change, although the way it was conceived at the time would have been very much through a set of culturally mediated beliefs.

Throughout this study we have attempted to draw together a sound evidence base, accommodating results from various scientific disciplines and adopting an inclusive approach to archaeological data so as to avoid the selective use of evidence. Although interpretive leaps are made it is hoped that this open approach will provide a clear insight into how various interpretations have been arrived at, leaving the readers to assess for themselves the merits, or otherwise, of the argument. The use of assertion has been avoided and we have sought to use plain and clear language where at all possible. If this synthesis can still be of use to researchers in 25 years time then we will be satisfied that we have succeeded in our efforts, but in any case, as more results of archaeological endeavour are forthcoming, much of what is contained in this work will be modified, changed and, undoubtedly, rejected.

## AIMS AND RESEARCH THEMES

The overarching aim of this study has not been merely to document and describe the data sets available for North Northumberland, but to combine the available information into a historical narrative that engages with debates and offers interpretation and insight where appropriate. Furthermore, this account seeks throughout to place North Northumberland into the context of its adjoining areas, and occasionally further afield, so as to view Northumbrian history within a broader historical frame, though always being aware of the regional character of the Northumbrian evidence. Particular themes that run throughout much of the narrative include:

- the establishment of a more detailed chronological framework for the region
- assessing the character and chronology of environmental change, its impact on human groups and the impact of humans on their environment
- understanding settlement across the region in terms of the structures people inhabited, and also the temporality/duration of settlement and its patterning across the landscape
- understanding the impact of the sea and rivers on the settlement pattern at different periods and how these arteries were utilised during different periods
- characterising the surviving material culture from each period and what we can learn from this
- observing the ways in which people disposed of their dead and undertook ritual observance
- exploring issues of social interaction and social change

## SCOPE OF THE STUDY

The area of study covered by this volume is for the most part focused upon what can best be described as North Northumberland, that is Northumberland north of the Coquet-Aln interfluves (Figs 1.1 and 1.2). We venture out from this area as the availability of evidence and the need to provide a wider context for discussion occasionally necessitates, as for example in the Roman and Anglo-Saxon periods. The span of time encompassed by this work extends from the first modern humans present in the region to the arrival of the Normans and the beginning of the Middle Ages. This time bracket has allowed us to map out the human story and changing complexion of the landscape from the end of the last glacial period to a specific point in time when a real dislocation occurred in the course of both the region's and the nation's history: the Norman conquest.

As part of this synthesis we have assembled information through the analysis of a digital geographic information system (GIS) which has included not only the information contained on the county's historic environment record (HER), but also all the new digital mapping of archaeological features from aerial photographs (see Volume 1 and Chapter 3 this volume). We have also assembled an exhaustive compendium of radiocarbon dates for the region from archaeological contexts. Those dates that are of poor or uncertain reliability, on account of their poor archaeological associations or sample type, have been rejected. Dates have been grouped into particular category types within each chapter so as to aid analysis and inform discussion, and as a result some dates will occur in more than one table. Where it has been deemed appropriate, some of the dates have been combined and mathematically modelled so as to gain a more precise estimate of their age and the time-span of certain phenomena. The details of the methods used and conventions employed are outlined below.

After this introductory chapter, the second chapter of this volume presents an overview of the Late Glacial and Holocene environmental history of the Till-Tweed study area and the wider region. Building on the datasets described in Volume 1, the focus here is on the character and chronology of landscape development, Holocene climate change and palaeoecological records of vegetation change and human land use activities. This chapter is augmented by new data acquired since Volume 1 went to press, including a new pollen sequence from a peat core taken from Ford Moss, a 61ha raised bog on the Fell Sandstone escarpment on the north-east side of the Milfield Basin near the village of Ford. The third chapter synthesises the information resulting from aerial photographic survey and analysis within the Milfield Basin, and documents the various types of evidence available from the Neolithic through to the early medieval period. After these scene-setting chapters, each of the chronological narrative chapters forming the second part of the volume is set out in such a way as to provide some introduction and background, followed by the dating framework, a discussion of the evidence for the environment and land use, and by a consideration of settlement during the period. After this, however, the various period chapters pursue a more independent path, picking up on themes more applicable to that period of study.

## RADIOCARBON CONVENTIONS AND CHRONOLOGY

*Peter Marshall and Clive Waddington*

In order to allow for comparison with other periods from the Holocene, the dates quoted for the Mesolithic and subsequent periods are given in calibrated radiocarbon years BC and AD. Traditionally, earth scientists and archaeologists who deal with the Mesolithic use uncalibrated radiocarbon years before present (i.e. 1950), whereas scholars dealing with the Neolithic and later periods use calibrated, or 'calendar', years BC and AD. This creates confusion when dealing with the Early and Middle Holocene, as two different dating schemes are in use that are not immediately comparable. The reason for using calibrated years here is that uncalibrated years BP refer to dates measured from 1950 and not 'before present'; this gap will increase as time goes on as the present is constantly moving. The advantage of using calendar dates BC and AD is that they refer to any given year in time from a fixed point that is widely recognised. As calibration now extends back as far as 22,000 years ago there is no need to continue without calibration for the period covered by the Holocene.

The radiocarbon results are quoted in accordance with the international standard known as the Trondheim convention (Stuiver and Kra 1986). They are conventional radiocarbon ages (Stuiver and Polach 1977). All dates have been recalibrated and, where appropriate, subjected to Bayesian modelling to allow a more precise estimation of the chronological question being asked (see below). The results of calibrations, relating the radiocarbon measurements directly to calendar dates, are given in the various tables and accompanying figures throughout the second part of the volume. All have been calculated using the calibration curve of Reimer *et al*. (2004) and the computer program OxCal v4.0.5 (Bronk Ramsey 1995; 1998; 2001; 2009). The calibrated date ranges cited in the text are those for 95% confidence unless otherwise stated. They are quoted in the form recommended by Mook (1986), with the end points rounded outwards to 10 years. The ranges quoted in italics are posterior density estimates derived from mathematical modelling of archaeological problems (see below). The ranges in plain type in the tables have been calculated according to the maximum intercept method (Stuiver and Reimer 1986). All other ranges are derived from the probability method (Stuiver and Reimer 1993).

A Bayesian approach has been adopted for the interpretation of the chronology from the area (Buck *et al*. 1996). Although the simple calibrated dates are accurate estimates of the dates of the samples, this is usually not what archaeologists really wish to know. It is the dates of the archaeological events represented by those samples which are of interest. Absolute dating information, in the form of radiocarbon measurements, can be combined with the relative information provided by archaeological stratigraphy and associations, to provide estimates of the dates of the activities.

Fortunately, methodology is now available that allows the explicit combination of these different types of information to produce realistic estimates of the dates of archaeological interest. It should be emphasised that the posterior density estimates produced by this modelling are not absolute. They are interpretative estimates, which can and will change as further data become available and as other researchers choose to model the existing data from different perspectives. The technique used is a form of Markov Chain Monte Carlo sampling, and has been applied using the program OxCal v4.0.5 (http://c14.arch.ox.ac.uk/). Details of the algorithms employed by this program are available from the online manual or in Bronk Ramsey (1995; 1998; 2001; 2009). The algorithm used in the models described below can be derived from the structures shown in Figs 5.1–2 and 5.4.

## CHARACTER OF THE DATASET: LANDSCAPE AND ARCHAEOLOGICAL ASSOCIATIONS

***David G. Passmore and Clive Waddington***

One of the key aims of the Till-Tweed project has been the development of a heritage management framework for the region that incorporates an enhanced HER database and situates the archaeological record within its landscape context. This has required a multi-disciplinary geoarchaeological methodology that is built around a core GIS that incorporates or links to the following datasets:

- Geomorphological mapping of 560 km$^2$ of the Till-Tweed landscape using a combination of British Geological Survey superficial geology maps, Ordnance Survey maps (including historic maps), online aerial photograph imagery, LiDAR (Light Detection and Ranging) data covering 64% of the study area and a programme of field visits (Volume 1, Chapter 2).
- Sediment coring of over 150 alluvial terrace, floodplain, palaeochannel and floodbasin sites in the Milfield Basin and selected reaches of the Breamish/Till and Lower Tweed valleys (Volume 1, Chapter 2).
- Palaeoecological analysis (pollen, plant macrofossils and insect remains) and/or radiocarbon dating (35 samples) from 23 sediment cores in Late Devensian and Holocene palaeochannel or floodbasin sediments (Volume 1, Chapter 2).
- Radiocarbon dating (7 samples) of four sediment cores/exposures in alluvial sequences in the Rivers Glen and Till (this volume, Chapter 2).
- Pollen analysis and radiocarbon dating (4 samples) of a peat core from Ford Moss, a 61ha raised bog at *c*. 105 m OD on the Fell Sandstone escarpment 3km east of the River Till at Ford (this volume, Chapter 2 and Appendix A).
- 3436 surface finds from fieldwalking of 964.3 ha of the Till-Tweed landscape, comprising 3340 (97.2%) lithics, 92 (2.7%) pottery sherds, two pieces of slag, one coin and one button (Volume 1, Chapter 3).
- 24 test pits excavated in glaciodeltaic and Holocene alluvial terrace surfaces in the Milfield Basin (Volume 1, Chapter 3).
- New (254), or enhanced (218), HER records from a programme of aerial photograph transcription (to NMP standards) of over 4700 oblique and vertical photographs sourced from the NMR, the Unit for Landscape Modelling (formerly CUCAP) and Newcastle University's Museum of Antiquities (Volume 1, Chapter 4), giving an overall total of HER sites within the Till-Tweed study area of 51 isolated finds, 571 cropmark sites, 564 earthworks and monuments and 409 field systems (this volume, all chapters).
- Eight excavations of cropmark sites (including a henge-

type monument, a boundary feature, a ring-ditch, two curvilinear palisaded enclosures, a rectilinear enclosure, a pit alignment and a field system and building) with analysis of palaeoenvironmental remains and a programme of radiocarbon dating (Volume 1, Chapter 5).

- Assimilation of data from large-scale, open-area, commercial excavations at Cheviot Quarry (Johnson and Waddington 2008) and Lanton Quarry (Waddington 2009), as well as the recently published Neolithic remains from Thirlings (Miket *et al.* 2008) and other commercial excavations throughout Northumberland.

Central to the development of an integrated heritage management framework for the Till-Tweed study area has been the identification of 'landform elements' and their associated sedimentary sequences and archaeological associations. The development and application of this geoarchaeological approach has been explored and illustrated in Passmore *et al*. (2002; 2006) and is fully explained in Volume 1 of the project (Passmore and Waddington 2009a). For the Till-Tweed study blocks (Fig. 1.2) this has necessitated classifying nearly 560 $km^2$ of the landscape as one of fifteen geomorphologically defined landform elements that range in scale from comparatively small features, such as kettle holes or palaeochannels, to much larger expanses of drift-mantled hill slopes and alluvial valley floors (Table 1.1). By addressing the correspondence between particular types of landforms and their archaeological and palaeoecological associations, the potential of landscapes and their associated archaeology to experience modification, burial and/or transformation over time is demonstrated. This approach is intended to facilitate the prediction of the potential age range and context of archaeology and palaeoenvironmental deposits lying on or beneath modern land surfaces. In addition to providing a platform and context for heritage management purposes, the integration of geomorphological and archaeological data within a GIS environment also permits interrogation of the relationships between landscape setting and the character of the archaeological record. Therefore, and with specific regard to the study blocks delimited in Figure 1.2, our analysis in the following chapters of this volume has been informed by consideration of the number and density of all recorded archaeological monuments, features and findspots located in the landform elements described in Table 1.1.

*Table 1.1. Landform, sediment and archaeological associations for the Till-Tweed catchment (after Passmore and Waddington 2009a).*

| Landform element | | Sediment type | Holocene geomorphic activity | Archaeological associations |
|---|---|---|---|---|
| 1a | Bedrock with discontinuous shallow drift cover (Late Devensian) | Bedrock, till, some poorly sorted slope deposits | Generally stable, some localised colluvial activity | Mixed-age assemblages of earthworks and artefacts at or within the soil surface |
| 1b | Undifferentiated Late Devensian glacial and glaciofluvial drift | Till, sand and gravel, some poorly sorted slope deposits | Generally stable, some localised colluvial activity | Mixed-age assemblages of cropmarks, earthworks and artefacts. Can occur as upstanding features, features in underlying deposits or as artefacts in ploughsoils |
| 1c | Late Devensian ice-contact meltwater deposits | Sand and gravel, some localised thin till deposits | Generally stable, some localised colluvial activity | Mixed-age assemblages of cropmarks, earthworks and artefacts. Can occur as upstanding features, features in underlying deposits or as artefacts in ploughsoils. Particularly common are Mesolithic flint scatters, Neolithic pits and ceremonial monuments and Early Bronze Age and Anglo-Saxon settlement sites |
| 1d | Late Devensian glaciofluvial and glaciodeltaic terraces | Sand and gravel, some localised sand, silt and clay | Generally stable | Mixed-age assemblages of cropmarks, earthworks and artefacts. Can occur as upstanding features, features in underlying deposits or as artefacts in ploughsoils. Particularly common are Mesolithic flint scatters, Neolithic pits and ceremonial monuments and Early Bronze Age and Anglo-Saxon settlement sites |
| 1e | Late Devensian and/or Holocene palaeochannel deposits and enclosed basins inset within 1b, 1c and 1d | Sand and gravel, variable depth of fine sediment overburden | Generally stable, but possibility of local sediment accumulation | As (1b), but with potential for burial of LateGlacial and Holocene land surfaces, sediments and archaeological remains |
| 1f | Late Devensian kettle holes inset within 1b, 1c and 1d | Peat, organic-rich and inorganic fine sediment | High probability for Late Glacial and Holocene sedimentation | As (1b), but with high probability for burial of Late Glacial and Holocene land surfaces and/or organic deposits |
| 1g | Late Devensian glaciolacustrine deposits | Laminated sand, silt and clay | Landform stability over Holocene | Mixed-age assemblages of cropmarks, earthworks and artefacts. Can occur as upstanding features, features in underlying deposits or as artefacts in ploughsoils |
| 1h | Late Devensian alluvial fans | Sand and gravel, some fine sediment | Landform stability over Holocene | Mixed-age assemblages of cropmarks, earthworks and artefacts. Can occur as upstanding features, features in underlying deposits or as artefacts in ploughsoils |
| 2a | Holocene alluvial fans and colluvial spreads | Mainly sand silt and clay, some gravel | Possible Holocene alluviation/colluviation | Possible mixedage assemblages of cropmarks, earthworks and artefacts, but high probability of buried *in situ* landsurfaces, local reworking and truncation of older Holocene surfaces |
| 2b | Holocene alluvial terraces and floodplain deposits (pre-19th century) | Mainly sand and silt overlying sandy gravel | Alluviation and local fluvial erosion | Mixed age assemblages of cropmarks (rare), earthworks (rare) and artefacts within ploughzone, high potential for buried Holocene landsurfaces and organic deposits, local reworking and truncation of older Holocene surfaces |

*Table 1.1. continued.*

| Landform element | | Sediment type | Holocene geomorphic activity | Archaeological associations |
|---|---|---|---|---|
| 2c | Holocene alluvial palaeochannels and floodbasins developed on 2b surfaces | Alluvial sand, silt and clay with variable organic content, peat | Alluviation and local fluvial erosion | Limited or no surface archaeology, but proven (or high probability of) buried *in situ* landsurfaces and organic deposits |
| 2d | Nineteenth century and later river channel and floodplain deposits; modern channel and floodplain environments | Mainly sand and silt overlying sandy gravel | Alluviation and local fluvial erosion | No intact pre-19th C. archaeology on or beneath surface |
| 2e | Holocene peat bogs/ mires | Peat, some less organic inwash | Accumulation of peat and organic-rich deposits | Limited or no surface archaeology, but proven (or high probability of) buried *in situ* landsurfaces and organic deposits |

*Table 1.2. Physical extent and numerical summary of archaeological associations for landform elements delimited in the Till-Tweed study blocks.*

| | | | | Archaeological associations | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Landform element classification** | | Landform area $km^2$ (%) | | Lithic findspots (%) | | Isolated finds (%) | | Cropmarks (%) | | Earthworks / monuments (%) | | Fieldsystems (%) | |
| **Hilltop and hillslope environments (pre-Quaternary–Devensian) (*c.* 30–315m OD)** | | | | | | | | | | | | | |
| 1a | Bedrock with discontinuous shallow drift cover | 145 | *26* | 226 | *5.5* | 12 | *23.5* | 52 | *9.1* | 276 | *48.9* | 142 | *34.7* |
| 1b | Undifferentiated glacial and glaciofluvial drift | 217 | *39* | 1976 | *48.1* | 12 | *23.5* | 207 | *36.3* | 165 | *29.3* | 69 | *16.9* |
| | total | 362 | *65* | 2202 | *53.6* | 24 | *47.1* | 259 | *45.4* | 441 | *78.2* | 211 | *51.6* |
| **Late Devensian hummocky terrain (lower valley sides and floors) and alluvial fans (*c.* 30–150m OD)** | | | | | | | | | | | | | |
| 1c | Ice-contact meltwater deposits | 81 | *15* | 350 | *8.5* | 6 | *11.8* | 95 | *16.6* | 57 | *10.1* | 34 | *8.3* |
| 1h | Alluvial fans | 1 | *<1* | 8 | *<1* | -- | -- | 4 | *<1* | 1 | *<1* | 1 | *<1* |
| | total | 82 | *15* | 358 | *8.7* | 6 | *11.8* | 99 | *17.3* | 58 | *10.3* | 35 | *8.6* |
| **Late Devensian valley floors (*c.* 10–120m OD)** | | | | | | | | | | | | | |
| 1d | Glaciofluvial and glaciodeltaic terraces | 50 | *9* | 1167 | *28.4* | 12 | *23.5* | 156 | *27.3* | 44 | *7.8* | 45 | *11.0* |
| 1e | Palaeochannels and enclosed basins inset within 1b–d | 7 | *1* | 95 | *2.3* | -- | -- | 25 | *4.4* | 2 | *0.4* | 6 | *1.5* |
| 1f | Kettle holes inset within 1b–d | 1 | *<1* | 1 | *<1* | -- | -- | 1 | *<1* | -- | -- | 2 | *<1* |
| 1g | Glaciolacustrine deposits | 3 | *1* | 6 | *<1* | 2 | *3.9* | 1 | *<1* | -- | -- | 2 | *<1* |
| | total | 61 | *11* | 1269 | *30.9* | 14 | *27.5* | 183 | *32.0* | 46 | *8.2* | 55 | *13.4* |
| **Holocene valley floors (*c.* 2–130 m OD)** | | | | | | | | | | | | | |
| 2a | Alluvial fans and colluvial spreads | 1 | *<1* | 14 | *0.3* | -- | -- | -- | -- | 1 | *0.2* | 10 | *2.4* |
| 2b | Alluvial terraces and floodplain deposits (pre-nineteenth century) | 34 | *6* | 233 | *5.7* | 5 | *9.8* | 22 | *3.9* | 12 | *2.1* | 53 | *13.0* |
| 2c | Alluvial palaeochannels and floodbasins developed on 2b surfaces | 3 | *<1* | 27 | *0.7* | -- | --- | 2 | *0.4* | -- | -- | 19 | *4.6* |
| 2d | 19th C. and later river channel and floodplain deposits | 10 | *2* | 2 | *<1* | 2 | *3.9* | 2 | *0.4* | 2 | *0.4* | 21 | *5.1* |
| | total | 47 | *8* | 276 | *6.7* | 7 | *13.7* | 26 | *4.6* | 15 | *2.7* | 103 | *25.2* |
| 2e | Holocene peat bogs / mires | 4 | *1* | -- | -- | -- | -- | 2 | *0.4* | 3 | *0.5* | 2 | *0.5* |
| 3 | Modern ponds / reservoirs | -- | -- | -- | -- | -- | -- | -- | --- | -- | --- | -- | -- |
| 3 | Modern quarry workings / airfield | 2 | *<1* | -- | -- | -- | -- | 2 | *0.4* | 1 | *0.2* | 3 | *0.7* |
| | total | 6 | *1* | -- | -- | -- | -- | 4 | *0.7* | 4 | *0.7* | 5 | *1.2* |

*Table 1.3. Archaeological feature density (averaged per km²) for discrete cropmarks, earthworks and field systems in landform elements classified for the Till-Tweed study blocks. Note that landform element categories with a total area extent of less than 10 km² have been grouped in order to avoid distorting density values.*

| | | **Landform area** | | **Archaeological feature / monument density (per km²)** | | |
|---|---|---|---|---|---|---|
| **Landform element classification** | | km² | % | cropmarks | earth/mon | fieldsystems |
| **Hilltop and hillslope environments** | | | | | | |
| 1a | Bedrock with discontinuous shallow drift cover | 145 | *26* | 0.36 | 1.90 | 0.98 |
| 1b | Undifferentiated glacial and glaciofluvial drift | 217 | *39* | 0.96 | 0.76 | 0.32 |
| **Late Devensian hummocky terrain (lower valley sides and floors)** | | | | | | |
| 1c/1h | Ice-contact meltwater deposits and alluvial fans | 82 | *15* | 1.21 | 0.71 | 0.43 |
| **Late Devensian valley floors (low relief)** | | | | | | |
| 1d | Glaciofluvial and glaciodeltaic terraces | 50 | *9* | 3.10 | 0.88 | 0.89 |
| 1e/1f/1g | Kettle holes, glaciolacustrine deposits and palaeochannels/enclosed basins | 11 | *11* | 2.45 | 0.18 | 0.91 |
| **Holocene valley floors** | | | | | | |
| 2a–c | Alluvial fans, terraces, floodbasins and palaeochannels (pre-nineteenth century) | 38 | *6* | 0.63 | 0.34 | 1.41 |
| 2d | 19th C. and later river channel and floodplain deposits | 10 | *2* | 0.20 | 0.20 | 2.10 |
| 2e/3 | Holocene peat bogs and mires, modern quarrys and airfields | 6 | *1* | 0.68 | 0.68 | 0.85 |

# 2 Environmental Background

## *David G. Passmore and Clive Waddington*

### INTRODUCTION AND CONTEXT

This chapter outlines the environmental context of landscape development and human activity in the Till-Tweed study area and the wider region. Detailed descriptions of the methodology and Quaternary history of the region can be found in Volume 1 and are not repeated here, except for the purpose of elucidating some key aspects of landscape development. In particular, we focus on the geological framework of the region, the legacy of deglaciation, climate change and the dynamic changes in river and floodplain environments, all of which have served to frame and influence successive generations of human activity. We also review the record of vegetation change that may be obtained from the wealth of pollen studies that have been undertaken in the region, and which have recently been augmented by the Till-Tweed Project. This is intended to complement and enhance the archaeological narrative developed in succeeding chapters.

The analysis below and in the following chapters is also informed by consideration of the number and density of all recorded archaeological monuments, features and findspots located in the respective landform elements described in Table 1.1 (Chapter 1). Table 2.1 presents a summary of the number of lithic findspots, isolated findspots, cropmark sites, upstanding earthworks and monuments and field systems located in each of the landform elements classified in the study. Full details of the constituent datasets have been provided in Passmore and Waddington (2009a) where it is recognised that many cropmark, earthwork and monument complexes have multiple entries in the Northumberland Historic Environment Record (HER), including, for example, cairnfields or settlement sites with one or more associated features. The numerical analysis presented in Table 2.1 has aggregated the data so that each HER number is treated as an individual entity, and hence the total number of sites listed underestimates the number of constituent elements. It is also recognised that there are multiple examples of monuments or field systems that span one or more landform elements. This is especially the case in valley floor settings where medieval and later field systems are developed on alluvial terraces (Category 2b landform elements) and adjacent palaeochannels (Category 2c).

Table 2.2 summarises the density of archaeological assets expressed as the average number of discrete cropmark, earthwork/monument and field system sites per km$^2$ for a range of landform types. This analysis excludes the lithic findspot record, since archaeological fieldwalking was undertaken as a sampling exercise within the project study blocks; an analysis of the density of lithic findspots can be found in Passmore and Waddington (2009a; Chapter 4). Relatively few isolated findspots are catalogued in the Historic Environment Record (a total of 51 within the study blocks) and these are also excluded from analysis of density values. Furthermore, landform element categories with a total area of less than 10km$^2$ have been aggregated in order to avoid distorting density values.

### THE FORM OF THE LANDSCAPE: GEOLOGY AND GEOMORPHOLOGY, SOILS AND QUATERNARY HISTORY

#### Geology and Late Devensian glaciation

The bedrock geology of North Northumberland controls the broad form and elevation of the landscape that has framed Post Glacial human history in the region, as well as influencing the character of hill slopes and their soil cover that have hosted much of the region's settlement and land-use activities. On the western side of the study area the Cheviot Massif and surrounding hills reach a maximum elevation of 815m OD and present smooth and convex or gently flattened skylines that are locally broken by hilltop tors and dissected by narrow and steep-sided river valleys (Figs 2.1 and 2.2). This upland landscape reflects its origins as an eroded and strongly weathered mid-Devonian (*c.* 396 million years old) volcanic complex, comprising andesitic and some rhyolitic lavas and pyroclastic agglomerates and

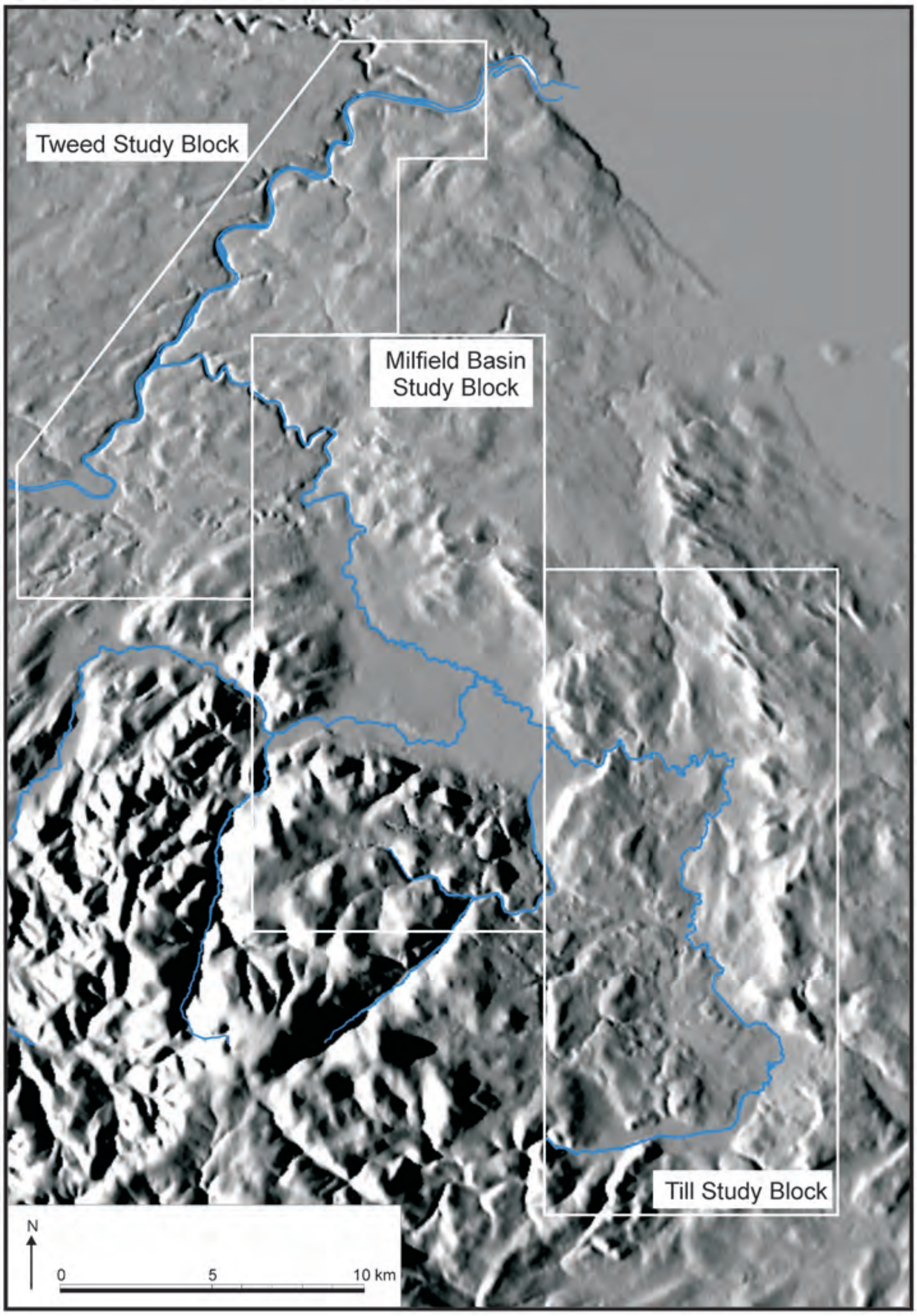



*Figure 2.1. Digital elevation model of the study area showing boundaries of study blocks.*

ashes, termed the Cheviot Volcanic Formation (Fig. 2.3; Lawrence *et al.* 2007). These rocks were intruded around 395 million years ago by the Cheviot Granite Pluton to form the central core of the Cheviot Massif and, also during the Devonian, a broadly radial series of rhyolitic and trachytic dykes (the Cheviot Dyke-Swarm; Lawrence *et al.* 2007; Fig. 2.3). Intrusion of the Cheviot Granite was associated with metamorphosis of the surrounding volcanic rocks up to 2km from the contact, and these recrystallised and relatively strong rocks are locally evident as crags and tors on higher parts of the massif (Lunn 2004).

To the north and east of the Cheviot Hills, the pre-Quaternary geology is formed predominantly from Carboniferous (359–299 million years old) sedimentary rocks comprising limestones, cementstones, mudstones and shales, siltstones, sandstones and coal seams (Lunn 2004). Here the landscape attains a lower elevation range (315m OD) but, as a result of tilting and differential erosion of alternating weak and resistant strata, forms distinctive gently curving cuestas that arc around the eastern and southern flanks of the Cheviots (Figs 2.1 and 2.3). West-facing craggy scarps are especially conspicuous in the Fell

*Figure 2.2. Photo of the Cheviot Hills landscape and the Milfield Basin (looking west).*

Sandstones (Fig. 2.4) and, within the immediate study area, deflect drainage of the eastern flanks of the Cheviots north to the Tweed valley, as part of the Breamish/Till system (Figs 2.1 and 2.3). The middle and lower reaches of these principal rivers coincide with the lowest parts of the study area where relatively weak cementstones and interbedded mudstones, limestones and sandstones of the Ballagan Formation (Lawrence *et al.* 2007; Fig. 2.3) have proven readily erodible by glacial and fluvial processes.

Although the Cheviot Massif is generally believed to have supported a local ice cap during the Devensian glaciation, the landscape presents relatively few features that are otherwise characteristic of upland glaciated areas in Britain (Lawrence *et al.* 2007; see also review in Passmore and Waddington 2009a). This most probably reflects the combination of relatively cold and arid conditions during glaciation (with the region lying in the precipitation shadow of upland western Britain) and the deflection of major, easterly flowing ice streams around the north and south of the massif (Harrison *et al.* 2006; Lawrence *et al.* 2007). Accordingly, erosional landforms are not well developed in the region, with the notable exception of sub-glacial meltwater channels that locally dissect Cheviot interfluves and valley sides (Clapperton 1968; 1971a; Fig. 2.5), a small cirque basin ('The Bizzle') on the northern flanks of the Cheviots (Harrison *et al.* 2006; Fig. 2.6) and, possibly, some accentuation of the ridge and vale topography of the Carboniferous cuestas east of the Cheviots by southerly flowing ice.

Depositional landscapes associated with Devensian glaciation are rarely found at higher elevations in the Cheviot Massif and Fell Sandstone escarpments, where thin till and undifferentiated glacigenic deposits form localised patches amidst glacially streamlined, or craggy, bedrock and scree slopes. These landscapes typically lie between 500 and 150m OD and comprise 26% of the Till-Tweed study blocks (Category 1a landform elements; Fig. 2.7; Table 2.1). Their soil cover reflects the combination of altitude and parent material, being dominated by peat on the cooler and wetter Cheviot hilltops, while the surrounding granitic and andesitic slopes support podzols. Occasionally, on areas of plateau, stony brown earth soils (Payton 1980) can be found, and on steeper andesite slopes brown rankers (Lunn 2004). Sandy podzols are also characteristic of the higher Fell Sandstone escarpments. Relatively high elevations and varying thickness of soils have not, however, dissuaded prehistoric and early historic communities from establishing settlement and subsistence activities in these environments. Over 48% of all recorded earthworks and 34% of field systems in the Till-Tweed study blocks are located in Category 1a landscapes (Table 2.1), giving a respective averaged site density of 1.9 earthworks and 0.98 discrete field systems per km$^2$ (Table 2.2).

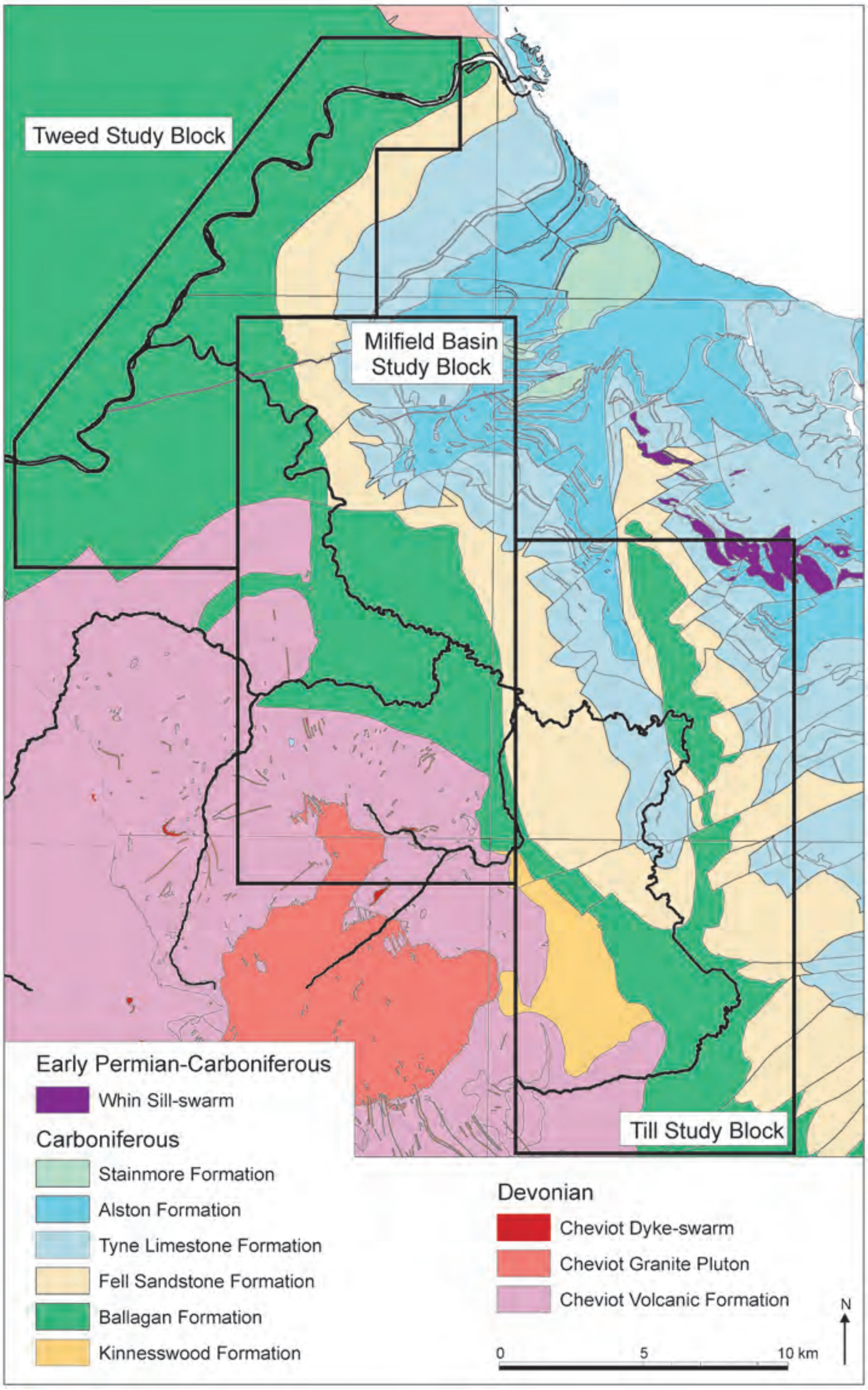



*Figure 2.3. Map of the study area showing the major geological formations.*

Till and undifferentiated drift deposits are more extensively developed on the lower elements of regional hill slopes (typically in the range between 50 and 270m OD), and especially throughout much of the lower Tweed valley, where they form upstanding terraced and undulating land surfaces that lie up to 65m above the present valley floor. These landscapes have been classified as Category 1b landform elements within the Till-Tweed study area where they comprise 39% of the mapped study blocks (Fig. 2.7 and Table 2.1). Cheviot hillslopes have been strongly modified by a combination of paraglacial and periglacial processes (Harrison 2002; Harrison *et al.* 2006; 2010); this is reflected in thick deposits of sediment that typically mantle lower valley slopes. Recent work on a 10m thick sediment sequence in Linhope Burn, a tributary

*Figure 2.4. View of Fell Sandstone escarpment at Doddington North Moor (looking south).*

*Figure 2.5. View of glacial meltwater channel in the Breamish valley near Ingram (Photo Andy Russell).*

of the River Breamish, by Harrison *et al.* (2010) has used optical dating methods to demonstrate that the bulk of this sequence was deposited during the Loch Lomond Stadial. To the north of the Cheviots, subglacial streamlining of glacigenic deposits beneath the north and north-eastward flowing Tweed Ice Stream has given rise to a distinctive drumlinised landscape in the Tweed valley (Lunn 2004; Lawrence *et al.* 2007), which is described in Volume 1 (Passmore and Waddington 2009a) (Fig. 2.8). Soils that developed on these surfaces

*Figure 2.6. View of the Bizzle (Cheviot Hills).*

are predominantly heavy stagnogleys with relatively fertile brown soils on the upland fringes and better-drained areas of till (Lunn 2004).

Hill slopes, mantled with till and undifferentiated drift, have presented a range of favourable locations for settlement and subsistence activity, with 36% of all recorded cropmarks, 29% of earthworks and nearly 17% of field systems located in these settings, giving averaged site density values of 0.96, 0.76 and 0.32 per km$^2$ respectively (Tables 2.1 and 2.2). Mesolithic and Neolithic artefact scatters are also well represented in these landscapes, with some 48% of recorded lithic findspots located in Category 1b landform elements (Table 2.2).

## Landscapes associated with Late Devensian deglaciation

While lowland landscapes of the Tweed valley bear testament to marked subglacial streamlining of till and other glacigenic sediments beneath Devensian ice sheets, the Breamish/Till valley and also the Tweed valley at Coldstream have been much influenced by the legacy of glacial meltwater and abundant sediment volumes during Late Devensian deglaciation of the region. This is strikingly evident in extensive deposits of glaciolacustrine, glaciodeltaic and glaciofluvial sediment that mantle lower valley sides and infill valley floors (Figs 2.9 and 2.10). In the broad expanse of the Milfield basin, glaciolacustrine sediments have been described as reaching a depth of at least 22m in the southern part of the basin (Gunn 1895; Clapperton 1971b) and extend across the full width of the basin beneath the Holocene river and floodplain environments (Fig. 2.10). In general, however, the landform record of deglaciation is most thoroughly documented in the context of well developed spreads of sands and gravels, deposited as hummocky ice-contact meltwater deposits (Category 1c landform elements; Figs 2.9 and 2.11), and generally low-relief glaciodeltaic and glaciofluvial terraces (Category 1d landform elements) (Figs 2.9 and 2.12), which comprise 15% and 9% respectively of the study block area (Table 2.1).

These generally free-draining landform assemblages, with gently rolling or relatively flat surfaces, host archaeological remains that, in numerical terms, are broadly proportional to their areal extent, but with the notable exception of lithic and isolated findspots (respectively over 28% and 23% of the total dataset), and cropmark sites (over 27%) on Category 1d glaciofluvial and glaciodeltaic sands and gravels (Table 2.1). The high proportion of cropmark sites on these terraces is also reflected in the relatively high site density value of 3.1 per km$^2$ (Table 2.2). The propensity of the Till-Tweed sand and gravel terraces to yield cropmark records, and their importance for multi-period settlement, subsistence and ceremonial activity, have been highlighted in Volume 1, and landform and archaeological associations are developed at length in the following period-specific chapters of this volume (Chapters 4–9). In the remainder of this section we focus on the chronology and character of proglacial

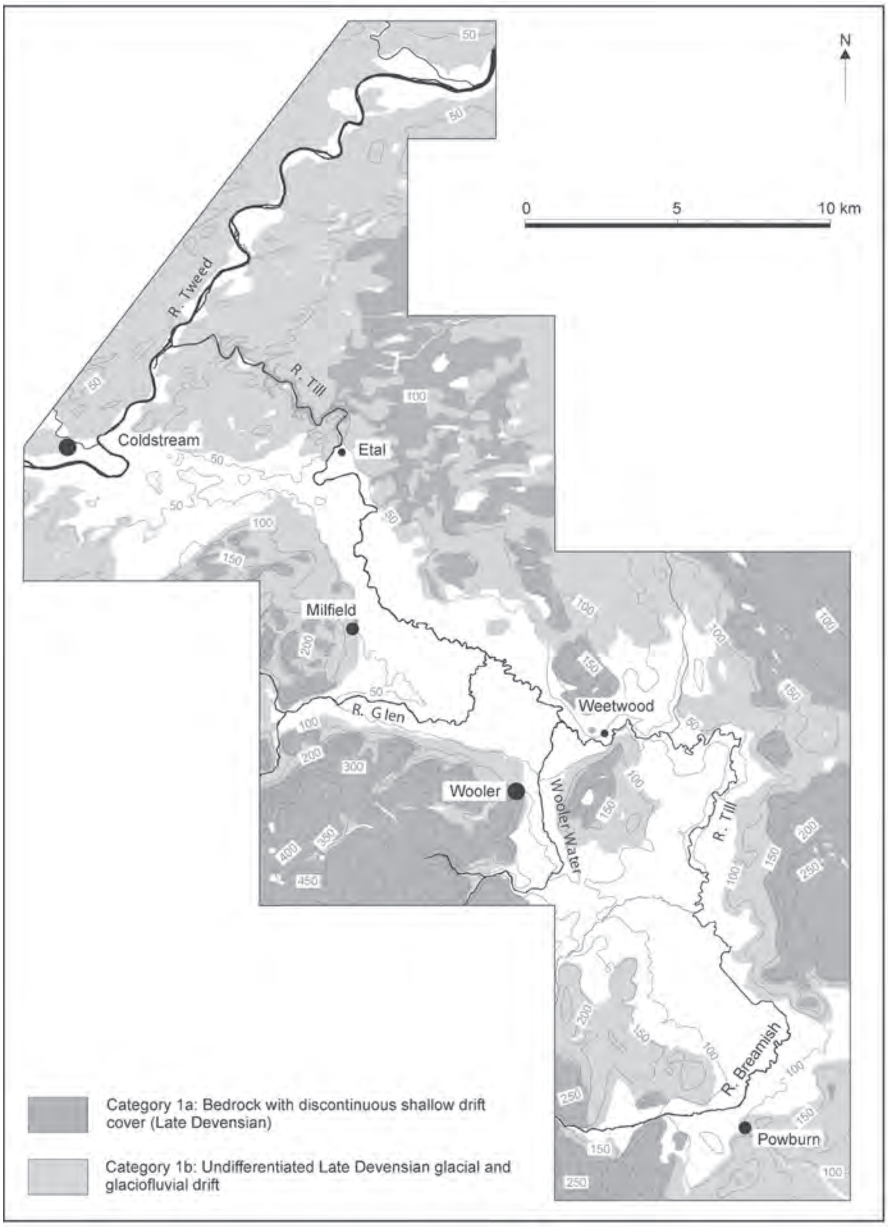



*Figure 2.7. Map of study area and regional topography showing (i) bedrock with discontinuous shallow drift cover (Category 1a landform elements) and (ii) undifferentiated Late Devensian glacial and glaciofluvial drift (Category 1b).*

lake formation and drainage, and the associated suite of landforms in the valley of the Till, and especially the Milfield Basin.

Late Glacial landforms and sediments in the Milfield Basin have attracted considerable attention from the earth science community and the presence of a large proglacial lake (variously termed 'Lake Ewart' and more recently 'Lake Milfield', cf. Lawrence *et al.* 2007), and associated glaciodeltaic and glaciofluvial terraces, are sufficiently distinctive within the context of Northumberland's geological and geomorphological history as to warrant detailed treatment in the Northumberland National Park Geodiversity Audit and Action Plan (Lawrence *et al.* 2007). However, dating controls on the Late Glacial sequences have hitherto been limited, and this has led to conflicting interpretations of the chronology and pattern of deglaciation and fluvial system development (e.g. Clapperton 1971a; Payton 1980; 1988; 1992; Tipping 1998; 2010). Refining our knowledge of this aspect of the environmental history of the basin is important since this phase of landform development has exercised an important control on the basin's physiography, the development of low-elevation glaciofluvial terraces first identified by the Till-Tweed Project (Volume 1, Chapter 2), as well as the history of Post Glacial river and floodplain environments. Furthermore, this distinctive landscape is likely to have been especially attractive to Palaeolithic and and Early Mesolithic groups. Accordingly, the following

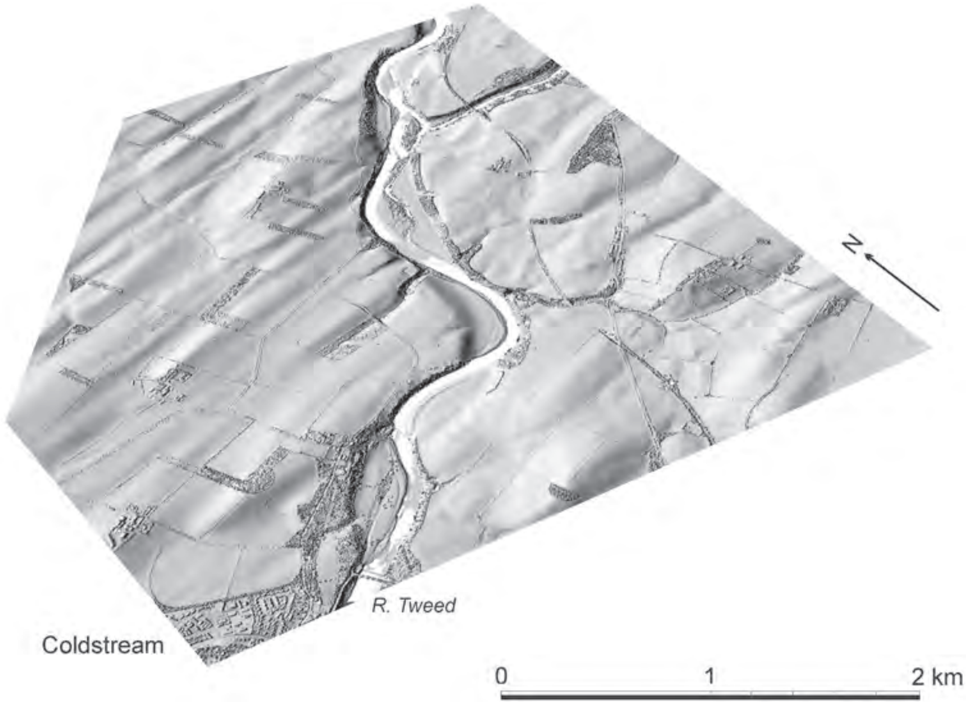



*Figure 2.8. LiDAR-derived image of landsurface topography around Coldstream (Tweed study block) showing drumlinised terrain and inset Late Devensian and Holocene alluvial valley floor.*

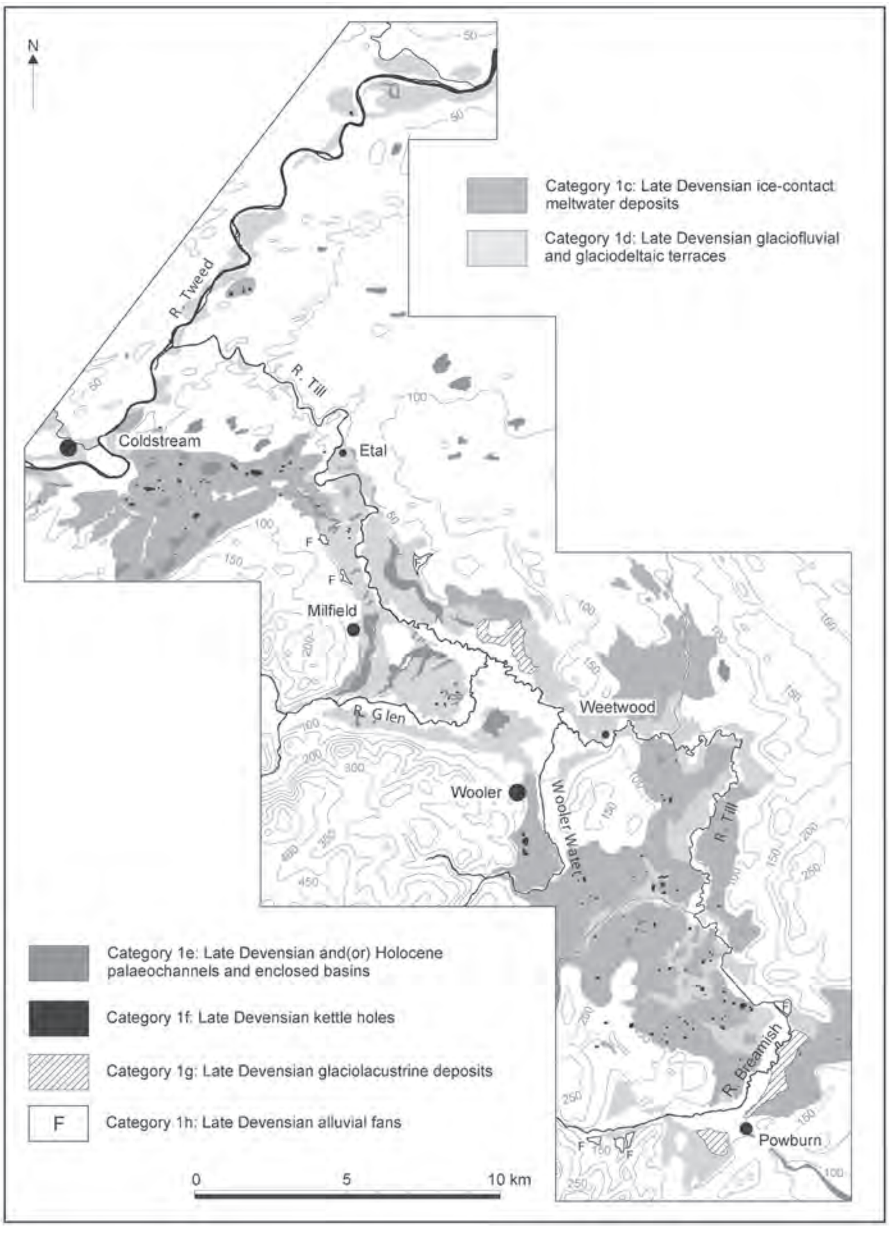



*Figure 2.9. Map of study area and regional topography showing landform elements associated with Late Devensian deglaciation (Categories 1c–1h; see text for details).*

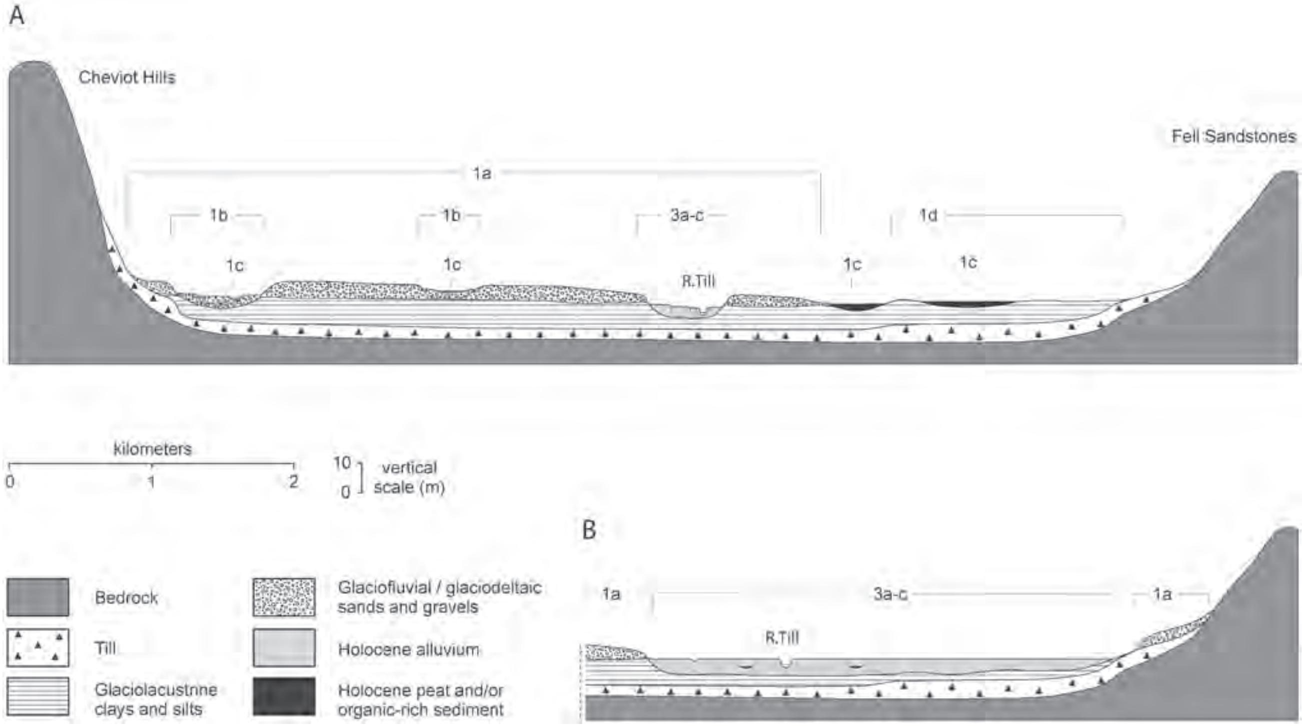



*Figure 2.10. Schematic cross-profiles of the Milfield Basin showing solid and drift geology and landform elements identified in this study (after Payton 1980 and Passmore* et al. *2002). Profiles A and B refer to reaches with respectively narrow and wide Holocene alluvial valley floors.*

synthesis draws on the work described in Volume 1, a geomorphological analysis of paraglacial valley floor development by Passmore and Waddington (2009b) and new, hitherto unpublished, radiocarbon dates that have augmented our understanding of the timing and character of lake drainage.

***Development of Lake Milfield and the Milfield Fan***

The development of Lake Milfield is believed to have arisen through damming of the basin's northern outlet by a combination of stagnant Tweed valley ice and a bedrock barrier at Etal (Clapperton 1971a; Payton 1980; Fig. 2.9). Payton's (1980) investigation of the Milfield Basin soils described glaciolacustrine deposits as reaching surface elevations of 42m OD on the margins of the basin (Fig. 2.13) where they are locally overlain by alluvial sediments and slope deposits. Published dating control on the latter stages of glaciolacustrine sedimentation is derived from radiocarbon dating of a buried humic gley soil developed in laminated silts and clays at Black Burn, located in a small tributary valley on the eastern flanks of the basin (Payton 1988; 1992; Fig. 2.13). The buried topsoil (bApg) horizon of this soil at *c.* 37m OD yielded a $^{14}C$ date of *c.* 11,595–11,180 cal BC (HAR-4308; Table 2.3; Payton 1992). Overlying the buried soil are *c.* 2m of laminated silts and clays that are interpreted by Payton (1988) as glaciolacustrine sediment characterised by biogenic, rather than density-graded, laminations.

Glaciofluvial and glaciodeltaic outwash deposits are extensively developed around the margins of the Milfield Basin (Fig. 2.13). A broad fan-shaped expanse of sand and gravel up to 10m thick spreads north and east into the basin from an apex at the mouth of the Glen valley at Lanton (Fig. 2.13) and has been described by Clapperton (1971a) as an outwash delta built out into a large proglacial lake that filled the basin during deglaciation. Currently known as the Milfield Fan (Lawrence *et al.* 2007), the surface of this feature has a maximum elevation of 56m OD at its apex and slopes north and east to margins at 40–42m OD. To the south and east, the surface terminates in a locally well defined terrace margin that rises 5–10m above the Holocene alluvial valley floor and the present rivers Till and Glen (Fig. 2.14). Lawrence *et al.* (2007) reconstruct the former lake surface at around 60m OD on the assumption that the entire Milfield Fan was deposited subaqueously, but a more conservative estimate of 45m OD for the lake surface (Fig. 2.15) is preferred here, following Payton's (1980) observation of some 2m of plane-bedded sandy gravels deposited by subaerial braided river channels as unconformably overlying glaciodeltaic foreset beds. The erosional contact recorded between these foreset and topset beds lies at *c.* 45m OD and is interpreted by Payton (1980) as offering a minimum estimate of the former proglacial lake level in the basin. Inset some 2–3m into the glaciodeltaic terrace surface are channelised

*Figure 2.11. Hummocky ice-contact meltwater deposits near Roseden Crossing, Breamish (Till) valley. Note kettle hole in foreground and Old Bewick hillfort on Fell Sandstone escarpment in background.*

*Figure 2.12. Glaciofluvial terrace surface in the Milfield Basin at Maelmin Heritage Centre, Milfield. Note sand and gravel exposed in ditch cut.*

depressions with broad, low-relief floors that have been described as former courses of the proto-River Glen (Payton 1980; Figs 2.13 and 2.14). One such channel to the north of Galewood (here termed the Galewood Depression; Fig. 2.13) traverses the central part of the terrace and has been found to be locally infilled with up to 130cm of fine sediment including *c.* 25–30cm of humified peaty silt at the base of the sequence where it overlies coarse sands and gravels (Volume 1; Chapter 2).

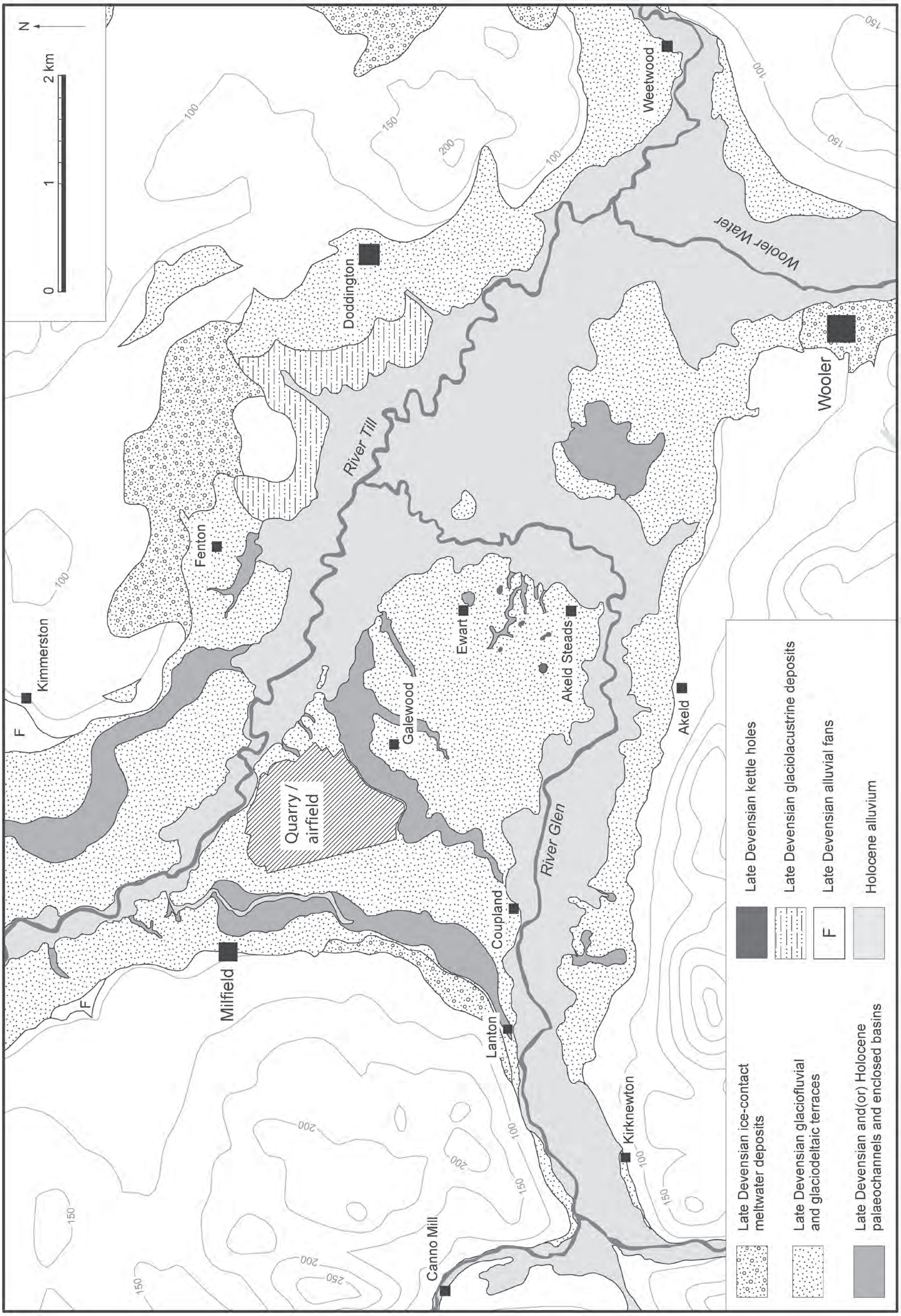



*Figure 2.13. Map of Milfield Basin showing Late Devensian depositional landform assemblages associated with deglaciation, Holocene alluvium and site of Milfield airfield and aggregate quarry.*

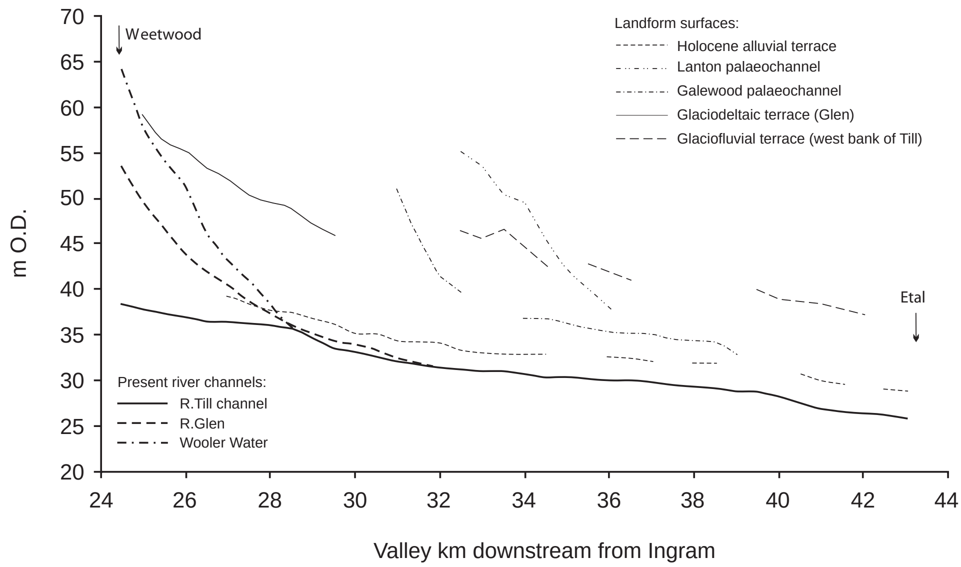



*Figure 2.14. Long-profiles of the present Rivers Till, Wooler Water and Glen in the Milfield Basin between Weetwood and Etal. Also shown are surface profiles of Holocene alluvium, glaciodeltaic terraces (flanking the R. Glen) and inset palaeochannels, and glaciofluvial terrace deposits downvalley of the Till-Glen confluence.*

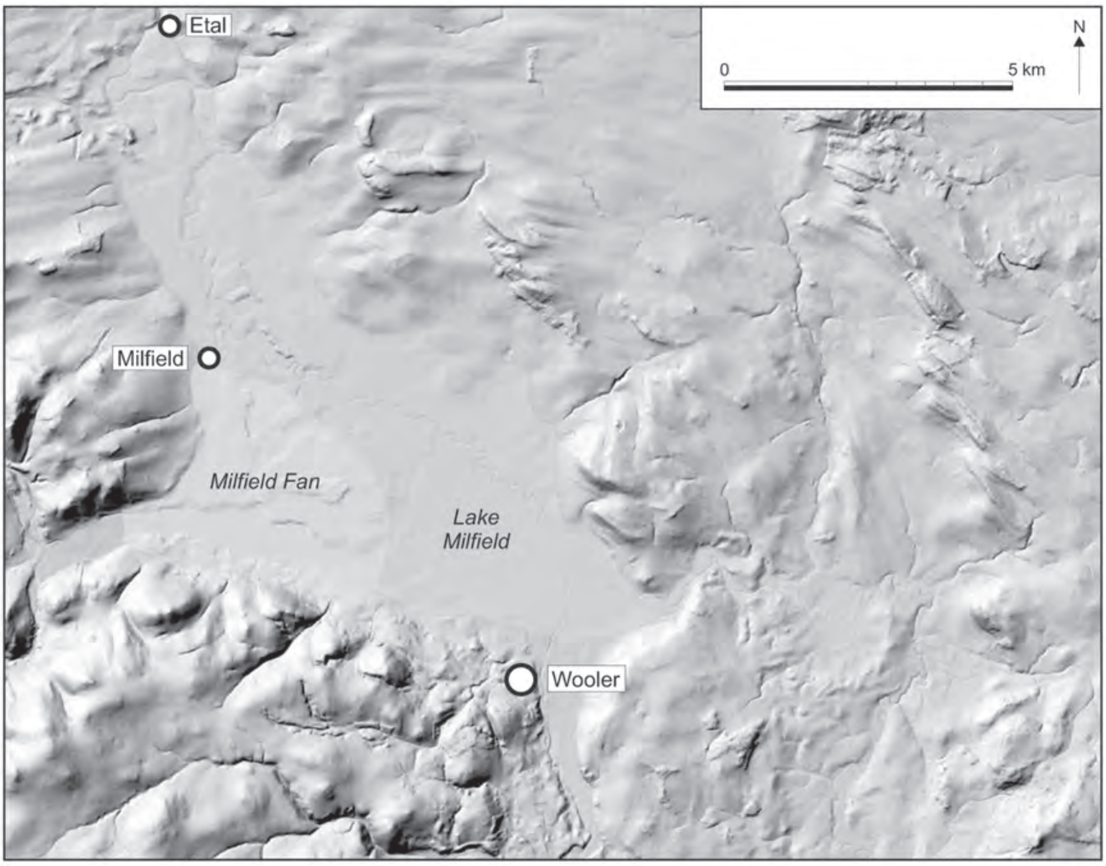



*Figure 2.15. Reconstruction of Late Glacial Lake Milfield and the glaciodeltaic Milfield Fan surface. The lake shoreline is drawn at 45m OD (see text for details).*

Previously, no direct dating controls have been reported for the glaciodeltaic terrace, and the argument for its deposition having occurred prior to the Late Glacial (Windermere) Interstadial (beginning *c.* 13,400 cal BC) rests on morphostratigraphic relationships with the glaciolacustrine sequence in the basin, and geomorphological evidence of periglacial processes including cryoturbation structures, fine sediment capping on larger clasts, and abundant cropmark evidence of polygonally patterned ground, on surfaces between 40–50m OD (Payton 1992). Recent geoarchaeological investigations associated with the nearby Cheviot Quarry (Johnson and Waddington 2009) have subsequently dated the upper and lower levels of the basal peaty sediment infilling the Galewood Depression to the period *c.* 11,470–11,300 cal BC and *c.* 12,310–12,070 cal BC (Table 2.3), respectively. Dating sediment accumulation in the abandoned channel at Galewood to the Late Glacial (Windermere) Interstadial provides further support for the assignment of the glaciodeltaic terrace to the later stages of the Dimlington Stadial, sometime between *c.* 16,000 and 13,400 cal BC.

A suite of sand and gravel terraces lies below the margins of the glaciodeltaic terrace in the Milfield Basin; Clapperton (1971a) has interpreted these as glaciofluvial terraces that represent fluvial reworking of glaciodeltaic sediments. They are most extensively developed on both sides of the Till valley floor in the northern part of the basin between Milfield and Etal (Figs 2.9 and 2.13) and have surfaces some 3–4m below the glaciodeltaic terrace. Mapping and sediment coring reported in Volume 1 have identified a further group of low-lying sand and gravel terraces in the southern and western parts of the basin, in areas that have been previously mapped as Holocene alluvium (Payton 1980; 1992; Tipping 1998; Figs 2.13 and 2.16). The largest terrace in this group lies inset below glaciofluvial and glaciodeltaic deposits, between Akeld Steads and Turvelaws, and has a gently undulating surface 1–2m above the main Holocene alluvial surface. This terrace is traversed by the artificially straightened course of the Humbleton Burn, a small tributary of the present River Glen that rises on the northern flanks of the Cheviot Hills (Fig. 2.16), and has been shown by sediment cores and archaeological test pits (Transect MSH2; Fig. 2.17; Volume 1, Chapter 5) to comprise between 2 and 3m of well to poorly bedded inorganic gravelly sands and silts. These fluvial sediments typically overlie inorganic and finely laminated light blue and grey silts and clays (Fig. 2.17) that are interpreted as truncated glaciolacustrine deposits. A smaller terrace remnant of this assemblage is evident to the east of Bridge End where it forms a localised, low-relief sand and gravel surface that is surrounded by Holocene alluvium (Fig. 2.16).

Both terrace units have gently dipping margins that are onlapped by Holocene silts and clays, but to the east of Akeld Steads their higher elevations have been shown by aerial photographs to exhibit a well developed pattern of polygonal ice wedge casts (Tim Gates pers. comm.; Fig. 2.18). Accordingly, these terraces are interpreted as reworked glaciodeltaic and glaciofluvial sediments that were deposited as a low-angle fan during incision of the River Glen through the main delta surface, and underlying glaciolacustrine sediments following drainage of the proglacial lake (see below). Abandonment of the terrace surfaces must have occurred prior to periglacial modification during the Dimlington and/or Loch Lomond Stadial.

### *Late Devensian and Holocene fluvial sequences in the Milfield Basin*

Sedimentary sequences underlying the central part of the Milfield Basin have been investigated along sediment coring transect MSH1, extending for some 2.7km between Bridge End and a small crossing over the river Till to the south-west of Doddington (Fig. 2.16). Selected sediment core logs and the surface profile of MSH1 are illustrated in Figure 2.19. This shows the alluvial surface to rise gently from a low of 34.5m OD at Humbleton Burn, in the central part of the basin, to 35–36m OD in the vicinity of the rivers Glen and Till, on the west and east side of the valley floor. In Volume 1 (Passmore and Waddington 2009a) and a subsequent paper (Passmore and Waddington 2009b) we focused on sediment cores taken in the vicinity of Humbleton Burn in the central part of the basin (cores MSH1–1, 14 and 21, Fig. 2.19), and which are notable for featuring beds of peat and/or organic fine sands, silts and clays at depths between 250 and 350cm below the surface (*c.* 31–32m OD). These organic-rich sediments are interpreted as buried, shallow channel fills or floodbasin depressions that have no modern surface expression. A radiocarbon assay of *c.* 11,820–11,450 cal BC (Table 2.3) from peat obtained from core MSH1–14 at 291–299cm suggested that this organic deposit dated to the Late Glacial (Windermere) Interstadial (Fig. 2.19). Pollen counts from organic-rich fine sediments between 310 and 330cm in the nearby core MSH1–21, characterised by a hazel-birch-juniper scrub (including the arctic-alpine dwarf-shrub *Betula nana* L.), grasses (Poaceae) and *Filipendula*, bear comparison with very early Holocene vegetation assemblages recorded in the kettle hole fill at Lilburn South Steads, 9.7km to the south-east (Jones *et al.* 2000). The age estimate for this core remains problematic, however, since MSH1–21 has been radiocarbon dated to *c.* 3640–3360 cal BC at 322cm (Table 2.3; Fig. 2.19). This date is believed to be in error as a result of sample contamination during the coring exercise and will require further palaeoecological and radiocarbon analysis. Since Passmore and Waddington (2009a and b) went to press, a new sediment core (SA16) was taken from within 10m of MSH1–1 and 14, and equivalent


*Figure 2.16. Simplified geomorphological map of the valley floor between Akeld Steads and Turvelaws (Milfield Basin) showing transects MSH1 and MSH2, cross-profile A–B, major palaeochannels and selected sediment core locations; box shows location of aerial photograph in Fig. 2.18.*

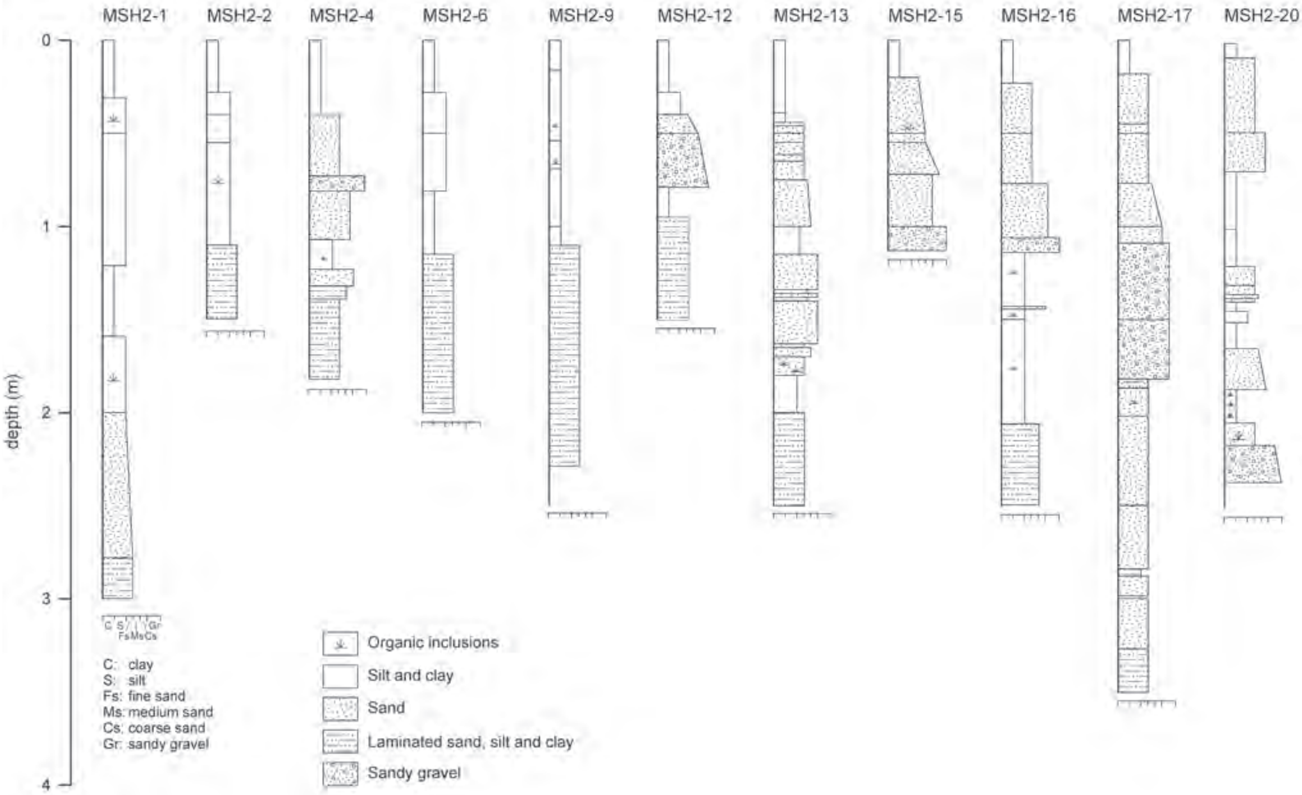



*Figure 2.17. Selected sediment core logs from Transect MSH2 (Milfield Basin) (see Fig. 2.16 for core locations).*

organic-rich sediments radiocarbon dated in their lower and upper limits. These samples have yielded dates of 11,390–11,160 cal BC and 11,320–11,000 cal BC, respectively (Table 2.3; Fig. 2.19; for further details see Appendix A), and serve to corroborate the Late Glacial (Windermere) Interstadial age for buried organic-rich sediments in this part of the Milfield Basin.

Geomorphological evidence for the chronology and character of Late Glacial and Early Holocene valley floor development is also available from the alluvial sequence in the lower reaches of the River Glen at Akeld Steads (Borek 1975; Tipping 1994a; 1998; 2010). Here, a 3.5m sequence of floodbasin peat and interbedded, fine-grained alluvium lies inset below, and immediately adjacent to, the upstanding (*c.* 45m OD) glaciodeltaic terrace margin (Figs 2.16 and 2.20). To the south-east of the River Glen the modern floodplain surface lies inset 1m below the lowest-elevation Late Devensian fan terrace described above. The organic-rich sedimentary sequence at Akeld Steads underlies the modern alluvial surface at 36m OD and spans the period between *c.* 10,020 and 9440 cal BC (31.5m OD) and *c.* 975–805 cal BC (35m OD; Tipping 1998; 2010). Geomorphological mapping and sediment coring, undertaken for the Till-Tweed Project, have demonstrated that this floodbasin fill extends for some 800m along the glaciodeltaic terrace margin and has a laterally persistent peaty infill sequence between 345 and 120cm thick. In the downstream limits of the floodbasin these peaty sediments directly overlie blue/grey, finely laminated sands, silts and clays to a recorded depth of 200cm, which are interpreted as glaciolacustrine deposits (Passmore and Waddington 2009a).

### *Late Devensian and Holocene fluvial sequences in the Wooler Water*

On the southern margins of the Milfield Basin, Late Devensian and Holocene sedimentary sequences in the valley floor of the Wooler Water, upstream of Wooler, have been the subject of investigations by Clapperton *et al.* (1971) and Tipping (1992; 1994b; 2010), while local channel and floodplain adjustments to recent historic aggregate extraction have also been reported by Sear and Archer (1998). On the western side of the valley an extensive spread of kame, esker and kettle hole deposits lie up to 175m OD and are truncated to the east by a broad gravel terrace, some 10m thick and 500m wide, that has been termed the Haugh Head Terrace (Tipping 1994b). This surface can be traced downstream through Wooler and out into the Milfield Basin as a broad, low-relief fan that merges with the Holocene alluvial surface and, to the north-west, the low-level glaciofluvial terrace surface developed along the southern margins of the basin (Passmore and Waddington 2009a; Fig. 2.16).

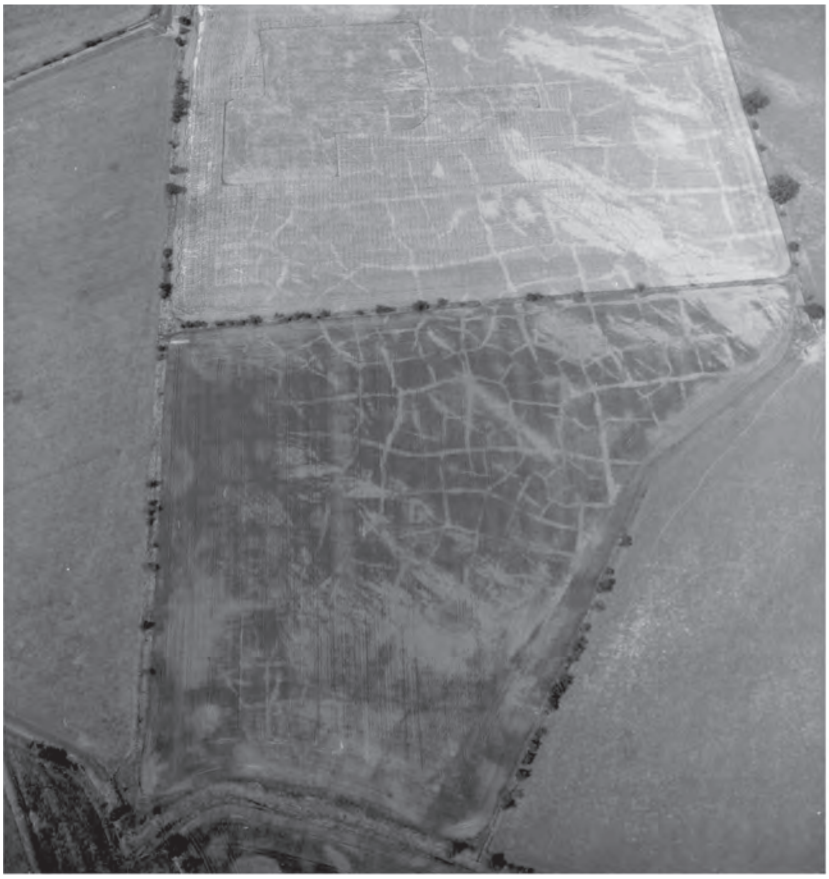


*Figure 2.18. Aerial photograph of low-relief terrace surface east of Akeld Steads showing cropmark evidence of polygonal ice wedge casts; see Fig. 2.16 for location of photograph (Copyright Tim Gates, 29 July 1994).*

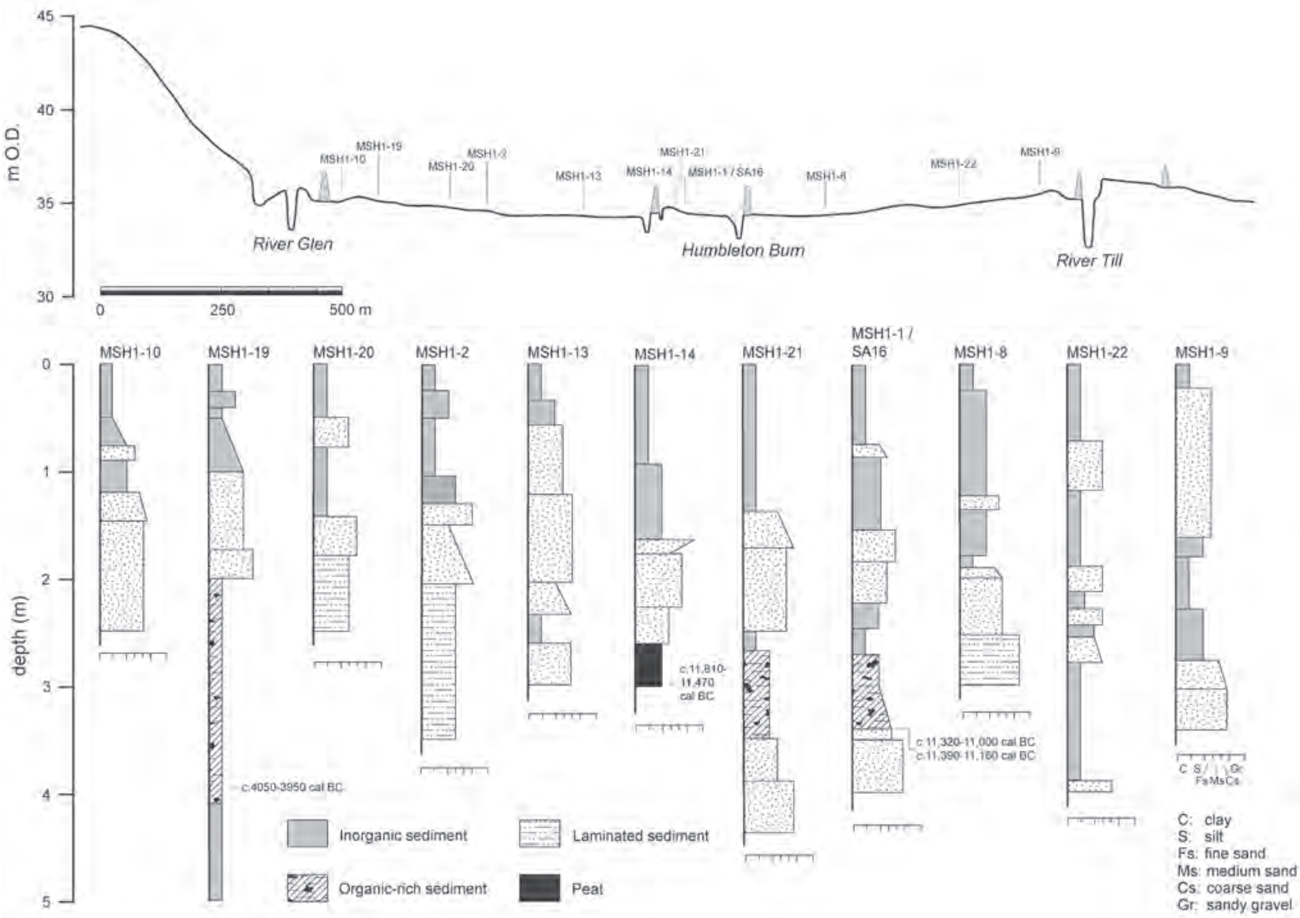



*Figure 2.19. Cross profile of the valley floor of the Milfield Basin along Transect MSH1 (derived from LiDAR data) showing locations, logs and $^{14}C$ dates for selected sediment cores.*

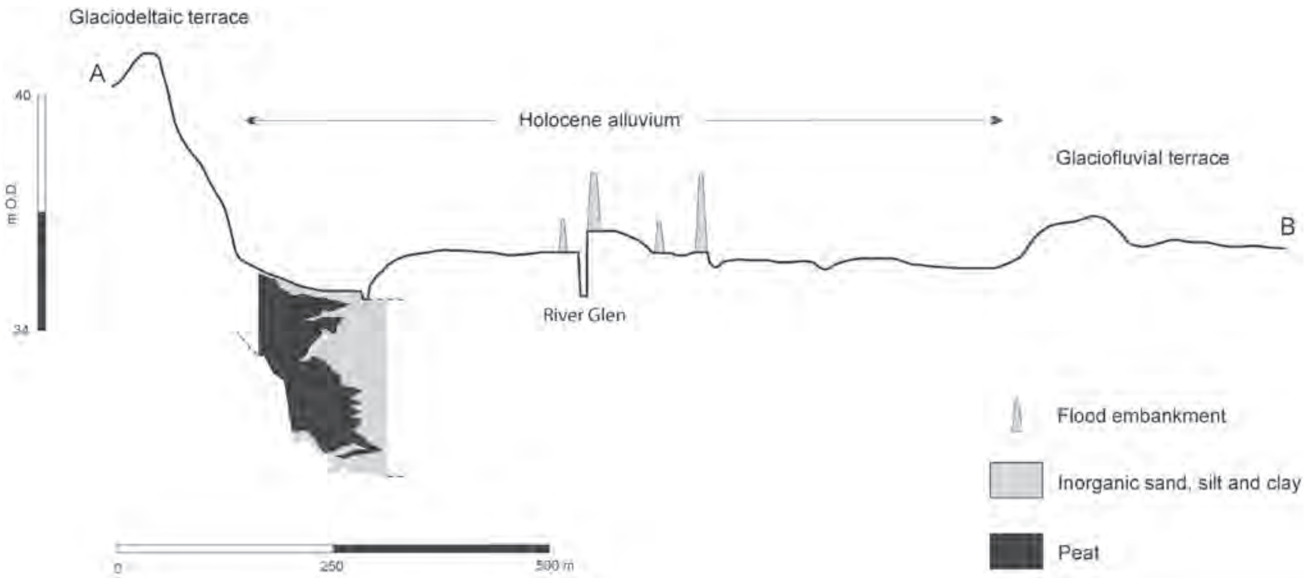



*Figure 2.20. Cross-profile A–B of the valley floor of the Milfield Basin extending southeast from Akeld Steads showing a summary of the Holocene sedimentary sequence described by Tipping (1994a; 1998).*

In contrast to the latter suite of glaciofluvial deposits, however, aerial photographs of the Wooler Water fan exhibit no evidence of periglacial modification (Tim Gates, pers. comm.).

Downstream of Wooler, the present channel of the Wooler Water lies inset *c.* 1m below the fan surface, but upstream, in the vicinity of Earle Mill (1km south of Wooler; Fig. 2.1), some 8m of channel incision has occurred since the 1960s in response to aggregate extraction of channel and floodplain sand and gravel (Sear and Archer, 1998). Here, channel bed surveys by local water authorities indicate the 1966 river bed to lie within 1m of the adjacent Haugh Head Terrace surface. Dating controls for the valley fill sequence in the Wooler Water are derived from a 2m thick peat bed buried beneath some 3.5m of fluvial gravels (termed the Earle Mill Terrace by Tipping 1994b). Upper levels of this peat have been dated to *c.* 2210–1940 cal BC (Tipping 1992; 1994b), but pollen evidence from the lower levels of the sequence suggests that peat development is likely to have begun during the Early Holocene (Clapperton *et al.* 1971).

The chronology and character of Late Devensian and Holocene valley floor development in the Wooler Water have been subject to differing interpretations. Clapperton *et al.* (1971) acknowledge that deposition of the Haugh Head Terrace may have commenced during regional deglaciation, but they interpret the Earle Mill peat deposit as a kettle hole fill that was buried by Late Holocene (post-*c.* 3700 cal BC) gravel aggradation, associated with development of the Haugh Head Terrace. Tipping's (1994b; 1998; 2010) re-evaluation of the site argued that the peat bed had developed on a poorly drained alluvial valley floor cut into the Haugh Head Terrace, and that the overlying gravels were associated with a discrete episode of post-2000 cal BC fluvial deposition (termed the Earle Mill Terrace) that aggraded to within 1–2m of the Haugh Head surface. In this model, the Haugh Head aggradation is viewed primarily as a response to increased discharge and sediment loads during the Loch Lomond Stadial. The terrace surface was subsequently abandoned by valley floor entrenchment, before or during the earliest Holocene. Assessment of these competing interpretations is complicated by the record of channel and floodplain gravel quarrying in this reach since the 1960s. Indeed, Sear and Archer (1998) regard the Earle Mill Terrace and two lower fluvial units as reflecting the subsequent adjustment of the Wooler Water to the combined impact of gravel extraction and flooding. Further assessment of the fluvial history will be difficult in view of extensive post-extraction landscaping of the site, but here it is noted that both Clapperton *et al.* (1971) and Tipping (1994b; 1998; 2010) envisage net valley floor entrenchment sometime between regional deglaciation and the earliest Holocene. At Earle Mill this incision attained at least 7m, but relatively flat terrace remnants on the adjacent truncated kamiform complex at 73m OD suggest that net fluvial incision since *c.* 16,000 cal BC may have been as much as 15m.

***Discussion: the chronology of Lake Milfield drainage and glaciofluvial terrace development***

Proglacial lake impoundment and delta formation in the Milfield Basin constitute the final phase of meltwater drainage described in Clapperton's (1971a) geomorphological synthesis of regional deglaciation. This appears to be consistent with the typical deglaciation transition described by Ballantyne (2002): proximal, ice-contact lakes evolve to distal

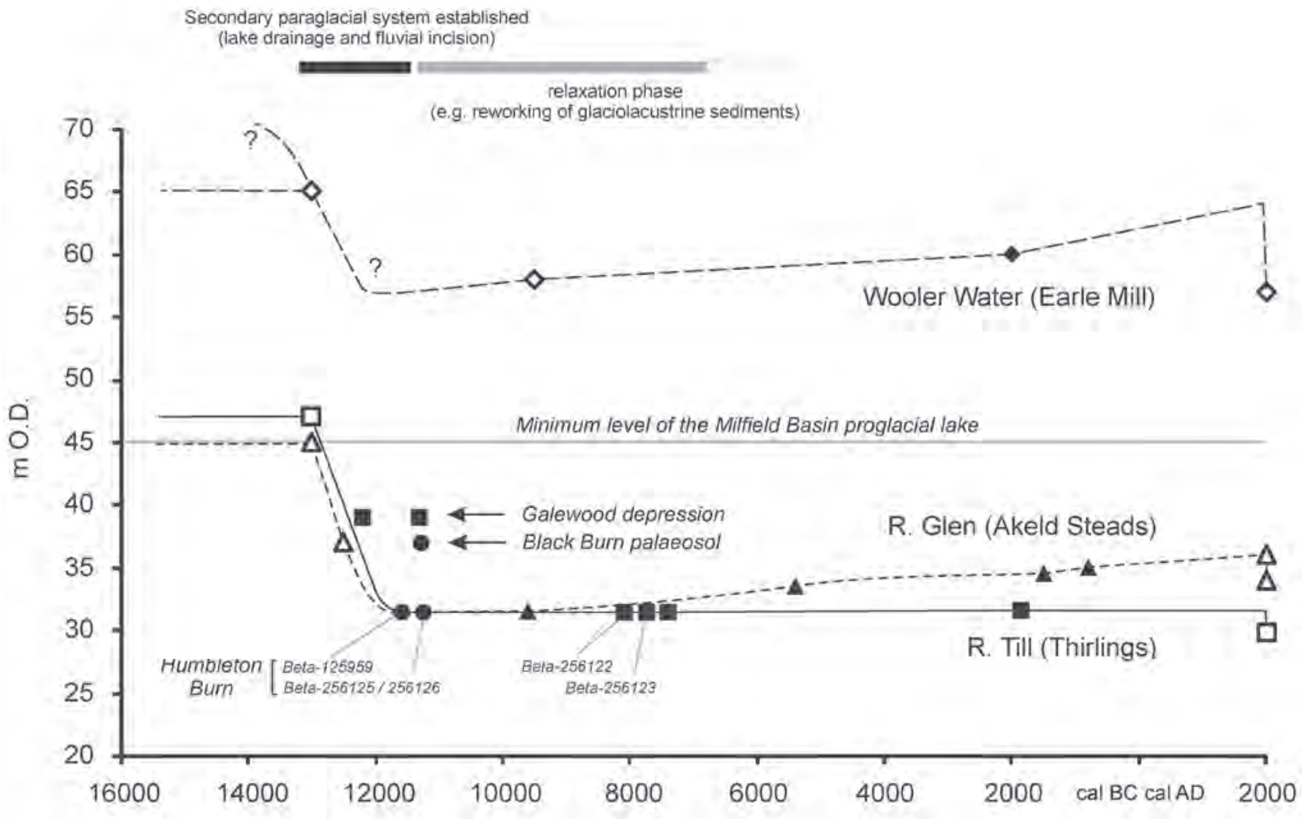



*Figure 2.21. Age-elevation plots for active channel and floodplain environments in the rivers Wooler Water (at Earle Mill), Glen (at Akeld Steads) and Till (at Thirlings) (filled symbols indicate radiocarbon dated levels, while open symbols are dates obtained by geomorphological inference or historical data; see text for details). Also shown are elevations of the proglacial lake (estimate of minimum lake surface – see text for details) and the Black Burn palaeosol (dated by Payton 1980; 1988), and an index of paraglacial activity (see text for details).*

glacier lakes in which sediment influx is dominated by meltwater rivers draining retreating glacier margins. In the Milfield Basin, however, distal margins of the lake may have remained in contact with an ice margin for much of the lake history, since Clapperton (1971a) envisages a gradual reduction in lake levels controlled by outflow beneath stagnant ice to the north of Etal, and incision of the rock-cut meanders of the present River Till between Etal and the confluence with the Tweed (Fig. 2.9). This process would have been complete by the time of final ice melt, by which time erosion of the bedrock gorge downstream of Etal had been accomplished to a level approximating the modern channel elevation.

Payton (1980; 1988) has subsequently argued, however, for at least two episodes of lake formation and drainage that, collectively, spanned the Windermere Interstadial and Loch Lomond Stadial. This model rests on the Windermere Interstadial $^{14}C$ date obtained on the buried soil developed on glaciolacustrine deposits at Black Burn and its subsequent burial by a further 2m of lacustrine sediments. This interpretation could not be reconciled with base-level changes controlled by erosion of the bedrock barrier at Etal, and hence was attributed to changes in discharge and/or climate within an closed basin (Payton 1988; see also discussion in Tipping 1998). In this scenario, lake-level rises post-dating *c.* 11,595–11,180 cal BC are argued to reflect climatic deterioration immediately prior to, or during, the Loch Lomond Stadial. This assumption, in combination with a re-evaluation of the geomorphological context of the Earle Mill peat bed near Wooler, prompted Tipping (1998) to assign the major phase of channel entrenchment and valley floor widening at both Akeld Steads and in the Wooler Water to the late Loch Lomond Stadial and/or earliest Holocene.

Figure 2.21 plots the age and elevation (m OD) for Late Devensian and Holocene active channel bed and floodbasin peat surfaces recorded in the valleys of the Wooler Water (at Earle Mill), Glen (at Akeld Steads) and Till (at Thirlings and in central parts of the Milfield Basin at Humbleton Burn), together with the minimum elevation of proglacial lake levels and the Black Burn palaeosol dated by Payton (1980; 1988). New radiocarbon dates and geomorphological evidence obtained by the Till-Tweed Project would appear to be inconsistent with the presence of a post-11,300 cal BC proglacial lake in the Milfield Basin on the following grounds: first, the Windermere Interstadial date reported here for organic-rich wetland deposits at *c.* 39m OD in the Galewood palaeochannel is incompatible with a further phase of glaciolacustrine sedimentation to elevations of *c.* 37–39m OD; the Galewood deposits lie between 90 and 115cm below the modern surface, are buried by non-lacustrine sediment and show no evidence of subsequent erosion. Secondly, peaty deposits, preserved at 31.5m OD in the central Milfield Basin, have also been dated to the Windermere Interstadial and these are overlain by 2.5m of fine-grained alluvium (Fig. 2.19). An interstadial landsurface at this elevation would imply that a contemporary drainage outlet for the basin below 31.5m OD had been established well before the Loch Lomond Stadial. Thirdly, evidence for polygonal ice wedge formation on the surface of low-lying (37m OD) glaciofluvial fan deposits to the east of Akeld Steads (Fig. 2.18) is also incompatible with a high (+40m OD) lake-level stand during the Loch Lomond Stadial. Accordingly, the balance of evidence would suggest that a near-complete or total drainage of the lake, and fluvial incision to at least 31.5m OD (in central parts of the basin) were accomplished sometime within the *c.* 2000–3000 years between the disappearance of Late Devensian ice and the later part of the Windermere Interstadial. This revised model of lake drainage requires a re-evaluation of the sediments burying the Black Burn palaeosol described by Payton (1988). Here it is suggested that these overlying deposits most probably accumulated in a small, localised valley floor depression during the Loch Lomond Stadial.

Abandonment of the main glaciodeltaic terrace surface in the basin is associated with the development of downvalley sand and gravel terraces, incised palaeochannel belts and a low-elevation sand and gravel fan at the former mouth of the River Glen, all of which point to an episodic lowering of lake levels and channel bed elevations rather than a single event. This landform assemblage probably reflects adjustment of basin drainage to erosion of the rock barrier at Etal, but possibly also the reorganisation of major drainage routeways through the basin as river channels adjusted to lowering of base levels. The landform assemblage is described here as being of glaciofluvial origin on the grounds that meltwater is likely, at least in part, to have been feeding the drainage system. However, the sequence of events is consistent with the establishment of a secondary paraglacial system (*sensu* Ballantyne 2002) whereby in situ glacigenic and paraglacial sediment stores from within and upstream of the basin, are remobilised by fluvial processes.

## Holocene river channel and floodplain environments

Holocene alluvial fan and valley floor environments account for 8% of the Till-Tweed study blocks and, given that they constitute the most geomorphologically active and flood-prone of regional landscapes inland from the coast, it is perhaps not surprising that they are associated with a generally limited archaeological record (Table 2.1). A notable exception to this pattern, however, is the relatively high proportion (25%, Table 2.1) of recorded medieval and later field systems that survives on these surfaces. For those parts of the alluvial valley floor that pre-date the 19th century (Category 2a–c landscapes) the average density value for field systems is thus relatively high, at 1.41 per km$^2$ (Table 2.2). Full details of the landform and sedimentary sequences associated with alluvial environments in the Till-Tweed study area are reported in Volume 1 (Passmore and Waddington 2009a). Here we present an overview of the character and chronology of Holocene valley floor development in the context of three contrasting geomorphological settings: (i) high-energy gravel bed river environments, (ii) low-energy confined gravel bed river environments and (iii) the low-energy alluvial Milfield Basin.

### *High-energy gravel bed river environments*

High-energy gravel bed river environments are characteristic of the River Breamish above New Bewick, the River Glen upstream of Akeld and also the Wooler Water above Wooler (Fig. 2.22). They are developed in relatively high-gradient valley reaches (Fig. 2.23) with wide, low-relief valley floors, and predominantly coarse-grained fills with thin (<1m) veneers of fine sand and silt alluvium.

The present River Breamish has a low-sinuosity gravel bed channel that is locally divided by unstable active gravel bars (Fig. 2.24). Historic (OS) maps indicate that since the mid-19th century the channel in this reach has been characterised by episodic channel division and lateral migration in a narrow zone up to 190m in width (Fig. 2.25). Adjacent Holocene floodplain alluvial surfaces lie between 1 and 1.5m above the present floodplain and feature well developed topographic and cropmark evidence of earlier channel systems (Figs 2.26 and 2.27). The highest Holocene terrace of the sequence, T1, is also the most extensive and most thickly developed; the maximum recorded thickness of gravels is 8m in the upper part of the reach, but the unit thins downvalley and, between Beanley and Harehope Hall, merges laterally with the (predominantly fine-grained) floodplain terrace that infills the valley floor in middle reaches of the River Till (see below). T1 deposits therefore form a coarse-grained depositional wedge in the Breamish valley floor that buries a deeply incised cut through glaciolacustrine and glaciofluvial sediments. Buried channel scours within T1 gravels infilled with fine sediment and occasionally organic-rich deposits, and the frequent preservation of low-sinuosity palaeochannel depressions developed on the terrace surface, both testify to widespread and frequent episodes of channel migration and avulsion.

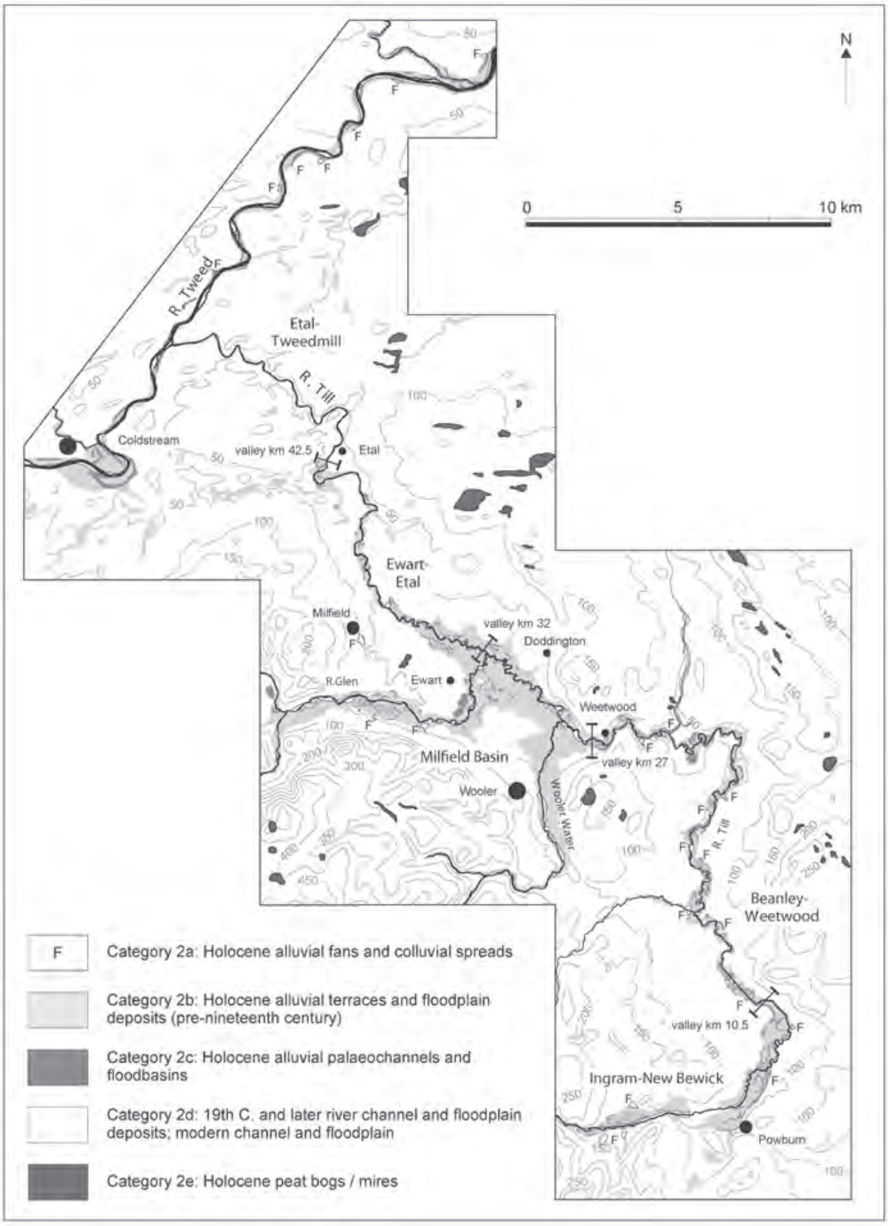



*Figure 2.22. Map of study area and regional topography showing landform elements of Holocene age (Categories 2a–e) and river subreach classification (see text for details).*

Accordingly, T1 gravels are interpreted as the deposits of a high-energy fluvial system with a laterally active, and locally divided, channel network.

Previous work in this reach of the Breamish has argued that the T1 gravels are Late Glacial glaciofluvial deposits (Clapperton 1971b), or are the deposits of a Holocene gravel bed river (Tipping 1992; 1994b). Investigations by Tipping (1992; 1994b) and this project have now documented radiocarbon dates for eight T1 palaeochannel fills (all in the upper 3m of the T1 gravel member). These give age estimates for local gravel aggradation and channel abandonment episodes at *c.* 10,000 cal BC (Tipping 1992, 1994b – although it is acknowledged that this date may be giving an erroneously old age estimate and should therefore be treated with caution), *c.* 6600 cal BC, *c.* 4000 cal BC, *c.* 1500 cal BC, *c.* 800 cal BC (recorded at both Brandon and Hedgeley Quarries), *c.* 150 cal BC and *c.* 60 cal AD (Tipping 1994b) (Fig. 2.28). This broad date range indicates that the upper part of the T1 fill was associated with lateral channel shifts and reworking of channel and floodplain terrace deposits over the greater part of the Holocene up to the Early medieval period. However, emplacement of the main gravel wedge is likely to have occurred during the Late Glacial period, following drainage of the Hedgeley Basin proglacial lake, and most probably reflects incision and reworking of extensive terraced glaciofluvial deposits and Late Glacial alluvial fan systems in the Ingram and Heddon/East Hill area (Fig. 2.22). Subsequent Holocene

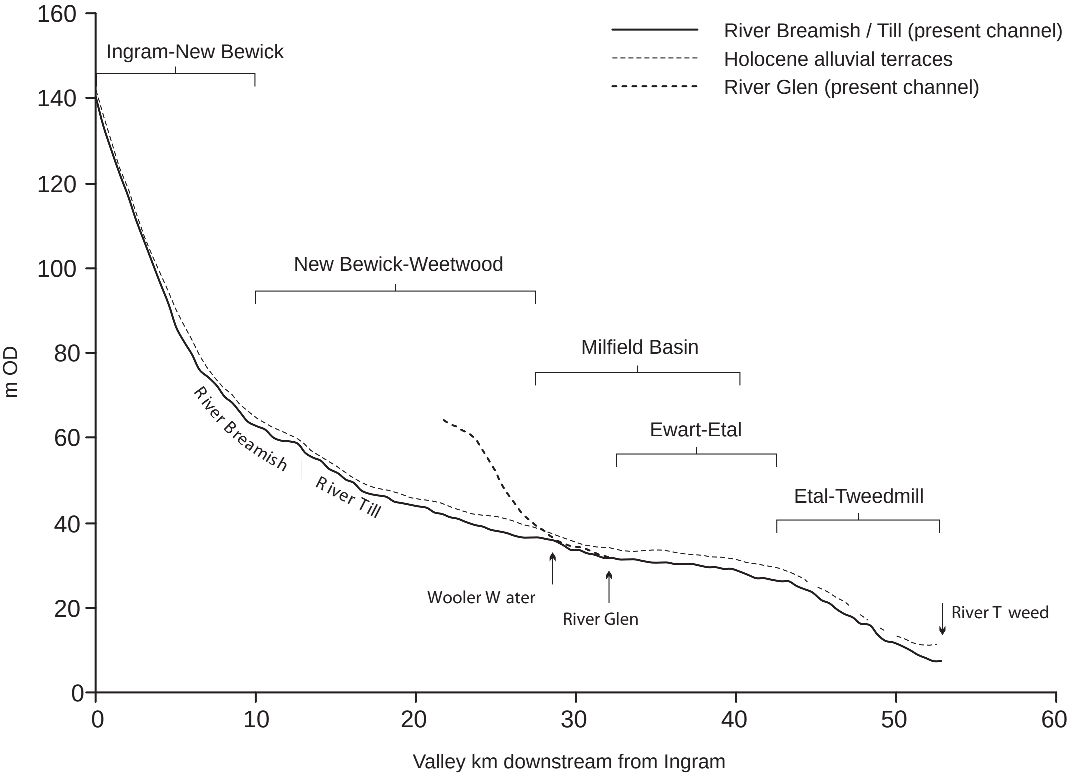



*Figure 2.23. Long-profile of the present River Breamish/Till channel and typical elevation of flanking Holocene alluvial surfaces. Also shown is the profile of the tributary River Glen below Canno Mill, the confluence of the Wooler Water and the Till and sub-reach classifications described in the text.*

fluvial activity, up to the Early medieval period, saw localised reworking of this gravel body with little or no net change in floodplain elevation.

Sometime during the period after cal AD 60–cal AD 390 and cal AD 1160 there appears to have been a change in the fluvial regime that resulted in limited incision of the T1 terrace. River channel and floodplain development during medieval and later times have been focused in a relatively narrow, inset corridor that is most extensively developed in the distal part of the sand and gravel wedge 1.5–2.5km downstream of Hedgeley Quarry. Incision and terracing of the valley floor coincides with an abrupt transitional zone in prevailing channel planforms to a relatively high-sinuosity meandering river (see Fig. 2.30) that experienced occasional avulsion and cut-off episodes. Two cut-offs have been dated to the periods shortly before cal AD 1160–1290 and cal AD 1410–1620. The pattern of channel and floodplain development during and after the 19th century has continued to rework earlier fluvial deposits in a narrow zone flanking the present-day river, although there does not appear to have been any net change in the elevation of channel and floodplain deposits.

Lower reaches of the gravel bed River Glen have exhibited a similar tendency towards lateral channel migration and avulsion over Holocene timescales. Between Canno Mill and the A697 crossing at Akeld, the Glen occupies a Holocene alluvial valley floor up to 0.5km wide that is flanked by upstanding Late Glacial glaciofluvial and glaciodeltaic sand and gravel terraces (Fig. 2.31). The present river has a low-sinuosity, single-thread channel (Fig. 2.32), but historic OS maps show that during the mid–late 19th century the channel was locally divided around small gravel islands in the reach immediately upstream of Lanton at Kirknewton (Fig. 2.33). The long-profiles of the Glen and associated Holocene and Late Glacial terrace surfaces exhibit a marked steepening of their gradients immediately downstream of the confluence with the College Burn. Here, the modern channel reaches a maximum gradient of $0.0067 m/m^{-1}$ before declining downvalley to a relatively gentle $0.001 m/m^{-1}$ where it enters the Milfield Basin (Fig. 2.23). Steepening of terrace and channel gradients coincides with a boundary in the underlying bedrock geology between Cheviot andesites and Carboniferous cementstones of the Ballagan Formation (Fig. 2.31), and is considered to reflect glacial overdeepening of less resistant Carboniferous bedrock in lower reaches of the Glen valley and the broader Milfield Basin.

Immediately upstream of the confluence with

*Figure 2.24. View of River Breamish at Ingram.*

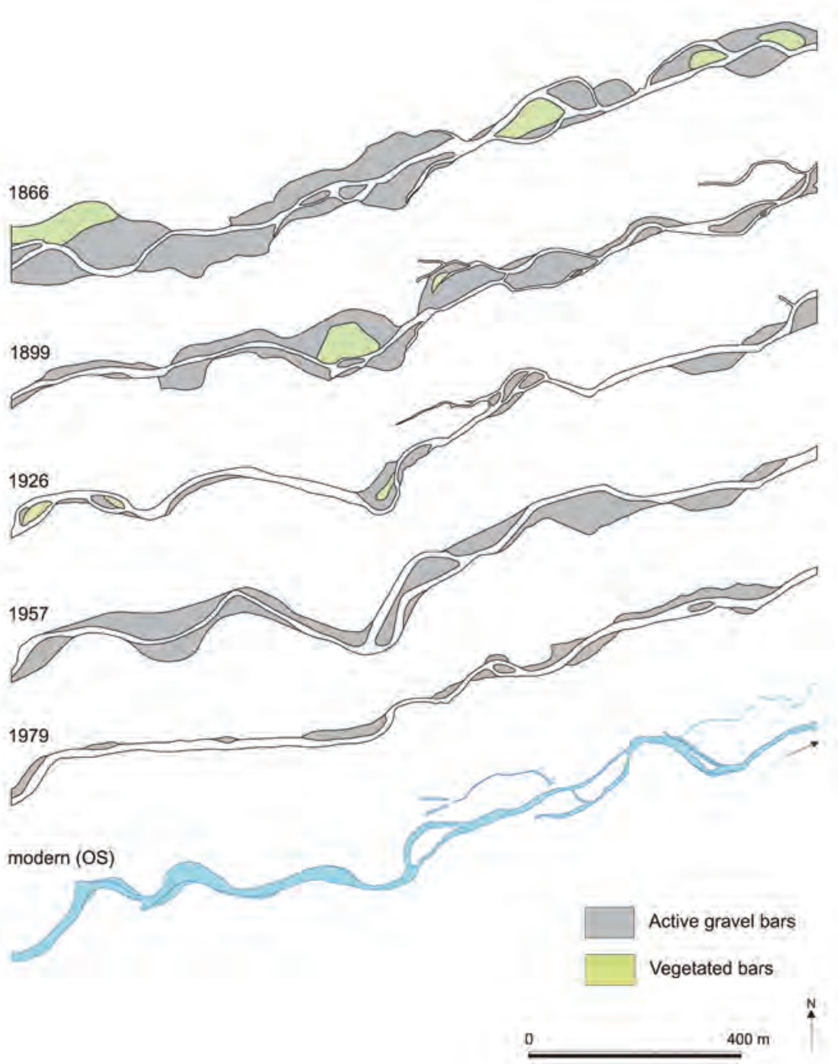



*Figure 2.25. Active channel and bar morphology for River Breamish between Ingram and Ingram Mill, derived from historic map records (Ordnance Survey County Series) and modern Ordnance Survey data.*

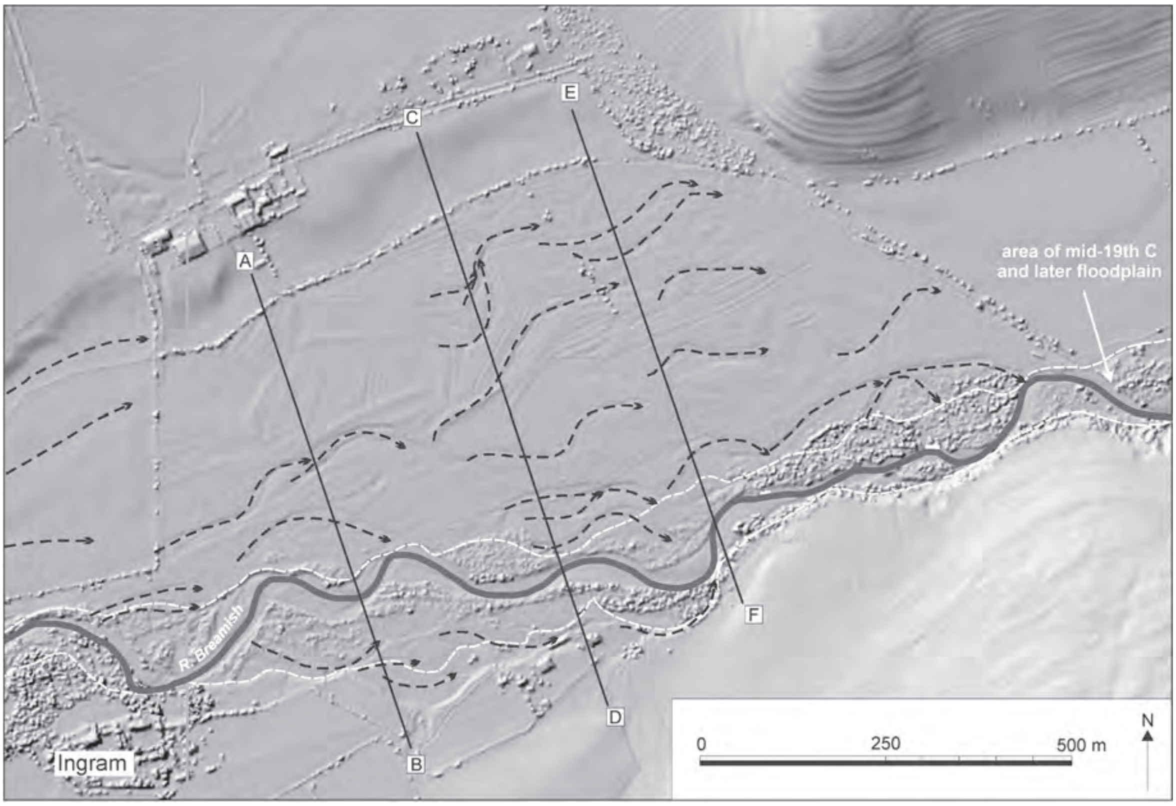



*Figure 2.26. LiDAR-derived digital elevation model of the valley floor at Ingram showing extent of channel and floodplain development since the mid 19th C, pre-19th C alluvial surface (T1) and associated palaeochannels and configuration of medieval and later field systems. Also shown are location of cross-profiles A–B, C–D and E–F (see Fig. 2.27).*

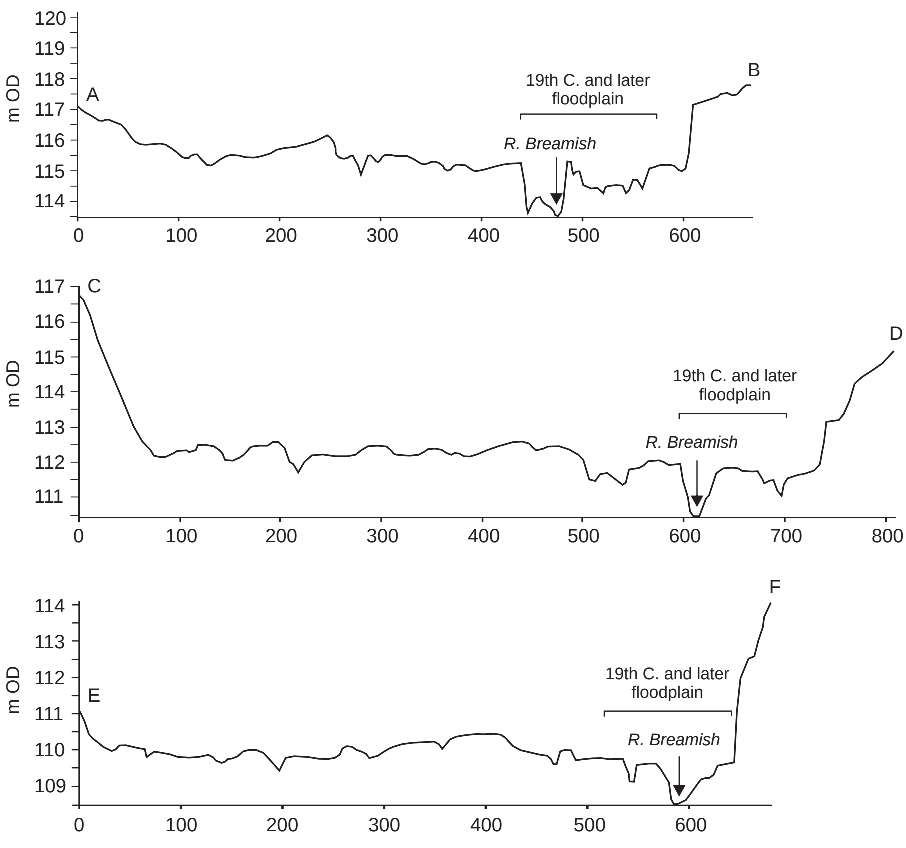



*Figure 2.27. Cross-profiles of River Breamish valley floor at Ingram (see Fig. 2.26 for location).*

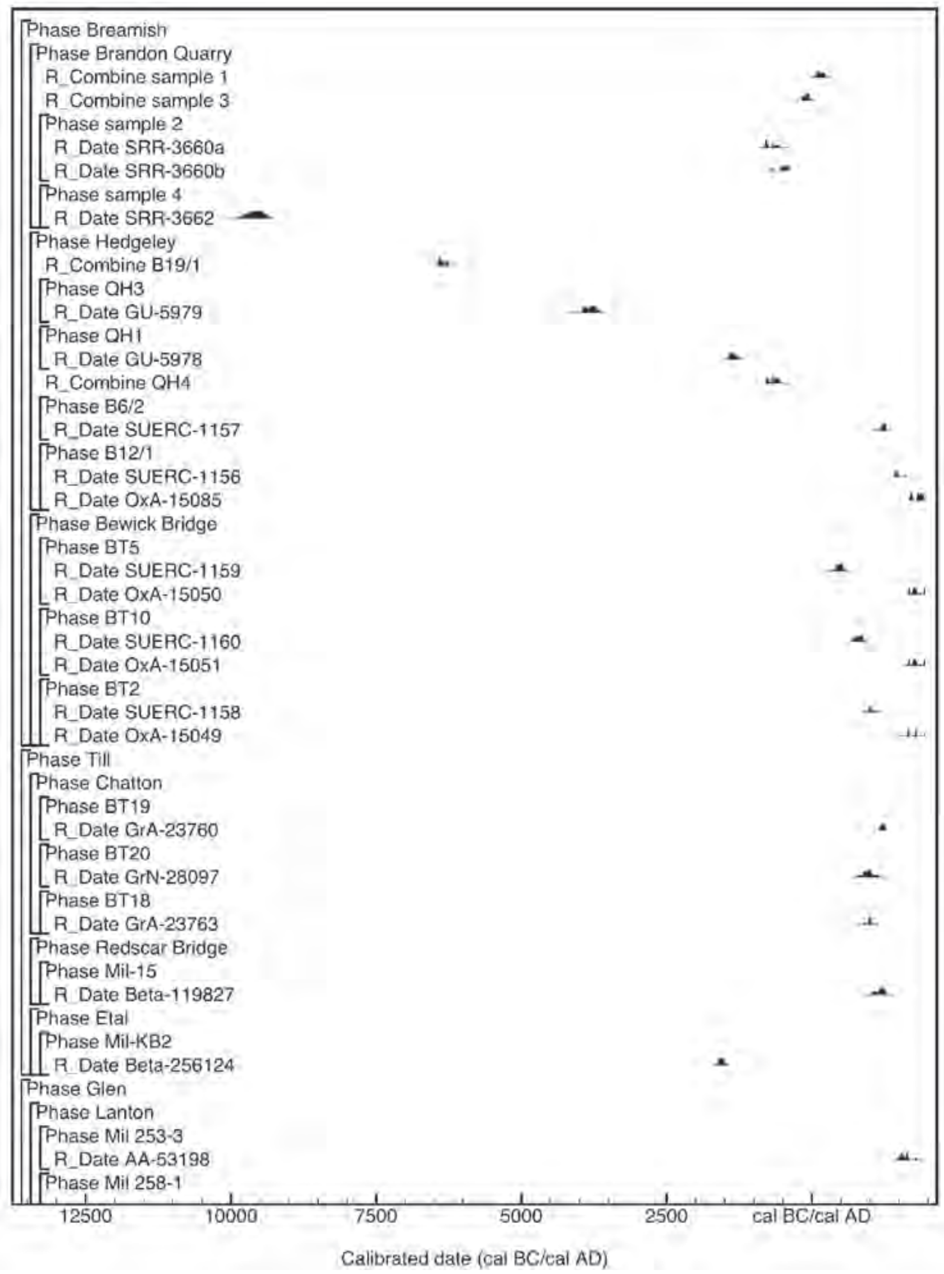



*Figure 2.28. Plot of calibrated radiocarbon dates for alluvial contexts in the R. Breamish (Brandon Quarry, Hedgeley, Bewick Bridge), R. Till (Newton Bridge, Redscar Bridge, Etal) R. Glen (Lanton, Canno Mill) and Wooler Water.*

the College Burn, the River Glen occupies a narrow (max. 300m), and steeply confined valley floor that features a large floodbasin on the west side of the river near Canno Mill (Fig. 2.31). Up to 3.8m of peat and organic-rich sediments infilling the floodbasin have been shown to have commenced accumulating from *c.* 4350–4170 cal BC (Passmore and Raven, unpublished data; see also Appendix A). Holocene valley floor relief in lower reaches of the River Glen, below the confluence with the College Burn (Fig. 2.31), is subdued with a maximum elevation range of 3m and no evidence of inset terrace margins. Rather, the alluvial surface rises gently from the valley margins towards 19th-century and later flood embankments that confine the modern channel and floodplain (Fig. 2.34). This valley floor cross-profile indicates that the net tendency of fluvial activity over the Holocene has been one of valley floor aggradation. Within the embanked zone the present floodplain is perched up to 1m above the adjacent alluvial surface, reflecting enhanced rates of recent historic floodplain alluviation in the confined zone. The alluvial valley floor features numerous meandering palaeochannel depressions which are particularly well developed in the reach between Lanton and the A697 road crossing (Fig. 2.31). Here, radiocarbon dating of four discrete

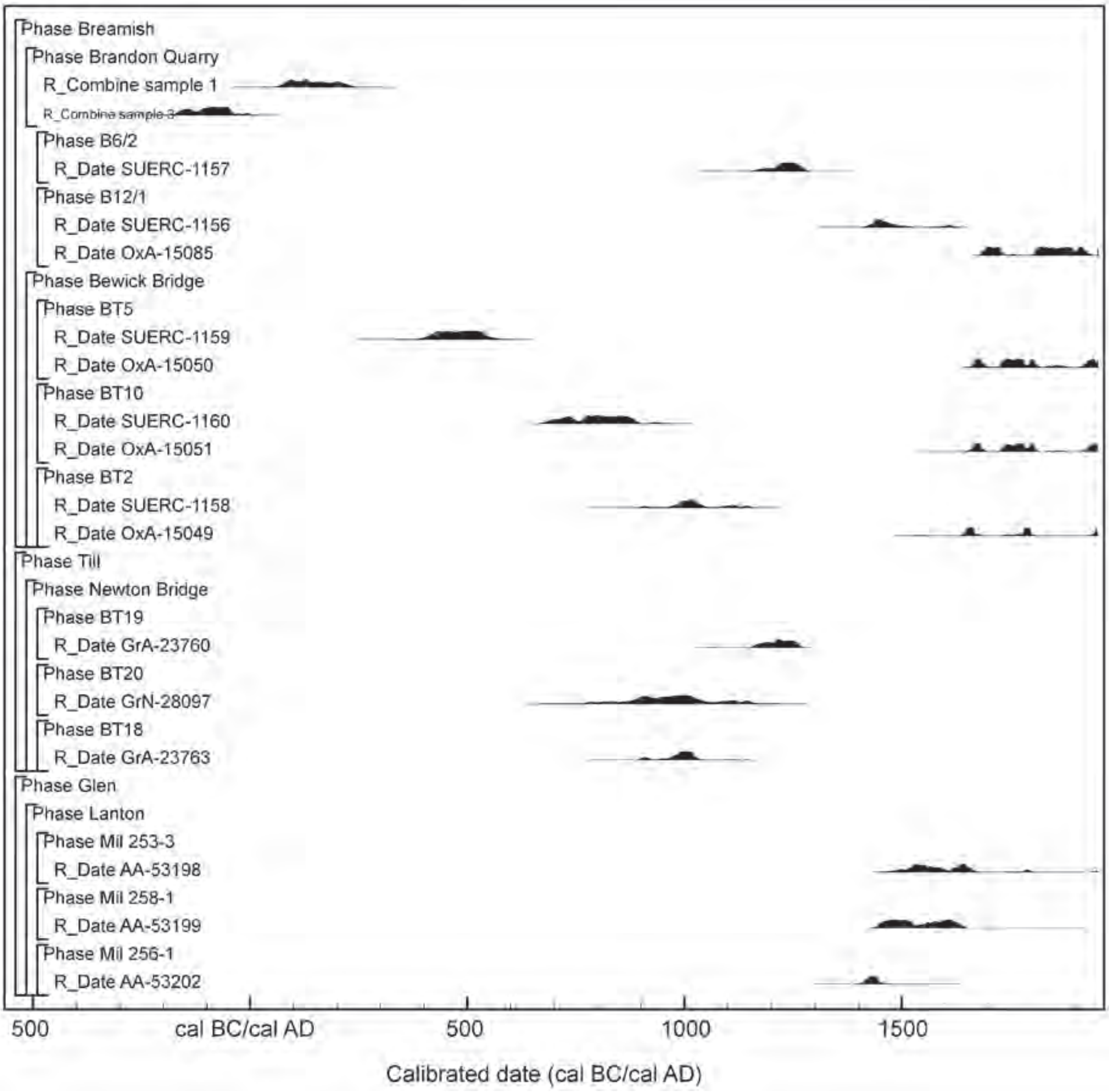



*Figure 2.29. Plot of calibrated radiocarbon dates spanning the first and second millennia AD only for alluvial contexts in the R. Breamish (Brandon Quarry, Hedgeley, Bewick Bridge), R. Till (Newton Bridge) and R. Glen (Lanton, Canno Mill).*

palaeochannel wood fragments suggests at least two phases of channel abandonment shortly before periods centered on *c.* cal AD 1400–1450 (cores M253–1 and M256–1) and *c.* cal AD 1450–1650 (cores M253–3 and M258–1; Passmore and Waddington, 2009; Fig. 2.29). A further palaeochannel, identified on the north side of the River Glen to the east of the A697 and 1km upstream from Akeld Steads (Fig. 2.31), has been dated at the base of its infill sequence to *c.* 2840–2450 cal BC (Allen 2007).

***Low-energy confined gravel bed river environments***

Low-energy confined gravel bed river environments are characteristic of the meandering River Breamish/Till between Beanley and Weetwood (valley km 10.5–27, Figs 2.22 and 2.35) where they occupy a relatively narrow Holocene alluvial valley floor that is typically inset at least 5m below Late Glacial deposits and has well defined margins. Present channel gradients decline from 0.0021m/m$^{-1}$ in the upper part of the subreach to 0.001m/m$^{-1}$ in the downvalley stretch between Chatton and Weetwood (Fig. 2.22). Flanking the modern channel and embanked floodplain throughout the subreach is a low-relief Holocene floodplain terrace surface that infills small alluvial basins up to 0.6km wide, which are separated by narrow, drift-confined reaches with little alluvial storage (Fig. 2.22). This alluvial surface grades to the T1 terrace surface at Beanley and forms the downvalley extension of this unit (see Fig 2.30). Valley floor relief of the alluvial surface between Beanley and Weetwood is subdued and features no distinctive alluvial terrace scarps that delimit alluvial surfaces of differing age. Locally, these surfaces feature high-sinuosity palaeochannels and palaeochannel scarps

*Figure 2.30. Aerial photograph of the River Breamish at Beanley looking downstream. Note change in channel planform downstream of the centre frame (Copyright Tim Gates, 6 July 1989).*

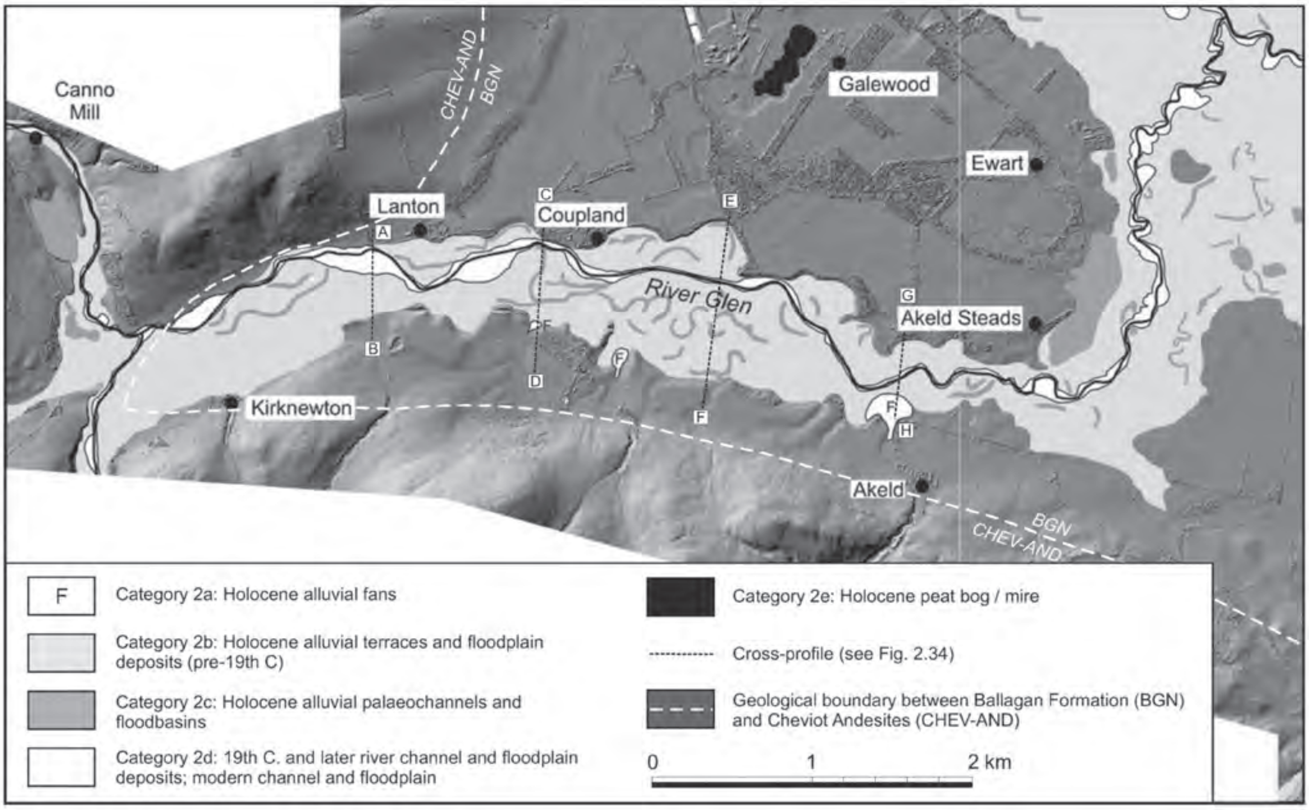



*Figure 2.31. Map of the lower Glen valley showing geomorphology of the valley floor, solid geology and location of cross-profiles shown in Fig. 2.34.*

Figure 2.32. View of the River Glen near Kirknewton.

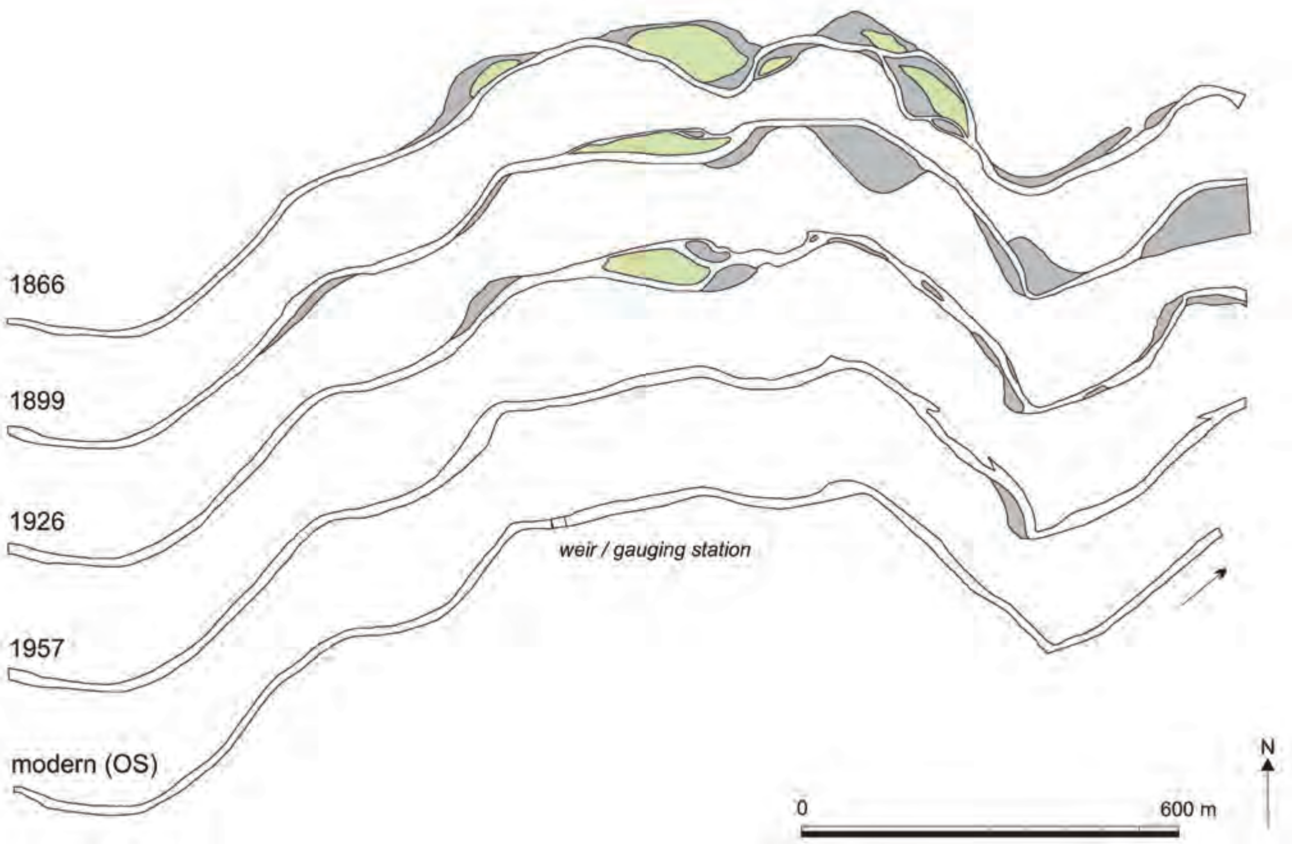



Figure 2.33. Active channel and bar morphology for the River Glen at Kirknewton derived from historic map records (Ordnance Survey County Series) and modern Ordnance Survey data.

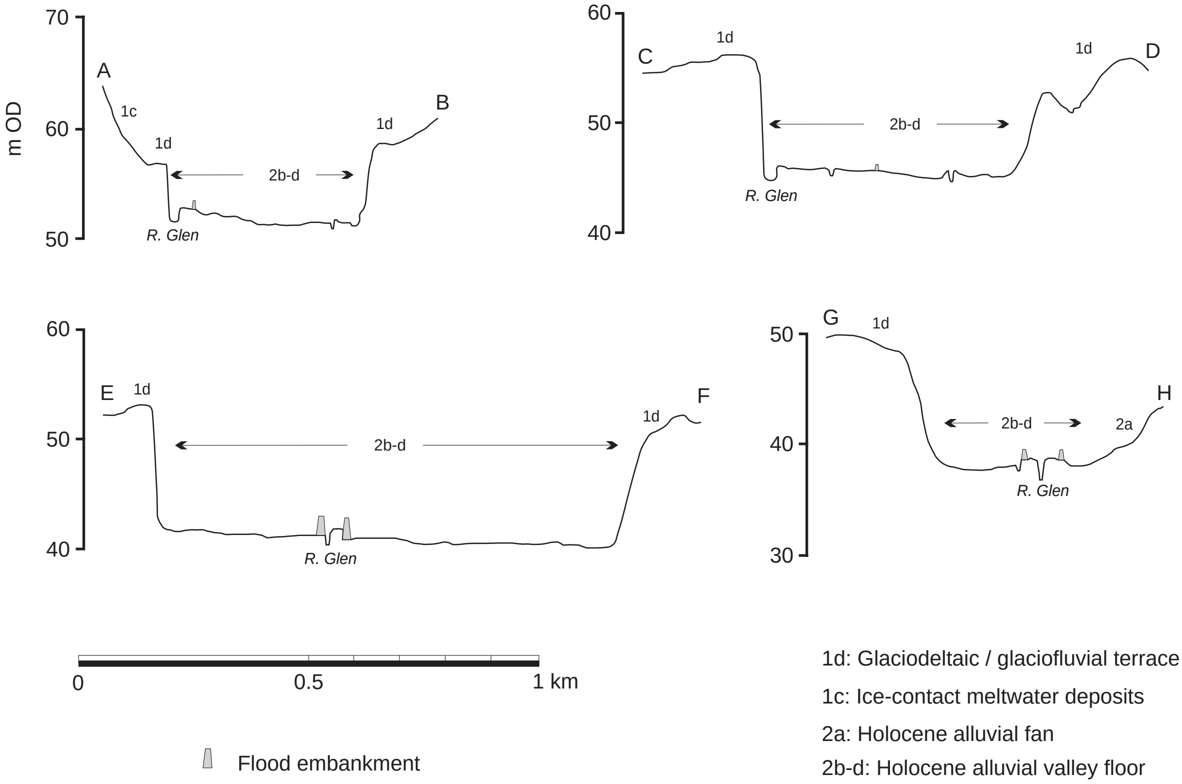



*Figure 2.34. Cross-profiles of the River Glen valley floor; for profile locations see Fig. 2.31.*

*Figure 2.35. View of the River Till valley near Bewick Bridge.*

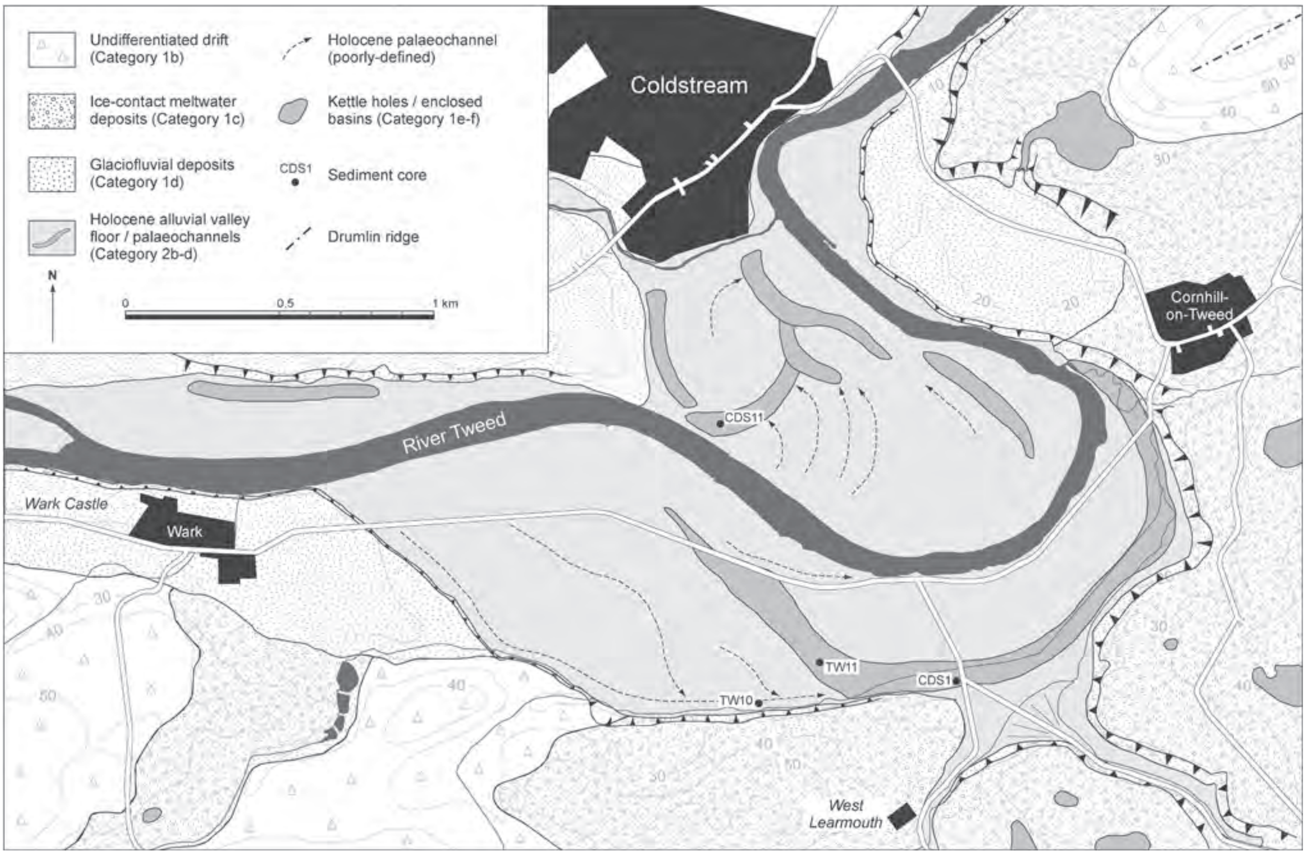



*Figure 2.36. Geomorphological map of the Lower Tweed at Coldstream showing major terrace edges and palaeochannels.*

that are distant from present watercourses, and which attest to changes in river channel location during the Holocene period. Dated palaeochannels in this stretch of the Breamish/Till all belong to the mid–late first millennium AD and early second millennium AD (Fig. 2.29), and suggest that much of the earlier history of channel change in these confined parts of the valley floor had been reworked or re-occupied by the later Holocene.

The Lower Tweed at Coldstream provides an example of a relatively low-gradient gravel bed river environment, developed at a larger downvalley scale to that of the middle reaches of the Breamish/Till and dominated by a large meander bend of the modern River Tweed (Fig. 2.36). Here the Holocene valley floor is 1.5km wide and features an extensive, low-relief terrace (T3) that lies inset below glaciofluvial terraces (Category 1d) and ice-contact meltwater deposits (Category 1c). At the western end of the study reach, at Wark, two low-relief terraces lie 5m (T1) and 3m (T2) above T3. These terraces lack dating control but are provisionally assumed to represent the final stages of glaciofluvial reworking and outwash deposition during deglaciation. Terrace T3 features several palaeochannel depressions that are inset up to 1m below the terrace surface. The channel planform morphology on the southern side of the valley broadly parallels the present river, with a series of channel remnants that appears to represent the episodic downvalley migration of a large, single-thread meander bend. The sequence of palaeochannels and (minor) terrace escarpments in the valley floor of the Coldstream subreach suggests that the floodplain has been formed by the migration, and/or episodic avulsion, of a large meander bend during the Holocene period. Available dating controls suggest avulsion phases at *c.* 50 cal BC–cal AD 70, *c.* cal AD 990–1170 and *c.* cal AD 1280–1410 (Fig. 2.37).

***Low-energy alluvial environments: the Milfield Basin***

In the Milfield Basin, the River Till exhibits a gently meandering planform as it traverses the broad expanse of Holocene alluvium infilling the valley floor (Figs 2.13 and 2.38). Between Weetwood and the confluence with the River Glen (valley km 27–32; Fig. 2.22), the Till has a gradient of 0.001m/m-[1] (Fig. 2.23) and gently meanders along the north-east margins of the basin (Fig. 2.13). Below the confluence with the River Glen, the Holocene valley floor of the Till progressively narrows from a width of 1.4km to 0.36km at Milfield, and thereafter occupies a narrow (*c.* 0.3km), entrenched valley downstream to a small alluvial basin at Etal (Figs 2.13 and 2.22). Within this reach, extending between

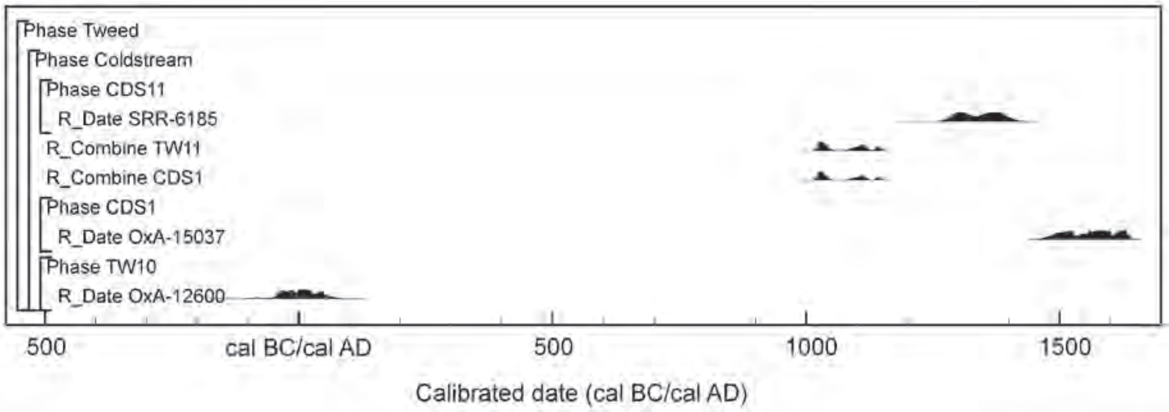



*Figure 2.37. Plot of calibrated radiocarbon dates obtained from palaeochannel fill deposits in the Lower Tweed valley at Coldstream.*

*Figure 2.38. View of the River Till near Doddington.*

valley km 32–42.5 (Fig. 2.22), the Till has a gradient of 0.0005m/m-[1] and a meandering channel planform that becomes increasingly constricted downvalley of Milfield. Relief on the Holocene alluvial surface in the basin is subdued and largely confined to occasional palaeochannel and floodbasin depressions, although ridge-and-furrow field systems are well preserved on the southern side of the Till between Thirlings and Woodbridge (Fig. 2.39).

At the onset of the Holocene period, channel bed elevations of the Glen and Till were incised some 13 to 15m below the adjacent glaciodeltaic terrace surface (Figs 2.20 and 2.21) and some localities in the basin, most notably at Akeld Steads (Tipping 1998), were established as floodbasins. The development of Early Holocene floodbasins has been recorded in similarly low-relief valley floors elsewhere in the UK (e.g. Parker and Robinson 2003) and may be linked to the development of levées comprising coarse, reworked Late Glacial sediments. Subsequent Holocene fluvial

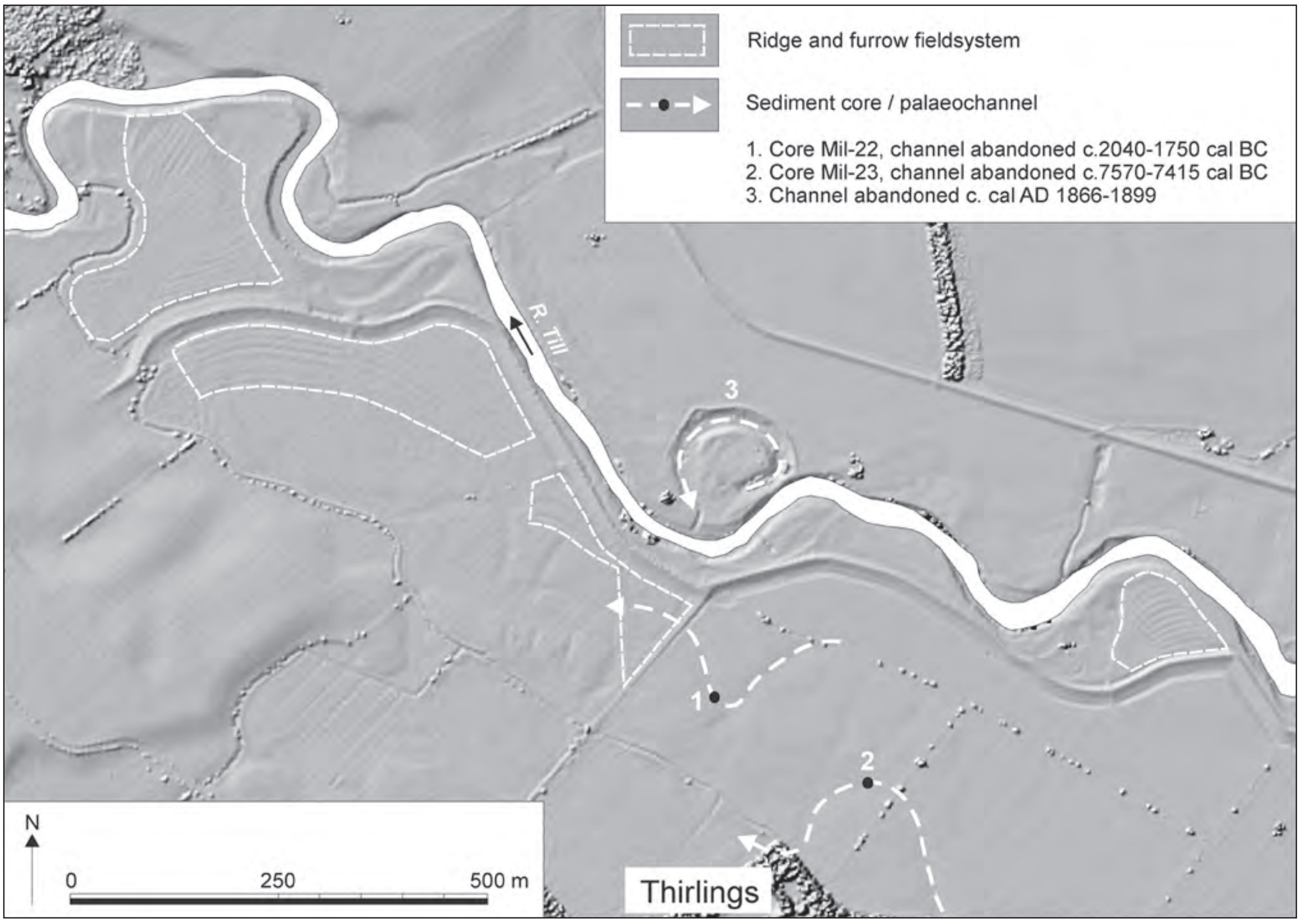



*Figure 2.39. LiDAR-derived digital elevation model of the valley floor at Thirlings showing palaeochannels and field systems on the alluvial surface relief.*

activity has exhibited a tendency to valley floor aggradation in lower reaches of the Glen (*c.* 4.5m), Wooler Water (*c.* 4–5m) and Humbleton Burn (2.5m, Fig. 2.21). This localised aggradation is likely to have been promoted by the reduction in valley gradients encountered by tributary streams entering the basin, whereas at Thirlings, 1km downstream of the confluence with the Glen, the Till appears to have experienced little net change in channel bed elevation (Fig. 2.21). The Holocene fluvial record of the Milfield Basin therefore bears comparison with similarly low-gradient valley settings in the lower reaches of northern British rivers (e.g. Passmore *et al.* 1992), rather than the typically incised fluvial terrace sequence of steeper upland valley floors (e.g. Macklin and Lewin 1989; Passmore and Macklin 2000; Tipping 1995a), and this most probably reflects the long-term base level control exerted by the Etal rock barrier (Figs 2.22 and 2.23).

Up to 5m of Holocene fluvial sediment infills the central part of the present Milfield Basin (Figs 2.19 and 2.20) and, in contrast to narrower valley floors of the Glen and Till upstream of Weetwood, the wide expanse of the alluvial basin has permitted several older palaeochannels of the Till and Glen to escape later reworking. This is reflected in the extended age range of dated palaeochannels and floodbasin sediments that extend back to the earliest Holocene (Tipping 1998; Volume 1, Chapter 2). The chronology of palaeochannel and floodbasin deposits in the basin is summarised in Figure 2.40. Holocene alluvial surfaces typically lie inset up to 10m below the upstanding Late Glacial sand and gravel terraces, and in some localities palaeochannels appear to be cut into, or lie immediately adjacent to, glaciodeltaic and glaciofluvial terrace bluffs (Figs 2.13 and 2.22). In general, however, it is likely that the lateral margins of the Holocene valley floor were largely established during the Late Glacial period of downcutting and lateral reworking, and that these have persisted until present times with only minor trimming and modification. Indeed, the tendency towards Early–Middle Holocene erosion, and elimination of older fluvial units and paraglacial sediment stores observed in Lewin *et al.*'s (2005) overview of UK fluvial histories, does not appear to be characteristic of the valley fill sequence in the Milfield Basin. In particular, extensive deposits of coarse-grained glaciodeltaic and

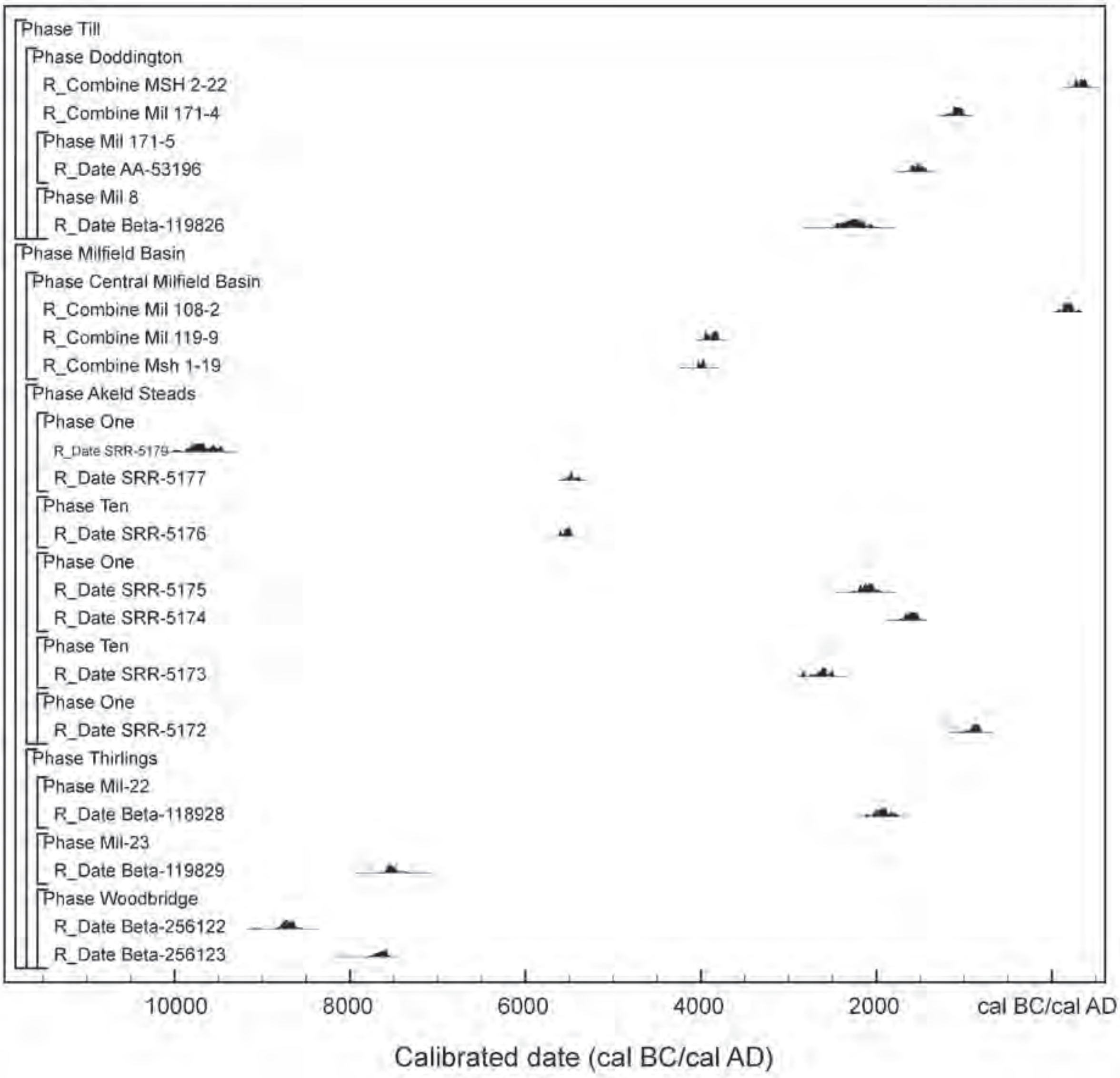



*Figure 2.40. Plot of calibrated radiocarbon dates for Holocene alluvial contexts in the Milfield Basin.*

glaciofluvial sediment have entered a phase of longer-term storage that has been, and remain, substantially decoupled from channel and floodplain processes under the climatic and fluvial regimes that have prevailed during the Holocene.

## HOLOCENE CLIMATE CHANGE AND VEGETATION HISTORIES

The following sections present a review of Holocene climate change and vegetation histories for North-East England, with a particular focus on North Northumberland. Published palaeoclimate records derived from proxies other than pollen sequences do not exist for Northumberland, and so here we draw on the long record of research conducted on raised mires and bogs in Cumbria and the Anglo-Scottish Borders, as well as wider European perspectives. In addition, we present some original analysis of temperature changes, specific to North Northumberland, derived from the North West Europe Pollen Database (analysis by Basil Davis). Fortunately there is considerably more material available with regard to pollen records of vegetation change in the wider region, as well as the area around the Till-Tweed Basins: reviews of North-East England by Innes (1999), the area encompassed by Northumberland National Park by Young (2004), and, more recently, Tipping's (2010) detailed environmental history of the Bowmont valley (northern Cheviot Hills) provide the basis for a synthesis of this work. In addition, we present a new dated pollen sequence from Ford Moss, located within the Till-Tweed study area, and hitherto unpublished radiocarbon dates from a pollen sequence taken from Broad Moss in the Cheviot Hills that extends the work published by Davies and Turner (1979) and Young (2004). Full details of these sequences are set out in Appendices B and C, respectively.

Many of the broader issues of interpretation, and the archaeological implications, are developed in the period-specific chapters below (Chapters 4–9). Here we focus on a broader review of key trends in vegetation change and human activity both within the Till-Tweed study area and extending also to the wider environs of Northumberland and the Borders, County Durham and the North York Moors (Figs 2.41 and 2.42).

## Holocene climate records from northern Britain and Europe

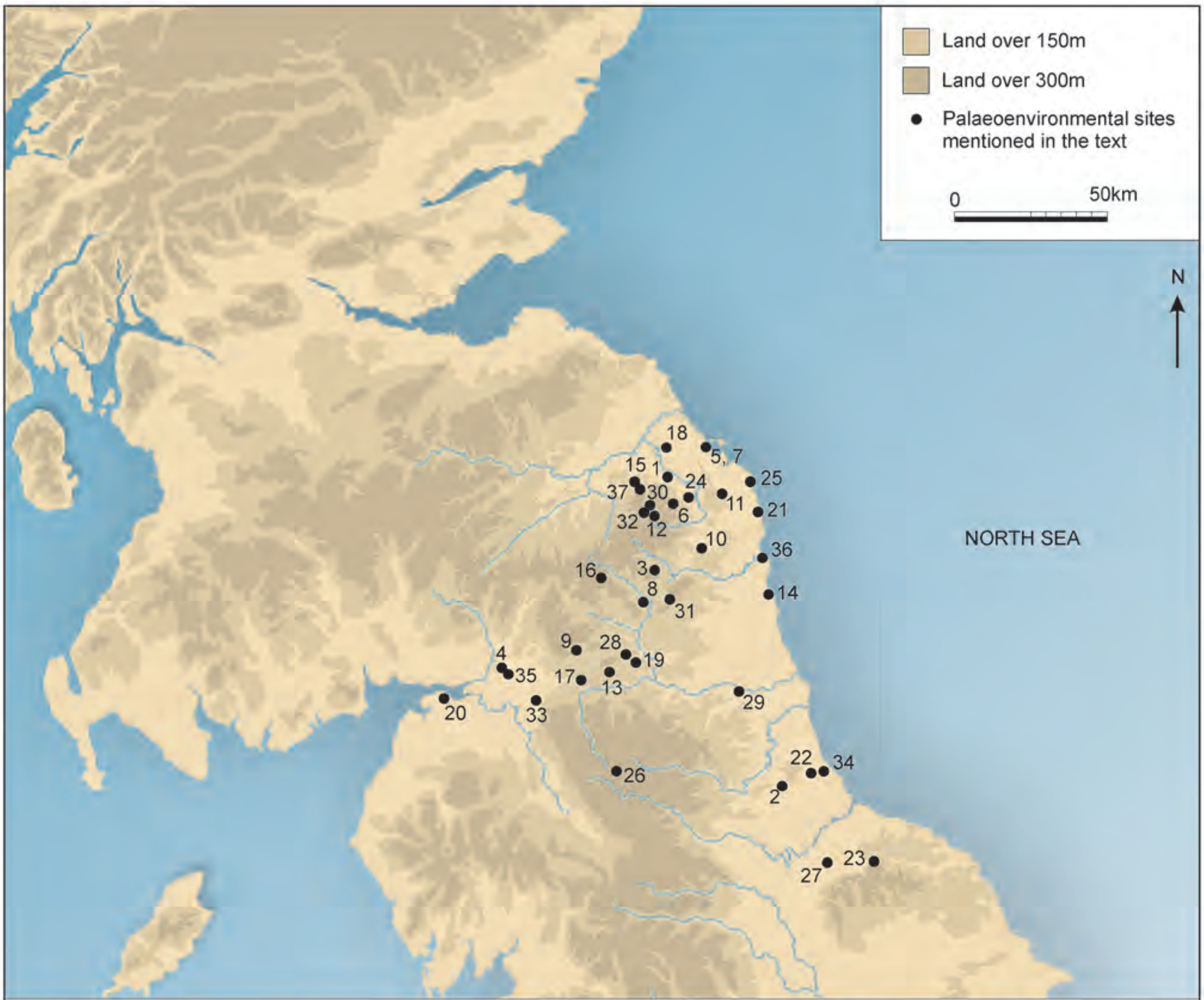
European pollen and peat stratigraphies have long been recognised as offering proxy records of Holocene climate change and have underpinned an influential, qualitative division of the Holocene into broadly wetter and drier climate regimes (Roberts 1998). In recent years, however, these palaeoenvironmental archives have been subject to a wider range of analytical techniques (notably with respect to studies of plant macrofossils and testate amoebae) and sophisticated numerical modelling that has sought to examine higher-resolution records, as well as reconstruct temperature and precipitation (Charman *et al.* 2006). Allied to improved chronological controls, and an increasing range of alternative terrestrial proxies, including for example episodes of glacier advance ('neoglacials') and retreat, bog oak records, lake levels and so forth, these new techniques are yielding evidence of Holocene climate variability spanning millennial to centennial timescales (e.g. Leuschner *et al.* 2004; Magny 2004).

Ombrotrophic (rain-fed) raised mires and blanket bogs in northern England and Scotland have been a key focus of study with respect to terrestrial Holocene proxy climate records in Britain (Charman *et al.* 2006), although the lack of comparable sites in North Northumberland means none of these have focused specifically on the Till-Tweed region. Sites from northern Cumbria and the western Anglo-Scottish Borders area have, however, proven especially important in British palaeoclimate research (e.g. Barber and Charman 2003; Barber and Langdon 2007) and have been widely used to inform analyses of landscape change and human activity in northern England (e.g. Chiverrell *et al.* 2007; Tipping 2010). The following sections outline a range of climate proxies from northern England and the Borders, as well as complementary assessments of subcontinental temperature reconstructions in North-West Europe derived from pollen records and neoglacial episodes. In addition, we present a reconstruction of surface air temperatures for the Till-Tweed area using pollen-based techniques after Davis *et al.* (2003). Selected proxy climate records are illustrated in Figure 2.43.

### *1. Bog surface wetness records from Cumbria and the Anglo-Scottish Borders*

Changes in bog surface wetness that may be inferred from peat stratigraphies are believed to be primarily related to the balance between precipitation and evaporation, or 'effective precipitation' (Charman *et al.* 2006), with evaporation being mainly controlled by summer temperatures (Barber and Langdon 2007). A number of techniques have been used to derive surface wetness curves, including analyses of plant macrofossils, peat humification and testate amoebae (e.g. Barber 1981, Charman *et al.* 1999, Barber *et al.* 2003, Charman *et al.* 2006) and have been widely applied on sites in northern Cumbria and the western Anglo-Scottish Borders area. The majority of these records extends over the past 4000–5000 years, but the plant macrofossil record from Walton Moss, Cumbria, stands out as being one of the few continuous, and reliably dated sequences that extend through to the Early Holocene (Hughes *et al.* 2000). This record is reproduced as a mire surface wetness curve on Figure 2.43a and shows shifts to locally wetter conditions commencing at *c.* 5800, *c.* 3300, *c.* 2400–1990, *c.* 1500, *c.* 1170–860 and *c.* 320–40 cal BC, and from *c.* cal AD 200, 500, 1650 and 1850 (Hughes *et al.* 2000).

While extended single-site records have been widely used to inform wider analyses of environmental change (e.g. Chiverrell 2001; Barber *et al.* 1994), attempts to infer climate changes from solitary sites have been hindered by difficulties in differentiating local from externally driven changes in precipitation and evaporation. Consequently, studies are increasingly turning to regional- and continental-scale syntheses of bog surface wetness in an attempt to seek evidence for a synchronous response in separate mire systems (e.g. Chiverrell *et al.* 2007). Of particular interest here is Charman *et al.*'s (2006) compilation of northern British palaeo-water table records derived from testate amoebae analyses (Fig. 2.43b). Confined largely to records spanning the past 4000 years, this study identified pronounced changes to wet conditions at *c.* 1650 and 810 cal BC and *c.* cal AD 350, and less pronounced shifts at *c.* 1110 and 100 cal BC and *c.* cal AD 690, 1090 1400 and 1690. It is noted that the main wet phases show good correspondence with mid-European lake highstands and the record of broader North Atlantic climate change, inferred from ocean and ice core records (Charman *et al.* 2006). Records specific to the Borders area are very similar to the overall northern British trends and are notable for pronounced, relatively dry phases at *c.* 1550–1350 cal BC, *c.* 50 cal BC to cal AD 50 and *c.* cal AD 650–850 (Charman *et al.* 2006).




**Key to sites:**

1. Akeld Steads (Tipping 1998; 2010)
2. Bishop Middleham (Bartley *et al.* 1976)
3. Bloody Moss (Moores 1998)
4. Bolton Fell Moss (Barber 1981)
5. Bridge Mill (Shennan *et al.* 2000)
6. Broad Moss (Davies and Turner 1979)
7. Broomhouse Farm (Shennan *et al.* 2000)
8. Brownchesters Farm (Moores *et al.* 1991)
9. Butterburn Flow (Yeloff *et al.* 2007)
10. Callaly Moor (Macklin *et al.* 1991)
11. Camp Hill Moss (Davies and Turner 1979)
12. Cocklawhead (Tipping 2010)
13. Crag Lough (Dark 2005)
14. Cresswell Ponds (Shennan *et al.* 2000)
15. Din Moss (Hibbert and Switsur 1976)
16. Drowning Flow (Moores 1998)
17. Fellend Moss (Davies and Turner 1979)
18. Ford Moss (this volume)
19. Fozy Moss (Dumayne and Barber 1994)
20. Glasson Moss (Dumayne-Peaty 1999)
21. Howick (Boomer *et al.* 2007a; 2007b)
22. Hutton Henry (Bartley *et al.* 1976)
23. Kildale Hall (Jones 1977)
24. Lilburn South Steads (Jones *et al.* 2000)
25. Newton Links (Shennan *et al.* 2000)
26. Quick Moss (Rowell and Turner 1986)
27. Seamer Carrs (Jones 1976; 1999)
28. Sells Burn (Moores 1998)
29. Shibdon Pond (Passmore *et al.* 1992)
30. Sourhope (Tipping 1996; 2010)
31. Steng Moss (Davies and Turner 1979)
32. Swindon Hill (Tipping 1996; 2010)
33. Talkin Tarn (Langdon *et al.* 2004)
34. Thorpe-Bulmer (Bartley *et al.* 1976)
35. Walton Moss (Hughes *et al.* 2000)
36. Warkworth (Shennan *et al.* 2000)
37. Yetholm Loch (Tipping 1996; 2010)

*Figure 2.41. Map of northern England and southern Scotland showing location of palaeoecological sites mentioned in text.*

***2. Chironomid records of Holocene temperatures from lake sediments at Talkin Tarn, Cumbria***

Chironomid (non-biting midge) assemblages have been shown to bear a strong relationship with mean July air temperatures (e.g. Brooks and Birks 2000) and are increasingly seen as important components of palaeoclimate analyses based on lake sediment stratigraphies (Brooks 2006), but to date have been little employed for assessment of Holocene temperature variations in Britain. Langdon *et al.*'s (2004) analysis

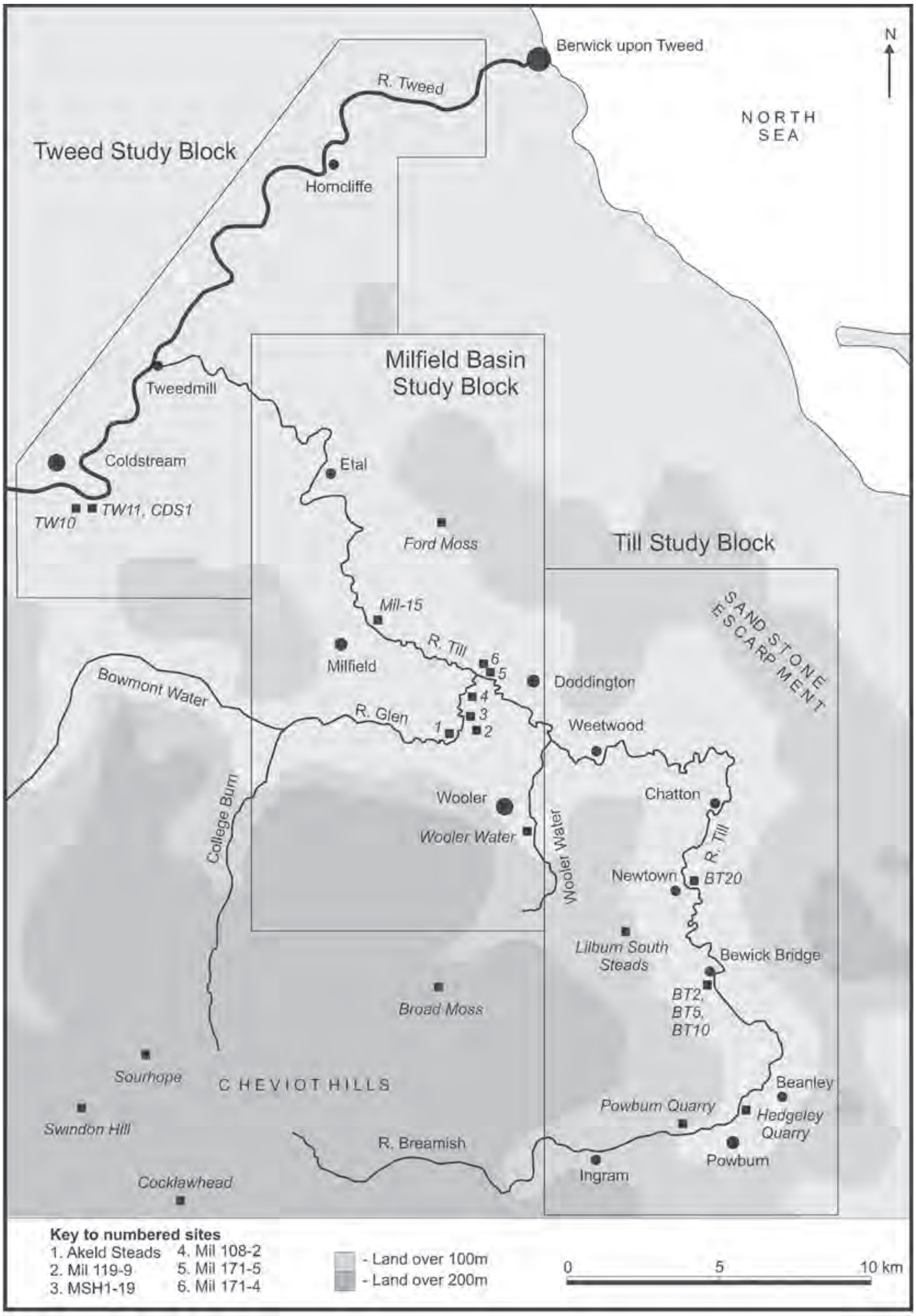



*Figure 2.42. Map of the Till-Tweed study area showing location of palaeoecological sites (italicised). See also Fig. 2.41 and text for details.*

of chironomid stratigraphy in lake sediments at Talkin Tarn (Cumbria), however, represented the first quantitative Holocene palaeotemperature reconstruction of its type in northern Britain. The chironomid record here extends over the past 6000 years and appears to have escaped any significant influence by human activity in the catchment. While acknowledging the tentative chronological controls at Talkin Tarn and the need for further higher-resolution work, both here and in a wider range of localities (see also Brooks 2006), subsequent analysis has demonstrated a good correspondence between chironomid-inferred warm and cool phases and the timing of bog surface wetness changes at nearby Walton Moss (Barber and Langdon 2007).

Figure 2.43c shows the chironomid-inferred mean July temperature record at Talkin Tarn to have oscillated between 14.6 to 12.1 °C over the past 6000 years, with relatively warm temperatures recorded at *c.* 3850 cal BC, followed by a slight cooling trend with specific cool events at *c.* 3100, 1950, 1350 and 800 cal BC. A relatively warm period between *c.* 450 and 50 cal BC precedes marked cooling to *c.* cal AD 150 before a warming trend to the uppermost part of the sequence, which, at 14.6 °C, compares well with the contemporary mean July average of 14.8 °C (Langdon *et al.* 2004).

***3. Temperature reconstructions from the European pollen database***

Linkages between Holocene climate and vegetation changes are well established in the palaeoenvironmental literature, especially in terms of qualitative relationships (such as those already discussed above), but they are also being explored, using increasingly sophisticated numerical techniques, to yield pollen-based, quantitative reconstructions of palaeoclimate. Recent work has interrogated fossil pollen records using analogue matching techniques against modern pollen samples for single sites and at continental scales (e.g. Cheddadi *et al.* 1997; 1998; Magny *et al.* 2001). These techniques have now been extended to yield area-average time series reconstructions of warmest month, coldest month and mean annual surface air temperatures across Europe during the last 12,000 years (Davis *et al.* 2003). The latter study employs a dataset compiled from pollen samples taken from sites across Europe and uses an innovative four-dimensional gridding procedure to assimilate many thousands of pollen-based proxy climate observations from over 500 pollen sites (see Appendix D for details). Here we interrogate the same dataset to derive temperature reconstructions extending over the past 12,000 years for the area of North Northumberland, centred on Ford Moss (Fig. 2.42).

Figures 2.43d and e show the reconstructed area-average mean annual (TANN) temperature anomalies for North-West Europe (expressed as temperature anomalies relative to the present) reported by Davis *et al.* (2003), and inferred mean temperatures of the warmest month (MTWA) and coldest month (MTCO) for North Northumberland for the past 12,000 years. In combination, these reconstructions show a rapid rise in mean annual temperatures during the Early Holocene with marked seasonal contrasts in MTWA and MTCO values. Reconstructed temperatures in North Northumberland suggest that summer temperatures approximating those of the present day were established by the very early Holocene at *c.* 9000 cal BC, while contemporary winter temperatures were very much colder at around -10°C (Fig. 2.43d). MTCO values rise sharply thereafter, reaching -2°C at *c.* 8000 cal BC before a more gradual rise to around -1.5°C by the Middle Holocene. A Middle Holocene thermal maximum is achieved around 4000–5000 cal BC in North-West Europe, and during this period MTWA values in North Northumberland are reconstructed at around 17°C, although peak values of 18°C occur slightly later at *c.* 3000 cal BC (Fig. 2.43e). The later Holocene period, after *c.* 3000 cal BC, sees a slight reduction in reconstructed mean annual temperatures for North-West Europe (Fig. 2.43d) and this trend is also evident in estimated mean summer temperatures for North Northumberland, which fall to around 15.5°C by the present day (Fig. 2.43d). Mean temperatures for the coldest month, however, continue to rise from their Middle Holocene levels and reach values of 2 to 3°C over the last 500 years.

***4. Episodes of Holocene glacier advance and retreat in Northern Europe***

Episodes of Holocene glacier advance and retreat that have been documented in Scandinavian and Alpine mountain valleys are recognised as reflecting Holocene climate changes on decadal and millennial timescales (Matthews 2007) and have recently been analysed to yield evidence of thirteen century- to millennial-scale neoglacial phases of broadly synchronous glacial advance in Southern Norway and the Swiss and Austrian Alps (Matthews and Quentin Dresser 2008). Glacial advance during the 'Little Ice Age', around *c.* cal AD 1600–1700, is perhaps the most widely known example of these relatively cool-climate episodes, but this appears to be only one of eight Europe-wide neoglacial phases in the period after *c.* 3000 cal BC (dated to the periods *c.* 2550–2350, 1700–1600, 950–550 and 250–50 cal BC, and *c.* cal AD 250–350 and 1150–1200), with a further four identified at *c.* 3100, 4350, 5800–5650 and 6300–6050 cal BC and two in the very early Holocene at *c.* 8250–8050 and 9200–9050 cal BC (Fig. 2.43f).

## Deglaciation and the transition to the Holocene

Very few Quaternary organic deposits and associated pollen records have survived the near-complete ice cover of the North-East English region during the main Late Devensian ice advance (Innes 1999) and there are no known records from the Till-Tweed area. Following deglaciation from *c.* 14,700 cal BC, newly exposed terrain is likely to have been rapidly colonised by pioneer tundra-type herbs (e.g. *Artemisia*, Chenopodiaceae, *Armeria*) before a succession of heath and dwarf shrub communities (including *Betula nana*, *Salix, Empetrum* and *Juniperus*), as climate

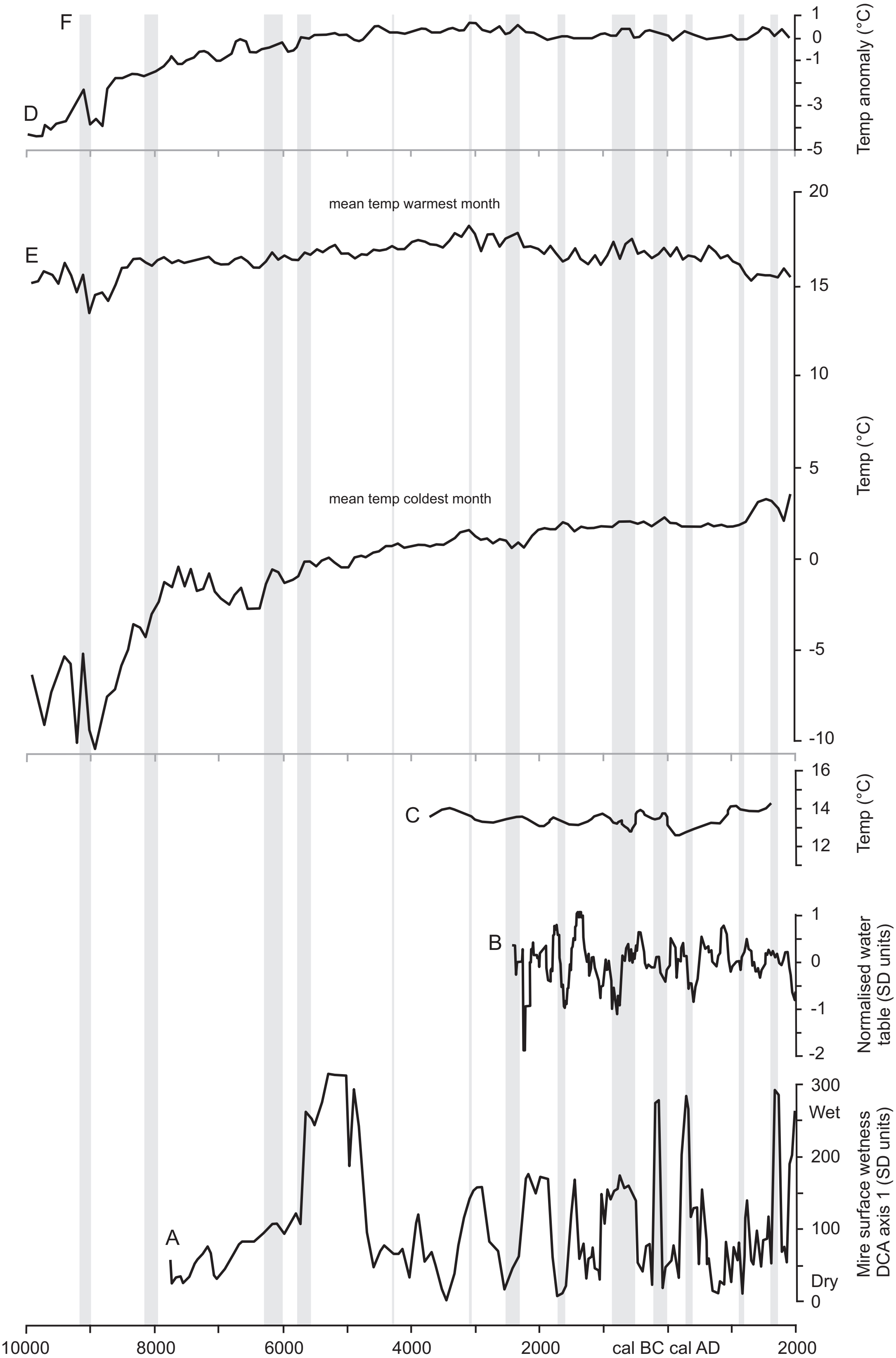



*Figure 2.43. Selected proxy climate records for northern England, Anglo-Scottish Borders and North-West Europe/Scandinavia for the period 10,000 cal BC to cal AD 2000, showing (A) reconstruction of mire surface wetness over the past 9500 years at Walton Moss, Cumbria, based on plant macrofossil data (Hughes* et al. *2000); (B) stacked palaeo-water table record (expressed as 100-yr moving average) from northern British peatlands based on analysis of testate amoebae (Charman* et al. *2006); (C) chironomid-inferred mean July temperature record for the past 6000 years from Talkin Tarn, Cumbria (Langdon* et al. *2004); (D) reconstructed area-average mean annual temperature anomalies for North-West Europe based on modelling of a European pollen database (Davis* et al. *2003); (E) reconstructed mean temperatures of the warmest month (MTWA) and coldest month (MTCO) for north Northumberland based on modelling of a European pollen database (Davis* et al. *2003; see text for details) and (F) Europe-wide neoglacial episodes (Matthews and Quentin Dresser 2008).*

warmed during the early Windermere Interstadial (Innes 1999).

Development of a birch-juniper scrub with grassland during this period has been demonstrated on the sand and gravel terrace adjacent to a small kettle lake at Lilburn South Steads, which represents one of the few dated pollen records of Late Glacial environments in the study area (Jones *et al.* 2000). The later part of the interstadial at Lilburn South Steads saw temporary development of open birch woodland with subsidiary scrub and herbs. While this degree of interstadial tree cover is likely to have been sparse by comparison with lowland sites documented elsewhere in the greater part of the North-East, for example at Thorpe-Bulmer in south-east Durham (Bartley *et al.* 1976) and on the margins of the North York Moors at Kildale Hall (Jones 1977) and Seamer Carrs (Jones 1976; 1999), it is indicative of a degree of tree cover that is absent from other documented sites in North Northumberland, a characteristic that Jones *et al.* (2000) attributes to the sheltered location of the Till valley at Lilburn.

A return to open, tundra-type vegetation in pollen diagrams from the region signals the transition to the cold, arid climate of the Loch Lomond Stadial and the final phase of the Late Glacial period (Innes 1999). In North Northumberland these sites are typically located in lowland settings, including Lilburn (Jones *et al.* 2000) and the coastal sites at Howick (Boomer *et al.* 2007a) and Broomhouse Farm (Shennan *et al.* 2000), and are characterised by dwarf-shrub heath and cold-phase open-ground assemblages including Gramineae, Cyperaceae, *Artemisia, Ranunculus*, Armeria, *Helianthemum*, *Saxifraga granulata, Taraxacum*-type and *Selaginella*. The short-lived stadial conditions were terminated by rapid climate warming at the onset of the Holocene (*c.* 9600 cal BC), and this is reflected across the region by the replacement of tundra-dominated open ground by a succession of grasslands, *Empetrum*-dominated heath, birch and juniper scrub, and ultimately closed-canopy woodland (Innes 1999). The composition and pace of woodland development appears to have varied across the region. In North Northumberland these early woodlands included significant amounts of birch with *Juniperus*, for example at Yetholm Loch (Tipping 2010), and in the Till valley at Lilburn where *Salix* (willow) was also present (Jones *et al.* 2000), but it was not until the arrival of *Corylus* (hazel) that closed-canopy woodland is likely to have been achieved in many Till-Tweed landscapes.

A very early Holocene expansion of hazel has been recorded on the coast at Howick (shortly after *c.* 9810–9370 cal BC, Boomer *et al.* 2007), and possibly also in the Till valley at Lilburn, although here the dating controls are less robust (Jones *et al.* 2000). In general, however, the colonisation of the British Isles by hazel is typically dated to the period *c.* 8300–7800 cal BC (Hibbert and Switsur 1976; Birks 1989). This corresponds well with the record of hazel expansion in northern parts of the Cheviots at Din Moss (*c.* 8500–7600 cal BC, Hibbert and Switsur 1976) and also at Yetholm Loch (*c.* 8150–7750 cal BC, Tipping 2010), where it coincides with a phase of lowered lake level that reflects a period of aridity. Relatively dry climatic conditions during this period of the Early Holocene are also evident in the lake level records of North-West Europe (e.g. Magny *et al.* 2001; Magny 2004) and, possibly, the more local peat record at Bolton Fell Moss (Hughes and Barber 2004), and this may have been influential in facilitating the establishment of hazel (e.g. Huntley 1993; Tipping 2010). Aridity may also have promoted the occurrence of natural forest fires and this, in combination with the often poor correspondence between hazel expansion and the charcoal record of fire frequency in the sediment record, would seem to caution against the assumption that Early Mesolithic forest fires were necessarily triggered by human activity (see review by Tipping 2010).

### Mesolithic climax woodland and early woodland disturbance

By the climatic optimum of the Middle Holocene, around 5000 cal BC, North Northumberland had developed a closed mixed deciduous forest cover with variable amounts of *Quercus* (oak), *Ulmus* (elm), *Corylus* (hazel), *Pinus* (pine) and *Tilia* (lime) (Davies and Turner 1979; Innes 1999; Young 2004; Tipping 2010). Considerable variation in the Early–Middle Holocene forest composition has been observed across wider parts of northern England (e.g. Turner and Hodgson 1979; Tipping 1996; Innes 1999) that most probably reflect environmental factors, including altitude and, especially, soil type and drainage. In the immediate Till-Tweed area, pollen records from Ford Moss (*c.* 105m OD) suggest that upland landscapes of the Fell Sandstones fringing the eastern side of the Till valley supported hazel/oak woodland with some elm, birch and pine by *c.* 7500 BC (Appendix B), while Cheviot slopes ranging between 100 and 370m OD in the Bowmont valley appear to have been dominated by hazel and birch with only a minor oak component and little or no elm in the period up to *c.* 5000 cal BC (Tipping 1996; 2010). Although pollen data from the higher slopes and Cheviot summit are presently lacking, Tipping (2010) argues that open but recognisable woodlands (perhaps dominated by hazel and birch) were likely to have been present even at these high points in the landscape. At lower elevations (<100m OD), sand and gravel terraces in the valley floor of the Breamish/Till valley at Lilburn also supported birch- and then hazel-dominated woodland with some pine and elm by *c.* 7000 cal BC (Jones *et al.* 2000). Equivalent terrace surfaces in the Milfield Basin to the north, here lying at 45–50m OD, also featured hazel-dominated woodland cover (with the presence of pine, willow, elm and oak) by *c.* 5500 cal BC (Tipping 1998). Lowland areas of the Tweed valley to the north were dominated by elm and oak after *c.* 6750 cal BC (Turner and Hodgson 1983), while the coastal lowlands to the east had achieved a dense hazel/oak woodland with some elm by *c.* 6000 cal BC (Boomer *et al.* 2007a and 2007b).

The last major tree species to become abundant in regional Middle Holocene woodlands was *Alnus* (alder), the expansion of which has often been taken as defining the Middle Holocene (Hibbert and Switsur 1976; Innes 1999). Although present from Early Holocene times in many pollen records from North-East England, the expansion of alder was typically delayed until sometime between *c.* 6600 and 5500 cal BC (see review by Innes 1999). At Akeld Steads in the Milfield Basin, floodbasin peats were colonised by alder from as early as *c.* 6300 cal BC (Tipping 1998; 2010). Elsewhere in North Northumberland, comparatively early dates for the alder rise have been recorded in the coastal lowlands at Howick (*c.* 6000–5700 cal BC, Boomer *et al.* 2007a), the Fell Sandstones at Ford Moss (*c.* 5700 cal BC, Appendix B) and the northern flanks of the Cheviots at Din Moss (*c.* 5800–5500 cal BC, Hibbert and Switsur 1976). In the Bowmont valley, Tipping (1996; 2010) documents a slightly later, but broadly synchronous, expansion of alder at Yetholm Loch (from *c.* 5140 cal BC) and Sourhope (from *c.* 5240 cal BC). Innes (1999) notes that variations in local environmental conditions are likely to have influenced the ability of alder to expand into particular localities and this accounts, at least in part, for the asynchronous character of the regional alder rise. Tipping (2010) argues, however, that the failure of alder to exploit suitable substrates for extended periods (e.g. up to 3000 years at Akeld Steads) prior to its eventual expansion, points to an external trigger, and that this was most probably a period of relatively dry climate that preceded a shift to wetter conditions from *c.* 5800 cal BC (as reflected in the bog surface wetness record at Walton Moss, Hughes *et al.* 2000).

In common with Early–Middle Holocene pollen sequences across Britain, vegetation records from North-East England often show evidence of temporary openings in the woodland canopy during the Mesolithic period (Innes 1999). Pre-agricultural woodland disturbance has been especially well documented in pollen diagrams from the North York Moors, where the coincidence of reduced tree pollen frequencies, the appearance of pioneer weeds and ruderals, and markedly enhanced charcoal content, has focused attention on the role of fire in modifying woodland ecosystems (see review by Innes 1999 and references therein). In North Northumberland there have been few attempts to achieve a similar level of sampling and dating resolution for the Mesolithic period, although both the Cheviot Hills and the Fell Sandstone escarpment appear to have witnessed disturbance of the woodland canopy. At Ford Moss, on the Fell Sandstones, the period between *c.* 6000–5500 cal BC is associated with two possible phases of woodland disturbance (associated with marked declines in tree and shrub pollen), with an intermediate phase in which deciduous woodland becomes re-established (Appendix B; Fig. 2.46). In the Cheviot Hills, two sites in the Bowmont valley, at Yetholm Loch and Sourhope, have yielded evidence of disturbance of the woodland canopy during the later Mesolithic after *c.* 4600 cal BC (Tipping 1996: 2010). The disturbance event at Yetholm Loch appears to have been relatively minor, while that at Sourhope is notable for persisting, albeit with some degree of woodland regeneration, for some 1500 years. Neither of these episodes was associated with charcoal traces that are sufficient to suggest an increase in the intensity or frequency of fires (Tipping 2010). The origin of such woodland clearings, and the opportunities they are likely to have afforded for Mesolithic subsistence activities, is considered below in Chapter 4.

## The Mesolithic-Neolithic transition and the onset of farming

In signalling the onset of sedentary farming activity, and the beginning of the end for natural primeval forest development, the Mesolithic–Neolithic transition during the early 4th millennium cal BC has attracted considerable attention from archaeologists and palaeoecologists. The palaeoecological record in North Northumberland and the Borders suggests, however, that this period is likely to have been one of variable and in many cases relatively subtle change (Innes 1999). While early examples of small-scale arable cultivation have been recorded at Din Moss from *c.* 3950 cal BC (Hibbert and Switsur 1976) and at Swindon Hill, where barley appears to have been grown from *c.* 2850 cal BC (Tipping 1996; 2010), other upland pollen sites in the region (for example Fellend Moss and Steng Moss; Davies and Turner 1979), and including Ford Moss on the eastern side of the Milfield Basin, show little or no evidence for Neolithic opening of the thick woodland cover (Appendix B).

Palaeoenvironmental insights into vegetation records from valley floor locations are often lacking due to the rarity of suitable sites (Tipping 2010). Where such sites are available, however, they offer some insight into land use activities close to Late Glacial terraces that comprise some of the most readily accessed terrain of high agricultural potential. The relatively confined valley floors of the Bowmont valley in the Cheviot interior have yielded evidence only of limited livestock grazing within a wooded environment (Tipping 2010). However, alluvial sites present a way forward in this respect and, notwithstanding taphonomic difficulties (Brown 1997b; Tipping 2010;

see also Volume 1), have permitted some insight into the woodland composition and human activities in valley floor settings in the Till-Tweed valleys.

There is some evidence from alluvial (palaeochannel) pollen sequences in the Milfield Basin to suggest an early onset of cereal cultivation. Sediment cores Mil119–9 and MSH1–19 have radiocarbon dated levels belonging to the Early Neolithic period and both are located within 1km of the glaciodeltaic sand and gravel terrace infilling the western part of the basin (Fig. 2.42). Sediment core MSH1–19 has a pollen sequence that commences at a depth of 397cm, where it is dated to *c.* 4050–3950 cal BC (Passmore and Waddington 2009a). Pollen counts at this level suggest that relatively well-drained parts of the alluvial surface, and most probably the adjacent sand and gravel terrace, supported a mixed oak woodland cover with elm, lime and ash. It is likely that hazel occurred both as a component of the oak forest and in hazel-dominated forest stands on the upstanding terrace surfaces, while lower-elevation parts of the floodplain in the vicinity of the palaeochannel supported dense alder carr. At 360cm the pollen sequence is succeeded by an assemblage indicative of small-scale thinning of the mixed oak woodland cover and the establishment of cleared plots in the vicinity of the core site, most likely located on the adjacent sand and gravel terrace to the west. The inclusion of cereal pollen is suggestive of local arable plots and, although this phase has yet to be dated, it is provisionally assumed that this activity was occurring during the Neolithic period.

Sediment core Mil119–9, located 0.5km south-east of MSH1–19, also extends into the very early Neolithic period and has a basal pollen assemblage deposited before *c.* 3970–3790 cal BC that is indicative of local hazel-dominated woodland with some pine, oak and willow and, in the immediate vicinity of the core site, floodplain alder. Also present are grasses (Poaceae), ruderal pollen and a grain of *Secale cereale* that may reflect very early arable cultivation rather than flood disturbance (Passmore and Waddington 2009a). At *c.* 3970–3790 cal BC the local floodplain developed dense alder carr, while mixed oak/hazel woodland appears to have been maintained on the drier terrace surfaces. Elevated values of Poaceae and ruderal pollen are probably indicative of continued small-scale clearance and pastoral land use, but there are no unambiguous indicators of cereal production. In combination, and notwithstanding the need for further chronological controls on these sequences, the pollen data suggest that the relatively dry and elevated terrace surfaces in the period immediately before and shortly after *c.* 4000–3800 cal BC supported mixed oak and hazel woodland with patches of grassland and small cereal plots.

Contemporary environmental changes also affected the composition of the regional woodland. These may have included climatically driven transient declines in oak (Leuschner *et al.* 2002; see also discussion in Tipping 2010), but are most widely acknowledged with respect to the ubiquitous decline in elm, at or shortly after the Mesolithic–Neolithic transition. The elm decline constitutes the most well known Holocene vegetation event in Northern Europe (Brown *et al.* in press) and is a biostratigraphic marker that is present in pollen diagrams in many parts of Britain (Innes 1999). In North-East England the elm decline is typically dated from *c.* 4300–4000 cal BC (Innes 1999), but there is considerable variation in the timing and rate of decline, both between and within specific localities (see also Tipping 2010). Several agents have been implicated in causing the phenomenon, including climate, edaphic factors and disease; the latter, in particular, is argued to have been promoted by Neolithic woodland clearance permitting the spread of the large elm bark beetle (the principal disease vector; see Clark and Edwards 2004). Forest disturbance in colder and wetter higher-elevation parts of the region may also have been important in promoting the development of blanket bog and heath.

Towards the end of the Neolithic period, between *c.* 2450 and 1800 cal BC (the 'Chalcolithic' – see Chapter 5), there is evidence in the palaeoecological record of an increase in the scale and tempo of forest clearance and arable agriculture. In some parts of the wider region, for example on parts of the east Durham plateau at Hutton Henry (major clearance from *c.* 1880–1460 cal BC), Bishop Middleham (where virtual deforestation of the local landscape is evident; Bartley *et al.* 1976) and the North York Moors (from *c.* 1930–1500 cal BC; Innes 1999), the very end of the 3rd millennium cal BC is marked by the onset of major deforestation, primarily for pastoralism but including some limited cereal production (Innes 1999). The first instance of significant clearance activity is also registered in mid-altitude Northumberland, at sites such as Steng Moss (from *c.* 2130–1780 cal BC, associated with pastoralism and a trace of cereal), Fellend Moss (from *c.* 2280–1910 cal BC, but with no evidence of cereal) and Camp Hill Moss (from *c.* 2030–1670 cal BC) (Davies and Turner 1979). Further south in Northumberland, at Butterburn Flow, a dense cover of alder, oak, elm, birch and hazel persisted until opening up of the woodland canopy, associated with some limited arable cultivation, from *c.* 2290–1890 cal BC (Yeloff *et al.* 2007). At Crag Lough, clearance of oak and hazel woodland is evident from *c.* 2600 cal BC and episodic cereal cultivation from *c.* 2200 cal BC (Dark 2005). In the immediate Till-Tweed area the site at Broad Moss, on the eastern flanks of the Cheviots, registers an opening up of the forest canopy associated with anthropogenic disturbance dating to the period between *c.* 2880 and 2400 cal BC and *c.* 2460–1950 cal BC (Passmore and Stevenson 2004; Appendix C). At Ford Moss, on the eastern side of the Milfield Basin, the onset of variable but sustained woodland disturbance commences at *c.* 2280–1959 cal BC (Appendix B).

A key characteristic of the Bronze Age throughout North-East England is some degree of expansion in woodland clearance and associated agricultural activities that had commenced towards the end of the Neolithic period. Young (2004) notes that within the boundaries of Northumberland National Park the first occurrence of cereals usually occurs in the Bronze Age, notably at Bloody Moss and Drowning Flow (respectively at *c.* 1500 and *c.* 1000 cal BC; Moores 1998), Broad Moss (*c.* 2280–1890 cal BC, Passmore and Stevenson 2004) and Fozy Moss (*c.* 1200 cal BC; Dumayne and Barber 1994). Clearance episodes are also evident in other upland and mid-altitude sites during the Bronze Age, including Fellend Moss from around *c.* 1700 cal BC (Davies and Turner 1979) and Steng Moss (Davies and Turner 1979) from *c.* 1650 cal BC. All of these episodes were associated with increasing levels of grasses and ruderal pollen that point to pastoral activities, although a subsequent clearance episode at Steng Moss, dated to *c.* 1050 cal BC, appears to be connected with the first instance of barley and wheat cultivation in this area (Davies and Turner 1979). At many of these sites the clearance activity is also associated with the expansion of heathland, as can be seen at Drowning Flow and Sells Burn (Moores 1998). More recent evidence from studies in the southern part of the National Park at Butterburn Flow suggests the period *c.* 2290–790 cal BC witnessed three discrete phases of woodland clearance that were associated with pastoralism and some limited arable cultivation (Yeloff *et al.* 2007). Similar sporadic clearance phases with cereals are evident from *c.* 2200 cal BC at Crag Lough before a relatively sustained phase of cereal production (reflected in *Hordeum*-type pollen and the first incidence of *Avena*-type) is established between *c.* 1200 and 900 cal BC (Dark 2005).

In the immediate area of the Till-Tweed Basin, Tipping's (1996; 2010) work in the Cheviot Hills has documented a continuation of small-scale clearance activity and barley cultivation at Swindon Hill, Sourhope and Cocklawhead into the Bronze Age, although barley production appears to cease between *c.* 1300 and 1150 cal BC, possibly giving way to low-intensity grazing activity (Tipping 2010). Pollen records from Broad Moss (Appendix C) and Ford Moss (Appendix B) also suggest a continuous Bronze Age presence in these areas. At Ford Moss the period commencing *c.* 2280–1950 cal BC, and extending into the early first millennium cal BC, saw marked albeit variable declines in pine and alder and, to a lesser extent, oak and hazel, which are indicative of localised woodland loss. The near-disappearance of lime echoes similar declines in Bronze Age sequences from the east Durham plateau (see review by Innes 1999). Clearances at Ford Moss were accompanied by grasses and ruderal pollen that are consistent with pastoral activities, while similar trends at Broad Moss are accompanied by some evidence of occasional cereal cultivation. The Bronze Age vegetation record at these sites would appear, therefore, to be broadly consistent with the chronology and character of vegetation changes evident elsewhere in upland Northumberland.

Palaeoenvironmental evidence for Bronze Age land use activities in the low-lying parts of the Northumberland landscape suggests that drier terraces on regional valley floors generally continued to provide a focus for pastoral and some arable agriculture as recorded for example from the Early Bronze Age in Redesdale at Brownchesters Farm (Moores 1998), and also in the Milfield Basin. Here, three organic-rich alluvial sequences, located at Thirlings (Mil-22; Fig. 2.42) and Doddington (Mil 171–4 and Mil 171–5, Fig. 2.42), have basal pollen assemblages that have been dated to the Bronze Age. At Thirlings, the period *c.* 2140–1740 cal BC is associated with an arboreal pollen assemblage dominated by hazel, oak and alder, while relatively high counts of Poaceae, cereal-type and ruderal pollen also attest to open areas of grassland, pasture and possibly cereal plots. Arable fields and hazel and oak woodlands during this period were probably developed on drier parts of the alluvial valley floor and the free-draining glaciodeltaic terrace, immediately west of the core site, while poorly drained alluvial wetlands supported alder carr. On the eastern side of the Milfield Basin, 2km from Thirlings, core Mil 171–5 yielded a basal pollen assemblage dating to *c.* 1630–1430 cal BC, characteristic of open grassland and pasture amidst areas of oak and hazel woodland, with wetter parts of the floodplain supporting stands of alder. Pastoral activities are sustained in the succeeding (upper) pollen assemblage in Mil 171–5, but here there is a marked local expansion of alder at the expense of grasses and herbaceous taxa. This change in the local woodland cover at the core site of Mil 171–5 has not yet been dated, but a broadly similar pollen assemblage from Mil 171–4, located in a palaeochannel 300m north-west of Mil 171–5 (Fig. 2.42), has a basal date of *c.* 1200–930 cal BC and suggests that by the Middle Bronze Age, floodplain alder carr was well developed in this part of the valley floor.

To the east and south-east of the Till-Tweed area, Bronze Age environments on the coastal lowlands have also been recorded, at Howick by Boomer *et al.* (2007) and from a series of sites along the Northumberland coast by Shennan *et al.* (2000) (Fig. 2.41). Sites at Bridge Mill (near Lindisfarne), and further south at Newton Links (Beadnell Bay), Warkworth and Cresswell Ponds (Druridge Bay), all feature Bronze Age sediments with pollen spectra consistent with a largely wooded landscape dominated by oak, elm and hazel, but with grassland and some saltmarsh taxa (Shennan *et al.* 2000). At Howick, the period between *c.* 2410–2130 cal BC and the Middle Bronze Age at *c.* 1690–1510 cal BC witnessed marked declines in oak and alder woodland and the disappearance of elm. Woodland cover, including stands of hazel, was further diminished by *c.* 1380–1100 cal BC, to be replaced by extensive grassland and ruderal taxa, and possibly also some limited cereals (Boomer *et al.* 2007; 2007b).

## Late prehistoric–early historic settlement expansion and clearance

Regional pollen diagrams present a mixed picture of pre-Roman Iron Age deforestation and agricultural activity. In general, during the Early Iron Age much of upland North-East England appears to have remained well wooded but with frequent small forest openings, providing space for grazing and cereal plots (Innes 1999). Upland localities in Northumberland at Steng Moss, Fellend Moss, Camp Hill Moss (Davies and Turner 1979), Drowning Flow and Bloody Moss (Moores 1998), for example, show that the Iron Age witnessed a continuation of the pattern of localised grazing activity and short-lived phases of arable production that had been established in the Bronze Age (Young 2004). This activity was maintained despite climatic deterioration in the early first millennium cal BC that promoted the development of herbaceous marsh and bog taxa (see Chapter 7).

By the mid–late first millennium cal BC (Innes 1999), however, major woodland clearance and associated agricultural activity appears to have commenced in some localities, including relatively high-elevation sites such as Quick Moss (500m OD) in West Northumberland. Here, deforestation at *c.* 175 cal BC–AD 67 coincides with the expansion of *Calluna* heath, pastoral indicators and evidence of cereal production (Rowell and Turner 1985). A similar phenomenon occurs in parts of the North York Moors (Innes 1999) and in South Northumberland at sites such as Crag Lough (*c.* 400 cal BC, Dark 2005) and Glasson Moss (*c.* 390–170 cal BC, Dumayne and Barber 1994). This trend is also evident in the immediate vicinity of the Till-Tweed area. In the Cheviot Hills, Tipping (1996; 2010) has demonstrated a marked intensification of woodland clearance, pastoral activities and the appearance of arable cultivation, including oats and rye, from *c.* 300–200 cal BC. Pollen records from Broad Moss (Davies and Turner 1979, Passmore and Stevenson 2004, Young 2004, Appendix C) and Ford Moss (Appendix B) also indicate major, semi-permanent forest clearance, with evidence for pastoralism and episodic cereal production on the Cheviot and Fell Sandstone hills flanking the Till valley from *c.* 390–40 cal BC at Broad Moss and *c.* 200 cal BC at Ford Moss. Agricultural expansion during the Middle–Late Iron Age, including the extension of cultivation well into upland locations, may have been partly facilitated by climatic amelioration and has been linked to a relatively high demand for cereals during this period (Dark 2005; see Chapter 7).

At present, only one valley floor pollen sequence dating to the Iron Age has been recovered in the Till-Tweed study area. This site, TW10, is located in a palaeochannel on the southern margin of the Holocene fluvial valley floor of the River Tweed to the south of Coldstream (Fig. 2.36). Organic-rich channel fill sediments at the base of this sequence have been dated to *c.* cal 50 BC–AD 80 and their pollen record indicates a Late Iron Age landscape dominated by grassland and some limited broadleaf woodland cover, especially oak and hazel, that probably reflect comparatively drier settings on the adjacent Late Glacial sand and gravel terraces.

Analysis of the impact of Roman occupation, between AD 79–410, has been much influenced by a focus on Hadrian's Wall and nearby pollen records from lake and mire sites (e.g. Davies and Turner 1979, Dumayne and Barber 1994, Tipping 1997, Dumayne-Peaty and Barber 1998, Moores 1998, Dark 2005, Yeloff *et al.* 2007) and from deposits infilling archaeological features associated with the Wall and its forts (Manning *et al.* 1997, Wiltshire 1997). These have shown the pattern and rate of landscape transformation to have been highly variable and this has prompted debate as to the relative impact of the militarised frontier zone. At some localities, in the vicinity of the Wall, there is evidence for marked deforestation in the Early Roman period, notably at Fozy Moss (*c.* cal AD 80–340), Glasson Moss (*c.* cal AD 60–250) (Dumayne and Barber 1994) and possibly also at Crag Lough (Dark 2005) and Fellend Moss (Davies and Turner 1979). Clearance at these sites, and the appearance of *Secale cereale*, and possibly other cereal crops at this time, have been hypothesised as reflecting an increase in the demand for grain, as well as timber and fuel associated with Wall and fort construction (e.g. Dumayne and Barber 1994, Dark 2005). The reliability of these linkages has been challenged, however, in part due to perceived difficulties in reconciling chronological controls and pollen stratigraphies (see Young 2004), while several other sites near the Wall zone show no significant increase in cereal production during Roman times (e.g. Sells Burn, Moores 1998). Indeed, woodland clearance and agricultural intensification at Butterburn Flow (10km north of the central zone of Hadrian's Wall), evident at *c.* 90 cal BC–cal AD 50, is followed by cessation of cereal cultivation and woodland regeneration during the period *c.* cal AD 90–450. This has been interpreted as reflecting abandonment of farmland as the local population was displaced south into the military and economic security of the frontier zone (Yeloff *et al.* 2007). This was followed, immediately after the

Roman withdrawal of AD 410, by renewed pastoral and cereal agriculture in the vicinity of Butterburn Flow, which persisted into the sixth century AD.

To the north of the frontier zone the expansion of agricultural activity in the uplands during the Late Iron Age was maintained, or consolidated, by extensive clearance of all tree species and an associated rise in pollen indicators of pastoral and arable agriculture. This trend is well documented in the northern Cheviot Hills (Tipping 1996; 2010), where Mercer and Tipping (1994) have argued for a Late Iron Age and early historic landscape that was organised around the needs of an agricultural economy. To the south, at Steng Moss, the period commencing *c.* 160 cal BC–cal AD 210 saw an extensive clearance phase that was associated with the pollen of *Hordeum, Secale* and *Triticum*, and arable weeds such as *Centaurea cyanus* (Davies and Turner 1979). This phase persisted through to the end of the Roman occupation. In several other upland localities the proportion of cereal cultivation associated with Romano-British clearance appears to be very much less, notably at Drowning Flow, Sells Burn and Bloody Moss, where high values of heath, grasses and ruderal pollen point to a predominantly pastoral local economy (Moores 1998). Similar vegetation records have been obtained in the uplands flanking the Till valley at Broad Moss and Ford Moss, where there appears to be little significant change in the vegetation record over the Romano-British period, these areas already exhibiting largely cleared and pastoral landscapes, with traces of cereals and extensive areas of *Calluna* heath that were established in Middle Iron Age times.

Sediment core Mil108–2, located in a palaeochannel in the lower reaches of the River Glen, and just over 1km east of the glaciodeltaic terrace margin (Fig. 2.42), provides the sole alluvial pollen assemblage dating to the Roman period from the Milfield Basin. Basal sediments here have been dated to *c.* cal AD 80–320 and provide a maximum age for a single pollen assemblage dominated throughout by Poaceae, ruderal taxa (including *Plantago lanceolata,* P. major/media, and Anthemis-type) and cereals (*Secale cereale*), that are indicative of hay meadows, pasture and arable plots in the vicinity of the core site. Arboreal pollen counts are low and consistent with a scattered woodland presence including alder, hazel and oak.

## The mid–late first millennium AD

While the post-Roman and Early medieval periods have received rather less attention from palaeoecologists than earlier periods, there are enough dated pollen sequences to establish a picture of regional variability in land use trends during the middle and later part of the first millennium AD. The records are also sufficient to challenge the previously accepted wisdom that the Roman withdrawal prompted rapid and widespread economic collapse and abandonment of settlement and agricultural landscapes (Innes 1999; Young 2004). There is certainly evidence to suggest that woodland regeneration did occur at some sites very close to Hadrian's Wall, for example at Fozy Moss where marked abandonment of former agricultural land is recorded at *c.* cal AD 370 (Dumayne and Barber 1994) and Crag Lough from *c.* cal AD 500, where a reduction in arable land is matched by an increase in the area of pasture and *Betula* scrub (Dark 2005). At Butterburn Flow, however, the Roman withdrawal is signalled by renewed pastoral and cereal agriculture which persisted into the sixth century AD (Yeloff *et al.* 2007; see above), while at Fellend Moss the regeneration of tree and scrub cover was delayed until the seventh century AD (Davies and Turner 1979). In areas away from the immediate vicinity of Hadrian's Wall the picture of immediate post-Roman land use changes is similarly variable with, for example, a protracted phase of woodland regeneration at Steng Moss between *c.* cal AD 500 and AD 865 (Davies and Turner 1979) and a shorter episode of tree and scrub growth at Sells Burn (Moores 1998).

Dark (2005) has argued that the generally reduced intensity of land use at this time reflects abandonment of land that may have been brought into crop in response to the military demand for supplies during the Roman occupation, and that variations in the timing and degree of abandonment may be explained, at least in part, by the preferential release of areas with the least favourable soil conditions. Added to the influence of economic and political factors on land use trends is the likely impact of climatic deterioration around the fifth–seventh centuries AD. Notwithstanding the evidence for woodland regeneration and land abandonment in many localities at this time, however, it is interesting to note that some areas appear to have experienced a degree of continuity in settlement and land use. At Drowning Flow and Bloody Moss, for example, Moores (1998) demonstrates that extensive heath cover and hazel-dominated scrub persisted into the post-Roman period, while the valley floor of the River Rede at Brownchesters appears to have hosted cultivation of oats and wheat through to *c.* cal AD 685 (Moores 1998). At Broad Moss, the first millennium AD appears to have experienced only minor fluctuations in birch, hazel and alder amidst a generally deforested landscape, with large areas of *Calluna* heath and a sustained presence of grassland, ruderal pollen and some traces of cereal (Appendix C). A similar picture emerges from the pollen record at Ford Moss, although here the chronological controls for the historic period are poorly resolved and reliant on extrapolation from a mid-first millennium cal BC date at a depth of 217cm (Appendix B). This record would also suggest that the mid–late first millennium AD period was characterised by extensive *Calluna* heath, minor fluctuations in birch, oak, hazel and alder and a sustained presence of pastoral land use in the vicinity of the bog.

In contrast to the paucity of valley floor pollen records dating to Roman Iron Age times, the period spanning the mid–late first millennium AD and early second millennium AD is represented in the Till-Tweed by alluvial pollen sequences in the Breamish (Till) at Hedgeley, Bewick Bridge and Newtown Bridge, in the Milfield Basin (River Till) at Redscar Bridge, and in the Lower Tweed at Coldstream (Fig. 2.42). At Bewick Bridge in the Breamish/Till valley, close to Roman Iron Age enclosures and an Anglo-Saxon settlement or industrial site (Gates and O'Brien 1988), three sediment cores, BT5 (spanning the period *c.* cal AD 390–600 to *c.* cal AD 1660–1955), BT10 (spanning the period *c.* cal AD 680–940 to *c.* cal AD 1660–1955) and BT2 (spanning the period *c.* cal AD 900–1160 to *c.* cal AD 1640–1950) (Fig. 2.29), suggest that drier parts of the floodplain and, especially, the adjacent glaciofluvial landsurfaces were experiencing a fluctuating mixture of open woodland and grassland, with evidence of pastoral and arable agriculture over the second half of the first millennium AD. Cultivation of cereals appears to have occurred from at least as early as *c.* cal AD 680–940 (BT10), and subsequently around *c.* cal AD 900–1160 (BT2), and the landscape was probably extensively deforested by the later medieval period. In the immediate vicinity of the palaeochannel sites, plant macrofossils testify to the existence of floodplain pond and wetland/marsh habitats, while insect fauna assemblages confirm the local presence of grassland/pasture on the alluvial valley floor. This combination of palaeoecological data indicates that local communities were actively engaged in woodland clearance and tillage from the mid-first millennium AD, and well before the medieval and later expansion of cereal production that is reflected in the extensive areas of extant ridge and furrow.

At Newton Bridge, however, 2km downstream of Bewick Bridge, the immediate valley floor environment in the vicinity of core BT20 (Fig. 2.42) appears to have been dominated by alder carr at *c.* cal AD 1160–1280, and major local woodland clearance here occurs sometime after this date. Three kilometres upstream from New Bewick, two alluvial pollen assemblages from palaeochannel fills at Hedgeley provide further information with regard to the medieval landscape in, and adjacent to, the Holocene floodplain (Volume 1; Chapter 2). The younger of these palaeochannels (site B6, Fig. 2.42) has a basal date of *c.* cal AD 1160–1290 that is contemporary with floodplain wetland conditions and some local tree cover in the immediate locality and, on drier terraces adjacent to the floodplain, open woodland and grassland with some traces of cereals. A nearby channel (site B12, Fig. 2.42) has an infill sequence spanning *c.* cal AD 1410–1620 to *c.* cal AD 1680–1940, with a pollen assemblage characteristic of a partially wooded landscape with oak and hazel, and a presence of cereal-type pollen and associated ruderal taxa that suggests localised arable production during the later medieval and early post-medieval period.

In the Tweed valley, at Coldstream, there is further evidence of valley floor vegetation character that dates to the transition from the first to the second millennium AD. Here, sediment cores TW11 and CDS1 (Fig. 2.42) sampled a palaeochannel on the southern margin of the Holocene floodplain that has an infill sequence that begins *c.* cal AD 990–1160 (Volume 1; Chapter 2). The pollen assemblages are characteristic of largely open grassland, with some patches of temperate broadleaf woodland, including alder, oak and hazel. Although there is little direct evidence for anthropogenic activity in these pollen records, core CDS1 did yield a charred breadwheat cereal grain (*Triticum aestivum*) from just above the dated horizon, and further charred cereal grains and a cereal stem were recovered between 160 and 150cm.

The alluvial pollen sequence from Redscar Bridge (core Mil-15, Fig. 2.42), in the lower part of the Milfield Basin, is of particular interest since it lies only 500m north-east of the Anglo-Saxon settlement site of Maelmin. The palaeochannel here was abandoned and infilling by *c.* cal AD 1030–1280, and the contemporary pollen assemblage features generally low arboreal pollen (predominantly hazel and alder with some oak, elm and birch) and relatively high counts of Poaceae, cereal-type pollen (including *Secale cereale*, *Triticum* and *Hordeum*) and ruderal taxa. As is the case at New Bewick and Hedgeley, this agricultural activity was probably focused on the upstanding and free-draining glaciodeltaic terraces lying immediately adjacent to the core site.

*Table 2.1. Physical extent and numerical summary of archaeological associations for landform elements delimited in the Till-Tweed study blocks.*

| | | | | **Archaeological associations** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Landform element classification** | | Landform area km$^2$ (%) | | Lithic findspots (%) | | Isolated finds (%) | | Cropmarks (%) | | Earthworks / monuments (%) | | Fieldsystems (%) | |
| **Hilltop and hillslope environments (pre-Quaternary-Devensian) (*c.* 30–315m OD)** | | | | | | | | | | | | | |
| 1a | Bedrock with discontinuous shallow drift cover | 145 | *26* | 226 | *5.5* | 12 | *23.5* | 52 | *9.1* | 276 | *48.9* | 142 | *34.7* |
| 1b | Undifferentiated glacial and glaciofluvial drift | 217 | *39* | 1976 | *48.1* | 12 | *23.5* | 207 | *36.3* | 165 | *29.3* | 69 | *16.9* |
| | total | 362 | *65* | 2202 | *53.6* | 24 | *47.1* | 259 | *45.4* | 441 | *78.2* | 211 | *51.6* |
| **Late Devensian hummocky terrain (lower valley sides and floors) and alluvial fans (*c.* 30–150m OD)** | | | | | | | | | | | | | |
| 1c | Ice-contact meltwater deposits | 81 | *15* | 350 | *8.5* | 6 | *11.8* | 95 | *16.6* | 57 | *10.1* | 34 | *8.3* |
| 1h | Alluvial fans | 1 | *<1* | 8 | *<1* | -- | -- | 4 | *<1* | 1 | *<1* | 1 | *<1* |
| | total | 82 | *15* | 358 | *8.7* | 6 | *11.8* | 99 | *17.3* | 58 | *10.3* | 35 | *8.6* |
| **Late Devensian valley floors (*c.* 10–120m OD)** | | | | | | | | | | | | | |
| 1d | Glaciofluvial and glaciodeltaic terraces | 50 | *9* | 1167 | *28.4* | 12 | *23.5* | 156 | *27.3* | 44 | *7.8* | 45 | *11.0* |
| 1e | Palaeochannels and enclosed basins inset within 1b–d | 7 | *1* | 95 | *2.3* | -- | -- | 25 | *4.4* | 2 | *0.4* | 6 | *1.5* |
| 1f | Kettle holes inset within 1b–d | 1 | *<1* | 1 | *<1* | -- | -- | 1 | *<1* | -- | -- | 2 | *<1* |
| 1g | Glaciolacustrine deposits | 3 | *1* | 6 | *<1* | 2 | *3.9* | 1 | *<1* | -- | -- | 2 | *<1* |
| | total | 61 | *11* | 1269 | *30.9* | 14 | *27.5* | 183 | *32.0* | 46 | *8.2* | 55 | *13.4* |
| **Holocene valley floors (*c.* 2–130 m OD)** | | | | | | | | | | | | | |
| 2a | Alluvial fans and colluvial spreads | 1 | *<1* | 14 | *0.3* | -- | -- | -- | -- | 1 | *0.2* | 10 | *2.4* |
| 2b | Alluvial terraces and floodplain deposits (pre-nineteenth century) | 34 | *6* | 233 | *5.7* | 5 | *9.8* | 22 | *3.9* | 12 | *2.1* | 53 | *13.0* |
| 2c | Alluvial palaeochannels and floodbasins developed on 2b surfaces | 3 | *<1* | 27 | *0.7* | -- | --- | 2 | *0.4* | -- | -- | 19 | *4.6* |
| 2d | 19th C. and later river channel and floodplain deposits | 10 | *2* | 2 | *<1* | 2 | *3.9* | 2 | *0.4* | 2 | *0.4* | 21 | *5.1* |
| | total | 47 | *8* | 276 | *6.7* | 7 | *13.7* | 26 | *4.6* | 15 | *2.7* | 103 | |
| 2e | Holocene peat bogs / mires | 4 | *1* | -- | -- | -- | -- | 2 | *0.4* | 3 | *0.5* | 2 | *0.5* |
| 3 | Modern ponds / reservoirs | -- | -- | -- | -- | -- | -- | -- | --- | -- | --- | -- | -- |
| 3 | Modern quarry workings / airfield | 2 | *<1* | -- | -- | -- | -- | 2 | *0.4* | 1 | *0.2* | 3 | *0.7* |
| | total | 6 | *1* | -- | -- | -- | -- | 4 | *0.7* | 4 | *0.7* | 5 | |

*Table 2.2. Archaeological feature density (averaged per km²) for discrete cropmarks, earthworks and field systems in landform elements classified for the Till-Tweed study blocks. Note that landform element categories with a total area extent of less than 10 km² have been grouped in order to avoid distorting density values.*

| | | Landform area | | Archaeological feature / monument density (per km²) | | |
|---|---|---|---|---|---|---|
| **Landform element classification** | | km² | % | cropmarks | earth/mon | fieldsystems |
| **Hilltop and hillslope environments** | | | | | | |
| 1a | Bedrock with discontinuous shallow drift cover | 145 | *26* | 0.36 | 1.90 | 0.98 |
| 1b | Undifferentiated glacial and glaciofluvial drift | 217 | *39* | 0.96 | 0.76 | 0.32 |
| **Late Devensian hummocky terrain (lower valley sides and floors)** | | | | | | |
| 1c/1h | Ice-contact meltwater deposits and alluvial fans | 82 | *15* | 1.21 | 0.71 | 0.43 |
| **Late Devensian valley floors (low relief)** | | | | | | |
| 1d | Glaciofluvial and glaciodeltaic terraces | 50 | *9* | 3.10 | 0.88 | 0.89 |
| 1e/1f/1g | Kettle holes, glaciolacustrine deposits and palaeochannels/enclosed basins | 11 | *11* | 2.45 | 0.18 | 0.91 |
| **Holocene valley floors** | | | | | | |
| 2a–c | Alluvial fans, terraces, floodbasins and palaeochannels (pre-nineteenth century) | 38 | *6* | 0.63 | 0.34 | 1.41 |
| 2d | 19th C. and later river channel and floodplain deposits | 10 | *2* | 0.20 | 0.20 | 2.10 |
| 2e/3 | Holocene peat bogs and mires, modern quarrys and airfields | 6 | *1* | 0.68 | 0.68 | 0.85 |

*Table 2.3. $^{14}C$ dates and calibration details for Late Devensian contexts and selected Holocene samples from the Milfield Basin (see text for context and calibration details).*

| Laboratory code | Sample reference | Core | Material | $^{14}C$ Age (BP) | Calibrated date range (95% confidence) |
|---|---|---|---|---|---|
| SUERC-9080 | GW90 (90 cm) | Galewood 1 | Wood fragment | 11,490±35 | 11,470–11,300 cal BC |
| SUERC-9081 | GW115 (115 cm) | Galewood 1 | Wood fragment | 12,280±40 | 12,310–12,070 cal BC |
| BETA-125959 | MSH1–14 (291–299 cm) | MSH1–14 (Humbleton Burn) | Silty peat | 11,740±70 | 11,820–11,450 cal BC |
| BETA-256125* | Mil-SA16a | Mil-SA16 | Macrofossil | 11,360±60 | 11,390–11,160 cal BC |
| BETA-256126* | Mil-SA16b | Mil-SA16 | Macrofossil | 11,260±60 | 11,320–11,000 cal BC |
| HAR-4308** | Black Burn | Black Burn | Peat | 11,460±100 | 11,595–11,180 cal BC |
| SUERC-522 | M13 (322 cm) | MSH1–21 | Wood fragment | 4700±55 | 3640–3360 cal BC |

* New data obtained since publication of Passmore and Waddington 2009a (Volume 1) and 2009b
** after Payton (1988; 1992)

# 3 Monuments from the Air

*Tim Gates*

*Snow lies bright on Hedgehope*
*and tacky mud about Till*
*where the fells have stepped aside*
*and the river praises itself,*
*silence by silence sits*
*and Then is diffused in Now.*

Basil Bunting, Briggflatts (1966).

## INTRODUCTION

In 2001, as part of a wide-ranging project covering the archaeology and geomorphology of the Milfield Basin in North Northumberland, 1:10,000 scale mapping of all the archaeological sites that had been recorded by air photography was commissioned from Air Photo Services at Cambridge. The work of transcription was carried out by Roger Palmer with assistance from Lidia Żuk using the 'AirPhoto' transformation programme developed by Irwin Scollar. The resulting maps cover a territory of 225 square kilometres, or nine contiguous Ordnance Survey 1:10,000 quarter sheets (Fig. 3.1).

The present report is intended to be read in conjunction with the companion study published in Volume 1 of a separate territory of 270km$^2$ that was split between the Tweed and Till river catchments (Gates and Deegan 2009). While these three areas of landscape do in fact join to form a single continuous block, it was a requirement of the different funding streams that the Milfield survey be published as a separate piece of work.

Once the transcription had been completed, the resulting maps were compared with the existing Northumberland County Historic Environment Record (HER) maps and new HER numbers were allocated as appropriate to sites which had not previously been recorded. The present writer was tasked to make a record for each new site suitable for entry into the Northumberland county HER. At the final count, 212 new records had been created of which 132 (62%) relate to cropmarked sites and 80 (38%) to earthworks, including 45 entries for tracts of ridge and furrow ploughing. An additional 287 pre-existing records (for both cropmarks and earthworks) have been enhanced. In what follows, sites referred to only by name and HER number are briefly described in lists at the end of this chapter (see Tables 3.1–3.12). Where cropmarked sites are concerned, these lists are largely an exercise in morphological classification and as such their value as chronological indictors can be no more than limited.

The aim of this contribution is to present the air photographic data for the Milfield Basin area and to place it in its wider, regional context. At the same time, other evidence from excavation, fieldwalking and pollen analysis will also be considered. It should be stressed, however, that the resulting narrative falls far short of an exhaustive account of the archaeology of this area, which has long been recognised as one of fundamental importance to our understanding of the archaeology of the Tyne-Forth province. In his 1982 Rhind Lectures, for example, Professor George Jobey singled out the Milfield Basin, along with the Meldons in Peeblesshire and the landscape surroundings of Traprain Law, as one of three 'nodal areas' where the accumulating results of field survey and excavation made possible a more detailed understanding of changing settlement patterns through time than could yet be achieved elsewhere. Developments over the past 25 years have lent further weight to this view.

Yet, as George Jobey was careful to point out, the special importance accorded to the Milfield Basin in the minds of archaeologists is at least partly a function of the number of spectacular or unusual sites that are concentrated in what is a relatively small and well-defined expanse of flat land surrounded on all sides by hills. These sites, many of which are known only as cropmarks, include a well known group of henges, an enigmatic 'avenue' or droveway, numerous pit alignments, two Anglo-Saxon palaces, at Yeavering (*Gefrin*) and Milfield (*Maelmin*), and a further high-status Anglo-Saxon settlement at Thirlings. Additionally, the Plain is overlooked from the south by Yeavering Bell, at 5.6ha the largest hillfort in the county, whose massively built stone rampart contains no fewer than 125 roundhouse platforms.

But if the Milfield Plain is in some ways atypical, it also possesses its quota of the mundane or commonplace. For not only are the surrounding hills


*Figure 3.1. Map showing the aerial photograph survey area.*

thickly populated with Iron Age hillforts and later stone-built farmsteads, but their plough-levelled counterparts are also much in evidence in the form of cropmarks round the edges of the Plain. To these should be added a still emerging pattern of linear boundaries, some of which are certainly of prehistoric date, together with a rash of smaller features such as pits and ring ditches and an increasing number of Anglo-Saxon *Grubenhäuser*.

In the light of this, we must be careful on the one hand not to overemphasise those features which set this area apart and distinguish it from most other parts of Northumberland and East Lothian. Yet on the other, the Milfield Plain has now, as it no doubt also had in the distant past, a special character which derives in large measure from its unusual and striking topographical setting.

## The influence of geology and topography on air photography

Contrasting relationships between landscape settings and the character and pattern of archaeological preservation, described at a regional scale in Chapter 2, are especially marked with respect to cropmark formation across the distinctive topography of the Milfield Basin. Here, the extensive and free-draining spreads of low-relief glaciodeltaic sands and gravels that form the Milfield Fan (Chapter 2, Fig. 2.13) frequently produce vivid and clearly defined cropmarks, even in years of only moderate drought, and have proven magnetically attractive to airborne archaeologists. This no doubt helps to explain why certain sites, such as the Coupland and East Marleyknowe henges, have been photographed time and time again over the past sixty years. Yet certain other sites that are similarly located on Late Devensian sand and gravel landform elements, whether on the Milfield Fan or elsewhere in the study area, do not respond in the same way and may appear very infrequently even when sown with a theoretically responsive crop. Thus the Anglo-Saxon sites at Yeavering and Thirlings, located on soil types similar to those of the Coupland and East Marleyknowe henges (typical brown podzolic soils and argillic brown sands), are known to have produced really clear cropmarks on only a handful of occasions in the last six decades.

Accordingly, there is every reason to expect that other important sites still remain to be discovered on glaciodeltaic and glaciofluvial landforms where cropmarks have formed most readily in the past and which have been the subject of intensive reconnaissance for many years. Well-developed patterns of polygonal ice wedge casts (reflecting periglacial modification during the Dimlington and/or Loch Lomond Stadial periods – see Chapter 2) on the Milfield Fan and fringing glaciofluvial surfaces frequently show up as cropmarks and can sometimes be valuable as a check on the potential for cropmark development in areas where archaeological sites appear to be lacking. At the same time, however, there are occasions where it has proven difficult to distinguish these periglacial features from man-made ditches. Nor have they always been correctly interpreted even when encountered in excavation, and re-examination of the cropmark evidence at Yeavering strongly suggests that the alleged 'Romano-British field system' identified by Dr Hope Taylor was in fact no more than a network of ice wedge casts (Gates 2005).

Not all parts of the Milfield Fan have proven conducive to cropmark development, however, with regard to either archaeological or periglacial features. Of particular note are the Late Devensian palaeochannels that are inset some 2–3m into the glaciodeltaic terrace surface and which reflect former courses of the proto-river Glen (see Chapter 2, Fig. 2.13). These include the Galewood Depression, which traverses the central part of the Milfield Fan and features soil types that include gleyic brown podzolic soils, typical sandy gley soils and neutral humified peat, and the Lanton-Milfield palaeochannel to the west which contains gleyic brown earths and, adjacent to the Meldon Burn, typical cambic gley soils. The combination of a greater proportion of fine sediment, higher moisture content and, locally, organic-rich sediments in these depressions renders their appearance on aerial photographs as darker tones which contrast with the generally paler colour of the crop growing on the surrounding glaciodeltaic terrace surface. These features have been mapped separately by Palmer, including in those areas where no archaeological features are visible and, because these soil types inhibit the development of cropmarks, they need to be taken into account when interpreting the evidence of air photographs. Therefore, where ditches or other man-made features appear to terminate in channel-like depressions, there is always the possibility that they do in fact continue further than the air photographs suggest. In Figure 3.2, for example, a cropmark representing one arm of a T-shaped ditch near Marleyknowe can be followed to the edge of a palaeochannel where it is lost in an area of unripe crop. Only if the palaeochannel is shown on the interpretive map will the probable reason for the 'ending' of the ditch be made clear.

Fine-grained Holocene alluvial deposits flanking the Rivers Glen and Till in the Milfield Basin also tend to be less susceptible to the formation of cropmarks due to their relatively high moisture and organic content, and hence cropmarks of any kind appear less frequently on the floodplain soils than they do anywhere else in the Basin. By contrast, given suitable combinations of weather and crop, cropmarks occur quite readily over most of the remaining territory covered by this survey. This applies especially to other deposits of sand and gravel which border the Basin, including areas of hummocky ice-contact meltwater deposits, but also the relatively low-lying drumlinised landscapes of till and undifferentiated drift between Crookham and the River Tweed at Coldstream. In especially dry summers, cropmarks and parchmarks also regularly appear on the till-derived soils which cover the lower slopes of the hills surrounding the Milfield Basin, though not in such numbers as on the more freely draining glaciodeltaic and glaciofluvial terraces.

The distinctive topography of the region also influences the formation of cropmarks through the pronounced rain shadow effect promoted by the high Cheviot massif. This rain shadow extends across the whole of the Milfield Basin and adjacent parts of the Tweed and Till catchments. As a consequence, the

*Figure 3.2. Part of the prehistoric ditch system near Marleyknowe revealed as a cropmark. Note how one arm of the T-shaped ditch disappears into a band of deeper silt corresponding to the course of a palaeochannel. The distinctive dark 'blob' near the centre of the frame marks the site of a* Grubenhaus. *(Copyright Tim Gates, 2 August 1979).*

annual rainfall is lower here than in surrounding districts, averaging only 635 to 762mm, and soil moisture deficits (which are a measure of the droughtiness of the soil) regularly rise to levels above 100mm even in years of only moderate drought. At the same time, high deficits occur sooner in this area than on the coastal plain to the south and east. At Pallinsburn, for example, 5km north-north-west of Milfield, estimated soil moisture deficits of 100mm were reached in or before the end of the first week of July in 11 years out of 19 between 1965 and 1983. Because soils in the rain shadow dry out more rapidly, especially where they overlie gravel, cropmarks form earlier here than elsewhere in the region. Indeed, on the gravels of the Milfield Basin and on the hummocky sands and gravels and drumlins between Crookham and Cornhill, good-definition cropmarks may appear in cereals in early June, a month or six weeks earlier than in similar crops growing on more water-retentive soils nearer to the coast and in the south-east of Northumberland. In good years, this may mean that fresh cropmarks and, in grass, parchmarks, continue to form over periods as long as three or four months. To take full advantage of this constantly changing situation may require upwards of a dozen flights spaced at intervals through the season.

The history of agricultural land use, both ancient and modern, has of course played a critical role in determining whether archaeological sites survive above ground as recognisable earthworks or, in the case of plough-levelled sites, as buried features that are at least potentially capable of generating cropmarks under favourable conditions. It follows that the alternative ways in which air reconnaissance and photography can usefully be deployed in a given area will depend very largely on the history of past land use, particularly on the extent and intensity of medieval and modern ploughing.

Over the territory covered by this survey, there is a fundamental dichotomy between, on the one hand, upland areas where well-preserved earthworks are the norm, and on the other, the more intensively farmed lowlands where the great majority of sites has been levelled by centuries of ploughing. In areas where there has been little, if any, medieval or post-medieval cultivation, as on the higher slopes of the Cheviots or the dip slopes of the Fell Sandstone escarpment to the east, archaeological sites are most often encountered as visible earthworks. While these are usually best recorded by means of ground survey, aerial photography can nevertheless play an important role as a rapid and cost-effective means of documenting sites and field systems over large tracts of land, especially in terrain that is remote and difficult to access. And where field survey is contemplated, air photographs may also be useful as an aid to interpretation on the ground or for purposes of illustration. The relatively new possibility of using computer-generated digital terrain models means that *oblique* photographs of sites in variable terrain can now be used for accurate mapping.

The territory covered by this survey includes only a small number of earthwork sites on the Fell Sandstone moors above Doddington and Weetwood but many more on the northern fringes of the Cheviots where prehistoric settlements, fields and cultivation systems exist in considerable numbers. In some localities, as for example to the south and east of Yeavering Bell, complex patterns of earthworks form continuous landscapes extending over several square kilometres and, on occasion, it may even be possible to detect the very slight surface traces of such ephemeral structures as prehistoric roundhouses or lines of palisade that were built entirely out of timber. While features such as these are often most clearly recognisable on air photographs, there may be instances where they are more easily detectable on the ground. At Mid Hill, in the College valley, for example, a recent field survey identified timber roundhouses and a possible palisade within a hillfort, none of which had previously been recognised even though the site had been photographed from the air under near-ideal conditions (Oswald and McOmish 2002b). In most cases though, air photography and ground survey can most usefully be regarded as complementary techniques that are best used in tandem.

In cultivated lowland areas, the situation is of course very different and here cropmarks recorded by aerial photography are generally the most readily available guide to what may lie buried beneath the surface. Instead of upstanding banks and stone walls, archaeological sites are represented almost exclusively by negative features, such as pits and ditches, which have been dug into the underlying subsoil, and we must extrapolate from these truncated elements how the long-vanished, above-ground structures may have looked and what the relationships between them may have been. These are some of the ways in which the contrasting and essentially complementary nature of the archaeological evidence as it survives in upland and lowland areas imposes limits on the kinds of interpretation and inference that can be drawn in each case.

## A BRIEF HISTORY OF AERIAL RECONNAISSANCE IN NORTH NORTHUMBERLAND

This section builds on the 'Reconnaissance History' section presented in Chapter 4 of the companion volume but deals specifically with the history of aerial reconnaissance as it relates to the Milfield Basin study area rather than the wider Till-Tweed study area which is the focus of Volume 1. Inevitably there is an element of repetition but this has been kept to a minimum so as to allow the context of the research history to be easily comprehended by the reader without resorting to continual cross-referencing.

In Northumberland, specialist archaeological air photography began immediately after the end of World War II when, in July 1945, Dr Kenneth St Joseph made his first flight over Northumberland at the start of a career in air photography that was to last for almost half a century. So far as Northumberland is concerned, St Joseph's flying followed an almost clockwork routine, the great majority of flights taking place in July or August while en route to or from Scotland where his primary concern was the investigation of Roman military strategy. Over a period of some 40 years, St Joseph, later assisted by Dr David Wilson, photographed many cropmarked sites in the vicinity of Milfield. These include most of the known henges and related burial monuments, as well as numerous Iron Age forts and Romano-British farmsteads. Nor were earthwork sites entirely neglected, though, in the early years especially, many were photographed in the summer months when much of the finer detail is masked by vegetation. Amongst St Joseph's early successes were the discoveries, in 1948 and 1949 respectively, of the Anglo-Saxon palace complexes at Milfield and Yeavering (Gates 2005).

In the context of the present survey, it is important to stress that, even in the early years, air photography was conducted within a framework of research. Indeed, right from the start, St Joseph's flying was intended to solve specific problems in a number of different fields, most notably those connected with the Roman conquest and occupation of Britain. In this he received encouragement and support from several quarters, particularly from Dr Ian Richmond who, once the War had ended, returned to Newcastle to resume his Lectureship in Roman British Archaeology at what was then still King's College, Durham. Richmond and St Joseph were friends and intellectual collaborators and, since the early 1930s, had been jointly involved in fieldwork and excavation in Northumberland and the Scottish Borders. Even in these early days, Richmond in particular was keenly appreciative of the value of air photographs as an aid to ground fieldwork. In this he received both encouragement and practical help from O. G. S. Crawford who had been a passionate advocate of their use since he joined the Ordnance Survey as its first Archaeology Officer in 1920 (Phillips 1980).

Towards the end of the War, Richmond and others made strenuous efforts to persuade the RAF to allow their training flights to be used as a means of acquiring the kind of air photographs needed by archaeologists. However, for a variety of technical and organisational reasons, all these efforts ended in failure and Richmond turned his attention to the possibilities of commissioning specialist air photographs through other channels, including local flying clubs. He also made contact with Sir Walter Aitchison, a local businessman who lived at Coupland Castle near Wooler and whose family owned a chain of grocery stores. Responding to Richmond's far-sighted vision, Sir Walter agreed to set up a private trust, known as the Christianbury Trust, for the specific purpose of promoting archaeological fieldwork and conservation in the northern counties of England and in Scotland. With Richmond acting as Chairman, the Trust continued in operation for a period of ten years, from 1944 until Sir Walter's death in 1954. During this period sums of money were regularly paid to St Joseph to cover expenses incurred in the course of his flying activities and also to pay for excavation and fieldwork undertaken by himself and Richmond, mostly on Roman military sites in Northumberland and the Border counties of Scotland.

As it happens, Sir Walter was himself not only a keen amateur field archaeologist but also an Honorary Correspondent for the Ordnance Survey in the 1940s and 1950s. In this capacity he spent a great deal of time in the Cheviot Hills where he travelled far and wide, by Land Rover and on foot, noting the existence of innumerable earthwork sites and communicating his discoveries to the Ordnance Survey in Southampton. Being of a hospitable nature, Sir Walter also kept open house for any archaeologists who happened to be working in the vicinity of Coupland, and at one time or another entertained many members of the Scottish Royal Commission (Royal Commission on the Ancient and Historic Monuments of Scotland – or RCAHMS), especially when work was resumed on the Roxburghshire Inventory after the end of the War.

It has also been suggested that Sir Walter may have had a hand in persuading the RAF to undertake a wide-ranging photographic sortie over the northern Cheviots through his social contacts with Group Captain James Addams who was Officer Commanding at RAF Milfield from 1941–46. The sortie in question (ref. CPE/Scot/319) was undertaken as part of the National Air Survey by an aircraft from 540 Squadron on detachment at Leuchars and was carried out on 18 March 1948 in conditions that were near-ideal for the recording of earthworks. The resulting cover straddles the Border extending east to west from Chillingham to Hawick and north to south from Wooler to Holystone, and the photographs, numbering more than 1000 in all, proved of immense value to Investigators of the Scottish Royal Commission working in Roxburghshire where they were particularly helpful in the identification of timber-built palisaded settlements surviving in the form of earthworks (Steer 1949).

Whatever Sir Walter's role in this undertaking may have been, he himself bought a full set of prints which he had professionally mounted on card and stored in handsome, purpose-made boxes. Following the lead given by the Scottish Royal Commission, he took these photographs with him into the field and annotated them on the reverse with notes recording his observations. From time to time, he sent the accumulated information to Southampton where it was duly incorporated into the Ordnance Survey Archaeology Division's record system.

It will be clear from what has been said above that, from its inception, archaeological air photography in this region was intended to serve a number of different purposes, both local and national, and that one of its main uses was as an aid to ground-based fieldwork. In view of Sir Walter Aitchison's leading role in this enterprise, it is entirely fitting that it was on one of the flights which Sir Walter himself helped to sponsor that St Joseph discovered the cropmark complex at Yeavering that was eventually shown to mark the 7th-century Anglo-Saxon palace of *Gefrin* (Gates 2005).

Regular flights by St Joseph and David Wilson on behalf of the Cambridge Committee for Aerial Photography (CUCAP) continued into the late 1980s. Meanwhile, locally based flying by Dr Norman McCord of Newcastle University was also making a significant contribution to our knowledge of cropmarked sites in the Milfield area. In the years 1969–71, McCord discovered a number of important cropmarked sites on and around the Milfield Plain including several henge monuments and pit alignments, together with numerous Iron Age forts and Romano-British settlements. No less important, the results of this reconnaissance were promptly put into the public domain in the second of two articles written jointly with George Jobey and published in *Archaeologia Aeliana* (McCord and Jobey 1971). As well as reproducing a representative selection of photographs of cropmarked sites, the authors put forward a provisional scheme for classifying sites according to their shape in plan and, in the case of settlements of the late prehistoric and Roman periods, the number and spacing of their enclosing ditches. This morphological scheme was based on the results of fieldwork and excavation elsewhere in the region and, in modified form, still has validity today. One site recorded by Norman McCord in 1971, which came too late to be included in that year's article, was the Anglo-Saxon settlement at Thirlings. Nevertheless, it was McCord who first drew Thirlings to the attention of colleagues, thereby initiating a long series of excavations beginning in 1973 (O'Brien and Miket 1991).

McCord's last flight over Milfield took place in 1972, and it was not until 1977 that locally based flying was resumed by the present writer. Unfortunately, this means that virtually no flying took place in the Milfield area during the exceptionally dry summer of 1976 which is universally recognised as one of the most productive years ever for cropmarks in the UK. Thereafter, from 1977 to 1996, most arable parts of Northumberland between the Tyne and the Tweed were subject to regular monitoring from the air during the summer months, the precise number of flights in any one year being dictated by the prevailing weather and crop conditions. As a result, there was a steady increase in the number of cropmarked sites recorded year on year. Indeed, with the exception of three years – 1985, 1991 and 1993 – when no flying took place, the number of 'new' sites recorded over the county as a whole regularly ran well into double figures, reaching an all time maximum of 171 in 1994 (Gates and Deegan 2009). It is also worth noting that the percentage of new sites reached levels of between 33 and 55% in ten out of these sixteen years, strongly implying that the point had not yet been reached where it could be argued that diminishing returns would not justify the effort or expense of further work.

In 1977, and in the years that followed, many flying hours were devoted to the recording of earthwork sites, not only in the Cheviots but more widely over the Northumberland landscape. As a consequence of this work, a large number of previously unrecognised settlements and field systems attributable to the prehistoric and Roman periods came to light in areas where they were formerly conspicuous only by their absence. Apart from their value as a primary record of what existed on the ground, air photographs taken during these flights also proved of critical importance in demonstrating the need for ground survey as the most appropriate means of documenting field systems and other upland sites that were considered vulnerable to destruction by ploughing or afforestation. Convinced by this photographic evidence, in 1979 and again in 1981 the Department of the Environment provided funds for programmes of survey work which were carried out with the assistance of Stewart Ainsworth, then on secondment from the Ordnance Survey's Archaeology Division (Gates and Ainsworth 1979; 1981). In these two campaigns, air photographs proved invaluable both in choosing sites where survey might prove worthwhile and as aids to interpretation on the ground. One important result of this work was the recognition, for the first time, of the widespread survival of Roman and pre-Roman field systems as upstanding earthworks in upland parts of Northumberland. On plan, these field systems could be divided into two basic types: one characterised by small, irregular fields or plots up to 0.5ha in size, and the other by a more regular layout of larger fields with some reaching as much as 4.0ha in area and incorporating walled trackways. Fields of the first type were commonly associated with settlements of unenclosed roundhouses, at least some of which seemed likely to be of Bronze or Iron Age date (Gates 1983). By contrast, the larger, more organised field systems were invariably associated with Late Iron Age or Roman Iron Age enclosed settlements (Gates 1982a).

Air photography has again contributed to two projects recently commissioned by the Northumberland National Park which also impinge on the territory covered by this study. The first, called 'Discovering our Hillfort Heritage', required both black and white and colour photographs (including many stereo pairs) to be taken of all 42 hillforts within the boundaries of the Park. These include several well known sites which fall within the compass of the present survey, namely Yeavering Bell, Humbleton Hill, Gleadscleugh, West Hill, St Gregory's Hill and Hethpool Bell. All these sites were photographed in the spring or early summer of 1997 before detailed ground survey and analysis was carried out by staff of the former RCHME and latterly by English Heritage (Oswald *et al.* 2006; 2008).

Another set of photographs was specially commissioned by Rob Young of the Northumberland National Park in 2003–04 as a contribution to the 'Historic Village Atlas' (Carlton and Rushworth 2004). This covered seventeen historic villages within the Park and included three hamlets, Akeld, Kirknewton and Westnewton, which fall within the boundary of this study.

Contrary to popular perception, much aerial survey is routine in nature. Particularly where cropmarks are concerned, the evidence should be seen as essentially cumulative, and the significance of any one element, whether an enclosure or a fragment of ditch, will only become clear in the context of the broader picture as it slowly emerges over time. Consequently the value of any one feature or site, however unique or spectacular, should to some extent be judged according to the contribution it makes to this wider pattern. Indeed, the value of a long-term programme of air reconnaissance and photography lies mainly in its ability to contribute to the study of that which is persistent over time or space and it is against this yardstick that success or failure should be measured.

## THE PREHISTORIC LANDSCAPE 4000–2000 BC

### Neolithic

No contribution dealing exclusively with evidence from air photography can pretend to offer either a continuous or balanced narrative of the development of human society in prehistory and in what follows it is inevitable that some aspects will receive disproportionate attention while others will be neglected or even omitted altogether.

For example, air photography has as yet thrown up no archaeological evidence for periods earlier than the Neolithic in this area though prior human activity is widely attested by abundant lithic scatters (see Chapter 4). On the other hand the recent discovery at Howick of a Mesolithic house (Waddington 2007a) is a most welcome development, not only because it is valuable in itself but also because it holds out some hope that one day it may be possible to identify structures of a similar kind amongst the multitude of unenclosed roundhouses represented by cropmarks elsewhere in Northumberland and further afield.

In the vicinity of Milfield, pits containing sherds of Carinated Bowl pottery have been encountered during excavation with ever increasing frequency (see Chapter 5). While it is doubtful that air photography could add anything to our knowledge of this period it is not entirely beyond the realms of possibility that contemporary post-built structures, if they exist, could one day be recognised in the form of cropmarks. Certainly, there are occasional instances where individual postholes can be distinguished within the foundation trenches of Iron Age ring-groove houses, as was for example the case with a timber-built roundhouse at Wooperton (NU 047 203) (McCord and Jobey 1971, pl. XVI no. 1).

Be that as it may, there are already a number of locations where seemingly random scatters of small pits have been recorded as cropmarks on the Milfield Plain, including a number of sites in the vicinity of Thirlings (*c.* NT 957 323) and the Coupland henge (*c.* NT 940 328), or as a component of larger complexes of cropmarks around the Milfield Anglo-Saxon palace (*c.* NT 940 340) and at Ford Westfield (*c.* NT 941 365). While it is not possible to suggest even an approximate date for any of these pits on the basis of air photographic evidence alone, the repeated discovery of groups of pits containing Carinated Bowl and later Neolithic pottery elsewhere on the Milfield Plain holds out the possibility that some of these cropmarked sites may likewise prove to be of Neolithic date.

In addition to the above, there are a number of other cropmarked sites which could represent Neolithic monuments of one kind or another. For example, a possible causewayed enclosure was discovered on the south-east facing slopes of Flodden Hill (NT 9237 3546) in 1994 (Gates and Palmer 2004). If confirmed by excavation as a Neolithic monument this would represent an important addition to our knowledge of sites in this class which are not only rare nationally but especially so in the north (Waddington 1997; Oswald *et al.* 2001). To date only two or three other possible causewayed enclosures exist in the Borders Region or adjacent parts of the North-East, the most promising being a possible example near Whitmuirhaugh, on the south bank of the Tweed and 17km to the west of Flodden Hill (Smith 1991), and another underneath South Shields Roman fort (Hodgson *et al.* 2001).

Other cropmarked monuments near Milfield for which dates in the Neolithic period have been suggested include three possible mortuary enclosures. Two of these lie close together at the foot of Yeavering Bell and are nearly identical on plan, each being defined by a relatively broad ditch which forms a sub-rectangular enclosure with overall dimensions of about 70m long by 20–25m wide. The westernmost enclosure is somewhat more regular in shape with sharp, angular corners and two breaks in the ditch, either or both of which could represent formal entrances. By contrast, the eastern enclosure has rounded rather than angular corners but is otherwise so similar in plan that it is difficult to see the two sites as other than functionally and chronologically related.

When first published, more than 30 years ago, it was suggested that these enclosures might represent an outlying element of the Anglo-Saxon palace site at Yeavering which lies only 1.5km to the west (McCord and Jobey 1971; 120 and pl. XII, no. 2). However, the more accurate measurements enabled by this study show beyond doubt that these enclosures are too large to represent roofed structures and so add support to the interpretation proposed by Tim Darvill, who first identified the western enclosure as a mortuary enclosure in his book on 'Prehistoric Britain from the Air' (Darvill 1996, plate 98).

One other cropmarked site in this same area has been put forward by Roger Miket as a possible mortuary enclosure (Miket 1976). The site in question occupies level ground on the glaciodeltaic terrace surface in the middle of the Milfield Plain, some 130m north-west of the Ewart henge (HER 2153). The enclosure in this case measures about 30m in length by 20–25m wide and has roughly parallel sides with rounded ends. Apart from one break in the south-east corner, the circuit of the ditch appears continuous and no pits or other features are visible in the interior. What is, however, apparent is that the ditch defining the Ewart enclosure is significantly narrower than either of the Yeavering examples and for this reason its identity as a possible mortuary enclosure should perhaps be treated with a greater degree of caution.

## Henges and related ceremonial monuments

The Milfield Basin is well known for its concentration of henges and related ceremonial monuments (see Table 3.1 and Chapter 5 for dating) which together form a ritual complex comparable to those at Forteviot in Perthshire (St Joseph 1978) and Thornborough in North Yorkshire (Harding 2003). Seven henges near Milfield have so far been described in print (Harding 1981; Harding and Lee 1987) and to these may now be added an eighth possible example at Ford Bridge West (HER 19684). This was first recorded as a cropmark in 1996 on the north side of the B6354 road leading from Flodden Lodge to Ford Bridge, where it occupies level ground barely 100m from the left bank of the river Till (Fig. 3.3). Although partly obscured by a belt of trees, the cropmark does indeed appear to represent a henge as the air photographs show it as approximately circular with an overall diameter of about 25m and a ditch that is noticeably broad in relation to its diameter. One entrance is visible on the north-facing side and several large pits are visible in the interior. On plan the monument thus resembles some of the other small henges in the vicinity of Milfield and there can be little doubt that this is indeed another site of the same type, especially as its position in close proximity to the river echoes that of the nearest of the other henges, at Milfield North. Accordingly, if confirmed as a henge, the Ford Bridge example would extend the known limits of the ritual complex northwards by a distance of some 2km. Fifty metres to the north-east of the putative henge, the air photographs show a second ditched enclosure of approximately the same dimensions but somewhat less regular shape (Fig. 3.3). While this may be in some way related, its possible identity as yet another henge monument appears doubtful.

The Coupland henge is the largest monument of this type in the Milfield group and is also unusual in that there is no air photographic evidence for any internal settings of posts or stones. The ditch has an overall diameter of 70–80m and even in its ploughed-down state traces of an external bank can still be made out as a very slight swelling in the ground surface (see Volume 1, Chapter 5). Even as recently as 1950 the bank was still sufficiently clear to allow its diameter to be measured at 95m from crest to crest (Atkinson 1950). This is the only henge in the group that is still visible as a residual earthwork, all the others being recorded solely as cropmarks.

The Milfield North henge, too, is unusual in that it is accompanied by a double alignment of paired pits. While the lateral spacing between each pair of pits is fairly regular, at around 3 to 4m, the longitudinal intervals are more variable with gaps as much as 10 to 30m in length between adjacent pits in each alignment. As planned from air photographs, the pits form an arc 85m long on a radius of *c.* 190m measured from the centre of the henge. A single pair of pits was excavated by Anthony Harding one of which yielded redeposited sherds of what was originally described as Grooved Ware, though this attribution is now seen as incorrect (Harding 1981; Gibson 2002a; Millson *et al*. 2011). Samples of charcoal from the same pit gave calibrated dates in the range 2290–1780 cal BC. Both of the excavated pits were shown to have held upright posts which the excavator believed may have been used to sight through or over the henge towards the southern skyline, where the distinctive twin peaks of Yeavering Bell are clearly visible on the horizon. Alternatively, the double row of pits could perhaps be explained as some kind of ceremonial avenue or processional way (Waddington 1999a) comparable to those discovered at Thornborough and Dishforth in North Yorkshire (Tavener 1996).

Although the double row of pits at Milfield North has frequently been described as a 'pit alignment' it does in fact have little, if anything, in common with those single lines of spaced pits which are normally referred to under this heading, many of which seem not to have held posts and can more plausibly be accounted for as linear boundaries of some kind. Accordingly, it would be misleading to assume that the late third or early second millennium dates obtained from the double pit row at Milfield North give even the most generalised idea of the context of any of the single pit alignments which have now been recorded as cropmarks on the Milfield Plain and at an increasingly large number of other locations in Northumberland, from the Tweed southwards to the Tyne.

Another distinctive, if not unique, aspect of the henge monuments on the Milfield Plain is their apparent relationship with what has been described as an 'avenue' or 'droveway'. This enigmatic feature is represented by a pair of more or less parallel ditches which have been traced as cropmarks from a point close to the western perimeter of the *Maelmin* palace complex southwards as far as the Marleyknowe henge – a total distance of 1.75km. There is much about this structure which remains unexplained (see also Chapter 5) and it is the view of all the authors of this volume that neither its date nor its function has yet been satisfactorily established. Nevertheless, for the sake of convenience, it will continue to be referred to here as an 'avenue'.

As far as can be determined from air photographs, the ditches of the avenue are of only slight proportions, an impression which has also been confirmed by excavations at both West Plain (Harding 1981) and Coupland (Volume 1, Chapter 5) which in each case showed that neither ditch is broader than 1.6m or deeper than 0.6m as measured from the present ground surface. From the Coupland henge southwards, the course of the avenue is well documented on air photographs and here the ditches are broadly parallel, at 10 to 35m apart, though with many small kinks and unexplained changes of direction on either side (Harding 1981; Fig. 3.13). Certainly no particular effort has been made to maintain a strictly uniform distance between the ditches or to achieve either a straight or a smoothly curving line. North of the Coupland henge, the avenue is less well recorded by air photography and there are several sections 100m or more in length where it cannot be traced at all. Nevertheless, so far as can be judged, the ditches which form this part of the avenue are slightly closer together and their alignment is straighter than is the case further south.

Towards its northern extremity (*c.* NT 9390 3377), the avenue passes close to the west side of a sub-rectangular enclosure, formed by what seems to be a palisade trench rather than a ditch, and as it does so the eastern avenue ditch bends inwards in such a way as to suggest that it may actually be avoiding the enclosure. If this interpretation is correct, it would imply that the enclosure was standing when the avenue ditches were dug and a date for the construction of the enclosure

*Figure 3.3. Ford Bridge West henge. A probable henge is partially visible as a cropmark projecting from a belt of trees. 50m to the east of the henge, and slightly closer to the camera, a second, less regularly shaped enclosure may represent a related ritual monument. (Copyright Tim Gates, 22 July 1996).*

would therefore give a *terminus post quem* for the avenue. This hypothesis could only be tested by excavation as the air photographic evidence provides no real clue to the date of the enclosure except that it lies close to the *Maelmin* palace site and contains what might be either a *Grubenhaus* or a large pit. But even if this latter feature were shown to be a *Grubenhaus* its presence within the enclosure might still be no more than a coincidence and therefore without significance for the dating of either the enclosure or the avenue.

Over the southern portion of its length, the avenue comes into close physical proximity with the henges at Milfield South, Coupland and Marleyknowe. The present air photographic transcription has added little to our understanding of the relationship between the avenue ditches and these three monuments, and the details remain essentially as they were described almost 30 years ago by Anthony Harding (Harding 1981). Likewise, Harding's argument that the construction of the avenue must postdate the building of the Coupland henge remains valid and this view has again been confirmed in excavations recently undertaken by Waddington (see Volume 1, Chapter 5).

As Roger Palmer has pointed out (Palmer pers. comm.), the identification of the avenue as a 'droveway' is made rather less likely by the fact that it appears to be unconnected with any identifiable settlement or field system and by the apparent absence at either end of the kind of funnel-shaped structure which is commonly associated with droveways used in stock management. As it happens, such a feature does exist elsewhere on the Milfield Plain though it is not related to the avenue (see below). If, however, the avenue served an essentially ceremonial function, as both Harding and Waddington maintain, then the lack of characteristics typical of a droveway need not be a problem. As regards its date, contexts much later than the Neolithic or Bronze Age could be envisaged and Bradley has already noted the possibility of a connection with the Anglo-Saxon complex at *Maelmin* (Bradley 1993).

In a review article, Clive Waddington has speculated that the single pit alignments at Ewart on the Milfield Plain may have formed an integral part of a Late Neolithic landscape which separated off the henge and possible mortuary enclosure at Ewart referred to above (Waddington 1997, fig. 2). At the same time, he has drawn attention to the wide chronological spread of dates currently available for pit alignments elsewhere in Britain, with examples dating to the Bronze Age, Iron Age and Roman periods (*ibid.*). Here a key problem has been the lack of secure dating evidence from excavated sites and for this reason Waddington's recent excavations on the single pit alignment at Redscar Bridge are especially welcome as they have produced a series of radiocarbon dates indicating a *terminus post quem* for the maintenance of the alignment as a functioning boundary, if not necessarily its construction, somewhere between the Roman Iron Age and the early post-Roman period (see Volume 1, Chapter 5). Elsewhere in the same locality, Miket's excavation on the Ewart 1 single pit alignment produced undoubted Grooved Ware pottery (Miket 1981) though some commentators have suggested this material could be residual (Barber 1985), whilst Harding's excavation on the Milfield North double pit alignment produced non-Beaker pottery associated with Beaker period radiocarbon dates (see above). Overall, then, the results do not yet form a coherent picture.

Questions about the date and function of pit alignments are ones to which we shall return later in this report but at this point it is worth noting that this class of monument is far more widely distributed across the Tyne-Forth region than was realised even as recently as twenty years ago. So far as Northumberland is concerned, the distribution of cropmarked single pit alignments now extends from the Tweed valley southwards at least as far as the River Wansbeck. Additionally, two further examples have recently been encountered by chance during rescue excavations near Blagdon, on the northern fringes of the Tyneside conurbation (Stephen Speak and Gary Brogan pers. comm.). In the great majority of cases air photographs provide little if anything in the way of contextual information but such data as presently exist would seem to suggest plausible contexts somewhere in the pre-Roman or Roman Iron Age for most single pit alignments rather than earlier periods (see also Volume 1, Chapter 4).

## THE PREHISTORIC LANDSCAPE 2000–750 BC

### Cairnfields, burials and unenclosed settlements

Cairnfields, incorporating anywhere from a small handful of cairns to upwards of a hundred or more, are widely distributed in the northern Cheviots where they are most common on flat or gently sloping terrain above the 250m contour that has not been disturbed by later ploughing. Within the territory covered by this survey, further small groups of clearance cairns also exist on the Fell Sandstones on Weetwood Moor at altitudes above 150m.

None of the cairnfields in this area has yet been satisfactorily dated, though the occasional presence of Early Bronze Age burial monuments amongst the smaller heaps of stone encourages the idea that some of them may belong in contexts as early as the second millennium cal BC. Even in areas where burial monuments and clearance cairns exist side by side, however, the case for an association in the archaeological sense is by no means easy to demonstrate. At Millstone Hill, near Chatton, for example, where three kerbed burial cairns were accompanied by more than eighty small clearance cairns, it was suggested that the burial monuments were constructed on former agricultural land that had been exhausted by cultivation and then abandoned (Jobey 1981). A charcoal sample from a cremation deposit in the centre of burial cairn C2 was submitted to Harwell but, having proven too small for conventional dating, was subsequently discarded (info. Dr Jill Walker). In the northern Cheviots, as on the Fell Sandstones, burial cairns and cremation cemeteries quite commonly occur as a component of some of the larger cairnfields, though again it does not necessarily follow that all these monuments are of the same date. Near Tom Tallon's Crag, in the hinterland to the south of Yeavering Bell, the remains of an exceptionally large burial cairn stand on the edge of a small cairnfield (*c.* NT 9322 9799). In 1858 the cairn was dismantled, yielding enough stone to build more than 900m of the adjacent boundary wall (Tomlinson 1888). In the process a cist and some bones were discovered but no pottery or other grave goods are mentioned in contemporary accounts. Again, on the south-eastern slopes of Fredden Hill (NT 961 262), four large burial cairns are situated within the boundaries of an extensive cairnfield. In none of these instances, however, can the relationship between the burial monuments and the accompanying cairnfields be determined simply on the basis of visual inspection alone.

Questions of association are also an issue in relation to the excavated Bronze Age site at Houseledge near Wooler. In this instance two settlements of unenclosed roundhouses, Houseledge West and Houseledge East, form part of a complex pattern of earthworks which includes an extensive cairnfield and at least two Early Bronze Age burial monuments (Burgess 1984). Excavations between 1979 and 1982 produced a range of finds, including a considerable quantity of cord-ornamented pottery, for which dates in the early second millennium cal BC would be appropriate. At the same time three successive phases of land use were distinguished, beginning with the cairnfield and followed first by a series of lynchets or terraces and finally by a more or less regular arrangement of embanked field plots. Though several suspected house sites were excavated not all proved to have accommodated roofed structures. At Houseledge West, site AB, however, a timber building had been reconstructed on the same site on at least three different occasions, appearing in its final manifestation as a ring-bank structure that seems to have been associated with the system of embanked field plots. Pending final publication, it is not yet clear exactly how some of the other features, including the burials, the clearance cairns and the lynchets or terraces, relate to earlier settlement remains. While there seems little doubt that settlement on this site was long-lived, it was not necessarily continuous and it remains to be seen what is the date of the earliest timber roundhouse on site AB, which was of post-built construction, and whether it can be positively associated with any of the lynchets or terraces that are stratigraphically earlier than the later field plots. For the time being, the existence on this site of an identifiable settlement of Early Bronze Age date remains an exciting possibility.

In the Northumberland uplands, extant settlements of unenclosed roundhouses commonly appear as earthworks in the form of either ring-banks or ring-grooves or, less commonly, as platforms on steeper slopes. On some sites as many as a dozen buildings may be present though the average number is only two and 50% of the settlements surveyed in the campaigns of fieldwork undertaken in 1979 and 1981 possessed only a single visible structure (Gates 1983). The same surveys also showed that roughly one third of these settlements are accompanied by some form of land clearance, be this in the form of embanked fields or plots, or groups of clearance cairns. Where fields or plots are present, they are generally small, most being less than 0.25ha in area, though examples as large as 2ha have also been recorded. In some cases, where settlements are accompanied by fields or other evidence of stone clearance at heights of 300m and above, dates no later than the latter part of the second millennium cal BC might be contemplated, given the obvious difficulty of ripening crops at these altitudes after the onset of the Late Bronze Age climatic deterioration (see Chapters 2 and 6). At the same time, it was foreseen that such a basic form of settlement could well prove to have had a long chronological currency, and dates in the first millennium cal BC are now available for a number of unenclosed settlements in lowland contexts in the Tyne-Forth region, including sites on the Milfield Plain and at East Brunton in Tyne and Wear (Jobey 1985; Tyne and Wear Museums report, forthcoming; Johnson and Waddington 2008).

In the context of a review of upland settlement in Britain in the second millennium cal BC, Colin Burgess proposed that climatic deterioration in the period 1250–1000 cal BC may have provoked a catastrophic decline in population and the wholesale withdrawal of settlement from upland areas (Burgess 1985). However, as Young has pointed out, the concept of a large-scale reduction of population in the uplands in the later second millennium cal BC is not supported by pollen evidence (Young 2004, 166), while Jobey also prefers to see only a partial withdrawal of settlement away from the upland interior in the direction of the main river valleys at this time. In the Cheviots, for example, such a withdrawal may have amounted to only a kilometre or two, as shown by the relative distribution of unenclosed settlements on the one hand and by palisades and hillforts on the other (Jobey 1985, fig. 10.9).

Because only a small number of Bronze Age settlements in the Tyne-Forth region have so far been investigated, our knowledge of the contemporary economy is limited. However, excavations on an unenclosed settlement at Halls Hill in Redesdale (NY 907 887) show that a range of cereals, including emmer wheat (*Triticum dicoccum*), spelt wheat (*T. spelta*) and six-row barley (*Hordeum vulgare*), was being cultivated in the period between the late second and the early or middle first millennium cal BC. The final abandonment of Halls Hill was marked by debris from a large fire which also contained significant quantities of charred plant matter, including grains of both emmer wheat and six-row barley. Three radiocarbon dates on this material, including one on a single grain of emmer wheat, produced identical dates ranging from 810 to 540 cal BC (van der Veen 1992; Gates 2009, fig. 5.2; Chapter 6 of this volume).

Both on the Milfield Plain itself and on the lower slopes of the surrounding hills, where ploughing has erased all but the most resilient earthworks, our knowledge of early settlement is limited to the evidence of cropmarks and chance discoveries made in excavations on other kinds of site. For example, amongst the fifty-odd ring ditches recorded on air photographs (Table 3.2) there are some which look more like the construction trenches of timber-built roundhouses than barrows or burial monuments and might on that account represent unenclosed settlements.

One ring ditch that did indeed mark the site of an unenclosed roundhouse was excavated in 1981 at Lookout Plantation, near Crookham, prior to the construction of a natural gas pipeline. Although the ring ditch in this instance was only *c.* 10m in diameter it nevertheless produced a recognisable cropmark on a vertical air photograph. Excavation showed that the outside wall of the roundhouse had been supported by vertical posts set at intervals in a foundation trench with a doorway in the south-west facing side. In the interior, a second ring of posts, presumably connected at the top by a ring beam, gave additional support to the roof. Charcoal samples from four postholes suggested two phases of occupation, in the Early and Middle Bronze Age (Monaghan 1994). Since the excavations at Lookout Plantation were completed, further air photography has revealed the existence of at least one other ring ditch of comparable size and appearance in the immediate vicinity of the site, together with a network of linear cropmarks. While some of these linear markings may

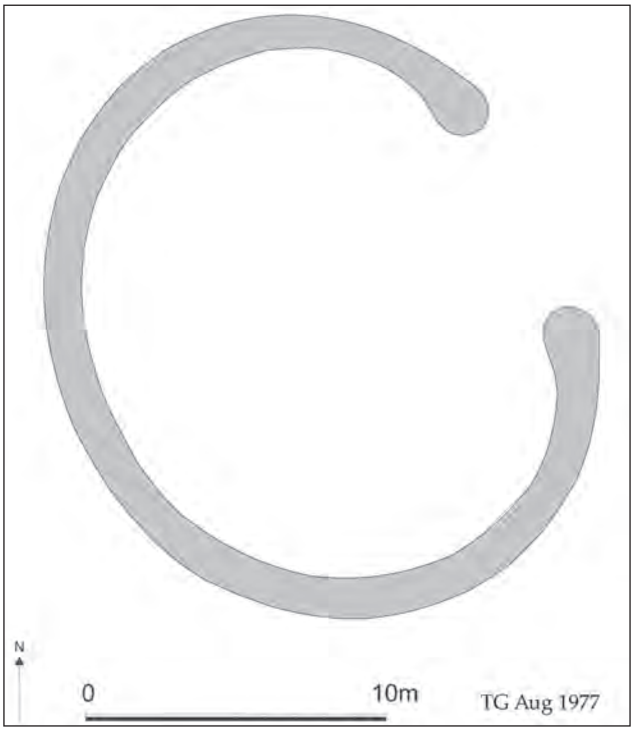



*Figure 3.4. Plan of a penannular enclosure revealed as a grassmark on the Wooler Cricket Club pitch in August 1977.*

be of periglacial origin, others could represent fields contemporary with the settlement.

More recently, two post-built roundhouses have been excavated at Cheviot Quarry North and both have been tightly dated to the 10th century cal BC, which is to say to the beginning of the Late Bronze Age (Johnson and Waddington 2008). In addition, three further post-built roundhouses have been excavated at Lanton Quarry, two of which have a single radiocarbon date suggesting that one belongs to the Middle Bronze Age and the other to the Late Bronze Age (Waddington 2009; see also Chapter 6).

Included amongst the other ring ditches listed in Table 3.2 are two groups of cropmarks on Whitton Hill situated one on either side of the A697 and less than a kilometre to the north of Milfield village. In all, eleven ring ditches are visible on air photographs, one of which has two concentric ditches and an overall diameter of 15m, while all the others are single-ditched with diameters in some cases as small as 3.5m. In two or three instances, where large pits are visible at or near the centre of the ring ditch, it can reasonably be inferred that these were burial or ritual monuments of some kind. Where such pits are absent, however, the possibility that some of the larger examples might represent domestic roundhouses cannot absolutely be ruled out.

The Whitton Hill ring ditches have been more fully described by Roger Miket who excavated two monuments, including the double ring ditch (Site 1) alluded to above. In the event, both sites proved to be henge-related or burial monuments with complicated structural histories and the dating of Site 1 shows that it was broadly contemporary with the nearby Milfield North henge (Miket 1985).

The smaller of the two ring ditches excavated by Miket at Whitton Hill (Site 2) was formed by an unsegmented penannular ditch, 10m in diameter, accompanied by slight traces of an external bank and broken by a gap in the south-facing side. On the south side of the monument, an arc of small pits ran just inside the lip of the ditch. The purpose of these pits could not finally be established but two larger pits at the centre of the monument both contained cremation burials. A radiocarbon date obtained from the primary silt of the ditch suggests that Whitton Hill site 2 may have been constructed around 2000 cal BC, though two other dates, one on charcoal associated with one of the cremations and the other from a later deposit of ditch silt, centre in the mid-second millennium cal BC, perhaps indicating that the monument remained in use for a considerable period of time.

By analogy with Whitton Hill, a ritual function also looks likely for some of the other ring ditches on the Milfield Plain which for one reason or another do not look convincing as unenclosed roundhouses. These include two sites, at NT 9369 3417 (HER 19665) and NT 9573 3111 (HER 2161), where the ditch is both continuous and noticeably broad in relation to its diameter.

What is almost certainly a ritual monument of a different kind is situated on an alluvial terrace close to the Wooler Water where the Wooler Cricket Club now has its pitch (HER 3330). The site in question consists of an oval-shaped penannular ditch broken by a broad entrance causeway in the east-facing side. At times of severe drought the course of the ditch stands out as a band of bright green grass which is in stark contrast with the parched turf on other parts of the pitch. In just these conditions the opportunity was taken to make a sketch plan of this monument in August 1977 (Fig. 3.4). Although it has been suggested that the site might represent a henge (Miket 1976, 126, n. 10), the ditch is very much narrower than is the case with any of the other henge monuments on the Milfield Plain whose ditches typically measure 4m to 8m in breadth. Again, the apparent absence of pits or postholes in the interior might be thought unusual for a henge, although the evidence on this point cannot be conclusive and, as we have noted above, internal pits are also lacking at the Coupland henge. On balance, therefore, the site might better be accounted for either as a henge-related ritual monument or a cremation cemetery, rather than a henge in the classic sense.

Pits visible as cropmarks are not uncommon in the interiors of ring ditches elsewhere on the Milfield Plain, and quite a number of examples are documented in Table 3.2. If, as seems likely, at least some of these indicate burials, Early Bronze Age burial monuments may be a relatively common feature of the Plain. Taken together with the recent discovery of unenclosed roundhouses of both Middle and Late Bronze Age date at Cheviot Quarry North (see above), this suggests a more persistent presence on the Plain during the Bronze Age, by both the living and the dead, than has previously been envisaged (e.g. Burgess 1984, 142–3).

## THE PREHISTORIC LANDSCAPE 750 BC–AD 500

To assist comparisons, plans of a selection of cropmarked settlements and enclosures referred to in the following sections are reproduced at 1:5000 scale in Fig. 3.5 (palisades and multivallate lowland forts) and Fig. 3.6 (single-ditched enclosures and enclosures with two widely spaced ditches) where they are identified by their Historic Environment Record numbers. Although it is coming to seem increasingly old fashioned, the term 'hillfort' has been retained for settlements on hilltops which were contained within walls or ramparts of stone or earth even though these may in some cases have been intended as much for display as for defence. For their lowland equivalents, however, many if not most of which are not on hills, though still conspicuous in their landscape setting, I have preferred the term 'fort'. While not entirely satisfactory, this will do until such time as agreement has been reached on some better alternative.

### The pre-Roman and Roman Iron Age

#### *Palisades*

In Northumberland there is as yet nothing to compare with the Late Bronze Age 'proto-hillfort' at Thwing in Yorkshire (Manby 1979) though it has been suggested that a circular enclosure at Horsedean Plantation, near Chatton, consisting of a ditch accompanied by an inner line of palisade, may perhaps be of Late Bronze Age date (Miket 1986). More recently, dates between the 13th and 9th centuries cal BC have been obtained for three enclosed settlements, East Linton, Standingstone and Whittinghame Tower, examined as part of the Traprain Law Environs Project (Haselgrove 2009). Pending final publication, the implications of this unexpected discovery have yet to be assessed though it will no doubt prompt a careful re-examination of the morphology of settlement enclosures between the Tyne and Forth in the hope of identifying any specific features that would enable what has been termed a 'Late Bronze Age Enclosure Horizon' to be defined more closely. Meanwhile, at Traprain Law it has recently been demonstrated that a settlement of Late Bronze Age date existed on the summit where it was encircled by one, if not two, ramparts (info. Dr Fraser Hunter); and at Eildon Hill North (Owen 1992), too, there is a possibility of a similarly defended Late Bronze Age settlement. Although it is too early to say how widespread this phenomenon may be across the region as a whole, a Late Bronze Age origin for certain other hillforts might also be envisaged including, for example, Yeavering Bell.

Aside from these few and possibly exceptional sites, the earliest enclosed settlements that we can positively identify in Northumberland are those which consist of timber roundhouses contained within a perimeter formed by one or more lines of protective palisade (see Chapter 7 for dating summary). In the county as a whole, between 15 and 20 settlements of this type are known to exist as earthworks, though only one doubtful example lies within the area covered by this survey. This is the somewhat enigmatic structure of uncertain context on the eastern summit of Yeavering Bell. Additionally, roughly a dozen palisaded sites have come to light as cropmarks in the Milfield Basin survey area (see Table 3.3).

As will be apparent from the descriptions provided in Table 3.3, most cropmarked palisades are small enclosures, ranging from 0.1 to 0.5ha in size, and formed by a single line of palisade. Though visible traces of interior roundhouses or other signs of habitation are most often lacking, the majority of these settlements are too small to have accommodated more than a single roundhouse.

By contrast with these small, homestead-sized enclosures, two sites within the survey area stand out by virtue of their large size and the greater complexity of their enclosing palisades. The first of these, at Yeavering 1 (HER 19655), lies at the foot of Yeavering Bell and close to the site of the *Gefrin* Anglo-Saxon palace (Gates 2005, fig. 20, 3). In this case the perimeter is represented by twin palisade lines set 3m apart and though erosion has destroyed the southern half of the perimeter, and part of a large roundhouse placed off-centre within it, the diameter of the enclosure can be reliably estimated at *c.* 75m, giving an internal area of around 0.5ha. On plan, this particular palisaded enclosure bears a striking resemblance to the settlement at High Knowes 'A', near Alnham, for which an Early Iron Age context has been suggested, though no radiocarbon dates or artefacts of any kind were forthcoming in excavation (Jobey and Tait 1966).

At both High Knowes 'A' and Yeavering 1 the twin palisade trenches are strictly concentric and on that account can reasonably be assumed to have been in contemporary use. Moreover, at High Knowes 'A' this interpretation is reinforced by arrangements at the entrance where transverse slots on either side of the passageway probably supported hurdles which closed off the gaps between the palisades. On other sites in the region, such as Hayhope Knowe in Roxburghshire (Piggott 1949), twin lines of palisade occasionally

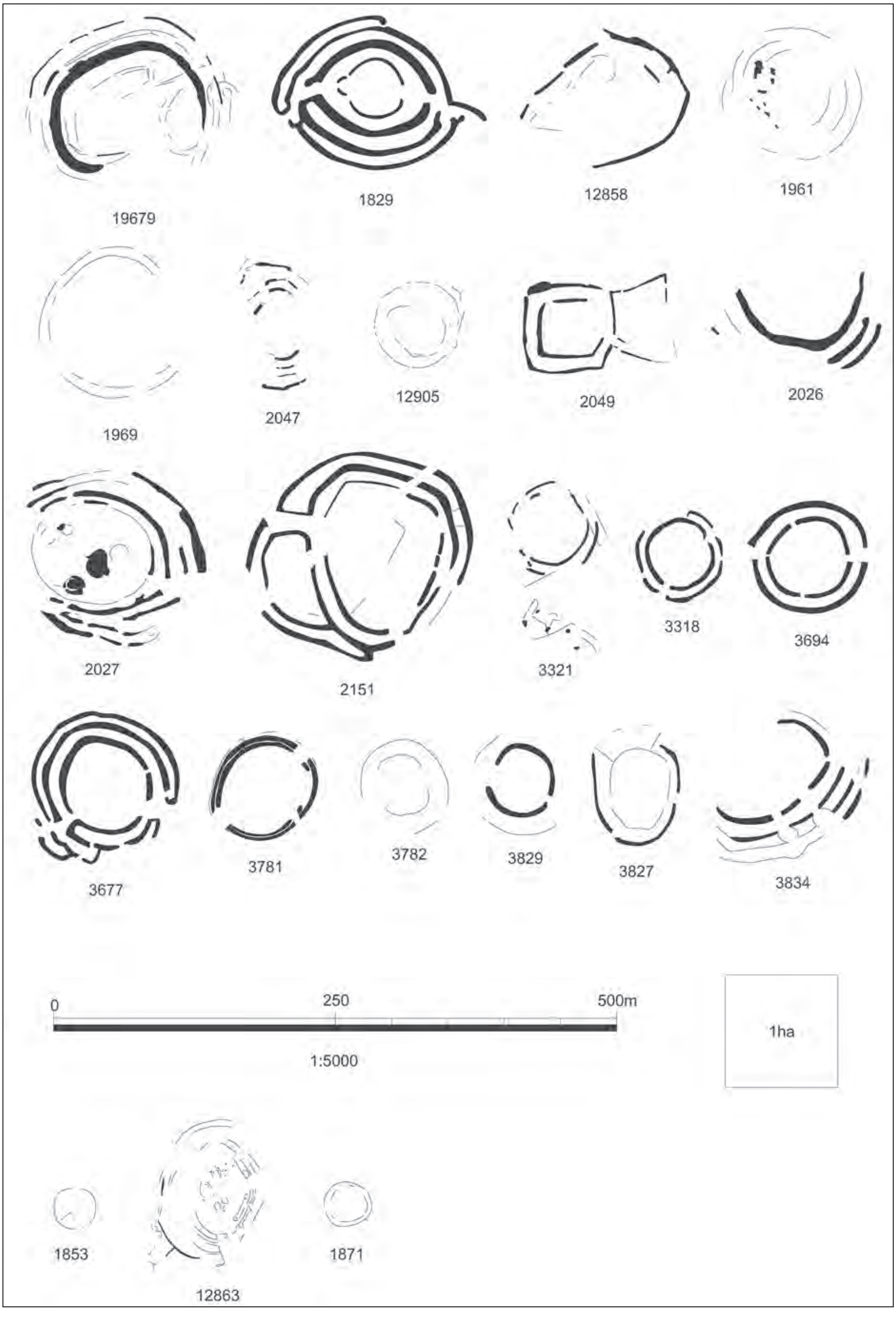



*Figure 3.5. Plans of selected multivallate lowland forts (top) and palisades (bottom) recorded as cropmarks and reproduced at 1:5000 scale. Original transcriptions at 1:10,000 scale by Rog Palmer. Sites are numbered according to their Historic Environment Record number.*

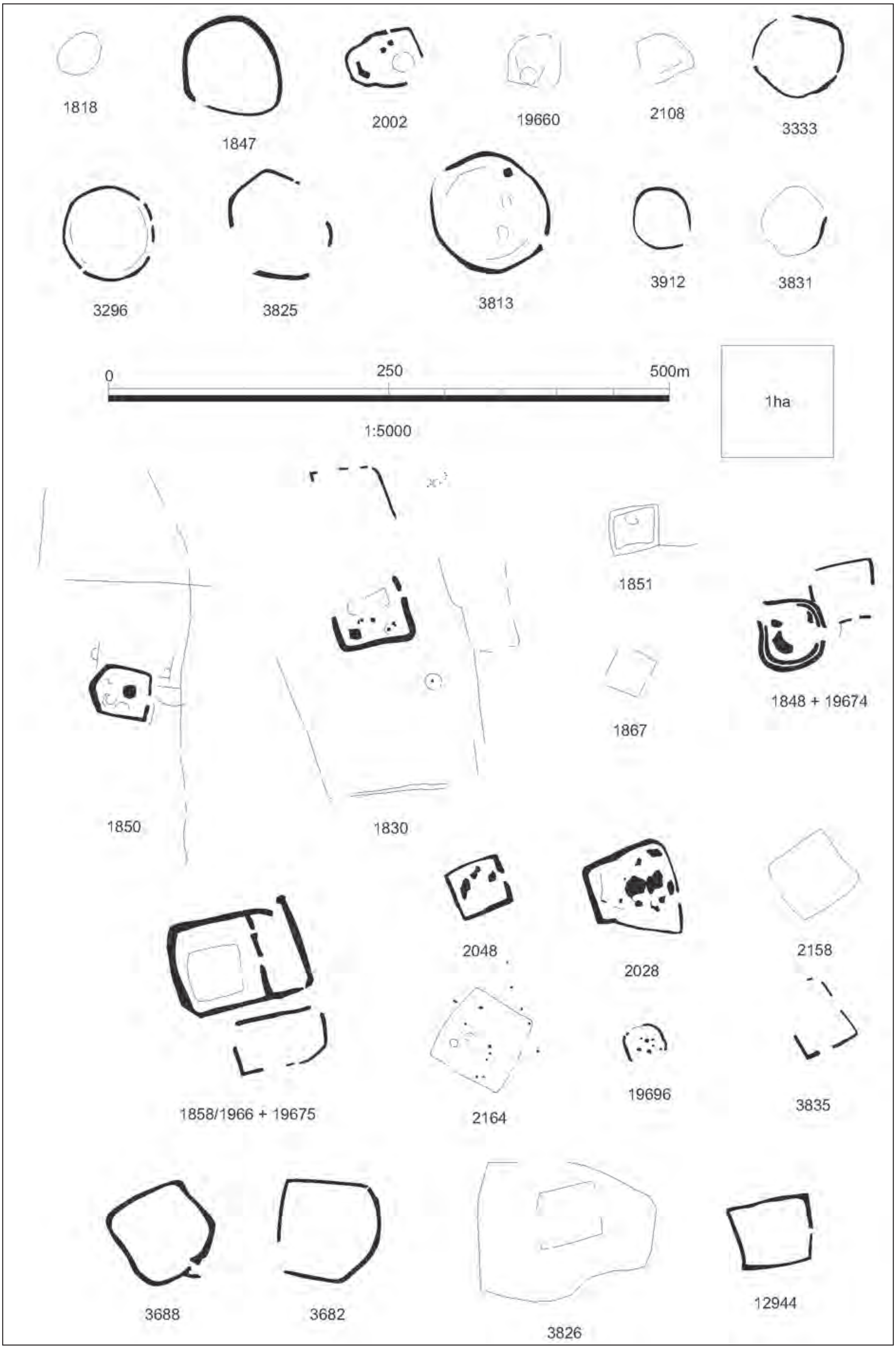



*Figure 3.6. Plans of selected single-ditched rectilinear and curvilinear enclosures, and enclosures with two widely-spaced ditches (1858/1966 & 3826), recorded as cropmarks and reproduced at 1:5000 scale. Original transcriptions at 1:10,000 scale by Rog Palmer. Sites are numbered according to their Historic Environment Record number.*

join to form hairpin ends, confirming the structural contemporaneity of the two lines of timber uprights. In situations such as this, some form of cross-bracing, perhaps supporting a platform or walkway, would be all that was necessary to convert these otherwise free-standing palisades into what might be described as a 'proto-box rampart'. Even if the primary intention was to confer greater rigidity on a structure whose stability might otherwise be in doubt, it seems likely that the inhabitants would not have been slow to exploit the enhanced opportunities for display, if not defence, that such an arrangement would provide. And by a process of elaboration over time, finally involving the infilling of the space between the palisades with earth or stone, it would not be difficult to see how a genuine box rampart might develop.

In 1989, a large and complex palisaded settlement came to light as a cropmark on the summit of Pace Hill near Crookham (HER 12863). In this instance the perimeter is marked by as many as eight separate lines of palisade, including two separate pairs of closely spaced trenches. In the light of what has been said above, the question of what kind of structure may be represented by these paired palisade lines remains open. As some palisade lines intersect it is clear that they cannot all be contemporary, and several phases of replacement or refurbishment must be involved. On plan, the site is oval with maximum overall dimensions of 120 by 90m and an internal area of *c.* 0.8ha. It is therefore larger than many Iron Age forts in this district and may be compared with the Phase 1 enclosure at Old Fawdon Hill (NU 023 141), near Ingram, which contains no fewer than 27 round timber houses within a space of 0.6ha (Gates and Ainsworth 1979; Oswald *et al.* 2006, fig. 5.7).

The Pace Hill 1 palisaded settlement occupies a prominent position on the crest of a ridge with commanding views across the Till valley where it narrows to a bottleneck at the Etal gorge. Not only does this location confer a considerable strategic advantage, it also ensures visibility over a wide area, and there can be little doubt that it was this combined potential for display and defence which determined the choice of site. Given its strategic importance, it is hardly surprising that the same ridge top was chosen for the site of a large multivallate fort, Pace Hill 2, which was first revealed as a cropmark in 1994 (HER 19679; Fig. 3.7). As the outermost fort ditch intersects with the perimeter of the palisaded settlement it is clear that the two sites cannot be contemporary. Presumably the fort replaced the earlier palisade which, in its final form, may perhaps have been defended by something not unlike an empty box rampart.

In addition to the palisades listed in Table 3.3, there are a number of instances where cropmarks representing foundation trenches for timber uprights can be seen on air photographs within the ploughed-down defences of Iron Age forts. In these situations it is frequently difficult to decide whether it is a pre-fort palisaded enclosure that is represented or, alternatively, the bedding trench for a box rampart or some other kind of timber reinforcement forming part of a composite earth and timber rampart. This is not a new problem and can be illustrated by reference to the hillfort at Fenton Hill (HER 1953) where excavation has shown that timbers belonging to the second of two box ramparts were supported in continuous bedding trenches. Eventually this structure was replaced on exactly the same line by one of three dump ramparts (Burgess 1984, fig. 8.7). Here again it is worth pointing out the potential difficulties of distinguishing in horizontal section what could, on the one hand, be either the close-set bedding trenches of a box rampart or, on the other, lines of upright timbers which projected upwards through an earth bank as a reinforcement for what might otherwise be described as a dump rampart. Still less, in the case of a site known only as a cropmark, would it be possible to distinguish a structure of this kind from what might otherwise be two or more lines of free-standing palisade.

The multivallate fort at Sandy House 1 (HER 2027; Fig. 3.8), on the western edge of the Milfield Plain, illustrates the problem. In this instance, where the bedding trench for a single line of palisade or timber revetment can be clearly seen running within, and strictly concentric with, the innermost ditch of the fort, it could be interpreted either as a revetment or façade for the now vanished earth bank situated just inside the ditch or, alternatively, as a free-standing palisade that formed a completely separate system of defence, whether earlier or later than the bank and ditch.

At present, the earliest dated palisade in this immediate area is the Phase I palisade at Fenton Hill for which a single radiocarbon date of 820–370 cal BC (HAR-825) was obtained (see Chapter 7). A little to the north, however, in East Lothian, several sites enclosed by palisades and ditches have now produced reliable radiocarbon dates in the centuries around 1000 cal BC (see Chapter 7). If, on this basis, the first appearance of palisades is seen as a phenomenon of the late second or very early first millennium cal BC, it is also the case that dates from other sites in the region show that this was a long-lasting form of settlement. Thus, a date of 390 cal BC–cal AD 50 (HAR-6202) for the first of three successive palisaded enclosures at Murton High Crags, near Berwick, could well imply that its final replacement was in use up to the very end of the first millennium cal BC and conceivably even as late as the first century AD (Jobey and Jobey 1987). In this case, however, all three palisades would appear to have been set into low banks of upcast material derived from shallow external scoops, a phenomenon also encountered at Ingram Hill, in the Breamish valley, where a line of timber uprights was inserted into the crest of a low bank, again accompanied by a

*Figure 3.7. Pace Hill 2. A large multivallate fort first recorded as a cropmark in 1994. The enclosing ditches are evidently of more than one period. Towards the top of the frame, faint traces of a complex palisaded settlement are also visible. (Copyright Tim Gates, 13 July 1994).*

*Figure 3.8. Sandy House 1. Cropmarks reveal a large multivallate fort on the edge of the Milfield Plain. Note the spreading apart of the ditches on either side of the entrance and the single line of palisade trench or rampart revetment running within the innermost ditch. Two round timber house sites are clearly visible in the interior. (Crown copyright RCAHMS, 22 July 1986).*

slight external ditch (Jobey 1971). At this latter site an uncalibrated radiocarbon date of 410 cal BC–cal AD 20 (I-5316), obtained on charcoal from the base of the bank, gives a *terminus post quem* for the construction of this, the final perimeter. While it has been suggested that *embanked* palisades of this kind constitute a distinct and relatively late phenomenon, it could also be that there is a greater degree of structural variation amongst palisades generally than has so far been recognised. Meanwhile, radiocarbon dates already imply a significant degree of overlap between free-standing palisades and hillforts (Gates 1983, fig. 14).

In the upper reaches of North Tynedale, excavations undertaken by George Jobey on a series of rectilinear stone-built settlements showed that some, though not all, began life as palisaded settlements which likewise followed a rectilinear plan. In the case of one of these sites, at Kennel Hall Knowe, a date of 360 cal BC–cal AD 130 (HAR-1943), obtained from the earliest of three replacement palisades, could indicate an origin for this site in the Late pre-Roman Iron Age (Jobey 1978). At the same time it appeared that the eventual rebuilding of these settlements in stone took place no earlier than the early to mid-second-century cal AD. If so, then in this remote valley at least, a pre-Roman Iron Age tradition of building exclusively in timber continued into the Roman period.

What this means in terms of settlement chronology more generally is unclear though it does indicate that what was once regarded as an Early Iron Age tradition of timber building lasted into the Late pre-Roman, or even Roman, Iron Age, in some districts at least. And while it has been suggested that palisaded settlements with rectilinear plans may represent a different and chronologically later form of settlement, distinct from free-standing palisades built on curvilinear plans, the hazards of attributing dates on the basis of morphology alone are obvious and well understood. In the case of cropmarked sites, where apart from size and plan form there may be little else to go on, the difficulties of assigning even approximate contexts are especially acute.

The above point is one to which we shall return. Meanwhile the problem can be illustrated by reference to a cropmarked rectilinear settlement on Lanton Hill, 4km south-west of Milfield (HER 2028; Fig. 3.9). Here, the enclosing ditch is trapezoidal in plan and accompanied by an internal bank of which only faint indications can be made out on air photographs. In the east-facing side, one or possibly two entrances are visible. The basic plan is a familiar one and can be paralleled on any number of extant, rectilinear settlements, both in Northumberland and further afield, which would at one time have been confidently attributed to the Roman Iron Age. At Lanton Hill, however, the sites of several *timber-built* roundhouses are visible within the ditch, together with at least one other outside the enclosure on the north side. Additionally, what is probably the foundation trench for a single line of palisade rather than a rampart revetment can be seen running inside the ditch on the north and west sides of the enclosure, where it more or less follows the assumed course of the internal bank. In these circumstances two alternative interpretations may be considered. On the one hand, it would be possible to see the site as essentially a Late pre-Roman or Roman Iron Age palisaded settlement that was eventually replaced by an enclosure formed by a bank and ditch, possibly containing a number of stone-founded houses of which no identifiable traces now remain. Or, the site could have originated as an earlier Iron Age palisaded settlement which then developed into a small fort or defended farmstead enclosed by a single rampart and ditch. The excavated but undated site at West Brandon, County Durham, offers a possible parallel for this latter scenario (Jobey 1962).

For the reasons outlined above, we should be cautious in assuming that the majority of palisaded settlements necessarily belong to the early part of the Iron Age as has sometimes been thought, and be more open to the possibility that a proportion at least may belong in contexts as early as the Late Bronze Age or as late as the first or second centuries AD. At the same time, it would be hard to deny a general tendency, over the span of the pre-Roman and Roman Iron Age, for the use of timber as the principal building material for both houses and enclosure perimeters to give way to a greater reliance on stone and earth, though this does not imply that this change in architectural tradition happened simultaneously throughout the region. No doubt the rate at which new building techniques were adopted would be governed in part by the local availability of timber and stone, as well as the readiness of different communities to embrace changes in traditional styles of architecture.

Finally, if neither the building materials employed nor the plan form adopted can be relied upon as a means of distinguishing pre-Roman from Roman Iron Age settlements, especially in the case of cropmarked sites, it becomes that much more difficult to judge the possible impact of Rome, especially in areas north of the Wall. And if some palisades may in fact be of early Roman date, there are others, such as the 'Great Enclosure' at Yeavering and its equivalents at *Maelmin* and Sprouston (Gates and O'Brien 1988; Smith 1991), which certainly belong within a much later, post-Roman, tradition.

### *Hillforts and related settlements*

Radiocarbon dates obtained so far for hillforts in this region put their first appearance no earlier than the 7th or 8th centuries cal BC (see Chapter 7 this volume). At Fenton Hill the first box rampart has produced a date of 800–200 cal BC (HAR-866; Burgess 1984; Chapter 7 this volume) while at Huckhoe, west of Morpeth, the

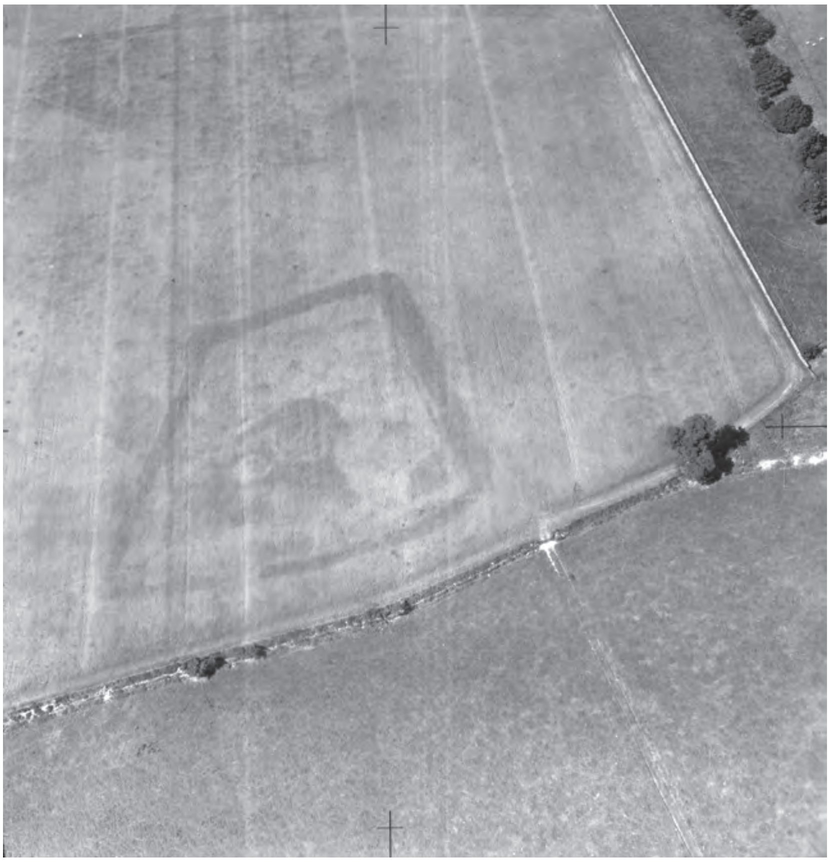


*Figure 3.9. Lanton Hill. A single-ditched rectilinear settlement is revealed as a cropmark. A line of palisade trench or rampart revetment runs inside the ditch. The sites of several round timber houses are visible in the interior and another lies outside the enclosure to the north (right of frame). (Copyright Unit for Landscape Modelling, Cambridge University, 16 July 1951).*

stone-walled rampart followed immediately after an earlier palisade dated to 780–400 cal BC (GaK-1388; Jobey 1968b; Chapter 7 this volume), although this date may suffer from an 'old wood' effect as it was from oak. Of course not all hillforts have origins as early as this: at Brough Law a date of 410–10 cal BC (I-5315) on charcoal from beneath the stone rampart indicates a *terminus post quem* no earlier than the third or fourth centuries cal BC for its initial construction (Jobey 1971; Chapter 7 this volume).

The number of extant forts in Northumberland runs to about 160 of which all but two are curvilinear or D-shaped in plan, the exceptions being Manside Cross and Ewesley Fell, which are rectilinear (Jobey 1965). No particular chronological significance need be attributed to these differences in plan, which most probably reflect differences in local topography or architectural fashion. While the vast majority of extant hillforts situated in upland terrain has curvilinear ramparts or walls that follow the rounded contours of the hills, the proportion of rectilinear sites recorded as cropmarks in lowland areas is significantly greater, especially where the terrain is either level or only gently undulating.

Since the advent of air photography in the years after the Second World War, the number of putative Iron Age forts recorded as cropmarks in Northumberland has increased by 140 multivallate examples of which about one third (40 sites) are rectilinear in plan, and the rest curvilinear. As has already been suggested, the higher proportion of rectilinear sites in this sample can most readily be explained in terms of the greater availability of flat or gently undulating terrain in the more intensively farmed lowland areas where cropmarks predominate. Within the more limited territory covered by this survey, 24 multivallate forts have been recorded as cropmarks; of these, 21 are curvilinear and 3 rectilinear in plan. In this same area, the number of recorded cropmarked sites now equals the number of hillforts, both multivallate and univallate, which survive as upstanding earthworks (Tables 3.4–3.6). At the same time, however, it should be noted that the definition of what constitutes a multivallate as opposed to a univallate hillfort is not quite as clear cut as it may seem. As recent surveys on more than a dozen hillforts in the Cheviots have shown, some 'multivallate' examples in fact represent a succession of superimposed univallate enclosures with only a single wall, or rampart and ditch, in use at any one time (Oswald *et al.* 2006; 2008). Nor need all the surviving walls necessarily have fulfilled a defensive purpose and some were certainly added long after the hillforts themselves had fallen into decay, as conclusively demonstrated at West Hill (Kirknewton), for example (Oswald *et al.* 2000).

Although the number of sites recorded as cropmarks represents a very considerable increase in the overall number of Iron Age forts, it may still not reflect their true frequency within the territory under review, since the above figures take no account of the likely possibility that some single-ditched enclosures may in fact represent univallate forts rather than non-defensive settlements of Late pre-Roman or Roman Iron Age date. If, as tentatively suggested in Volume 1 (Chapter 4), some univallate forts might be distinguished from later, non-defensive, farmsteads by their relatively large size, then, on the evidence presently available, the actual number of cropmarked forts in the Milfield area could, in theory at least, be increased by as many as ten or a dozen additional examples.

As would be expected, the distribution of extant forts is heavily biased in favour of upland areas which have not been subject to intensive ploughing and it is for this reason that earthwork sites are so heavily concentrated round the northern fringes of the Cheviots and on the edge of the Fell Sandstone escarpment where it overlooks the Milfield Plain. When the newly recognised cropmarked sites are taken into account, a different pattern emerges however, with a significant number of forts now appearing on the lower, till-covered slopes around the edge of the Milfield Basin. By contrast, no forts have come to light on the Milfield Plain itself, either on the glaciofluvial sand and gravel terraces or on the alluvium of the floodplain. Indeed, with only one or two exceptions, such as a single-ditched, D-shaped enclosure at Coupland East (Fig. 3.13, HER 2108), the central part of the Milfield Plain appears, on the basis of cropmark evidence, entirely devoid of any kind of recognisable settlements that might be readily attributable to either the pre-Roman or Roman Iron Age. So far as it is possible to tell, therefore, it seems that this area was avoided, at least in terms of permanent settlement, from the end of the Bronze Age until the Anglo-Saxon period.

As illustrated in Figure 3.5, multivallate forts recorded as cropmarks in the sample territory exhibit great variation in size and in the complexity of their defences, and it is evident that some of the larger sites in particular must have gone through a lengthy process of development and reorganisation. Our understanding of these evidently complex structural histories is presently hampered by the small number of hillforts that have been excavated and also by the small scale of the investigations in relation to the size of the monuments. All told there have been around a dozen excavations on Iron Age forts in Northumberland during the last sixty years and in the area covered by this survey only the hillforts at Fenton Hill (Burgess 1984) and West Dod Law (Smith 1989) have been investigated to modern standards in the post-War period. Seen against this background, the recently completed excavations at Wether Hill, in the upper Breamish valley, are especially important and will make a significant contribution to our knowledge of how hillforts in the region developed and changed over time (Topping 2004).

Given the dearth of excavation, analytical field survey of upstanding earthworks remains critically important to our understanding of hillforts and the sequence of development on particular sites. In Northumberland generally, the large corpus of surveys painstakingly accumulated by George Jobey in the 1950s and '60s remain invaluable as a basis for comparative studies (Jobey 1965). More recently, Jobey's work has been supplemented and to some extent overtaken by new surveys carried out by English Heritage field teams on selected sites within the Northumberland National Park, as part of the 'Discovering Our Hillfort Heritage' project. Thirteen hillforts within the National Park were subjected to critical re-examination as part of this project, while others, both within the Park and further afield, were surveyed in less detail. Of these sites, five – Yeavering Bell, Humbleton Hill, Gleadscleugh, West Hill (Kirknewton) and St Gregory's Hill – lie within the limits of the present study. Detailed reports on all these sites have been published and they are also the subject of a book and an analytical paper (Oswald *et al.* 2006; 2008).

The results of both excavation and survey demonstrate that a significant proportion, if not a majority, of hillforts went through a sequence of development involving some more or less radical modification of their defensive circuit, often with the addition, or abandonment, of stone walls or ramparts over the lifetime of the site. At the same time, the structure of the defences and gateways in use on different forts, or sometimes on the same fort over time, is also highly variable, and box ramparts of different kinds, stone walls and dump ramparts (with or without some form of stone or timber revetment or timber breastwork) were all employed. At Fenton Hill, for example, two box ramparts of different construction were followed by triple lines of dump rampart, while at West Dod Law an inner stone wall was eventually added to a pre-existing outer earth rampart. Here the earlier rampart was itself of two phases, the first of which consisted of dumped earth with an internal timber revetment which is thought to have been in place no later than 400–190 cal BC (Smith 1989; see also Chapter 7 for revised calibration).

In twelve out of the thirteen sites surveyed by English Heritage, a more or less radical re-modelling of the hillfort defences took place over time. At Castle Hill (Alnham), as many as four successive phases of reconstruction were involved, affecting both ramparts and gateways (Pearson, Lax and Ainsworth 2001). At Great Hetha, where the stone-walled ramparts were reconstructed on no fewer than three separate occasions, each successive rebuilding led to a significant reduction in the habitable area contained within it, perhaps indicating that enhanced opportunities for display rather than enlargement of the living space was the primary motivating factor (Pearson and Lax 2001). Similarly, at both St Gregory's Hill and Ring Chesters, where two structural phases are involved, the final stone-walled ramparts enclose areas only half as big as their larger predecessors (Oswald and McOmish 2002a; Oswald, Pearson and Ainsworth 2002).

As both McOmish (1999) and Oswald *et al.* (2006; 2008) have pointed out, hillforts are often sited so that their defences tilt across the contours in such a way as to confer maximum visibility from one particular direction, usually that corresponding to the main line of approach. It is also quite frequently the case that the defences achieve their greatest stature and most elaborate form on either side of the main or only gateway. Both these features, it is suggested, can be explained if a concern for display, wealth and prestige was no less a consideration than the practical needs of defence. Oswald has also made the interesting suggestion that hillforts may even have been used as theatrical backdrops for staged displays of symbolically charged conflict, perhaps in the form of one-to-one combat between opposing champions, as described in the Irish sagas (Oswald *et al.* 2006; 2008).

Where cropmarked sites are concerned, we can only speculate as to the structural history of the defences and the layout of houses or other structures in the interior. In the case of multivallate forts which are enclosed by ditches of markedly different width, such as Pace Hill 2 (Fig. 3.7; HER 19679), there must be a strong suspicion that more than one period of construction is represented, mirroring what has been shown to be a common situation on earthwork sites. But even where there are grounds for suspecting that not all ditches were necessarily contemporary, it may be no easy matter to determine the constructional sequence of the defences, nor to say which lines of defence were in use at any one time. At Broxmouth, in East Lothian, for example, the complex developmental sequence of the defences and gateways could hardly have been predicted solely by analysis of the air photographs. Indeed, it proved difficult to resolve this question even after excavation (Hill 1982b). It is hardly surprising, therefore, that we can rarely determine from cropmark evidence alone whether a given site expanded or contracted over time. Likewise, as has already been noted above in connection with the multivallate fort at Sandy House 1 (Fig. 3.8; HER 2027), it may be difficult or even impossible to distinguish on air photographs what could either be the foundation trench for a line of free-standing palisade or an ostensibly identical feature that held posts forming part of a composite earth and timber rampart.

By the same token it is not always possible to draw a rigid distinction between palisades on the one hand and enclosures formed by ramparts and ditches on the other. Where the presence of a ditch implies the existence of a now vanished bank, a timber breastwork or reinforcement may have been set into the bank which, if it did not penetrate the subsoil, would leave no trace as a cropmark. Just such a breastwork seems to have been a component of Phase II of the outer rampart at West Dod Law (Smith 1989).

Where cropmarked sites are concerned, the difficulties of interpretation can be further illustrated by reference to the small fort or defended settlement at Spylaw 1 (HER 3827). Here the perimeter is formed by an oval ditch which neatly encircles what at first sight appears to be the construction trench for a timber revetment belonging to the accompanying rampart. On the other hand such an interpretation would seem to be denied by the existence of two antennae-like extensions of the inner support trench which project outwards on the north side, crossing the assumed line of the rampart. Unless perhaps some form of cross-bracing of the earth rampart is involved, it seems that two different constructional phases must be represented.

Opposed entrances are a not uncommon feature of cropmarked forts and are, for example, in evidence at Flodden (HER 1829), Blakelaw (HER 3318), Doddington Dean (HER 3781) and Lowick Low Stead (HER 3694). At Flodden, an inner sub-circular enclosure, again having opposed entrances, was tentatively claimed as a Class II henge (Miket 1976) though its status as such is doubtful and it could equally well be that this enigmatic feature represents a later intrusion into the fort interior rather than a pre-existing monument of some kind.

Elaboration of entrances is likewise a recurring feature of cropmarked forts as it is of their earthwork counterparts. At Sandy House 1 (Fig. 3.8; HER 2027) the otherwise closely spaced ditches are spread more widely apart on either side of the entrance. By lengthening the approach to the interior, the defensive potential and the dramatic qualities of the site are increased. A similar arrangement can be seen at Nesbit (HER 2151), though here the middle and outer ditches of the fort join together on either side of the passageway.

Protective hornworks are present on a small number of cropmarked sites, most notably at Flodden (HER 1829) and Hetton Dean West 1 (HER 3677; Fig. 3.10) where they seem to be a relatively late modification intended to create a staggered approach into the fort interior. The aim here may have been to conceal the layout of buildings within the fort until the last possible moment, thereby achieving a tactical advantage in the event of a hostile attack as well as a

*Figure 3.10. Hetton Dean West 1. A multivallate lowland fort with triple ditches shows as a cropmark. Note the elaboration of the ditches at the entrance on the eastern side (furthest from the camera). (Copyright Tim Gates, 2 August 1994).*

heightened sense of drama or surprise in the mind of a visiting stranger.

Like their upland counterparts, forts in lower lying situations almost invariably occupy positions in the landscape that were carefully chosen to ensure the greatest possible visual impact when seen from a distance. As mentioned above, the large, multivallate fort at Pace Hill 2 (HER 19679; Fig. 3.7), and the complex palisaded settlement which proceeded it on virtually the same site, stood on the crest of a ridge with commanding views across the Till valley. Enhanced visual impact could also be achieved by selecting sites that were in some cases raised only a few metres above their surroundings. For example, all the major forts situated on the fringes of the Milfield Plain, including Sandy House 1 (Fig. 3.8; HER 2027), the Burrowses (HER 2026) and Nesbit (HER 2151), are sited on low spurs or rising ground at or near the foot of steeper slopes. While not themselves conspicuous as landmarks, these locations have been carefully chosen to confer maximum visibility as seen from the surrounding landscape. Again the governing principle is see and be seen.

In Chapter 3 of Volume 1, attention was drawn to a number of instances where annexes were added to forts at what seemed to be a late stage in their occupation. In the Milfield area, a further example of this same phenomenon can be seen at Flodden Edge (HER 2049) where a trapezoidal annexe is tacked on to the east side of the fort, abutting the outer ditch (McCord and Jobey 1971, pl. XIV, 2). As commonly occurs elsewhere, the ditch defining the annexe is of noticeably slighter proportions than either of the two ditches which form the defences of the fort, again suggesting that the annexe may be a late, perhaps non-defensive, addition to the original work. In this instance there are two exits from the fort, one of which leads into the annexe while the other bypasses it. If, as suggested in Chapter 4 of Volume 1, annexes functioned principally as corrals for stock, then the point here was presumably to separate human from animal traffic. As has been noted at other sites, at 0.3ha, the area enclosed by the annexe at Flodden Edge is larger than the space contained within the fort itself (0.22ha). And although stances for several timber roundhouses are visible within the fort, none are evident inside the annexe, again implying that the annexe was mainly, if not exclusively, used for purposes other than human habitation.

In the uplands, too, annexes are not infrequently found attached to hillforts, and in the area we are concerned with here, examples can be seen at

Humbleton Hill (HER 1544), West Hill (HER 1417), St Gregory's Hill (HER 1429) and West Dod Law (HER 3795). At Humbleton Hill the annexe is defined by a low rubble bank which Jobey saw as definitely postdating the defences of the hillfort. Although this view was subsequently called into question, the most recent English Heritage survey confirms Jobey's interpretation (Oswald *et al.* 2006; 2008). The area enclosed by the annexe, at 3ha, is almost twice that contained by the outer wall of the fort (1.73ha), and while the number of house sites within the ramparts of the fort itself could be as many as thirty, no more than eight are visible in the annexe.

In excavations at West Dod Law (HER 3795), a section cut through the perimeter bank of the hillfort annexe showed it to be of relatively light construction, being no more than 2m broad and faced on the outside only with a line of earthfast boulders (Smith 1989). This conforms with what has been observed in field survey at other sites where enclosures formed by uncoursed rubble walls are frequently found to have been built over and beyond the defences of Iron Age forts after, in some cases long after, they had fallen into decay. At West Dod Law the fort itself contained no more than eight stone-built roundhouses and although another six were located outside the defences, only one of these was situated within the annexe. At both Humbleton and West Dod Law it again seems likely that the main purpose of the annexes was to corral stock.

If annexes attached to forts are seen as corrals added at a comparatively late stage in the lifetime of the site, and in some cases demonstrably after their walls or ramparts had ceased to exist in defensible form, it is worth considering what possible implications this proposition might have. For example, an overall increase in the numbers of livestock over time to the point where additional space had to be provided might be envisaged, or alternatively a change in stock management such as might be necessary to keep animals from straying into a gradually expanding network of fields where hay or other crops were grown. If the latter, then evidence of the gradual development of larger and more organised field systems around some lowland forts might be expected to emerge as cropmark photography continues. Certainly field systems and trackways that are clearly the result of enlargement over time are a recurrent feature of hillforts in upland areas where they are invariably associated with settlements of stone-built houses that postdate the earlier defensive phase, or phases, of the site. While the same phenomenon may also have occurred in lowland areas, the evidence for contemporary field systems is presently no more than fragmentary, though this is most probably due to the relative ease with which shallow ditches or field walls may be erased by centuries of ploughing. Either way, it is hard to resist the idea of a significant intensification of farming practice during the Late pre-Roman Iron Age and Roman periods, involving a more sophisticated regime of stock management, the more rigorous separation of grazing and arable land, and an increase in the acreage of enclosed land at some, if not the majority, of sites. Whether or not there was any overall increase in arable production across the region as a whole is presently impossible to determine, not least because it begs the question of which sites may or may not be contemporary. On the other hand, land once enclosed and cultivated with considerable expense of labour is unlikely to have been given up without good reason and the *potential* for an increase in agricultural production in the Late pre-Roman and Roman Iron Ages certainly exists.

With the glaring exception of Yeavering Bell, and a small handful of other hillforts with internal areas greater than 2ha, the vast majority of Iron Age forts in this region are best thought of as defended farmsteads occupied by extended family groups of, say, twenty to thirty individuals (Oswald *et al*. 2006). Although some sites are enclosed by walls or earthworks of sufficient stature or elaboration to justify the use of the terms fort or hillfort, the defensive potential of others is much less apparent.

At present our understanding of the Iron Age agricultural economy is very limited though more detailed palaeoenvironmental data are now becoming available, together with information from ceramic residues (see Chapter 2 and Johnson and Waddington 2008). While a mixed economy, involving both stock rearing and arable farming, can be assumed, there is as yet no firm basis on which to gauge where the balance of the economy lay or how it may have changed over time. At the same time some degree of specialisation might be envisaged, with animal husbandry the dominant activity at sites on or close to the upland margin where evidence of contemporary field systems or cultivation is conspicuously absent, as for example at Great Hetha (Pearson and Lax 2001).

Surveys of hillforts and their environs carried out by English Heritage in the Northumberland National Park have revealed only limited evidence for arable cultivation that can plausibly be associated with the hillforts themselves. Small areas of terracing and lynchet development have been documented in the vicinity of a handful of forts, including for example Ring Chesters, Castle Hill (Alnham), St Gregory's Hill and West Hill (Kirknewton) (Oswald *et al.* 2006; 2008). Assuming that these features are indeed of Iron Age date – a hypothesis which cannot yet be demonstrated beyond doubt – then it would suggest that crops were being grown by the occupants of these particular hillforts at least. However, the scale of this activity is difficult to determine and it could well be that stock rearing was the mainstay of the economy at some or all of these upland sites, at least in the period before the appearance of later settlements of stone-built roundhouses, some of which are clearly associated with much more elaborate and extensive field systems. Further evidence on this point from pollen records is discussed elsewhere in Chapters 2 and 7.

Where linear earthworks occur in close proximity with hillforts, a *prima facie* case can sometimes be made for seeing them as contemporary land boundaries intended to mark territorial divisions between adjacent communities. On a practical level they may also have had a role in restricting the free movement of animals or demarcating areas of grazing. Within the limits of this survey there are no extant boundaries of this kind; the nearest example is at Wether Hill, near Ingram, where a linear earthwork consisting of two banks and a medial ditch cuts across the ridge adjacent to the hillfort (Fig. 3.11). Material obtained in excavation from beneath the northern bank, which gave a date of 390–50 cal BC, provides a *terminus post quem* in the Late pre-Roman Iron Age for the construction of this earthwork, broadly contemporary with the main occupation of the fort (Topping 1996; 2008). A second determination of cal AD 330–610 relates to the onset of peat growth in the accompanying ditch and suggests that maintenance of the boundary ceased in either the Late Roman or early post-Roman periods (Topping 1997).

At West Hill (Kirknewton), it has been suggested that some less obtrusive banks, this time unaccompanied by any visible signs of a ditch, might represent 'ranch' boundaries associated with the hillfort (Oswald *et al.* 2000; 2008). One such bank (Bank 1), on the east side of the hill, marks the downhill limit of a network of slight scarps or terraces which may represent a cultivation system associated with the fort. Eventually this bank was replaced by another boundary of similarly slight stature (Bank 2), which encircles the hill a little further down the slope. This second bank delimits a much larger and more organised field system, greater than 50ha in extent, which most probably belongs to the Roman Iron Age.

Counterparts of the 'ranch' boundary systems associated with hillforts in upland areas must presumably exist amongst the multitude of linear ditches that have been recorded as cropmarks in better favoured lowland environments, and in the area under review some prominent ditched boundaries on the Milfield Plain deserve mention in this context.

Most promising in this regard is an unusually large and extensive network of ditches, centred on one or both of two cropmarked forts situated towards the western edge of the Milfield Plain. One of these sites, Sandy House 1 (Fig. 3.8; HER 2027), has already been referred to above. Although the second site, at Sandy House North East (Fig. 3.12; HER 19661), is not well documented as a cropmark, it too may be a defended settlement of Iron Age date as it appears to be at least partially enclosed by two ditches whose close spacing suggests a defensive purpose. What is striking about this second settlement is that it is the point of origin of a remarkable double-ditched droveway which runs for a distance of 0.3km in a south-easterly direction before opening out into a funnel-shaped structure reminiscent of a 'banjo-enclosure' (marked 'X' on Fig. 3.13). The only plausible explanation for a ditch system of this type is that it was intended to control stock being driven to and fro between the enclosure and pastureland out on the Plain to the east. Once past the funnel entrance, the two ditches split apart, each branch following a curving path that is at least partly dictated by the course of the palaeochannel, described at the beginning of this chapter, which runs between Coupland and Milfield. As recorded on air photographs, the southern ditch (Fig. 3.2; HER 2032) can be followed for a distance of 1.2km beyond the 'funnel' entrance, and the northern ditch for 0.6km (HER 19701). Boundaries of this length suggest that a sophisticated and extensive system of land division existed on the fringes of the Milfield Plain during the Iron Age. Although the development of this system has not yet been tested by excavation, it is by no means impossible that its origins may ultimately be shown to go back as far as the Bronze Age.

In addition to the ditches of the droveway, a third ditch (HER 2117) runs roughly east-west across the Milfield glaciofluvial terraces, crossing ditch 2032 at right angles. That both ditches were in contemporary use at some stage is indicated by the existence of a break in ditch 2117, immediately to the west of the point where it crosses ditch 2032, which has all the appearance of a gateway (Fig. 3.13). At present ditch 2117 can be traced eastwards across the Milfield Plain for a distance of slightly over a kilometre and it will be interesting to see if future air photography manages to establish a connection between this ditch and any of the other, more fragmentary, linear ditches or pit alignments located only a little further out on the Milfield Plain in the vicinity of Thirlings or Ewart.

Continuing reconnaissance will hopefully increase our knowledge of these long-distance boundaries. Meanwhile it is apparent that the system of land allotment represented here is on a larger scale than that represented by any of the field systems which can presently be associated with Roman Iron Age settlements elsewhere in Northumberland (Gates 1982a; Oswald *et al.* 2006; 2008). Not only are the boundaries themselves much longer but the land units they define can be better explained in terms of 'ranch' farming for animal husbandry than as arable fields. The implication that large-scale stock farming played a significant role in the economy during the Iron Age goes some way to corroborate what has been said above about the possible role of annexes attached to Iron Age forts.

At present, there are few close parallels for the elaborate and extensive system of cropmarked ditches in the vicinity of Sandy House. Although embanked trackways leading between, rather than into, fields that were enclosed by walls or hedges are quite

*Figure 3.11. Wether Hill, near Ingram. The photograph shows excavations taking place on a linear earthwork (at the top of the frame). Radiocarbon dates indicate that the linear earthwork was constructed in the third century BC, contemporary with the occupation of the hillfort. The foundations of seventeen densely packed timber houses and three stone houses are visible within the defences of the hillfort. (Copyright Tim Gates, 14 August 1995).*

*Figure 3.12. Sandy House NE. Near the centre of the frame, cropmarks reveal the presence of a settlement enclosed in part by two close-set ditches. Dark marks which interrupt the ditches may represent a later, open settlement. South-east of the enclosure (upper right) paired ditches mark a trackway which leads away from the settlement before splaying out to form a funnel-shaped approach. The Coupland henge is just visible in the top left-hand corner of the frame. The straight diagonal line cutting across the photograph marks the course of a modern pipeline. (Copyright Tim Gates, 10 July 1992).*

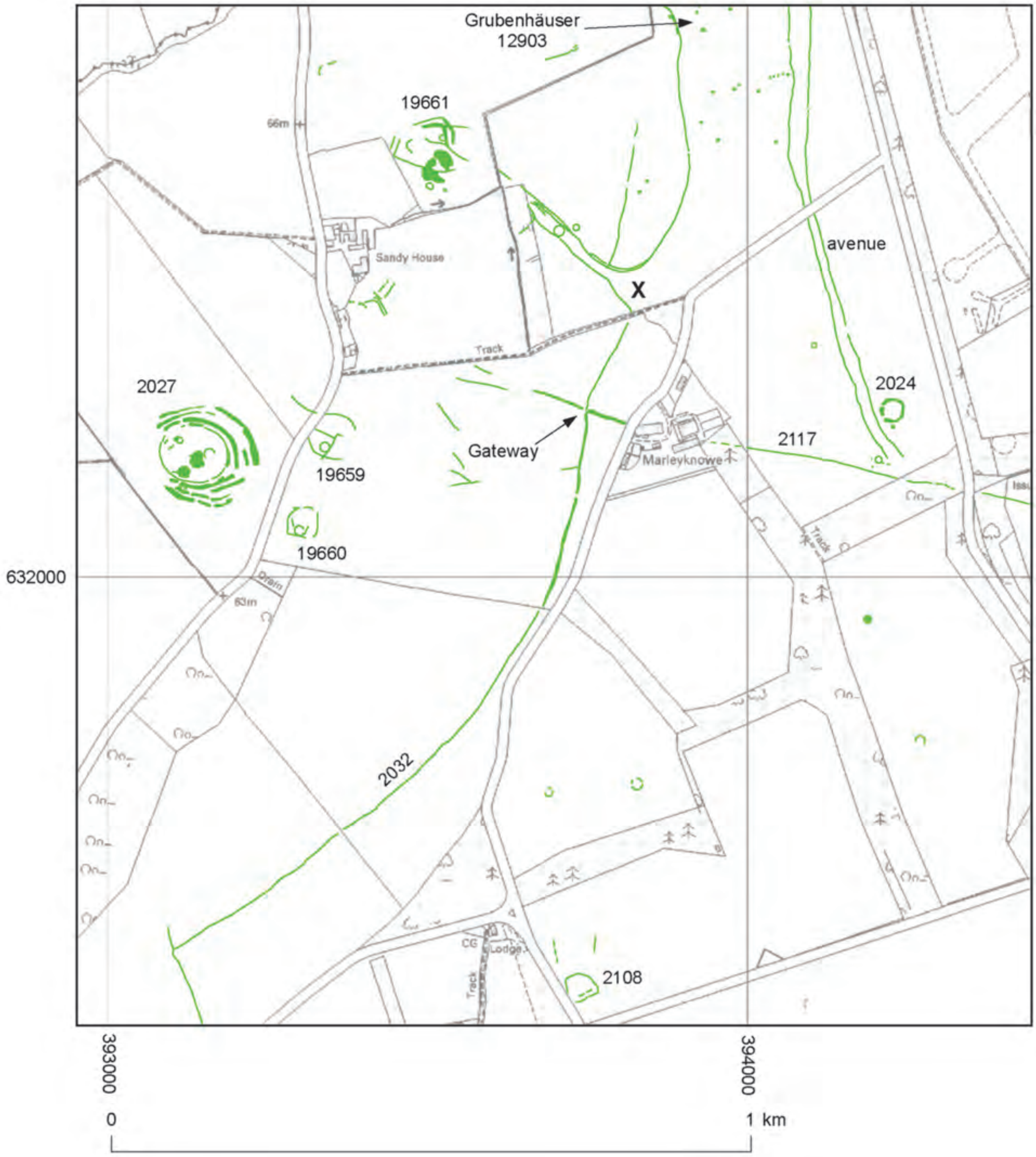



*Figure 3.13. Plan of cropmarks in the vicinity of Marleyknowe at 1:10,000 scale. Original transcription by Rog Palmer.*

commonly associated with stone-built settlements of Late pre-Roman or Roman Iron Age date in the uplands, cropmarked equivalents are rarer and no other examples have yet been recorded that possess a funnel-shaped entrance like that at Sandy House. Some parallels do however exist in the form of earthworks, a promising example being at Prendwick Chesters, in the upper Breamish valley (NT 985 148), where a hillfort and overlying stone-built settlement are embedded in an extensive network of boundaries and embanked enclosures that also incorporates a droveway with a funnel-shaped entrance (Topping 2008, figs 22–3). In this instance, however, the presence of a later, medieval or post-medieval settlement is a complicating factor and more than one period of enclosure is certainly involved. Amongst the other boundaries at this same site, the existence of a short length of pit alignment accompanied by a bank of upcast on one side only is of particular interest and one would like to know to what period of enclosure it belongs (Topping 2008, fig. 24). Elsewhere, in intensively farmed lowland areas, there are numerous examples of cropmarked

*Figure 3.14. Howtel East. Cropmarks show a settlement with an east-facing entrance that has been created in the angle formed by the convergence of two prehistoric boundary ditches. Discolouration within the enclosure indicates occupation. The boundary ditches are undated but are unlikely to be later than the pre-Roman Iron Age or earlier than the Late Bronze Age. (Copyright Tim Gates, 13 July 1994).*

forts which are accompanied by more fragmentary ditched boundaries, and attention has already been drawn to a number of these in the companion volume (Volume 1, Chapter 4). In the Milfield survey area itself, a complex of ditched boundaries seems to be associated with a hillfort at Howtel (NT 899 347). To the south-east of the fort, several timber roundhouses are visible within an enclosure formed at the point of convergence of two ditches belonging to this system (Fig. 3.14). This settlement, Howtel East (HER 2104), offers an excellent opportunity for investigating the chronology of the associated boundary system.

Air photography has significantly increased the number and distribution of pit alignments on and around the Milfield Plain in recent years (Table 3.11). While in some instances a case can be made for seeing them as land boundaries comparable in date to the ditched boundary systems referred to above, their chronology is not yet well understood. While it has been suggested that some single alignments of pits in the vicinity of the Ewart henge may be of Neolithic date (Miket 1981; Waddington 1997), this is unlikely to be so in the majority of cases and a wide range of dates could be envisaged for what is after all a comparatively simple method of land division. Indeed, the likelihood of a Late Iron Age or Roman Iron Age context for at least some of these features has now been demonstrated by excavation on one particular alignment near Redscar Bridge (HER 19702), where six radiocarbon dates were obtained from five consecutive pits. Calibrated at the two sigma confidence level, these span the period cal AD 10–640 (see Volume 1, Chapter 5). It now remains to be seen whether other alignments in this area belong in a similar late prehistoric or early historic context.

As mentioned above, surveys of hillforts recently undertaken by English Heritage in the Northumberland National Park have shown that in a significant proportion of cases their defences had already fallen into ruin or been deliberately slighted some considerable time before the sites were remodelled by the inhabitants of later settlements of stone-built roundhouses (Oswald *et* *al*. 2006; 2008). While this may mean that the defences of some forts were allowed to decay at a relatively early date, and perhaps even as early as the second or third centuries cal BC, elsewhere they may have remained viable until the beginning of the Roman Iron Age. At West Dod Law, for example, the defences seem to have remained intact until the first or second centuries cal AD (Smith 1990).

Be that as it may, by the Late Iron Age the landscape was increasingly dominated by other, less ostentatious, forms of settlement. As we have seen, some palisaded settlements, including those at Murton High Crags (Jobey and Jobey 1987), Ingram Hill (Jobey 1971) and Fawdon Dean (Frodsham and Waddington 2004), have produced dates as late as the late first century cal AD and it would not be surprising if a proportion of the unenclosed settlements in this area ultimately proved to belong in Iron Age rather than Bronze Age contexts. At Doddington Bridge North (NT 999 314; HER 2159), for example, on the eastern edge of the Milfield Basin, a series of disc-shaped cropmarks on the west side of the road could well represent a group of unenclosed ring-ditch houses, a form of settlement for which dates early in the Iron Age have already been obtained at Douglasmuir in Angus (Kendrick 1982) and Dryburn Bridge in East Lothian (Triscott 1982; Dunwell 2007). On the east side of the road, a further group of ring ditches seems more likely to represent a contemporary cemetery, as suggested by Waddington (Fig. 3.18 and Waddington 2005b).

### The later pre-Roman and Roman Iron Age: extant stone-built settlements and single-ditched cropmarked enclosures

The appearance of settlements of stone-built roundhouses has long been recognised as marking a significant change in the local architectural tradition where buildings with walls of timber or turf had previously been the norm. At one time this development was believed to have taken place no earlier than the early or mid-second century AD, as shown by the discovery of pottery of Roman manufacture beneath the floors of the earliest stone buildings on a handful of excavated sites. However, radiocarbon dates obtained more recently from a small number of sites in the Tyne-Forth region suggest that this may not be the full story, and a pre-Roman origin now looks likely for some sites of this type, though this would not rule out foundation dates in the Roman Iron Age for others. Given the statistical uncertainties inherent in radiocarbon dating on the one hand, and the chronological insensitivity of native pottery on the other, the problems of assigning firm dates to settlements that may in some cases be separated by intervals of a century or more are obvious.

The essentially non-defensive character of native stone-built settlements is most clearly apparent where they overlie hillforts, for then it is not unusual to see stone-founded roundhouses with their attendant yards and walled enclosures spilling out across the evidently redundant ramparts. On some larger sites of this type, the number of stone-built houses may far exceed the maximum number of timber buildings that could ever have been accommodated within the defences of the fort itself; at sites such as Greaves Ash in the Breamish valley, Castle Hill (Alnham) and West Hill (Kirknewton), the number of roundhouses that was eventually reached may be as many as 30 or 40. Though it cannot necessarily be assumed that all these buildings were either contemporary or even intended for human habitation, it would be possible to see in this phenomenon evidence of an expansion in the size of certain settlements over time. Nevertheless, as was stressed by Jobey many years ago, the wider question of whether there was any general increase in population of the region as a whole during the Roman period remains unanswered (Jobey 1974a).

On lowland sites where stone-built houses represent the latest phase, or phases, of occupation, centuries of ploughing and stone picking may eventually result in their total erasure. At the excavated site of Murton High Crags, for example, this process was far advanced and the best-preserved houses belonging to the final, stone-built, settlement were reduced to nothing more than short arcs of walling and occasional isolated patches of paved flooring while others may have disappeared altogether (Jobey and Jobey 1987). Here it would only take another decade or two of ploughing to destroy all traces of the remaining stone-built houses. Likewise, at Doubstead, near Berwick, cultivation and stone clearance had been so thorough that it was finally impossible to determine whether any stone-built houses had stood within an embanked enclosure that was itself represented only by the truncated remains of the ditch (Jobey 1982a).

On the fringes of the Cheviot Hills, where extant stone-built settlements are thick on the ground, they are mostly contained within an enclosure formed either by a bank of earth and rubble or, less commonly, by a bank and ditch. On steeper hillsides, the rear part of the enclosure may be scooped into the slope, the excavated material being used to build a frontal apron and enclosing bank. This form of settlement is simply an adaptation to the local topography and there is no reason to think that the scooping of the interior has any value as a chronological indicator or as a means of distinguishing sites that may belong to the pre-Roman as opposed to the Roman Iron Age.

Whatever the form of the enclosure, it is not uncommon to find platforms or stances for timber buildings alongside their stone-built counterparts, and, where a stratigraphic relationship can be observed in field survey, it is invariably the stone-built houses that are later. On the other hand, without excavation there is no reliable means of knowing which stone-built settlements may have had timber precursors, as in the majority of cases these will have left no surface traces. At Hetha Burn in the College Valley, for example, excavation showed that a scooped settlement with three successive phases of stone building had been preceded on the same site by an undated, but possibly pre-Roman, timber roundhouse (Burgess 1984). Could this be shown to be a more common phenomenon than can presently be demonstrated, it would imply a significantly larger population hereabouts in the Late Iron Age than has previously been thought, thereby helping to corroborate pollen evidence that points to an expansion of woodland clearance and, less certainly, an increased reliance on arable farming at this time.

A recent survey of the enclosed, stone-built settlement at South Heddon, near Ilderton, also suggests the possibility of a Late Iron Age origin for this particular site (Pearson and Hunt 2004). In this instance at least some, and possibly all, of the stone-built roundhouses in the interior were shown to be later than the surrounding enclosure, which, unusually for a Cheviot site, is rectilinear on plan and formed by two substantial banks separated by a ditch. The survey left open the question of a pre-Roman origin for the enclosure and any timber roundhouses that may originally have been present within it. At the same time the unusually robust nature of the perimeter earthworks raises the question of whether the site in its earliest form might better qualify as a small hillfort or defended settlement, comparable to, say, West Brandon in Co. Durham (Jobey 1962) rather than the type of undefended farmstead more normally met with in the Cheviots.

Looked at from a wider perspective, the question of when stone-built roundhouses made their first appearance on native sites in this region is of long standing but one which has not yet been satisfactorily resolved. While it has been shown that this event most probably happened early in the Roman Iron Age, on a handful of geographically isolated settlements in North Tynedale (e.g. Jobey 1978) there are other sites, such as The Dunion (Rideout 1992), Fawdon Dean (Frodsham and Waddington 2004), and Broxmouth (Hill 1982b), where dates for stone houses in the pre-Roman period look possible or even likely. While this may well mean that the transition from timber to stone was not synchronous across the region as a whole, beginning earlier in some areas than in others, it remains the case that houses with stone walls were the predominant architectural style on native settlements during the Roman period between the Tyne and the Forth. In Dumfriesshire, by contrast, houses built exclusively of timber remained the norm throughout the Roman period, perhaps suggesting that the choice of building material was a matter of cultural preference or, more likely, that wood was in more plentiful supply further to the west (Jobey 1974b).

On some of the larger stone-built settlements, both in Northumberland and further afield, surveys and excavation have demonstrated that multiple constructional phases implying lengthy periods of occupation are involved. For example, four of the hillforts in the Northumberland National Park recently surveyed by English Heritage possessed two or more phases of stone-built settlement which postdate the hillfort defences, viz. two each at West Hill and St Gregory's Hill; three at South Heddon and no fewer than five at Middleton Dean (Oswald *et al.* 2006). In cases such as this there is every possibility that these later settlements were occupied for most or all of the Roman period, though a shortage of dateable artefacts and radiocarbon dates from excavated sites makes this proposition difficult to demonstrate in practice. As was pointed out more than twenty years ago (Jobey 1982b), only four sites north of Hadrian's Wall – Huckhoe, Traprain Law, Hownam Rings and Murton High Crags – have so far produced pottery of the third century cal AD or later, none of it manufactured after *c.* AD 360. Yet this surely cannot be the full story, and single finds of post-Roman metalwork from Crock Cleugh and Hownam Rings hint at continued occupation in the post-Roman period, as does the coin series from Traprain Law which continues to *c.* AD 400 (Sekulla 1982).

Over the last three decades, aerial photography combined with terrestrial fieldwork has led to the identification of field systems in apparent association with an increasing proportion of stone-built settlements in the uplands of Northumberland. As the characteristic features of these field systems remain essentially as they were described more than 25 years ago they need not be rehearsed again here (Gates 1982a). More recently, several of the hillforts in the north Cheviots surveyed by English Heritage have also been shown to possess extensive field systems of the same type. These sites include West Hill and St Gregory's Hill, near Kirknewton, where walled or embanked fields and their accompanying trackways are specifically associated with stone-built settlements that belong to the post-defensive phases of occupation. At both sites, complex stratigraphic relationships between their component parts show that these field systems, like the settlements themselves, were the product of long periods of evolutionary development (Oswald *et al.* 2006; 2008). On this evidence alone it seems likely that these sites were in more or less continuous occupation through most or all of the Roman Iron Age.

Other field systems of similar type are known to exist elsewhere on the northern fringes of the Cheviots, as for example in the sheltered comb to the east of Yeavering Bell (*c.* NT 936 293; HER 1444) where again there is an association with a group of stone-built settlements. By contrast, cropmarks on the site later occupied by the Anglo-Saxon palace complex at Yeavering, which were previously thought to represent a similar network of ditched field boundaries and a trackway, have now been reinterpreted as ice wedge casts of purely natural origin (Gates 2005). Be that as it may, the now widespread recognition of field systems in association with stone-built settlements, many of which show evident signs of enlargement or remodelling over what could well be lengthy periods of time, is consistent with pollen evidence indicating that extensive woodland clearance took place in many upland areas, commencing in the Late Iron Age and continuing into the Roman period (see Chapters 2 and 7).

On the lower slopes of the surrounding hills, and on the Milfield Plain itself, where cropmarks rather than earthworks predominate, the equivalents of the stone-built farmsteads described above are most likely to be found among the increasingly large number of single-ditched enclosures recorded by air photography (Fig. 3.6). At one time it was those cropmarked sites with a strictly rectilinear plan that were considered to have the greatest potential as settlements of Roman Iron Age date as they bore a close resemblance in plan to some of the extant stone-built farmsteads in the southern dales of Northumberland from which pottery and other finds of Roman manufacture had been obtained in excavation (Jobey 1964).

Yet, as has already been pointed out, rectangularity of plan cannot any longer be considered a reliable means of distinguishing settlements that could belong to either the pre-Roman or Roman Iron Age. Moreover, as has equally been pointed out, it could well be that a proportion of the single-ditched rectilinear enclosures within the Milfield survey area will in fact turn out to represent univallate Iron Age forts or defended settlements rather than undefended farmsteads, and the same may be said of the 19 single-ditched curvilinear enclosures recorded by air photography in the same area (Tables 3.8 and 3.9). Occasionally, where foundation trenches for timber roundhouses show up as cropmarks within these enclosures, as at Sandy House 2 (Fig. 3.15; HER 19659), an *origin* in the pre-Roman Iron Age is possible though this would not preclude the subsequent development of later, stone-built phases.

What is probably no more than a variant form of the ubiquitous single-ditched enclosure exists where a second, widely-spaced ditch surrounds the first, the interval between the two usually being of the order of 10 to 20 metres or even more. Given the wide spacing between the ditches, it seems unlikely that enclosures of this type could have had a defensive function and, as argued in Volume 1 (Chapter 4), the outer enclosures can most plausibly be explained as corrals for stock. Like annexes attached to forts, to which they can usefully be compared, the ditches defining the outer enclosures are often of slighter dimensions than those which surround the settlement itself. Three sites of this type are presently on record in the Milfield survey area, namely Cannon Burn 1 (Fig. 3.16), Labour in Vain and West Hetton Hall 1 (see Table 3.10). Like hillforts with annexes, single-ditched enclosures possessing a second, widely-spaced outer ditch represent only a small minority of the total number of settlements in this class. If they too represent stock compounds or corrals, as is suggested here, then it might be possible to see this as evidence of economic specialisation or as indicative of the relative affluence of these particular communities during the Late pre-Roman or Roman Iron Age. More speculatively, it might even be possible to see these as places in which the produce of more than one settlement or community was collected, perhaps on a seasonal basis, for barter or redistribution.

At present no more than a handful of single-ditched enclosures recorded as cropmarks can plausibly be associated with linear ditches that could represent contemporary field or ranch boundaries. Most promising in this regard are the three rectilinear settlements at Mardon South (HER 1849), Mardon South East 1 (Fig. 3.17; HER 1850) and Flodden Strip (HER 1830), each of which is the focus of a pattern of rectilinear fields or enclosures of more or less regular shape. Not all of these putative fields appear to be fully enclosed, however, at least by boundaries that are detectable from the air, and some of the larger units, which seem to be bigger than could readily be accounted for as arable fields, might be better explained as paddocks or meadows set aside for hay or grass.

Reference has already been made to excavations on a pit alignment at Redscar Bridge where six radiocarbon dates spanning the Roman period (Volume 1, Chapter 5) provide terminal dates for the maintenance of the boundary. This should alert us to the possibility that some pit alignments probably continued to define property boundaries that were still in use during the latter part of the Roman Iron Age, even if their origins lie in an earlier period.

## Roman military archaeology

As might be expected in an area which lay outside the formal boundaries of the Roman Empire for all but around five decades of the occupation, there is no evidence for a permanent military presence after the final withdrawal from the Antonine Wall in *c.* AD 165. Indeed, the only lasting legacy of Roman rule hereabouts is the road known as the Devil's Causeway, which passes through the survey area on its way northwards to its apparent destination at Tweedmouth. As yet there is no evidence to show that this road had any strategic function beyond the end of the Flavian period or formed any part of the Hadrianic or later frontier systems (Birley 1961, 244–45). Nor does Colm O'Brien envisage its use as an estate boundary in the Early Anglo-Saxon period (O'Brien 2002, fig. 6).

Three Roman temporary camps have recently been identified by air photography along the Devil's Causeway, and others have also been recorded south of

*Figure 3.15. Sandy House 2. The site of a single-ditched enclosure containing at least one timber roundhouse is revealed as a cropmark. Other marks represent modern field drains, wheel tracks through the crop made by tractors and ice wedge polygons dating to the end of the last Ice Age. (Copyright Tim Gates, 17 August 1978).*

*Figure 3.16. Cannon Burn 1 and 2. Cropmarks reveal two adjacent enclosures. The larger enclosure is sub-divided into two unequal-sized portions in the larger of which a rectilinear settlement with an east-facing entrance is faintly visible. The wide spacing between the ditches of the inner and outer enclosures suggests that their purpose was not defensive. It is suggested that the adjacent enclosure may be a stock corral rather than a settlement. (Copyright Tim Gates, 19 July 1994).*

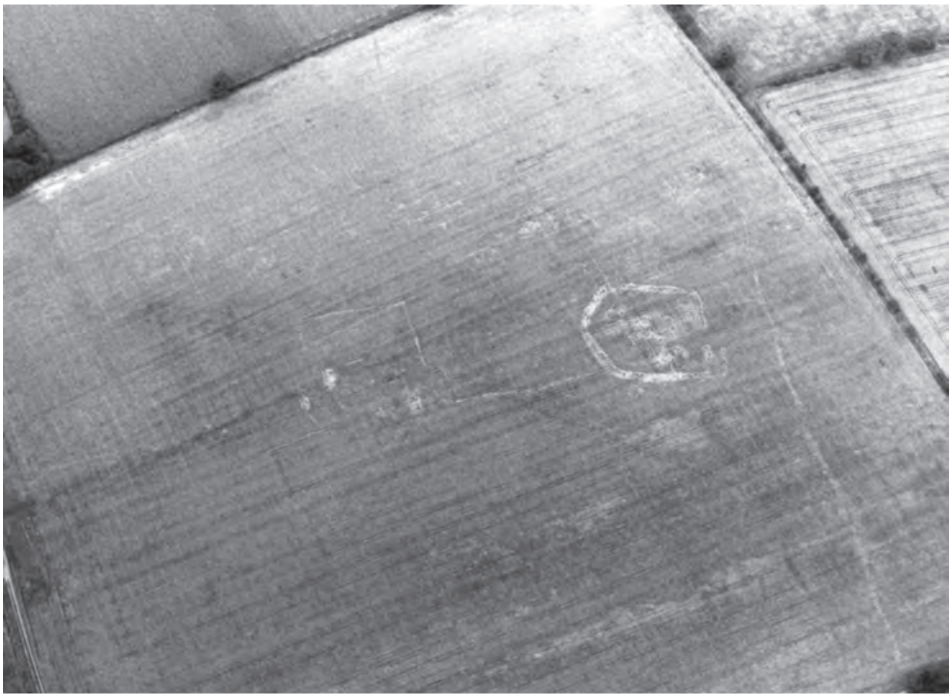


*Figure 3.17. Mardon SE 1. An enclosed settlement with an east-facing entrance is revealed as a cropmark. Ditches adjacent to the enclosure may represent fragmentary remains of an associated field system. (Copyright Tim Gates, 18 August 1978).*

the Tweed at Mindrum, East Learmouth and possibly also at Carham (Welfare and Swan 1995; Gates and Hewitt 2007). Within the limits of this survey, what may be the corner of a temporary camp was recorded by St Joseph as a cropmark at East Horton in 1968 (NU 034 304; HER 3832). Three kilometres to the north of this site, strings of pits on either side of the Roman road at *c.* NU 025 332 (HER 3838) almost certainly represent quarries for obtaining road metal.

## THE EARLY MEDIEVAL PERIOD AD 500–AD 1000

Air photography has played the leading role in the recognition of early medieval settlement sites in the North-East of England and the Borders Region of Scotland. Major centres at Yeavering, Milfield, Thirlings and Sprouston were all discovered from the air as cropmarks, subsequently leading to major excavations in the case of Yeavering and Thirlings (Hope-Taylor 1977; O'Brien and Miket 1991). A 1:5000 scale transcription of the cropmarks at Milfield (*Maelmin*) has been published (Gates and O'Brien 1988) but so far only small-scale investigations have taken place on the western margin of this large and complex site (Volume 1, Chapter 5). It was also while preparing the plan of *Maelmin* that cropmarks thought to represent *Grubenhäuser* were recognised for the first time north of the Tees. Thereafter, the validity of this interpretation was tested in excavations undertaken by O'Brien at New Bewick in the Breamish valley, 18km south-east of Milfield (NU 060 206), and it was confirmed that one of these cropmarks was indeed a *Grubenhaus* of Anglo-Saxon date (Gates and O'Brien 1988).

The recognition of *Grubenhäuser* represents a very significant step forward in our ability to locate Anglo-Saxon settlements in this region, particularly as it has led to the identification of a growing number of other cropmarked sites where structures of the same type are represented. In Volume 1, for example, 13 sites with *Grubenhäuser* have been documented, containing between them an estimated 35 to 50 individual *Grubenhäuser*. The average number of *Grubenhäuser* per site is two to three, though at New Bewick as many as 20 examples could be involved (Volume 1, Chapter 4). In the territory covered by this survey, *Grubenhäuser* have been identified as cropmarks at a further 12 sites (Table 3.12). This includes sites previously reported near the Anglo-Saxon palace at Milfield (*Maelmin*), as well as other groups in the immediate vicinity of Thirlings, some of which are depicted on the plan published with the excavation report on that site (O'Brien and Miket 1991, Fig. 1). In addition to these sites known only from aerial photographs, another nine *Grubenhäuser* have recently been excavated at Lanton Quarry where they were discovered during topsoil stripping in advance of sand and gravel extraction (Waddington 2009). This brings the total number of *Grubenhäuser* on and around the Milfield Basin to around 100, of which the overwhelming majority are located on the glaciofluvial sand and gravel terraces.

*Figure 3.18. Doddington Bridge North. A rectilinear enclosed settlement with a south-east facing entrance is clearly visible in the lower right-hand corner of the frame. To the south (towards the top of the frame) are several ring ditches, some if not all of which are likely to represent burials. Four or more Grubenhäuser are also present in the same area. (Copyright Tim Gates, 1 July 2008).*

Although this may seem to be an unexpectedly high figure it is nevertheless likely to be an underestimate, given the unobtrusive nature of the cropmarks and the difficulties inherent in spotting them from the air. Equally, it is possible that the seeming concentration of these sites on gravel could be more apparent than real, as cropmarks of this type are even less likely to be visible on the heavier till deposits which clothe much of the surrounding landscape.

Such potential sources of bias notwithstanding, there does seem to be an unusually high density of Anglo-Saxon settlement on the glaciofluvial sand and gravel terraces of the Milfield Basin. What may also be significant is that there are virtually no enclosed or defended settlements of probable pre-Roman or Roman Iron Age date on these same terraces, though they do exist in some numbers around the edges of the Milfield Plain (see above). Indeed, apart from the pit alignments and boundary ditches referred to elsewhere in this report, the great majority of cropmarked sites on the delta gravels are either ceremonial or funerary monuments of Late Neolithic or Bronze Age date or settlements of the Anglo-Saxon period. On the southern margin of the Plain, the Yeavering palace too is sited in an area formerly occupied by a prehistoric cemetery and ritual centre. If the absence of Late pre-Roman and Roman Iron Age settlements from the delta is seen as a case of 'ritual avoidance', then the siting of several large and important Anglo-Saxon settlements here could be explained as the act of a new and increasingly self-confident elite, which, by making an ostentatious break with the past, hoped to assert its political authority, as indeed Bradley and O'Brien have already argued (Bradley 1987; 1993; O'Brien 2002).

Whether or not there is any merit in the above suggestion, it is a fact that only three of the *Grubenhäuser* sites listed here are not situated on the Milfield terraces, the exceptions being at Blakelaw (HER 3318), Newtown 1 (HER 3321), and Howtel East (HER 19690). At each of these sites, between one and three *Grubenhäuser* are visible as cropmarks, though again these figures cannot necessarily be regarded as indicative of the true number that may actually exist. What may very well also be significant is that at Blakelaw and Newtown 1 the *Grubenhäuser* are situated near to Iron Age forts, while at Howtel East and Doddington Bridge North, *Grubenhäuser* are located in close proximity to prehistoric farmsteads (Fig. 3.18). Although falling outside the bounds of this survey, it is worth noting that a further juxtaposition of this kind exists at Roseden Edge (NU 028 218) where several putative *Grubenhäuser* again lie no more than a short distance from a plough-levelled Iron Age fort. However, as there is presently no way of knowing if any of these settlements were inhabited in the Late Roman Iron Age, we cannot tell if the arrival of *Grubenhäuser* represents continuity of occupation or reoccupation after a period of abandonment.

As O'Brien has pointed out, *Grubenhäuser* do not normally exist in isolation and it would come as no surprise if some, or even all, of these settlements were accompanied by timber buildings of post-in-

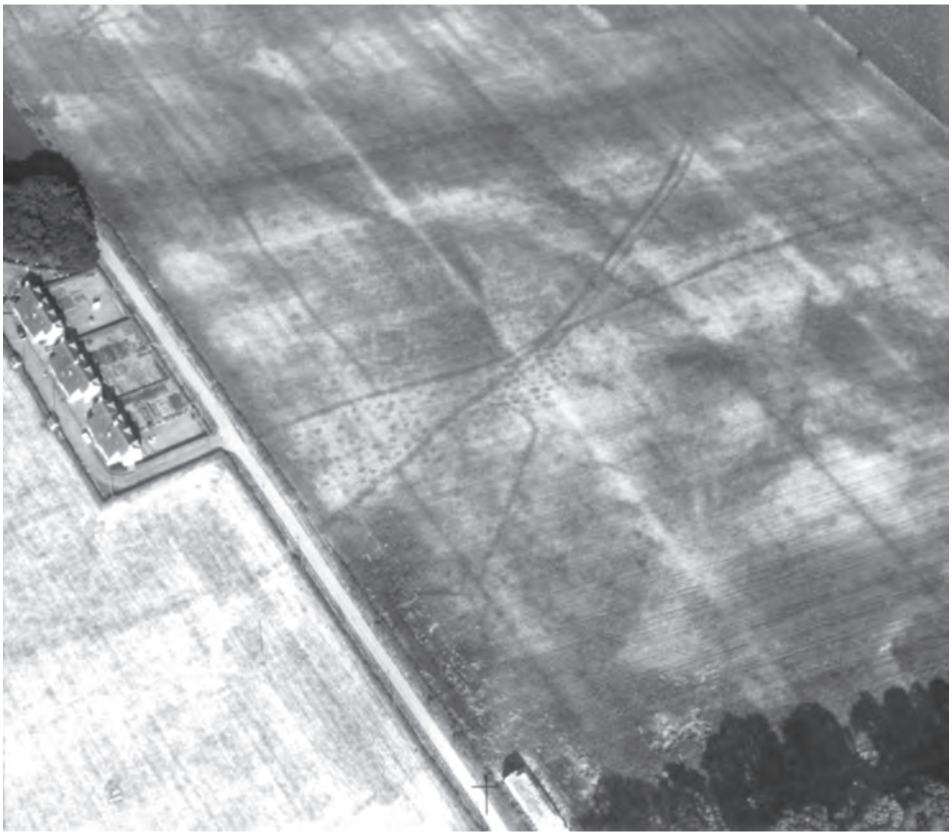


*Figure 3.19. Ford Westfield. A complex of cropmarks includes a small rectangular enclosure, perhaps representing the site of a small church or shrine and possibly of Anglo-Saxon or medieval date. In the middle distance, just beyond the rectangular enclosure, rows of inhumation graves are faintly visible. The more prominent 'spots' on the side of the enclosure nearest to the camera seem more likely to represent pits than graves. Linear boundaries in the vicinity most probably date to the Late pre-Roman or Roman Iron Age. (Copyright Unit for Landscape Modelling, University of Cambridge, 20 July 1972).*

hole construction (Gates and O'Brien 1988). Indeed this has recently been shown to be the case at Lanton Quarry (Waddington 2009). On the other hand, this is not a question which is likely to be answered by air photography, as buildings of this kind would not normally be expected to give rise to identifiable cropmarks.

Where *Grubenhäuser* are concerned, the question of dating is again one which must presently be left open. For, as a comprehensive survey of *Grubenhäuser* throughout Britain has shown, buildings of this type occur in a wide range of contexts from the late 5th to the mid 9th century AD (Tipper 2004). At New Bewick, none of the pottery or other artefacts that were recovered is susceptible to close dating, although the situation is different at Lanton Quarry. Here, numerous samples, including animal bone, are available for radiocarbon dating, together with a range of associated artefacts including ceramics, loom weights and polychrome beads.

Another site which may yet find a place in an Anglo-Saxon context is situated near Ford Westfield, on the east side of the Till and about 1km south-west of Ford village (*c.* NT 940 365). This complex, multi-period cropmarked site includes an inhumation cemetery containing several dozen graves which are laid out in orderly rows adjacent to a small enclosure with dimensions about 15m by 15m (Fig. 3.19). The orientation of the graves is not easy to determine: while some appear to lie east-west, others may be on a north-south alignment. If this is a Christian cemetery, at least in part, the associated enclosure could represent the site of a small church. Alternatively, it could be a large barrow marking a high-status burial or else a pagan shrine. Short of excavation there is no ready way of answering these questions. Meanwhile we may note that several other inhumation cemeteries are already known to exist in association with Anglo-Saxon settlements in this area, including Yeavering and Sprouston, and inhumation graves were also discovered in excavations on the Milfield North and Milfield South henge monuments (Scull and Harding 1990). Interestingly, O'Brien has already speculated on the existence of a 'high status pre-conquest site somewhere near to the River Till in Ford or Crookham' (O'Brien 2002). If he is right about this, then the site at Ford Westfield would seem to be the most likely candidate currently on offer.

*Table 3.1. Henges and related monuments – cropmarks.*

| | | |
|---|---|---|
| **NT 93 NW** | | |
| 19684 | NT 9332 3716 | Ford Bridge West. The northern half of a probable henge monument protrudes beyond the edge of a shelter belt. The monument takes the form of a semi-circular ditch with an estimated overall diameter of 25m. The ditch is broad in relation to its diameter and is interrupted by a causeway on the N-facing side. Several pits are visible within the ditch. |
| **NT 93 SW** | | |
| 2010 | NT 9338 3492 | Milfield North. The henge consists of a sub-circular ditch up to 5m broad with a diameter of 25m. There are opposed entrances in the NW and SE-facing sides. Three large pits are visible on air photographs within the ditch as well as several others outside it. The site was partially excavated in 1975–7. |
| 2024 | NT 9423 3226 | East Marleyknowe. The henge takes the form of a segmented ditch up to 8m broad and has a diameter of 40m. Traces of an external bank are visible on some air photographs. On the W side, an entrance causeway is visible. Air photographs show four large pits in the interior of the henge. |
| 2025 | NT 9406 3308 | Coupland. A sub-circular ditch up to 10m broad forms an enclosure with an overall diameter of 75m. There are two opposed entrances, each 15m wide, facing NNW and SSE. Outside the ditch, on the N side, are what could be two large pits or gravel quarries. Some photographs show traces of an external bank in the form of a faint soilmark. A double-ditched droveway or 'avenue' passes through the henge. |
| 2034 | NT 9396 3351 | Milfield South. The henge is formed by an oval-shaped ditch with overall measurements of 35 × 30m. There is an entrance, 5m wide, through the ditch on the NW side. The site was partially excavated in 1977–8. |
| 2037 | NT 9285 3043 | Yeavering. The henge measures 25 × 21m in diameter overall and is formed by an oval ditch 3–4m broad. There are opposed entrances in the NW and SE-facing sides. The henge was partially excavated in 1976. |
| **NT 93 SE** | | |
| 2140 | NT 9589 3070 | West Akeld Steads. The henge is almost circular on plan. It is formed by a ditch up to 10m in breadth and has an overall diameter of 45–50m. There is an entrance in the NW side and, less certainly, another facing to the SE. A circle of at least ten pits runs just inside the inner lip of the ditch. Other pits are visible in the interior including a large one at the centre of the monument. |
| 2153 | NT 9569 3172 | Ewart Park. The henge is oval on plan and is formed by a ditch 5–8m broad and up to 20m in diameter. The circuit of the ditch is broken by opposed entrances in the NW and SE facing sides. At least one large pit is visible close to the centre of the henge. |
| **NU 02 NW** | | |
| 3330 | NU 0012 2781 | Wooler Cricket Pitch. In 1977 this monument was recorded on the ground as a vivid grassmark (Fig. 3.4) in the form of a penannular ditch with overall measurements of 22m N–S by 17.5m E–W. The width of the ditch varied from 1.25–1.5m and was interrupted by an entrance, 6.5m wide, in the centre of the E-facing side. On either side of the entrance the ditch terminals were noticeably swollen. |

*Table 3.2. Ring ditches – cropmarks.*

| | | |
|---|---|---|
| **NT 93 NW** | | |
| 1866 | NT 9090 3910 | One, or possibly two, ring ditches? No estimate of diameters is possible. |
| 1869 | NT 9122 3862 | One possible ring ditch with a diameter estimated at 10–15m? Doubtful. |
| 1880 | NT 9119 3972 | Lookout Plantation. One ring ditch, 10m in diameter, lies close to the site of an unenclosed roundhouse excavated in 1981. |
| 1883 | NT 9043 3857 | A ring ditch with an overall diameter of 25–30m. There are two visible breaks in the circuit. |
| 12868 | NT 9319 3727 | One ring ditch about 10m in diameter. |
| 19651 | NT 9192 3614 | One probable ring ditch, oval rather than circular and 15–20m in diameter. |
| 19671 | NT 9423 3671 | Ford Westfield. One ring ditch about 15m in diameter. |
| 19678 | NT 9158 3763 | One doubtful ring ditch, oval rather than circular with a maximum diameter of 25m. |
| 19680 | NT 9182 3740 | One ring ditch, 10m in diameter. |
| **NT 93 SW** | | |
| 2029 | NT 9397 3007 | A possible ring ditch lies close to a ditched enclosure which has been described as a possible mortuary enclosure. |
| 2030 | NT 9419 3193 | One ring ditch, 10m in diameter. The ditch is broad in relation to its diameter and for this reason is probably a burial or ritual monument. |
| 2044 | NT 9371 3254<br><br>NT 9374 3255 | A ring ditch about 25m in diameter. A large pit is visible off-centre within the ditch perhaps indicating that this is a burial monument.<br>A ring ditch 10m in diameter.<br>Both ring ditches appear to pre-date a late (?) prehistoric droveway. |
| 2045 | NT 9332 3458<br><br><br><br>NT 9333 3469<br>NT 9332 3440<br>NT 9343 3423 | East Whitton Hill. Five ring ditches are depicted on Rog Palmer's plot to the E of the A697 road. These include: (i) at NT 9332 3458, a double ring ditch with a maximum overall diameter of 15m. This monument was excavated by Roger Miket in 1983 (Site 1). The inner 'circle' was found to consist of a ring of pits, 6m in diameter.<br>(ii) at NT 9333 3469, a ring ditch less than 10m in diameter.<br>(iii) at NT 9332 3440, a ring ditch, less than 10m in diameter with a relatively broad ditch.<br>(iv) at NT 9343 3423, a ring ditch about 15m in diameter. |
| 2046 | NT 9319 3460<br>NT 9325 3445<br><br><br>NT 9326 3453 | West Whitton Hill. Six ring ditches are shown to the west of the A697 on Rog Palmer's plot. These include: (i) at NT 9319 3460, a double ring ditch about 20m in diameter overall.<br>(ii) at NT 9325 3445, a ring ditch about 10m in diameter, the ditch being relatively broad in relation to the diameter.<br>(iii) at NT 9326 3453, a ring ditch with an overall diameter of 10m. This seems to be the site excavated by Roger Miket in 1982 (Site 2). It was found to be penannular on plan with an opening in the S-facing side. Within the ditch, an arc of pits, 6m in diameter, may be all that was left of a complete ring . |
| 2106 | NT 9369 3166 | A small ring ditch has been plotted by Rog Palmer but its existence has not been confirmed. |
| 2107 | NT 9383 3167 | A small ring ditch has been plotted by Rog Palmer but its existence has not been confirmed. |
| 2112 | NT 9495 3122 | A ring ditch 10m in diameter. One or two other possible ring ditches lie in the area to the E. |
| 2113 | NT 9421 3218 | A ring ditch formed by two concentric ditches has an overall diameter of 10m. In the 19th century a cist burial was discovered at this same location. The site lies close to the southern terminal of a double-ditched droveway or 'avenue' (HER 2039). |
| 2114 | NT 9427 3175 | One ring ditch, 10m in diameter. |
| 2115 | NT 9398 3033 | Two thirds of the circuit of a ring ditch with a diameter of about 20m. |
| 12911 | NT 9482 3117 | A small ring ditch has been plotted by Rog Palmer but its existence has not been confirmed. |
| 12912 | NT 9494 3109 | A small ring ditch has been plotted by Rog Palmer but its existence has not been confirmed. |
| 19665 | NT 9369 3417 | A single ring ditch, 12–15m in diameter, with a broad, continuous ditch. Probably a burial or ritual monument rather than an unenclosed roundhouse. |
| 19656 | NT 9269 3054 | Yeavering 'Eastern Ring Ditch'. A ring ditch, 14m in diameter, was excavated by Hope-Taylor and shown to pre-date the 'Great Enclosure'. |
| 19667 | NT 9151 3482 | Two closely adjacent ring ditches, each 10–15m in diameter. (Not shown on Rog Palmer's plot). |

*Table 3.2. continued.*

| | | |
|---|---|---|
| **NT 93 SE** | | |
| 2161 | NT 9573 3111 | A ring ditch, about 15m in diameter, with a broad, continuous ditch. Probably a burial or ritual monument rather than an unenclosed roundhouse. |
| 2165 | NT 9928 3005 | Turvelaws. A ring ditch, 10m in diameter, lies 60m E of a rectilinear enclosed settlement and may represent either a timber-built roundhouse or a burial monument. The site was partly excavated (see Waddington, this volume). |
| 12928 | NT 9664 3213 | A ring ditch, about 20m in diameter, with a broad, continuous ditch. Probably a burial or ritual monument rather than an unenclosed roundhouse. |
| 19718 | NT 9577 3063 | An arc of a probable ring ditch about 10m in diameter. Situated close to West Akeld Steads henge and now overplanted with trees. |
| 19719 | NT 9582 3065 | An arc of a probable ring ditch about 10m in diameter. Situated close to West Akeld Steads henge and now overplanted with trees. |
| 19721 | NT 9577 3231 | One ring ditch, sub-circular on plan and with a diameter of about 10m. A centrally placed pit may indicates that this is a burial monument. |
| 19725 | NT 9604 3206 | Approximately half the circuit of a ring ditch, estimated at 15m in diameter. |
| 19726 | NT 9518 3420 | One ring ditch, 10m in diameter. A centrally placed pit may indicate that this is a burial monument. |
| 19727 | NT 9625 3490 | One, or possibly two, ring ditches. The most likely of the two has an estimated diameter of about 15m. |
| 19730 | NT 9859 3405 | A ring ditch, about 10m in diameter. This site is not shown on Rog Palmer's plot. |
| **NU 02 NW** | | |
| 19677 | NU 0329 2550<br>NU 0335 2558 | Arc of a possible ring ditch, about 10m in diameter.<br>Arc of a possible ring ditch, about 15m in diameter. |
| **NU 03 SW** | | |
| 19676 | NU 0008 3119 | A ring ditch with an estimated diameter of 10m. |
| 3836 | NU 0006 3104 | Half the circuit of a ring ditch with an estimated diameter of 20m. |

*Table 3.3. Curvilinear palisaded enclosures – cropmarks.*

| | | |
|---|---|---|
| **NT 93 NW** | | |
| 1853 | NT 9044 3906 | West Crookham. A circular palisaded enclosure measures 40m in diameter and has an internal area of 0.11ha. There are no visible signs of settlement in the interior. |
| 1871 | NT 9110 3885 | Crookham Eastfield. A sub-circular palisaded settlement with a single line of palisade, measures 45 × 40m in diameter and encloses an area of 0.08ha. A disc-shaped mark in the centre of the enclosure indicates the position of a roundhouse. |
| 1872 | NT 9282 3515 | Flodden East. Three, or possibly four, arcs of palisade trench mark the northern edge of a settlement. |
| 1873 | NT 9204 3545 | Flodden North 2. A roughly trapezoidal palisaded enclosure measures 50 × 45m and encloses an area of *c*. 0.11ha. There are no visible signs of settlement in the interior. |
| 12863 | NT 9147 3746 | Pace Hill 1. A large palisaded settlement is enclosed by at least five, and possibly as many as eight, concentric lines of palisade, including two pairs of twinned palisade trenches spaced 3m apart. An entrance is visible on the SE-facing side and on either side of it one pair of double palisade lines terminate in hairpin ends. The site is oval on plan with overall dimensions of 120 × 90m and a maximum internal area of *c*. 0.88ha. To the S, the enclosure is cut by the outermost ditch of a multivallate Iron Age fort (Pace Hill 2; HER 19679). |
| 12867 | NT 9307 3720 | First Linthaugh 1. A sub-circular palisaded enclosure measures *c*. 40m in diameter and encloses an area of *c*. 0.13ha. There are no visible signs of settlement in the interior. |
| 12883 | NT 9183 3564 | Flodden North 1. A sub-circular palisaded enclosure measures 40 × 45m and has an internal area of 0.26ha. No entrance is visible nor are there any signs of occupation in the interior. |
| 19670 | NT 9420 3654 | Ford Westfield. A sub-circular palisaded enclosure measures *c*. 30m in diameter and has an internal area of 0.07ha. |
| **NT 93 SW** | | |
| 2105 | NT 9341 3032 | Yeavering 2. A palisaded enclosure measures *c*. 30m in diameter and encloses an area of *c*. 0.07ha. There are no visible signs of settlement in the interior. |
| 19655 | NT 9283 3038 | Yeavering 1. The N half only of a twin palisaded settlement is visible. The enclosure measures 75–80m in diameter and would originally have contained an area of *c*. 0.5ha. A round timber house foundation is visible in the interior. |
| 19658 | NT 9346 3014 | Yeavering 3. The W half of a palisaded enclosure protrudes from a shelter belt. The site appears to be sub-circular on plan and has a maximum diameter of *c*. 40m. |
| **NU 03 SW** | | |
| 19698 | NU 0100 3110 | South Dod Law. An almost circular palisaded enclosure with an estimated diameter of *c*. 40m and containing an area of 0.13ha. |

*Table 3.4. Hillforts and defended settlements – earthworks.*

| | | |
|---|---|---|
| **NT 92 NW** | | |
| 1397 | NT 9020 2880 | Hethpool Bell. An egg-shaped enclosure is formed by a now collapsed stone wall. The enclosure has internal dimensions of 64m × 40m and contains an area of 0.2ha. There appears to have been one original entrance at the N apex of the enclosure. There are no visible remains of occupation in the interior. In 1999–2000 the site was surveyed by an English Heritage survey team who concluded that it is probably of Iron Age date. |
| 1401 | NT 9490 2906 | Gleadscleugh. A hillfort with internal dimensions of 95 × 35m. The defences, which are formed by three ramparts on the N side but only one elsewhere, enclose an area of 0.3ha. In 2000–2001 the hillfort was surveyed by an English Heritage survey team who recorded the sites of 14 timber roundhouses in the interior. |
| 1417 | NT 9097 2950 | West Hill. A univallate hillfort with a perimeter formed by a stone wall. The hillfort has internal dimensions of 95m × 35m and an internal area of 0.28ha. The site is overlain by two phases of stone-built settlement dating to the late Iron Age or Roman periods. These later settlements are accompanied by an extensive field system. The site was surveyed by an English Heritage survey team in 1999–2000. |
| 1429 | NT 9161 | St Gregory's Hill. A bivallate hillfort with two stone ramparts. In 2002 the site was surveyed by an English Heritage survey team who showed that the hillfort went through two developmental phases. The first phase is represented by the outer rampart which has internal dimensions of 92 × 55m and encloses an area of 0.4ha. At a later date a second, inner, rampart was added. This measures 72 by 39m internally and encloses an area of 0.22ha. The site is overlain by a later, Romano-British, settlement represented by a dozen stone-built roundhouses and an accompanying field system. |
| 1448 | NT 9280 2931 | Yeavering Bell. This is the largest hillfort in Northumberland. The defensive circuit is formed by a single, massive stone rampart which has internal dimensions of 340 × 170m and encloses an area of 5.6ha. The most likely position for the original entrance is in the middle of the S-facing side. In 1998 the site was surveyed by a team from the RCHME who recorded 125 timber roundhouse sites in the interior. This survey also suggests that the two 'annexes' at the E and W ends of the monument may in fact represent the course of an earlier rampart. On the E summit, a sub-circular or polygonal enclosure, formed by a ditch and external bank, post-dates the construction of the hillfort rampart and cuts at least two roundhouse platforms. Otherwise its date and function remain obscure. There are no stone-built roundhouses on the site and no evidence to show that occupation continued into the Roman period. Limited excavations were carried out by Dr. Brian Hope-Taylor in 1958. |
| **NT 92 NE** | | |
| 1509 | NT 9595 2892 | Standrop Hill. A fort or defended settlement of presumed Iron Age date is situated on a N-facing slope. The defences are formed by two almost concentric banks which measure 70 × 50m and enclose an area of *c*. 0.35ha. Two possible stone-built roundhouses are visible in the interior suggesting that occupation may have continued into the Roman period. Later, medieval or post-medieval settlement is represented by the foundations of one or more rectangular stone buildings. |
| 1527 | NT 9561 2849 | Monday Cleugh. A multivallate cliff-edge fort has a D-shaped plan with an entrance in the SE corner. On the NW side the defences are formed by three concentric earth and stone banks. These are reduced to two on the S side with only a single rampart overlooking the gorge to the E. The interior space measures 70 × 65m and contains an area of *c*. 0.25ha. Three stone-founded roundhouses in the interior belong to a post-defensive phase of late Iron Age or Roman settlement while the foundations of one or more rectangular buildings represent medieval or later use. Outside the ramparts to the W, there is a secondary enclosure or annexe. From the SE the site is approached by a walled trackway which may form part of a field system contemporary with the stone-built, Romano-British, phase of settlement. |

*Table 3.4. continued.*

| | | |
|---|---|---|
| **NT 92 NE** | | |
| 1544 | NT 9666 2829 | Humbleton Hill. The hill summit is crowned by two massive stone ramparts, the area contained within the inner rampart being 0.63ha. The defences are most strongly developed on the E side of the hill where there was an entrance in the SE corner of the site. To the SW, where the fort faces onto a ravine, the defences are reduced to the eroded remains of a single much slighter bank. A field survey undertaken by RCHME in 1997 documented at least 16 roundhouse platforms within the circuit of the ramparts. On the N and W sides, an outer enclosure or annexe has been added to the hillfort, probably in the late Iron Age or Roman periods. The annexe, which contains an area of 3.0ha, is formed by a comparatively slight earth and rubble bank and does not appear to be defensive in character and. Within it are the remains of another eight roundhouses including some which are stone-built and may represent occupation into the Roman period. |
| 1546 | NT 9847 2730 | The Kettles. A multivallate fort occupies a low promontory. The fort consists of two conjoined enclosures which are the result of it either having been enlarged or, more probably, reduced, in size at some stage. Where the natural slope is steepest, on the E and W sides of the site, the defences consist of a single bank of earth and stone, but elsewhere either two or three ramparts are present. Until recently the site formed part of a golf course. |
| 1555 | NT 9767 2758 | Brown's Law. An oval enclosure has internal measurements of 70 × 45m and is formed partly by a denuded bank or earth and stone and partly by a slight scarp. The site is poorly preserved but may provisionally be classified as an Iron Age fort or defended settlement. |
| **NT 93 NW** | | |
| 1825 | NT 9135 3572 | Flodden Hill. A circular, bivallate fort occupies the summit of Flodden Hill. The site has an overall diameter of about 120m and contains an estimated internal area of 0.5ha. Within the interior is a 16th century artillery redoubt. To the W is an oval-shaped annexe enclosed by a bank. The whole site is now covered by trees and for this reason is not shown on Rog Palmer's plot. |
| **NT 93 NE** | | |
| 1948 | NT 9716 3644 | Fordwood. The earthwork is oval on plan and the perimeter is formed by three, or possible four, concentric ramparts and ditches spaced closely together. The defences form a semi-circular arc on the north bank of a steep-sided burn. |
| 1950 | NT 9368 3793 | Blackchester. The earthwork is roughly circular on plan. The defences are formed by two concentric ramparts except on the N side where the ground falls steeply away and here there is only a single rampart. The entrance appears to be in the SW quadrant. The site is thickly covered with trees and is therefore not shown on Rog Palmer's transcription. |
| 1953 | NT 9794 3541 | Fenton Hill. The fort is oval on plan and its perimeter is formed by two ramparts and ditches and a third, counterscarp bank. Excavations in the 1970s have shown that the site began with two successive phases of palisaded enclosure. These were followed by an enclosure formed by a single, timber-revetted rampart and ditch which was in turn replaced by a larger enclosure of broadly similar form. In its fifth and final phase, the fort defences consisted of two dump ramparts and ditches and an outer counterscarp bank. Access to the interior was by a simple entrance on the W side. In its final phase the fort had internal dimensions of 100 by 70m and contained an area of *c*. 0.5ha. |
| 1958 | NT 9828 3675 | Roughting Lynn. A promontory fort occupies a riverine spur with streams to the N and S. The defences are formed by four arc-shaped ramparts which cut across the neck of the spur. The site is now afforested and for this reason does not appear on Rog Palmer's plot. |
| **NT 93 SE** | | |
| 2130 | NT 9850 3457 | Nesbit Chesters. A sub-rectangular enclosure has been mutilated by rig and furrow ploughing. Where the perimeter survives as a visible earthwork two ramparts are present. These form an enclosure with internal dimensions estimated at *c*. 95 × 70m. There are no visible indications of occupation in the interior. |

*Table 3.4. continued.*

| | | |
|---|---|---|
| **NU 02 NW** | | |
| 3285 | NU 0258 2663 | Trickley Hill. An oval enclosure is formed by a single bank and ditch with a probable entrance in the NW-facing side. On the N and W sides an external, counterscarp bank is also present. The site has internal dimensions of 90 × 70m and contains an area of about 0.3ha. There are no surface traces of occupation in the interior. |
| 3301 | NU 0212 2934 | Weetwood Moor. The hillfort has been much mutilated by quarrying. To the W, the defences consist of three earth and stone ramparts, spaced 4–10m apart. On the NE side, the spacing between the middle and outer ramparts increases to as much as 30m. No reliable estimate of the site's internal dimensions or area is possible. The fort is overlain by at least a dozen stone-built roundhouses with their associated yards and enclosures which represent one or more phases of later, non-defensive settlement. |
| **NU 03 SW** | | |
| 3786 | NU 0139 3185 | Horton Moor. A sub-circular enclosure is formed by a single bank and ditch with an intermittent counterscarp bank. The enclosure has internal dimensions of about 100 × 90m and contains an area 0.6ha. There are no surface features within the enclosure except for a mound whose origin and significance are uncertain. In the 1980s this (scheduled) site was levelled by ploughing and now survives as little more than a faint soilmark. |
| 3794 | NU 0063 3170 | Middle Dod Law. A D-shaped enclosure is formed by a single bank and outer ditch. A second, inner bank also exists on the N and W sides. The site has interior dimensions of 80 × 70m and contains an area of about 0.35ha. There are two probable entrances, situated in the NE and SW-facing sides. There are no visible signs of occupation in the interior. |
| **NU 03 SW** | | |
| 3795 | NU 0041 3171 | West Dod Law. The hillfort is formed by two concentric ramparts augmented by a ditch on the S side. There are two entrances, on the SE and NW sides, the latter leading into an adjoining annexe. Within the fort defences, eight timber or stone-built roundhouses are visible, not all of which can be contemporary. Five additional house sites lie outside the defences to the N and one other in the adjacent annexe. The primary enclosure has interior dimensions of 90 × 80m and an area of 0.28ha while the annexe contains an area of 0.23ha. Excavations undertaken in 1984–5 concentrated on the annexe and the defences and it was suggested that the defences fell into decay in the 1st or 2nd centuries AD. |
| 3800 | NU 0135 3281 | The Ringses. The hillfort is sub-oval on plan with a perimeter formed by three concentric earth and stone banks and ditches. On the W side only there is an additional, outer, bank and a slight counterscarp bank exists to the S. The main entrance is on the SE-facing side. The fort is overlain by a later settlement represented by the remains of a least 4 stone-built roundhouses and associated enclosure banks. It is also possible that the innermost 'rampart' in fact belongs to this last phase of occupation. To the N of the fort, a projecting bank may represent part of an annexe or else a field boundary. |
| 3802 | NU 0073 3163 | East Dod Law. The earthwork is oval on plan with internal dimensions of 80 × 70m and an area of 0.35ha. The perimeter is formed by one continuous earth and stone bank with a second, outer bank on the N and W sides. The most likely position for an entrance is on the W side. There are no visible signs of occupation in the interior. |
| 3812 | NU 0186 3119 | Buttony Wood. The enclosure is nearly circular on plan and the perimeter is formed by two banks and a medial ditch. In the SW quadrant there are traces of a third, inner bank and ditch. The northernmost part of the site has been ploughed down but the remainder survives as a residual earthwork under a plantation of trees. The internal diameter of the enclosure is estimated at 60m giving an area of *c*. 0.25ha. No trace of internal occupation has been recorded. |

*Table 3.5. Multivallate Iron Age forts and defended settlements with curvilinear plans – cropmarks.*

| | | |
|---|---|---|
| **NT 93 NW** | | |
| 1829 | NT 9237 3511 | Flodden. A large and complex multivallate fort. At their maximum extent the defences have consisted of three concentric ditches except on the NE-facing side where there are only two. On plan the site is oval with overall dimensions of 170 × 140m, and an internal area of *c*. 0.5ha. There are entrances on the SW and SE-facing sides both of which are protected by outward projecting hornworks. The innermost of the three ditches is broader than the other two suggesting that it belongs to a different stage of development. Centrally placed within the fort is a sub-circular ditched enclosure with opposed E and W-facing entrances. This enclosure has internal dimensions of 45 × 45m and contains an area of 0.19ha. On the basis of the air photographic evidence it could be either earlier or later than the fort and might, for example, represent a non-defensive settlement of the late pre-Roman or Roman Iron Age. |
| 1852 | NT 9408 3574 | Threecorner Wood. A double-ditched, sub-circular enclosure with an overall diameter of 55m may represent a defended settlement. The site has been partially excavated (Clive Waddington, this volume). |
| 1868 | NT 9258 3965 | Etal Ford. A bivallate promontory fort is represented by two curving arcs of ditch, spaced 15m apart, which mark the northern perimeter of the site. |
| 12858 | NT 9429 3957 | Broomie Knowe. A large, bivallate fort whose perimeter is defined by two broadly concentric ditches spaced 10–15m apart. The SW portion of the site lies under a plantation of trees but its overall dimensions are estimated at 140 × 110m, giving an internal area of 0.98ha. The outer ditch is markedly broader than the inner one suggesting that two different phases of development may be involved. Of three breaks in the outer ditch only one has the appearance of an entrance. |
| 12882 | NT 9020 3547 | Branxton Moor. Two concentric arcs of ditch (or palisade trench ?), spaced 10m apart, represent the NW perimeter of a possible Iron Age fort or defended settlement. Within the projected circuit of the perimeter, a disc-shaped mark indicates the site of a roundhouse. |
| 14104 | NT 9010 3848 | Kaimknowe. A bivallate fort, with two concentric ditches. The fort is sub-oval on plan with overall dimensions of *c*. 120 × 90m. Circular marks in the interior indicate the positions of roundhouses. The site was not discovered until 2003 and therefore does not appear on Rog Palmer's plot. |
| 19679 | NT 9155 3737 | Pace Hill 2. A large, multivallate fort, which is oval on plan with overall dimensions of 180 × 140m. The perimeter is complex and consists of at least three concentric ditches spaced 5–15m apart. Not all the ditches need be contemporary and there are indications that the innermost ditch (which is significantly broader than the others) has been re-dug on at least one occasion. The area contained within the innermost ditch is 0.73ha and there is an entrance through all three ditches on the E-facing side of the site. In the SE corner of the fort, at NT 9160 3736, there are suggestions of a palisaded enclosure whose relationship to the fort is unclear. |
| **NT 93 NE** | | |
| 1961 | NT 9625 3530 | White Hill. A sub-circular multivallate fort whose perimeter consists of three concentric lines of ditch spaced 10–15m apart. The site has overall dimensions of 120 × 120m and contains an estimated area of 0.38ha. |
| 1969 | NT 9801 3502 | Fenton. A sub-circular bivallate fort whose perimeter is formed by two concentric ditches spaced less than 10m apart. The maximum overall diameter of the site is estimated at 130m giving an internal area of 1.02ha. |
| **NT 93 SW** | | |
| 2026 | NT 9310 3063 | Burrowses. A large multivallate fort whose defences are represented by three concentric ditches, regularly spaced 10m apart. Only the S half of the site has been recorded, the N part having been mutilated by a railway cutting. The overall diameter of the site is estimated at 160m and its internal area at *c*. 0.91ha. |
| 2027 | NT 9315 3220 | Sandy House 1. A large multivallate fort with defences consisting of three, or possibly four, concentric ditches interrupted by an entrance in the SE-facing side. The site is roughly oval on plan with maximum overall dimensions of 180 × 150m giving an estimated internal area of *c*. 0.74ha. Running within the innermost ditch, and strictly concentric with it, is what could be either a single line of palisade or else the foundation trench for a timber revetment to the rampart. In the fort interior the sites of at least three round timber houses are visible. |

*Table 3.5. continued.*

| | | |
|---|---|---|
| **NT 93 SW** | | |
| 2047 | NT 9078 3469 | Canno Mill. A multivallate fort consists of an inner enclosure formed by twin ditches, set 10m apart. This is encircled by a third, outer ditch, spaced at a distance of 15–20m from the inner enclosure. There is a clearly marked entrance through the two inner ditches on the NNW-facing side though it is not clear if this is matched by a corresponding break in the third, outer ditch. The site has overall dimensions of 120 × 80m and an estimated internal area of *c*. 0.3ha. |
| 12905 | NT 9085 3384 | Kypie Hill. A circular enclosure is formed by two concentric ditches (or palisades ?) spaced 15–20m apart. The overall dimensions of the site are estimated at 80 × 70m giving an internal area of 0.19 ha. There are no visible signs of habitation in the interior. |
| **NT 93 SE** | | |
| 2151 | NT 9805 3335 | Nesbit. A large multivallate fort with three, and in places four, more or less concentric ditches which most probably belong to more than one phase of construction and need not all have been in use at any one time. Initially the site seems to have been enclosed by two concentric ditches measuring 170 × 135m overall and containing an area of *c*.0.99ha. At some probably later stage, a third, outer ditch has been added together with a fourth ditch on the W side only. On the W side this outer pair of ditches bulge outwards thus creating an open space or annexe containing an area of some 0.25ha. Additional cropmarks in the fort interior, and also outside it to the N (centred at 9804 3353), may belong to a later, non-defensive (?) phase of settlement, perhaps extending into the Roman period. |
| **NU 02 NW** | | |
| 3318 | NU 0402 2734 | Blakelaw. An almost circular bivallate fort is formed by two perfectly concentric ditches spaced less than 10m apart. The site has an overall diameter of 80m and an estimated internal area of 0.24ha. |
| 3321 | NU 0394 2517 | Newtown 1. A sub-circular, bivallate fort whose the perimeter is formed by two concentric ditches spaced 10m apart. The overall diameter of the site is estimated at 90m and its internal area at *c*. 0.35ha. There is an entrance through both ditches on the E-facing side. |
| **NU 03 NW** | | |
| 3677 | NU 0373 3508 | Hetton Dene West 1. A multivallate fort which is circular on plan with defences formed by three concentric ditches spaced less than 10m apart. The site has overall dimensions of 140 × 135m and an internal area estimated at 0.44ha. Entrances are visible in the SE and SW-facing sides. The SW entrance is protected by a projecting hornwork. |
| 3694 | NU 0124 3878 | Lowick Low Stead. A bivallate fort which is circular on plan with defences consisting of two concentric ditches spaced 8–12m apart. The site has overall dimensions of 110 × 100m and contains an area of 0.35ha. There appear to be two entrances, on the E and W-facing sides, though on the W side the break in the inner ditch is not very clear. There are no visible signs of occupation in the interior. |
| **NU 03 SW** | | |
| 3782 | NU 0189 3452 | Billy Law. A bivallate fort which is sub-circular on plan with defences formed by two concentric ditches spaced 10–15m apart. The site has overall dimensions of 85 × 80m and contains an area of 0.20ha. |
| 3829 | NU 0379 3311 | Town Hill. A sub-circular, bivallate fort with defences consisting of two concentric ditches spaced 10–15m apart, enclosing an area of 0.23ha. The inner ditch is noticeably broader than the outer one, perhaps indicating that more than one phase of construction is involved. A break in the circuit on the NW side may represent an entrance. |
| 3834 | NU 0400 3500 | Hetton Dean 1. A large multivallate promontory fort with defences formed by four concentric ditches which describe a S-facing arc cutting off the neck of the promontory. The ditches are spaced 5–10m apart and the area enclosed by the innermost ditch is estimated at *c*. 0.6ha. The kidney-shaped plan has been dictated by the topography. The innermost ditch is noticeably broader than the other three suggesting that it belongs to a separate (earlier or later?) phase of construction. |

*Table 3.6. Multivallate Iron Age forts and defended settlements with rectilinear plans – cropmarks.*

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|---|---|---|
| **NT 93 NW** | | |
| 1828 | NT 9115 3540 | Flodden Hill. The W half only of a bivallate fort has been recorded and the remainder of the site lies under a tree plantation. The fort perimeter is formed by two parallel ditches spaced 8–15m apart. Overall the site measures 100m across from N-S and, assuming a regular shape, must have enclosed an area of at least 0.35ha. In the interior, two disc-shaped marks are likely to represent the sites of roundhouses. |
| **NT 93 SW** | | |
| 2049 | NT 9145 3495 | Flodden Edge. A bivallate fort whose perimeter is formed by two parallel ditches spaced 10–15m apart. The fort has overall dimensions of 85 × 80m and an internal area of 0.22ha. In the interior, the positions of several round timber houses are visible. An entrance in the SE corner of the fort leads into a trapezoidal annexe formed by a ditch The area contained within the annexe is 0.30ha. |
| 19661 | NT 9349 3267 | Sandy House NE. A possible fort or defended settlement is represented on air photographs by two ditches, spaced less than 10m apart, which appear to form the NE corner of an enclosure. The remaining sides are indicated by lengths of ditch all of which are narrower than those which form the NE corner. The shape of the enclosure cannot be determined precisely but it seems to have been roughly trapezoidal or polygonal on plan with a possible entrance on the E-facing side. Towards the SE corner of the enclosure, irregular 'blobs' of solid tone could represent gravel quarries or else areas of occupation. The enclosure appears to be the destination of a double-ditched track or droveway which extends for a distance of some 300m to the SE (HER 2032/19701) and then splays out to N and S. |

*Table 3.7. Settlements of the Late pre-Roman and Roman Iron Age – earthworks.*

| **NT 92 NW** | | |
|---|---|---|
| 1392 | NT 9046 2906 | A scooped enclosure, measures 45 × 20m. The enclosure is oval on plan and contains one possible roundhouse. There are the remains of a field system in the vicinity (HER 1467). |
| 1394 | NT 9030 2912<br><br>NT 9037 2910 | Hethpool 'A': an oval, scooped enclosure measures 44 × 32m and has an entrance in the SE-facing side. There is a field system in the vicinity (HER 1467).<br>Hethpool 'B': an irregularly shaped scooped enclosure measures 30 × 28m and has an entrance in the E-facing side. There is one possible roundhouse in the interior. There are remains of a field system in the vicinity. |
| 1407 | NT 9077 2851 | Torleehouse SW. Three contiguous scooped enclosures are formed by earth and stone banks. One enclosure is circular with a diameter of 36m and the others are oval with overall measurements of 38 × 36m and 30 × 26m. Surface remains of round stone houses lie within or close to all three enclosures. |
| 1410 | NT 9132 2866 | Torleehouse S. Two conjoined enclosures, measuring 29 × 23m and 27 × 27m, are formed by earth and stone banks. One possible roundhouse platform can be seen within the southernmost enclosure. |
| 1417 | NT 9097 2950 | West Hill. The hillfort is overlain by at least two phases of later settlement represented by between nine and sixteen surviving round stone houses and their associated yards and enclosures. The stone built settlements are associated with an extensive field system represented by embanked fields and walled trackways. |
| 1419 | NT 9070 2975 | West Hill 6. A sub-rectangular scooped settlement is situated on a NW-facing slope. The NW end of the enclosure lies under a plantation but the surviving portion, measuring 30 × 25m, is enclosed by the tumbled remains of a stone wall with an entrance in the NE side. Within the enclosure are the remains a roundhouse 8m in diameter. To the NW and SE, stony banks probably represent a contemporary field system. |
| 1429 | NT 9161 2979 | St Gregory's Hill. The hillfort is overlain by at least two phases of later settlement each represented by six or eight stone founded roundhouses and their associated yards and enclosures. The latest of these settlements is associated with a system of embanked fields and walled trackways. |
| 1437 | NT 9389 2921 | Yeavering Bell East 1. A scooped enclosure contains three platforms for (timber-built?) roundhouses. The enclosure is overlain by a stone-walled sheep stell. Stony banks in the vicinity probably represent a field system associated with the earlier enclosure. |
| 1442 | NT 9363 2958 | Worm Law. A square, embanked enclosure, measures 28.5m × 25m and has a probable entrance in the SE-facing side. Excavations in 1862 are said to have revealed 'hut circles' and stone flagging. |
| 1443 | NT 9367 2921 | Yeavering Bell East 2. A scooped enclosure is oval on plan and is surrounded by a rubble wall. The enclosure measures 70 × 44m and has a probable entrance in the NE-facing side. There are no definite indications of prehistoric houses in the interior though there are remains of medieval or later buildings. Lynchets and stony banks in the vicinity may represent a field system (HER 1444) contemporary with the earlier settlement. |
| 1445 | NT 9367 2921 | Yeavering Bell North. Two contiguous scooped enclosures are situated on a N-facing slope. Both are square on plan and measure *c*. 30 × 30m. Lynchets and banks in the vicinity probably represent a contemporary field system. |
| 13346 | NT 9132 2966 | West Hill 1. A cluster of up to eight platforms is situated on a steep, E-facing slope. The largest platforms, measuring 8m and 11m in diameter, may have accommodated stone-founded roundhouses. |
| 13367 | NT 9137 2967 | West Hill 2. A single platform, 11m in diameter, is situated on an E-facing slope. It retains no visible traces of any structure but has in any case been disturbed by 19th century ploughing. |
| 13368 | NT 9124 2970 | West Hill 3. A single platform, 10m in diameter, is situated on a steep, E-facing slope. The platform has been disturbed by 19th century ploughing but retains a fragment of stony bank which may be the remains of a structure. |
| 13369 | NT 9132 2953 | West Hill 4. The poorly preserved remains of a scooped settlement are situated on a steep E-facing slope. The most prominent earthwork is an oval scoop which appears to have accommodated two circular platforms. At the N end, there are fragments of a retaining wall on the downslope side. The site has been damaged by 19th century ploughing. |
| 13370 | NT 9104 2911 | West Hill 5. A late prehistoric settlement is represented by a small complex of platforms lying at the foot of a S-facing slope. The largest platform may have supported more than one structure. |
| 19777 | NT 9169 2962 | St Gregory's Hill. The poorly preserved remains of a scooped enclosure are situated on a S-facing slope. There is an entrance on the SW side but no visible traces of structures in the interior. The site has been damaged by later ploughing. |

*Table 3.7. continued.*

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|---|---|---|
| **NT 92 NE** | | |
| 1505 | NT 9715 2531 | Hart Heugh. A sub-oval enclosure is formed by a rubble bank. The enclosure has maximum dimensions of 75 × 60m and the interior is sub-divided into two distinct compartments by a prominent scarp. In the interior there are traces of at least one roundhouse plus the foundations of a rectangular building of presumed medieval or post-medieval date. |
| 1507 | NT 9603 2856 | Monday Cleugh East. A sub-oval enclosure is formed by an earth and stone bank. The enclosure measures 42 × 42m and contains the visible remains of one stone built roundhouse. A trackway approaches from the E and may form part of a contemporary field system which is represented by linear clearance banks and enclosures on the slopes to the SE (HER 1580). |
| 1509 | NT 9595 2892 | Standrop Hill. The hillfort is overlain by the foundations of several round stone houses and their associated enclosures which represent a settlement of the late pre-Roman or Roman Iron Age. |
| 1516 | NT 9607 2875 | Three contiguous scooped enclosures contain a minimum of three roundhouse platforms. A hollow way passes close to the edge of the westernmost enclosure and may form part of a contemporary field system. |
| 1527 | NT 9560 2849 | Monday Cleugh. Within the defences of the hillfort are the remains of at least three stone-founded roundhouses representing a settlement of the late pre-Roman or Roman Iron Age. |
| 1548 | NT 9837 2690 | Earle Whin. A oval enclosure is formed by two concentric banks which do not appear to be defensive in character. There are no signs of occupation in the interior but the size and shape of the enclosure are consistent with its identification as a settlement of the late pre-Roman or Roman Iron Age. |
| 1551 | NT 9724 281 | A scooped enclosure, measuring 30 × 22m, is partially enclosed by an earthen bank. There are no visible signs of occupation in the interior but the enclosure can plausibly be accounted for as a settlement of the late pre-Roman or Roman Iron Age. |
| 1552 | NT 9713 2736 | Two conjoined scooped enclosures are partially enclosed by earth and stone banks. The northernmost enclosure contains platforms for timber-built (?) roundhouses and the foundations of one probable stone-built roundhouse. Banks and lynchets in the vicinity probably represent a contemporary field system. |
| 1553 | NT 9713 2736 | Coldberry Hill 1. A late pre-Roman or Roman Iron Age settlement is represented by two conjoined enclosures each formed by earth and stone banks. One enclosure is sub-circular on plan with dimensions of 29 × 20m. It contains one platform for a timber (?) house and also the foundations of a stone-founded roundhouse. Abutting onto its SW side is a second enclosure. This measures 21 × 12m and seems to have been intended for stock as it contains no trace of occupation. The site is associated with a contemporary field system (HER 1576). |
| 1554 | NT 9701 2727 | Coldberry Hill 2. A late pre-Roman or Roman Iron Age settlement is represented by two conjoined, sub-circular enclosures, formed by earth and stone banks. The northernmost enclosure measures 33 × 30m and has a scooped interior. It contains a platform for a circular timber (?) house and also the foundations of a stone-built roundhouse. The adjoining enclosure measures 30 × 30m and, as it contains no sign of occupation, may represent a stockyard. The settlement is approached from the SE by a double-walled trackway which forms an integral part of a contemporary field system (HER 1576). |
| 1672 | NT 9706 2556 | Hart Heugh N. A possible late pre-Roman or Roman Iron Age settlement is represented by an oval enclosure measuring 54 × 18m. The enclosure contains two or three possible house platforms. |
| **NU 02 NW** | | |
| 3301 | NU 0212 2934 | Weetwood Moor. The hillfort is overlain by an extensive settlement of late pre-Roman or Roman Iron Age date represented by upwards of a dozen stone-founded roundhouses with their attendant yards and enclosures. |
| **NU 03 SW** | | |
| 3795 | NU 0041 3171 | West Dod Law. A settlement of the late Iron Age or Roman period is represented by a dozen or more roundhouse sites. Some of these are located within the defences of the hillfort while others lie outside it to the north. |
| 3800 | NU 0135 3281 | The Ringses. The innermost 'rampart' of the fort in fact looks like a later addition and may form part of a late pre-Roman or Roman Iron Age settlement which is also represented by three visible stone-founded roundhouses. |

*Table 3.8. Single-ditched rectilinear enclosures – cropmarks.*

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|---|---|---|
| **NT 93 NW** | | |
| 1830 | NT 9193 3604 | Flodden Strip. The enclosure is trapezoidal rather than rectangular on plan. Although the N part is obscured by a shelter belt, its internal are can be estimated at not less than 0.17ha. There is an entrance in the centre of the E-facing side and visible traces of occupation in the interior. |
| 1835 | NT 9226 3544 | Flodden Bridge. A rectilinear enclosure measuring 50m × 50m contains an area of 0.23ha. There is a possible entrance in the E-facing side but no visible traces of occupation in the interior. |
| 1849 | NT 9043 3722 | Mardon South. The enclosure has overall dimensions of 60 × 55m and an internal area of *c*. 0.25ha. Linear ditches in the vicinity may represent a contemporary field system. |
| 1850 | NT 9091 3732 | Mardon SE 1. A rectilinear enclosure measuring 55 × 50m with an internal area of 0.12ha and an entrance in the E-facing side. The site of at least one round (timber ?) house is visible in the interior. Linear ditches in the vicinity may represent a contemporary field system. |
| 1851 | NT 9437 3582 | East Potato Wood. A rectilinear enclosure measuring *c*. 45 × 40m with an internal area of 0.09ha. There are no visible traces of interior occupation and no convincing sign of an entrance, though there are breaks in the ditch on the W and N-facing sides. The status of this site as a settlement of prehistoric or Roman date remains uncertain. |
| 1863 | NT 9119 3739 | Mardon East. A possible settlement site is represented by a three-sided 'enclosure' which opens to the S. At least one roundhouse is visible in the interior. |
| 1867 | NT 9305 3670 | Linthaugh 2. An almost square enclosure measuring 35 × 35m containing an of 0.06ha. There is a well marked entrance in the centre of the SE-facing side but no visible traces of habitation in the interior. |
| 19649 | NT 9078 3732 | Mardon SE 2. A probable settlement site is represented by a three-sided 'enclosure' open on the S-facing side. The enclosure measures 50m a side and diffuse marks in the interior probably represent areas of occupation. |
| 19674 | NT 9406 3838 | Hay Farm 2. A rectilinear enclosure measuring 55 × 50m has an internal area of 0.25ha. There is a clearly marked entrance in the S-facing side. On the W side, the enclosure conjoins or abuts up against a second, curvilinear ditched enclosure (HER 1848). |
| 19675 | NT 9500 3638 | Cannon Burn 2. An elongated rectilinear enclosure, open at the E end. The enclosure measures 50m × 85m and contains an area of 0.28ha. A break in the ditch in the NE corner probably marks an entrance. There are no indications of occupation in the interior and the enclosure may represent an annexe or stock pen contemporary with the settlement which lies immediately to the N (HER 1858). |
| 19776 | NT 9094 3560 | Flodden Hill West. A sub-rectangular enclosure with estimated overall dimensions of *c*. 70 × 60m occupies a prominent position on the top of a ridge. The enclosure is formed by a single ditch with an entrance in the centre of the W-facing side. Within the enclosure, in the NE corner, an area of dark tone may indicate the position of a roundhouse or other structure. In the 19th century it was believed that an earthwork in the position represented a 'redoubt' dating to the Battle of Flodden (1513AD). Whether or not it was re-used at that time it now seems certain that it originated as a late prehistoric or Roman settlement. It was first recorded as a cropmark in 2003 and therefore does not appear on Palmer's transcription. |
| **NT 93 NE** | | |
| 1964 | NT 9713 3576 | White Hill North. A sub-rectangular enclosure with maximum estimated dimensions of 75 × 80m and an internal area of *c*. 0.55ha. Amorphous marks in the interior may represent areas of occupation. |
| **NT 93 SW** | | |
| 2028 | NT 9242 3195 | Lanton Hill. A trapezoidal enclosure with maximum dimensions of 90 × 80m and an internal area of 0.46ha. There is a clearly marked entrance off-centre in the E-facing side. Running within the ditch, but not quite parallel with it, is what may be the foundation trench for a palisade or rampart revetment. The sites of at least two circular timber houses are visible in the interior. Outside the enclosure, 30m from the NE corner, a ring ditch may represent the site of an external roundhouse. |
| 2040 | NT 9369 3391 | Milfield East. A sub-rectangular ditched enclosure measuring 40 × 40 forming part of a large complex of cropmarks may represent a settlement although no entrance is visible and there are no signs of interior occupation. The enclosure has an internal area of 0.12ha. |
| 2048 | NT 9078 3469 | South Flodden Edge. An almost square enclosure with overall dimensions of 55m × 55m and an internal area of 0.18ha. There is a clearly marked entrance in the NE-facing side. Amorphous markings of dark tone in the interior may represent areas of occupation. |
| 19666 | NT 9366 3256 | Sandy House East. A right-angled section of ditch protruding beyond the edge of a shelter belt could possibly mark the corner of a rectilinear settlement. |

*Table 3.8. continued.*

| | | |
|---|---|---|
| **NT 93 SE** | | |
| 2158 | NT 9720 3470 | North Fenton Hill 1. An enclosure measuring 65 × 65m has an internal area of 0.37ha. No entrance is visible nor is there any sign of occupation in the interior, but in size and shape the enclosure conforms to that of a settlement of the late pre-Roman or Roman Iron Age. |
| 2164 | NT 9918 3007 | Turvelaws. A rectilinear settlement measuring 70 × 70m has an internal area of 0.50ha. There is a clearly marked entrance in the centre of the SE-facing side and the site of at least one roundhouse is visible in the interior. |
| 12922 | NT 9864 3401 | Nesbit East. A possible rectilinear enclosure has estimated dimensions of 50 × 30m. There is no evidence of an entrance or of occupation in the interior. Outside the enclosure to the NW a ring ditch and a disc-shaped mark of solid tone may mark the sites of exterior roundhouses. |
| 12924 | NT 9962 3308 | Bluntie Well. A rectilinear settlement enclosure has estimated dimensions of *c*. 65 × 65m and an internal area of *c*. 0.36ha. Although most of the E-facing side is invisible as a cropmark, and no roundhouses are visible, the site is almost certainly a settlement of the late pre-Roman or Roman Iron Age. |
| 12941 | NT 9856 3040 | Humbleton Burn. A possible rectilinear settlement of prehistoric or Roman date is represented by a rectilinear enclosure measuring *c*. 40 × 30m. However no entrance is visible nor is there any sign of occupation in the interior. From the NW corner of the enclosure a double-ditched trackway can be traced for a distance of 70m before it widens out to form a funnel-shaped structure. |
| 19724 | NT 9731 3468 | North Fenton Hill 2. A possible rectilinear settlement is represented by an open-ended 'enclosure' which has minimum dimensions of 40 × 45m. In the interior, marks of solid tone most probably indicate areas of habitation. |
| **NU 03 NW** | | |
| 3682 | NU 0267 3667 | Percy's Well. A rectilinear enclosure with maximum dimensions of 95 × 90m has an internal area of 0.59ha. Although there is no identifiable entrance and no sign of interior occupation, in size and shape the enclosure resembles a settlement of the late pre-Roman or Roman Iron Age. |
| 3688 | NU 0237 3635 | Laverock Law. A sub-rectangular ditched enclosure has maximum dimensions of 85 × 85m and an internal area of 0.49ha. A clearly marked entrance is visible in the centre of the SE-facing side but there are no signs of interior occupation. Nevertheless the enclosure most probably represents a late pre-Roman or Roman Iron Age settlement. |
| 3695 | NU 0384 2528 | Hetton Dean West 2. A rectilinear enclosure, which may be formed by a palisade rather than a ditch, has dimensions of 50 × 45m and an internal area of 0.14ha. An entrance is visible in the centre of the E-facing side. Outside the enclosure, on the E and S sides, additional enclosures most probably represent annexes or stock compounds. |
| **NU 03 SW** | | |
| 3835 | NU 0000 3130 | Doddington Bridge North. A ditched enclosure measuring an estimated 70 × 65m has an internal area of 0.4ha. There is a clearly marked entrance in the centre of the SE-facing side. Although there are no visible signs of occupation in the interior the site can confidently be identified as a settlement of the late pre-Roman or Roman Iron Age. |
| 12942 | NU 0349 3385 | White Law. Part of a sub-rectangular (?) ditched enclosure has been recorded on air photographs. The form of the enclosure suggests that it is a settlement of the late pre-Roman or Roman Iron Age. |
| 12944 | NU 0455 3096 | Quarry Plantation North. A rectilinear enclosure with overall dimensions of 70 × 60m has an internal area of 0.33ha. A probable entrance is visible in the centre of the E-facing side. |

*Table 3.9. Single-ditched curvilinear enclosures – cropmarks.*

| | | |
|---|---|---|
| **NT 93 NW** | | |
| 1818 | NT 9279 3656 | Linthaugh 1. An oval enclosure measuring 45 × 35m contains an area of *c*. 0.11ha. An entrance is marked by a break in the ditch on the NE side. There are no visible signs of occupation in the interior. |
| 1847 | NT 9375 3878 | Leathamhill. A sub-circular or D-shaped enclosure has dimensions of 100 × 90m and an internal area of *c*. 0.51ha. There are three breaks in the ditch though only that on the E-facing side has the appearance of an entrance. |
| 1848 | NT 9403 3834 | Hay Farm 1. A sub-circular enclosure measuring 60 × 60m and an internal area of 0.19ha. On the downhill, NW facing side, is a clearly marked entrance. To the NE the enclosure abuts against a single-ditched, rectilinear settlement enclosure (SMR 19674). |
| 12857 | NT 9175 3925 | Kinch Knowe. A curvilinear arc of ditch almost certainly represents the NE perimeter of an Iron Age fort or defended settlement. An E-facing entrance is also visible. |
| 12870 | NT 9335 3721 | First Linthaugh 2. An irregularly shaped, sub-circular enclosure with a diameter of only 20–25m has no identifiable entrance and lacks evidence of interior occupation. It could represent either a settlement or else a funerary monument of some kind. |
| **NT 93 SW** | | |
| 2000 | NT 9377 3373 | Meldon Burn. An oval enclosure having a diameter of 65m from NW-SE and an internal area of 0.17ha. The perimeter ditch has a tendency to run in straight lengths and on this account it has been suggested that the site is a settlement of Dark Age date. However it could equally well belong to the pre-Roman or Roman Iron Age. |
| 2002 | NT 9260 3401 | Milfield Hill. An irregularly shaped, curvilinear enclosure has maximum dimensions of 50 × 45m and an internal area of *c*. 0.24ha. Breaks in the ditch on the S and NE-facing sides could represent entrances. Although there are no evident traces of occupation in the interior the enclosure is best accounted for as a settlement. |
| 2108 | NT 9374 3136 | Coupland East. A D-shaped enclosure measures 50 x 45m and has an internal area of 0.15ha. Breaks in the ditch on the S and NE-facing sides could represent entrances. Although there are no evident traces of occupation in the interior the enclosure is best accounted for as a settlement. |
| 19659 | NT 9335 3222 | Sandy House 2. A sub-circular enclosure, formed either by a narrow ditch or else by a palisade, has a diameter of *c*. 70m and an internal area of *c*. 0.35ha. In the interior the site of one timber roundhouse is visible . |
| 19660 | NT 9330 3208 | Sandy House 3. A D-shaped enclosure, formed either by a narrow ditch or else by a palisade, has dimensions of 45 × 45m and contains an area of *c*. 0.19ha. The site of one timber roundhouse is visible in the interior and there is a possible entrance in the SE-facing corner. |
| **NU 02 NW** | | |
| 3296 | NU 0314 2865 | Horsedean Plantation. A strictly circular ditched enclosure with an external diameter of 85m contains an area of 0.48ha. A break in the ditch on the SE-facing side may represent an entrance. Within the ditch, and concentric with it, are intermittent traces of a single line of palisade trench. Excavations in 1986–7 produced no conclusive evidence of date or function. |
| 3333 | NU 0355 2521 | Newtown 2. A sub-oval enclosure measures 85 × 75m and contains an area of 0.4ha. A break in the ditch on the SE-facing side most probably represents an entrance. In the interior, several disc-shaped marks of solid tone mark the positions of timber-built roundhouses. The site can best be interpreted as an Iron Age univallate fort or defended settlement. |
| 3348 | NU 0343 2560 | Knockwell NW. A sub-circular enclosure with an overall diameter of *c*. 45m contains an area of 0.13ha. A break in the ditch on the SE-facing side most probably represents an entrance. Although there are no visible signs of interior occupation the site most probably represents a settlement enclosure. |
| **NU 03 NW** | | |
| 4042 | NU 0318 3999 | Lowick New Bridge 1. A sub-circular enclosure has a maximum overall diameter of 65m and contains an estimated 0.2ha. There is a possible entrance on the SE-facing side. Although there are no visible traces of occupation in the interior the site can best be accounted for as a settlement. |
| **NU 03 SW** | | |
| 3781 | NU 0012 3346 | Doddington Dean. A sub-circular fort or defended settlement is represented by a ditch *c*. 80m × 90m in diameter and enclosing an area of 0.47ha. Within the ditch are traces of a residual bank. Less than 10m outside the ditch, and concentric with it, is what appears to be a palisade trench. To the N and W, linear ditches may represent contemporary land division. |
| 3813 | NU 0489 3194 | Spylaw 2. A sub-circular enclosure measuring 115 × 100m and containing an area of 0.70ha. A break in the ditch on the SE-facing side probably represents the an entrance. Within the ditch, and running concentric with it, is what could be either a single line of palisade trench or else a second, narrow ditch. In the interior, disc-shaped marks of solid tone mark the positions of several roundhouses. |

*Table 3.9. continued.*

| | | |
|---|---|---|
| **NU 03 SW** | | |
| 3825 | NU 0345 3326 | West Hetton Hall 2. A sub-oval or polygonal enclosure is bisected by a shelter belt. The dimensions of the enclosure are estimated at 100 × 70m and its internal area at 0.57ha. A break in the ditch on the SE-facing side marks the most probable position of an entrance. The site has been partly excavated (Clive Waddington, this volume). |
| 3827 | NU 0414 3092 | Spylaw 1. An oval ditched enclosure with dimensions estimated at 90(?) × 70m. Within the ditch, and concentric with it, is what could be either a single line of palisade or else the foundation trench for a rampart revetment. This feature forms an enclosure measuring 70 × 50m with an area of 0.31ha. Outside the enclosure to the S, a crescent-shaped annexe is formed by one or two additional lines of palisade (not shown on Palmer's plot). |
| 3831 | NU 0489 3194 | Hetton Dean 2. A sub-circular enclosure, formed either by a single narrow ditch or palisade, has opposed entrances on the E and W-facing sides. The enclosure measures 65 × 60m and contains an area of 0.25ha. Although there are no visible traces of habitation in the interior the site is probably best accounted for as a settlement of Iron Age or Roman date. |
| 3912 | NU 0486 3132 | Spylaw 3. An almost circular enclosure measures 60 × 55m and contains an area of 0.20ha. A break in the ditch on the SE-facing side most probably marks the position of an entrance. Although there are no visible traces of habitation in the interior the site is probably best accounted for as a settlement of Iron Age or Roman date. |

*Table 3.10. Rectilinear ditched enclosures with two, wide-spaced ditches – cropmarks.*

| | | |
|---|---|---|
| **NT 93 NW** | | |
| 1858 | NT 9495 3645 | Cannon Burn 1. Two rectilinear enclosures are sited one within the other, the spacing between their respective ditches being 10–20m. The outer enclosure, which is elongated on an E–W axis, measures 130 × 100m and contains an area of 0.76ha. It is sub-divided into two unequal parts by a ditch which crosses the enclosure from N–S. The second, inner enclosure, which measures 45 × 45m and contains an area of 0.18ha, is centrally placed within the western compartment of the outer enclosure in such a way that an entrance in its E-facing side is exactly aligned with a break in the ditch which bisects the outer enclosure. In these circumstances, the two enclosures must be seen as contemporary. Most probably the inner enclosure represents a settlement nucleus and the outer one an annexe or stock compound. |
| **NU 02 NW and 03 SW** | | |
| 3341 | NU 0500 3000 | Labour in Vain. Two ditched enclosures are placed one inside the other. The inner enclosure, which is sub-rectangular on plan, most probably represents a settlement. It is surrounded at a distance of 20–25m by a second, less regularly shaped enclosure which may represent an annexe or corral. |
| **NU 03 SW** | | |
| 3826 | NU 0365 3326 | West Hetton Hall 1. A rectangular enclosure, measuring 60 × 50m contains an area of *c.* 0.26ha. A break in the ditch on the E-facing side marks the position of an entrance. The enclosure is surrounded at a distance of 10–50m by an outer ditch which may represent a contemporary annexe or corral with an internal area of 1.59ha. |

*Table 3.11. Pit alignments – cropmarks.*

| | | |
|---|---|---|
| **NT 92 NW** | | |
| 12947 | NT 9014 2954 to NT 9129 2995 | An interrupted ditch or pit alignment has been recorded as a parchmark in permanent pasture. |
| **NT 93 NW** | | |
| 12879 | NT 9009 3595 to 9128 3607 | A pit alignment 320m in length. |
| 19681 | NT 9158 3946 to NT 9172 3950 | A pit alignment 150m in length. |
| 19710 | NT 9215 3514 to NT 9230 3506 | A pit alignment 160m in length. |
| 19709 | NT 9399 3643 to NT 9401 3634 NT 9404 3632 to NT 9406 3621 NT 9418 3618 to NT 9452 3588 | Ford Westfield. Three stretches of pit alignment, respectively 80m, 110m and 450m in length and separated by gaps of 30m and 100m. The two northern alignments are prolonged as ditches which form part of a larger complex of boundaries and settlements. It seems very likely that all three alignments formed part of a single boundary now traceable over a distance of 800m. |
| **NT 93 SW** | | |
| 12904 | NT 9214 3296 to NT 9232 3281 | A pit alignment 230m in length. |
| 12894 | NT 9210 3473 to NT 9287 3398 NT 9235 3447 to NT 9232 3473 | A pit alignment has been traced over a distance of 1100m with the longest continuous stretch measuring 800m in length. Elsewhere there are breaks which correspond to existing woods, roads and a stream. About 400m from the northernmost point to which it has been traced, a separate alignment joins from the E. This eastern branch extends for 450m from NT 9235 3447 to NT 9232 3473. |
| 19703 | NT 9395 3411 to NT 9407 3403 | Milfield Palace. A discontinuous stretch of pit alignment can be traced through a complex of cropmarks for a distance of 170m. |
| 12917 | NT 9475 3003 | A pit alignment 60m in length. |
| 2038 | NT 9463 3435 to NT 9489 3413 | Redscar Bridge. A pit alignment has been traced over a distance of 340m including one break of 50m. At NT 9467 3432 it crosses or is crossed at right angles by a second alignment (HER 19702). After a gap of more than 100m, alignment HER 2038 continues on sheet NT 93 SE as HER 2166, giving a combined length of about 1km. |
| 19702 | NT 9464 3430 to NT 9478 3443 | Redscar Bridge. A slightly sinuous pit alignment can be traced over a distance of 180m. At NT 9467 3432 it crosses or is crossed at right angles by alignment HER 2038. Close to the point of intersection, five consecutive pits were excavated by Clive Waddington (this volume). All produced radiocarbon dates in the Roman period. |
| **NT 93 SE** | | |
| 2155 | NT 9553 3169 to NT 9576 3165 NT 9540 3185 to NT 9611 3169 NT 9538 3198 to NT 9549 3232 | Ewart 2. A pit alignment has been traced over a distance of 230m and passes 40m to the S of the Ewart Park henge. Ewart 1. This pit alignment has now been recorded as a discontinuous cropmark over a distance of 1250m, with gaps from 30–120m in length. In essence, it pursues a dog-leg course from north to south, making two 90° turns on the way. The northern arm follows a slight dip in the ground surface once occupied by a palaeochannel. A 20m long segment of this pit alignment was excavated by Roger Miket in 1977 (Miket 1981). |
| 2166 | NT 9500 3405 to NT 9544 3375 | Redscar Bridge. This pit alignment is a continuation of HER 2038 and can be traced over a distance of 550m including a break of 100m. |
| 19722 | NT 9613 3219 to NT 9613 3230 | Ewart 3. A pit alignment some 100m in length forms part of a complex of cropmarks some of which appear to be of natural rather than man-made origin. |
| 19734 | NT 9615 3202 to NT 9615 3208 | A pit alignment, 80m long, which could well represent a southwards extension of Ewart 3 though presently separated from it by a gap of 100m. |
| **NU 02 NW** | | |
| 3337 | NU 0267 2893 to NU 0276 2887 | A pit alignment 100m in length, perhaps running into a linear ditch. |
| 19712 | NU 0329 2870 to NU 0340 2860 | A pit alignment traced over a distance of 130m. |
| 19711 | NU 0342 2552 to NU 0348 2553 | A pit alignment 70m in length. |
| **NU 03 SW** | | |
| 12943 | NU 0152 3231 to NU 0140 3246 | A pit alignment, 200m in length, with two side branches, one extending for 50m, from NU 0138 3241 to 0143 3242; and the other for 60m, from NU 0148 3236 to 0152 3241. |
| 19715 | NU 0158 3247 to NU 0167 3261 | A pit alignment, 160m in length, continues the same line as the longer of the two side branches noted above (HER 12943) and must surely be considered as an extension of it. |

*Table 3.11. continued.*

| | | |
|---|---|---|
| **NU 03 SW** | | |
| 19716 | NU 0150 3263 to NU 0160 3270 | A pit alignment, 120m in length, runs parallel with alignment 19715 (above) and is separated from it by a distance of 140m. If prolonged to the SW it would intersect with alignment 12943 more or less at right angles. In these circumstances, it seems highly likely that alignments 12943, 19715 and 19716 at one time formed a single pattern of boundaries, dividing up this piece of land into sub-rectangular blocks. |

*Table 3.12. Grubenhäuser – cropmarks.*

| | | |
|---|---|---|
| **NT 93 SW** | | |
| 2008 | NT 9257 3060 | *Ad Gefrin*. One sunken floored building which formed part of the palace complex was excavated by Hope Taylor in 1953–62. More recent air photographs suggest that other *Grubenhäuser* exist further to the south in the vicinity of NT 925 303. One of these features is shown on Rog Palmer's plot at NT 9266 3042. |
| 2040 | *c*. NT 9369 3391 | Milfield East. In amongst a complex of cropmarks to the N and E of Milfield Village (OS land parcels 6100, 7600 & 4500), there are numerous scattered pits and 'blobs'. At least a dozen of these seem likely to be *Grubenhäuser*. |
| 12903 | *c*. NT 9400 3280 | Lying W of the 'avenue' or droveway (HER 2039) and within a radius of 400m of NT 9400 3280, there are upwards of 20 small pits and 'blobs' some of which are certainly *Grubenhäuser*. |
| 19663 | *c*. NT 9392 3377 | *Maelmin*. To the N and W of the Milfield palace site, as well as in the palace compound itself, there are forty or more cropmarks which undoubtedly represent *Grubenhäuser*. These occur singly, or in strings or clusters, in OS land parcels 0075, 0002, 2300 and 4778). |
| 19690 | NT 9029 3433 | Howtel East. Two *Grubenhäuser* lie 50m E of a prehistoric settlement (HER 2104). |
| 19694 | NT 9380 3145 | Coupland East. Three possible *Grubenhäuser* are situated 80m NE of a prehistoric settlement (HER 2108). (These features are not shown on Palmer's plot). |
| **NT 93 SE** | | |
| 2163 | *c*. NT 957 323 | Thirlings NE. Numerous pits and small sub-rectangular marks exist to the NE of the Thirlings Anglo-Saxon settlement. Amongst these are a dozen or more cropmarks which can be interpreted as *Grubenhäuser*. |
| 2167 | *c*. NT 962 306 | House Plantation. At least four probable *Grubenhäuser* can be distinguished amongst a scatter of pits and small marks. |
| 19720 | *c*. NT 9561 3175 | Ewart Park. In the area to the N and NE of the Ewart Park henge at least half a dozen *Grubenhäuser* can be distinguished amongst a scatter of pits and other marks. |
| **NU 02 NW** | | |
| 3318 | NU 0381 2731 | Blakelaw. At least one *Grubenhaus* has been identified in an area 170m W of an Iron Age fort at Blakelaw. |
| 3321 | NU 0394 2517 | Newtown 1. Three probable *Grubenhäuser* have been identified 50m to the S of an Iron Age fort. |
| 3835 | NU 0005 3105 | Doddington Bridge North. At least three *Grubenhäuser* are situated *c.* 200m SE of a single-ditched rectilinear enclosure. Ring ditches almost certainly representing burials are present in the same vicinity. |

# Part 2

# Chronological Narrative

# 4 Hunter-gatherer-fishers *c.* 13,400–3900 BC

*Clive Waddington and David G. Passmore*

## INTRODUCTION

Until recently, North-East England has received relatively scant recognition of its hunter-gatherer past in national reviews and commentaries. The discovery of a Mesolithic hut at Howick on the North Northumberland coast (Waddington 2007) has changed such perceptions, prompting recognition of the wealth of Mesolithic remains, but also the importance of this area, at a time when Britain was becoming detached from the continent due to rising sea levels. The coastline of North Northumberland, which in contrast to that of southern and eastern England has remained relatively stable for most of the Holocene (Fig. 4.1 and see Chapter 2), is an area particularly attractive for human groups as it provides remarkable ecological diversity, plentiful resources over a small area and easy access to its hinterland along the courses of numerous west-east tracking rivers rich in fish and other wildlife. North Northumberland is also home to a wide variety of rock types, some of which are suitable for stone tool manufacture. The exposed rock faces of the Fell Sandstone escarpment (Fig. 4.2), the river cliffs of the Tweed and the Andesite crags of the Cheviot fastness (Fig. 4.3) provide abundant rock shelter locations, whilst floodplains and the numerous inland ponds and lakes that formed in the deglaciated landscape to the east of the Cheviot massif would have attracted large numbers of game, wildfowl, fish and bird life (see Volume 1, Fig. 3.7). For hunter-gatherer-fisher groups entering this landscape, the recognition of such easily accessible resources, all within a day's return walk, would no doubt have signalled a welcoming environment.

In many respects the geography of North Northumberland would seem to offer a well-defined and topographically discrete environmental setting within which to study hunter-gatherer-fisher groups. To the west the area is bounded by the Cheviot Hills and to the east by the North Sea. The Tweed valley is bounded to the north by the Lammermuir Hills and to the south the area is broken by the high ground of the Breamish-Aln interfluve and, beyond this, several west-east flowing rivers that hinder access in this direction. This abruptly demarcated landscape (Fig. 4.4) is considered to provide an environmental envelope at a scale that could have supported year-round occupation for Mesolithic hunter-gatherer-fisher groups, and certainly those of the later Mesolithic who did not require the same levels of terrestrial mobility as earlier inhabitants. It is accepted, however, that the study area is perhaps unlikely to cover the annual range of Late Glacial and early Post Glacial groups who probably relied on significantly greater levels of mobility to structure food procurement routines, due to the dispersed distribution of resources throughout the year in what was a much colder and less productive environment. Although the evidence for such early occupation is reviewed, the main focus of this chapter is on the hunter-gatherer-fishers of the Holocene.

Understanding the early occupation of this landscape is challenging as, unlike later periods, we are dealing primarily with artefacts made from stone, with few examples of bone, shell or other organic materials. Discoveries of structural remains, like those at Howick, are seldom made and, other than the window of detail which this site provides, relatively little is known about the range of settlements and how these developed over time compared to later periods. That said, the Howick site provides a more detailed insight than is available for many other parts of the British Isles and this is amplified by the numerous rock shelter sites that have been investigated in Northumberland.

The palaeoenvironmental record for this period in North Northumberland is now considerably more informative than just a decade ago. Sediment sequences with important Early Holocene units have recently been analysed from Akeld Steads (Tipping 1998), Lilburn South Steads (Jones *et al*. 2000), Howick (Boomer *et al*. 2007a; 2007b), Thirlings (Volume 1, Chapter 2), Ford Moss (see Chapter 2 this volume) and Bradford Kaims (Boomer pers. comm.). To this work

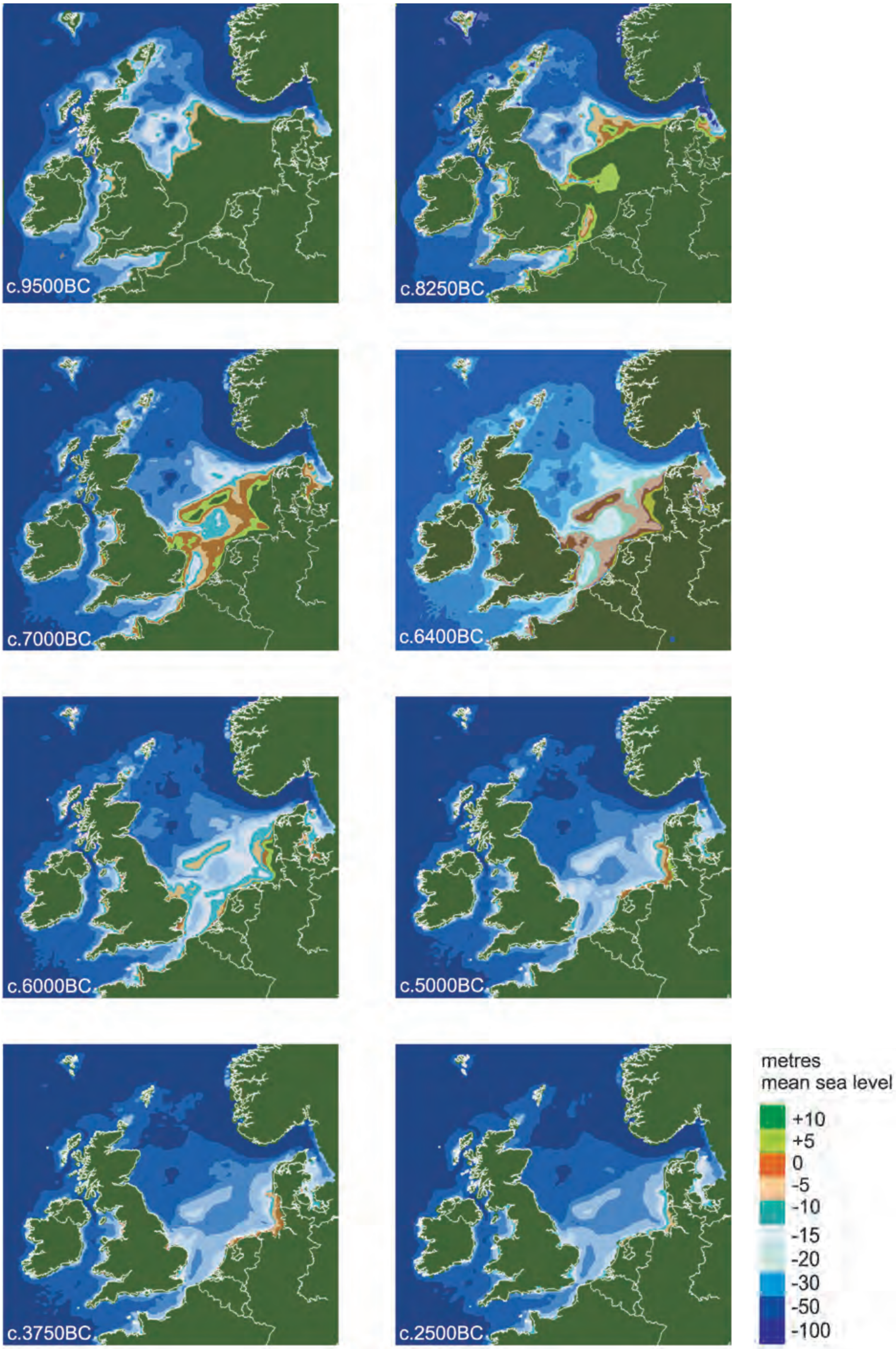



*Figure 4.1. A GIS generated model of the coastline around the North Sea basin based on sea-level index points and shown in time slices calibrated to calendar years (reproduced courtesy of Shennan et al. 2000).*

*Figure 4.2. The exposed rock face of the Fell Sandstone escarpment at Dove Crag where Mesolithic stone tools have been found during fieldwalking of the field surfaces immediately below the crags.*

*Figure 4.3. The outcropping Andesite crags of the Cheviots which provide attractive rock shelter locales overlooking the deep valleys that lead into the Cheviot range.*

*Figure 4.4. View west across the river Till towards the Cheviot Hills. Both the Cheviot Hills and sandstone escarpment protrude abruptly from the valley floor to create a dramatic and demarcated landscape.*

can be added Tipping's (2010) detailed re-appraisal of the past 12,000 years for the Bowmont valley in the northern Cheviots, and Harrison *et al*.'s (2010) presentation of the first independent dating controls on Late Glacial slope deposits in the Cheviots. In combination, these studies permit a more reliable and informed picture to emerge of Late Glacial and earlier Holocene landscape evolution and vegetation change than was previously available.

The Mesolithic, or 'middle stone-age', is the name given by archaeologists to the period between the end of the last glaciation (*c*. 9600 cal BC) and the advent of agricultural production (*c*. 3900 cal BC). It is conventionally divided into an Early and a Late period based on lithic typologies. However, there are other transitions that could equally divide the Mesolithic depending on the perspective taken. For example, climate change and the corresponding changes to vegetation and landforms provide a different way of dividing the period. Recently, Tolan-Smith has drawn attention to the changes in bone and antler working, marking a clear-cut distinction between the Early and Late Mesolithic (Tolan-Smith 2008, 147) with elk antler mattocks of the earlier period being replaced by red deer antler mattocks in the later period. The latter are manufactured by splitting lengths of antler beam and the former using the groove and splinter technique.

With recent advances in radiocarbon dating the timing of these transitions has come into better focus. In a recent reassessment and Bayesian analysis of dates for 'broad blade' and 'narrow blade' microliths it has been shown that the transition between these two lithic traditions could span between one thousand and two thousand years at the 98% confidence level (Waddington *et al*. 2007, 207–23) starting *c*. 8400 cal BC. It should be noted, though, that the corpus of dates for broad-blade sites remains small and more dates are needed. It is in the late ninth millennium cal BC that rapid sea level rise resumes as a result of a commensurate warming of the climate. This coincides with the first appearance of narrow-blade industries and the spread of hazel and broadleaf woodland throughout much of Britain. Given the broad synchronicity of these transitions the transition from an Early to Late Mesolithic is defined here as being in the latter half of the ninth and early eighth millennium cal BC in the centuries around *c*. 8300–7800 cal BC. During the course of this survey, however, evidence has begun to emerge which suggests that a yet earlier human presence may be detectable in the region. These tentative signs of Palaeolithic activity are considered below.

## A PALAEOLITHIC PRESENCE?

By *c*. 40,000 BP modern humans, *Homo sapiens sapiens*, were present in North-West Europe, with their arrival recorded in Britain at least as early as *c*. 30,000 cal BC (Pettitt 2008). During the following millennia the ice masses which extended over much of Britain underwent cycles of retreat and re-advance, meaning that Britain experienced pulses of human colonisation and depopulation in accordance with the ebb and flow of the ice. The most recent glacial cold stage, in Britain termed the Late Devensian, was a period of marked climate change that spanned the Last Glacial Maximum (*c*. 25,000–14,700 cal BC, known as the Dimlington Stadial), and subsequent deglaciation (*c*. 14,700–13,400 cal BC), the mild Windermere Interstadial (*c*. 13,400–11,000 cal BC) and the brief cold episode of the Loch Lomond Stadial (*c*. 11,000–9600 cal BC, also known as the Younger Dryas). Ice sheet development during the relatively short Loch Lomond Stadial was largely restricted to the Scottish Highlands and hence, with the exception of a small cirque basin on the northern flanks of the Cheviots ('The Bizzle'; Harrison *et al*. 2006), North-East England will have been ice-free from the end of the Dimlington Stadial around 14,700 cal BC. It is quite possible, therefore, that human occupation of North-East England (as thought likely for much of Britain) may be unbroken from *c*. 13,400 cal BC to the present day (although we note that a recent study aimed at redating samples of Late Glacial bone in Britain employing the ultrafiltration pretreatment technique at the Oxford Radiocarbon Accelerator Unit has led Roger Jacobi to identify a possible gap in horse, and therefore possibly human occupation, during the Loch Lomond Stadial; Jacobi pers. comm.). It is this period, from *c*. 13,400 to 9600 cal BC, that is referred to by archaeologists as the Late Upper Palaeolithic. It has been suggested that the recolonisation after the Dimlington Stadial could have been initiated from two directions; the English Channel Plain and the North Sea Lowlands. In the case of the latter this places an important emphasis on the north-east coast of Britain, as well as Yorkshire and central Britain, as areas for early recolonisation. It should be noted in this regard that, unlike the Mesolithic (Holocene) shoreline referred to above, the Late Upper Palaeolithic coastline of what is now North Northumberland lies offshore by several tens of kilometres (Coles 1998; Gaffney *et al*. 2009).

From a settlement perspective, much of northern Britain may, therefore, have been considered an upland periphery of the more attractive lowlands of the North Sea Plain. Nevertheless, following the disappearance of Late Devensian glaciers and by the establishment of warm conditions during the Windermere Interstadial from *c*. 13,400 cal BC, much of Northumberland is likely to have been favourable for habitation, with a largely open landscape supporting a wide variety of flora and fauna attractive to hunter-gatherer-groups (Coles 1998). In the Till-Tweed landscape the rapid and complete drainage of pro-glacial lakes in the Milfield Basin and upstream in parts of the

Till/Breamish valley by the Windermere Interstadial led to emergence of extensive areas of low-lying wetlands and newly forming floodplains, flanked by upstanding sand and gravel terraces free from flood risk (Chapter 2). Spreads of Late Glacial sand and gravel were particularly extensive in the valley floor of the Breamish/Till downstream of Powburn, in the Milfield Basin and in the Tweed valley lowlands between Coldstream east to the Till valley at Etal (Chapter 2, Fig. 2.9). Their surfaces are pitted by kettle holes and enclosed basins that are likely to have formed localised lake and wetland habitats; pollen records from one example, in the Till valley at Lilburn South Steads, near Chatton, show that the area fringing the lake briefly developed a birch woodland with subsidiary scrub and herbs during the later stages of the Interstadial (Jones *et al*. 2000). This level of tree cover is likely to have been restricted to relatively sheltered valley locations, however, and was soon replaced by tundra-like vegetation, including dwarf birch and willow scrub, during the brief return to the periglacial climate of the Loch Lomond (Younger Dryas) Stadial between *c*. 11,000 and 9600 cal BC (see also Chapter 2).

There have been few finds, and no securely radiocarbon-dated sites, attributable to the Upper Palaeolithic north of the river Tees and so the question of an Upper Palaeolithic human presence in Scotland and North-East England north of Yorkshire has usually been considered to be at best tentative and at worst rejected outright (e.g. Saville 2004, 207–10; Cousins and Tolan-Smith 1995; Salisbury 1992). A brief review of the current evidence from North-East England serves to show, however, that there are grounds for a possible Upper Palaeolithic human presence in the region. Furthermore, the recent discovery and publication of an undisputed Late Upper Palaeolithic, probably Late Hamburgian, site at Howburn Farm, Biggar, in southern Scotland (Ballin *et al*. 2010), at the same latitude as North Northumberland, together with the lithic evidence for a Late Upper Palaeolithic, probably Federmessergruppen, occupation at Kilmelfort Cave, Argyll (Saville and Ballin 2009), indicates there is every reason to expect similar finds in North-East England.

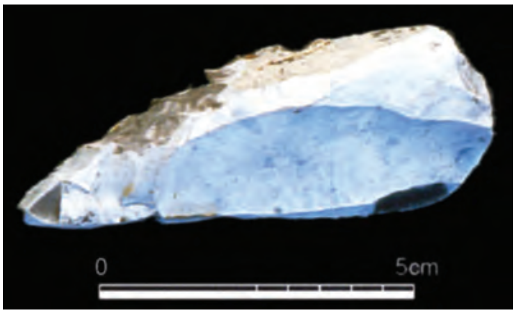



*Figure 4.5. The retouched flint blade from Tynedale thought to be of Late Upper Palaeolithic date.*

Late Upper Palaeolithic stone tool assemblages are characterised by distinctive forms such as 'Creswellian' points, tanged points, backed blades, trapezoidal points, 'Cheddar' points, shouldered points and penknife points, but such type fossils are rare in North-East England with only some Creswellian (late Magdalenian) material reported from County Durham by Coggins *et al*. (1989). In Britain most Late Upper Palaeolithic stone tool assemblages come from cave sites, such as those at Creswell Crags, Derbyshire, and Cheddar Gorge, Somerset. Closer to our study area, Late Upper Palaeolithic material has been discovered at Victoria (Dawkins 1872; Hedges *et al*. 1992), Jubilee (Jackson and Mattinson 1962) and Kinsey caves (Hedges *et al*. 1992; Jackson and Mattinson 1932) near Settle in the North Yorkshire Pennines, whilst at broadly the same latitude, caves in the Morecombe Bay area of south Cumbria have produced possible evidence for Late Upper Palaeolithic occupation, although not all of this is widely accepted (Wood *et al*. 1969; Gale and Hunt 1985; 1990; Salisbury 1986; 1992; 1997). Northumberland does not posses the type of limestone geology of the aforementioned areas and, consequently, has as yet no known cave sites so favoured by Upper Palaeolithic hunters. This means that in Northumberland we are much more reliant on making chance finds on 'open' sites through fieldwalking and test-pitting, which is notoriously difficult.

Late Upper Palaeolithic open sites are few in Britain with only a handful identified, the best known perhaps being the prolific flint site at Hengistbury Head, Dorset (Barton 1992). Jacobi has suggested that Late Glacial open sites probably do exist in the northern Pennines but that their discovery is hindered by spreads of soliflucted material (Jacobi 1976). More recent evidence for thick accumulations of slope debris in the Cheviots during the Loch Lomond Stadial (Harrison *et al*. 2010) would suggest a high likelihood of pre-Holocene reworking and burial of any Palaeolithic materials located on valley sides, to which should be added the potential masking effects of both Holocene colluviation and, in floodplain localities, alluvial burial. However, these geomorphological processes are unlikely to have impacted upon sites located on relatively flat glaciodeltaic and glaciofluvial terraces beyond their junctions with adjacent valley side slopes. In this respect it is interesting to note the tentative identification of a surface artefact assemblage of Late Upper Palaeolithic material comprising steeply retouched points and large end scrapers in County Durham at Towler Hill, Teesdale (Coggins *et al*. 1989), whilst in southern Northumberland a single backed blade (Fig. 4.5), thought to be Late Upper Palaeolithic, has been found during fieldwalking in Tynedale (Cousins and Tolan-Smith 1995). Both these locations were on free-draining river terraces close to the rivers Tees and Tyne, respectively. This proximity of open sites to strategic river corridors and fresh water is a recurring theme for the few open sites recorded in Britain. Other examples include the Trent Valley open sites at Farndon Fields and East Stoke near Newark (Garton 1993). Furthermore, as Pettitt has observed, Late Upper Palaeolithic groups appear to have been drawn to areas of landscape where upland and lowland meet, presumably so as to position themselves in ecotonal locales (Pettitt 2008, 36).

Examination by one of the authors of the lithic assemblages held at the Museum of Antiquities in Newcastle and Sunderland Museum, together with analysis of many new assemblages that have been produced as a result of commercial archaeology projects in North-East England, has revealed a recurrent observation namely that large pieces (relative to this area of Britain) of chipped flint, which have subsequently become very heavily patinated and abraded, are frequently recycled in the Mesolithic period. Such pieces are common in coastal assemblages but they are also found inland, as was the case during the fieldwalking for this study throughout the valleys of the Till and lower Tweed (see also Volume 1). Weyman has drawn attention to the ballast hills that contain imported flint along the southern part of the North-East England coast and the need to be wary about confusing this material with genuine discards (Weyman 1984, 49). Bearing this in mind it is still apparent that the recycling of previously worked and heavily patinated material undoubtedly occurs outside areas affected by such dumps. For example, many such pieces were found in the assemblage recovered from the Middle Warren survey north-west of Hartlepool. This covered an area of rising ground set back from the coastal strip and is clearly unaffected by ballast dumping (Waddington 1996). At Howick, a Mesolithic site dated to *c.* 7850 cal BC on the Northumberland Coast, some of the Mesolithic artefacts, all of which were *in situ* within the stratified occupation deposits of a defined building, had been made by recycling previously worked flint that had already become heavily patinated and abraded (Waddington 2007a, 78). Here, it can be inferred that the Mesolithic inhabitants of this site were picking up previously worked flint from the beach, where it had probably been washed ashore from sources under what is now the North Sea, to chip into new tools of their own. We should, however, remain tentative about attributing the patinated material to what is now an off-shore source since the material could equally have been eroded from till deposits on the Mesolithic shoreline before being redeposited on the beach by wave action. Either way, the implication is that Late Upper Palaeolithic, or less likely Early Mesolithic, occupation can be attested somewhere in the vicinity of the current North Northumberland coastline.

At Spindlestone, overlooking Budle Bay on the North Northumberland coast, the lithic assemblage recovered during excavations by Buckley contained possible Upper Palaeolithic artefacts reused as blade cores in the Later Mesolithic (Waddington 2004, 79). This evidence for the reuse of Palaeolithic flints is not confined to coastal sites. For example at Bywell, in the Tyne Valley, there is a recycled, heavily patinated blade that may have been originally chipped during the Upper Palaeolithic amongst what is otherwise a predominantly Late Mesolithic assemblage (Waddington 2004, 68). Amongst the material collected during the fieldwalking in the Till and Lower Tweed valleys, as part of this study, numerous examples of Mesolithic rechipping of already heavily patinated material can be observed. In view of the scarcity of lithic material suitable for tool manufacture in North-East England it is not surprising that in the Late Mesolithic all available raw material was being used, even if this meant the opportunistic recycling of earlier chipped material. Therefore, it may be that many Mesolithic and later assemblages contain former Palaeolithic artefacts recycled so as to render their Palaeolithic origin unrecognisable.

### Summing up

It seems that people may have made the occasional foray into the tundra and more sheltered juniper-birch wooded landscapes of this region during the Late Glacial interstadial, although on account of the remarkably few finds of this date it appears that such visits were short-lived, sporadic and small-scale. The coast of Norway, however, was colonised in the Late Upper Palaeolithic so there is no reason why the same should not have taken place in northern Britain. All the recycled material and those Late Upper Palaeolithic tools that have been found in North-East England to date are all made from sizeable flint nodules which are rare within the region. It appears therefore, that the lithic material used in the Late Upper Palaeolithic was transported over long distances, suggesting pioneer groups moving into unfamiliar territory where knowledge of local raw material sources was limited (Kelly and Todd 1988). Barton and Dumont (2000) have characterised the initial phase of Late Upper Palaeolithic settlement in southern Britain by the use of non-local lithic raw material.

The scant evidence in Northumberland so far is, in part, linked to the amount of recycling of earlier material by later Stone Age groups, processes of landscape taphonomy and, in more recent times, the intensive farming of the landscape in both lowland and upland locations. In addition, sea-level change has led to the drowning of North-East England's Late Upper Palaeolithic shoreline and the submergence of Late Upper Palaeolithic coastal sites below the sea, which contrasts with the uplift of the Norwegian coastline and the associated survival of early sites. The latter point bears emphasis here since the degree of landscape change that subsequently took place along the shoreline of North-East England may mask, in its entirety, a similarly early Late Upper Palaeolithic colonisation of the north-eastern British littoral as that now documented in Norway (Bang-Andersen 1996).

Hints of yet earlier occupation during the Upper Palaeolithic are provided by the observation of possible palaeoliths contained within the sand and gravel beds laid down at the end of the Dimlington Stadial to form the fluvioglacial and glaciodeltaic terraces of the Milfield and Hedgeley Basins. So far these possible palaeoliths do not include handaxe types of the Lower and Middle Palaeolithic, but smaller, core and flake pieces with evidence for edge preparation or chipping. Their identification and attribution remains difficult but they are typically made from flint, are heavily rolled and abraded so that their chipped edges become smoothed, and they have heavy patina development which is often so advanced that it can be better described as recortication. These effects conspire to mask the potential earlier working of these pieces, thus making confident identifications of human modification awkward and elusive. However, such pieces provide a tantalising glimpse of what could possibly be the remnants of activity by the first modern humans in the region and a more systematic examination of these gravels could be a useful future research exercise.

### Future research

Although direct evidence for the Late Upper Palaeolithic period within Northumberland is scarce, there are tentative signs that a corpus of data could yet survive that could help shed light on this period. The Late Glacial sand and gravel terraces should certainly be viewed as having the potential to host surface lithics in the ploughzone and perhaps the remnants of cut features, scoops and hearths. There is no reason, however, to believe that Late Upper Palaeolithic activity was limited to the locations that have produced material so far. There are certain parts of the landscape that could be specifically focused upon to produce new data sets for Late Upper Palaeolithic occupation.

A potentially rich source of archaeological and palaeoenvironmental residues that could span the Late Glacial period are the kettle holes and enclosed basins inset within glaciofluvial sand and gravel terraces. These features have the potential to contain both archaeological and environmental remains dating back to *c*. 15,000 cal BC, and, given the waterlogged conditions in many of these features, the remains could yet be well preserved. The potential of such sites has already been demonstrated by discoveries of the remains of butchered animals, sometimes with flint tools, in southern Denmark (Holm 1991; Aaris-Sørenson *et al.* 2006), northern Germany (Clausen 2004) and the USA (Kapp 1986). Closer to our study area a find of Giant Irish Elk has recently been made in an eroded lobe of kettle hole sediment found at the base of a cliff on the Isle of Man near Kirk Michael (Chiverrell and Thomas 2006), although no evidence for it having been butchered has yet been published. Together with the potential to obtain contemporaneous archaeological and palaeoenvironmental data from these deposits, there is also the possibility of obtaining a high resolution chronostratigraphy of kettle hole sedimentary sequences, as well as on the organic remains themselves. As the kettle holes accumulate their fill the remains should, at least in theory, be well stratified with the deeper and earlier sediments having the best chance of including intact organic remains. The archaeological examination of such features is long overdue in the British Isles.

Perhaps the simplest way to tap into future discoveries is for fieldworkers to become more aware of the potential lithic evidence. Rather than automatically discarding odd-looking pieces of flint or other rock, or ignoring those where the evidence for it being worked may seem tenuous, it is important to retain this material so that it can be looked at again by specialists, with a hand lens, and after the piece is properly cleaned. Indeed there are several existing collections that would benefit from further analysis as they may already contain some Late Upper Palaeolithic material (see various gazetteer entries in Waddington 2004). With greater awareness the frequency of finds from this period should increase.

## MESOLITHIC BACKGROUND

### Climate and sea level change

Any attempt to gain understanding of the hunter-gatherer-fisher groups who inhabited Britain after the last Ice Age must start with an appreciation of the physical world they inhabited. The landscape was very different from that of today both in terms of the visible landforms to the east of the modern coast and in some river valley settings, but also in terms of the vegetation cover and the wildlife (Chapter 2). All of these changes were primarily driven by the marked climate changes associated with the end of the Late Glacial period and the transition to the temperate conditions of the Holocene. Rapid warming at the onset of the Holocene saw summer temperatures in Northumberland approximating to those of the present sometime during the ninth millennium cal BC although winter temperatures (expressed as the mean temperature of the coldest month) at this time were very much colder at around -10°C. The mid-Holocene thermal maximum was achieved around 4000–5000 cal BC by which time summer temperatures in North

Northumberland were around 2°C warmer than at present, and the severe winters of the early Holocene had ameliorated with mean temperatures of the coldest month at around -1.5°C (Chapter 2; Fig. 2.45d). The general warming trend over the first half of the Holocene would have been punctuated, however, by relatively short-lived (century- to millennial scale) episodes of cooler climatic conditions, or 'neoglacials', several of which have been identified at a European scale during the Mesolithic at *c.* 4350, 5800–5650, 6300–6050, 8250–8050 and 9200–9050 cal BC (Chapter 2: Fig. 2.45f). Of these events, that centred on *c.* 6200 cal BC (also known as the '8ka event'; Alley and Ágústsdóttir 2005) may have been particularly marked with a decline in average summer temperatures in the order of 1–5°C, although it has not yet been identified in northern English palaeoclimate proxy records. The later neoglacial at *c.* 5800–5650 cal BC does however correspond well to a shift to wetter bog surface conditions at Walton Moss (Chapter 2; Fig. 2.45a).

In the North Sea Basin the area between Yorkshire and the South-East English coast to the Low Countries and northern France witnessed significant changes in the configuration of the coastline as rising sea-levels over the Early to Middle Holocene severed the terrestrial link between Britain and the Continent (Fig. 4.1). The coastline of North Northumberland experienced rather less dramatic changes in this respect, but here sea levels (expressed as mean high tide) were probably around 4m lower than today around 8000 cal BC (Shennan *et al*. 2000) and this would have pushed the coastline out to sea by several hundred metres in some places, albeit less in others. By the end of the Mesolithic, however, relative sea levels in Northumberland ranged from *c.* -0.5m (south Northumberland) to *c.* +2m (north Northumberland), reflecting regional variations in isostatic movements (see also Chapter 2).

### Floodplains and hill slopes

Inland, river valley floors had adjusted quickly to the climatic perturbations of the Late Glacial period, becoming deeply entrenched into the extensive valley fills of outwash sand and gravel and, where traversing the site of former proglacial lakes, cutting into thick sequences of laminated glaciolacustrine sand, silt and clay. It is often the case that landforms and sediments associated with Early–Middle Holocene channel and floodplain environments are poorly recorded in upland British river valleys, in part because of difficulties in establishing independent dating controls, but also because of the propensity for later Holocene river activity to rework and/or bury these earlier deposits (Lewin *et al*. 2005). This appears to be true of relatively high-energy gravel bed river environments of the Till-Tweed region, including the River Glen between Kirknewton and Lanton (Chapter 2) and in its upper reaches (where named the Bowmont; Tipping 1994c; 2010), the River Breamish upstream of Powburn (Chapter 2) and the Lower Tweed at Coldstream (Passmore *et al.* 2006; Chapter 2). Nor, to date, have any Mesolithic channel or floodplain deposits been identified in narrower and lower gradient reaches of the River Till between Beanley and Weetwood (Chapter 2).

In wider parts of the Breamish/Till system, however, lateral reworking of the alluvial valley floor appears to have been sufficiently low so as to permit the survival of older channel and floodplain deposits. Previous work in the Milfield Basin, for example, has established a long record of floodbasin sedimentation at Akeld Steads that includes the Mesolithic period (Borek 1975; Tipping 1998; 2010) and an episode of channel cut-off sometime shortly after *c.* 7600–7370 cal BC downvalley at Thirlings (Passmore *et al*. 2002). To these examples can now be added evidence for floodbasin or channel-fill peat deposition spanning *c.* 8820–8570 cal BC to7790–7540 cal BC at Woodbridge (immediately downstream of Thirlings; Chapter 2), an episode of channel cut-off in the River Breamish at Hedgeley at *c.* 6450–6240 cal BC and, towards the very end of the Mesolithic and the transition to the Neolithic, the onset of floodbasin peat accumulation from *c.* 4350–4170 cal BC in the River Glen at Canno Mill and further episodes of channel abandonment in lower reaches of the River Glen/Humbleton Burn near Bridge End (Milfield Basin) at *c.* 4050–3950 cal BC and *c.* 3980–3790 cal BC and in the River Breamish at Hedgeley at *c.* 3970–3650 cal BC (Chapter 2 and see also Chapter 5).

It remains unclear whether these incidences of channel abandonment reflect the lateral shifts of a single, meandering river or, as has been argued for several Early Holocene valley floors in other parts of Britain (e.g. Brown 1997b; Knight and Howard 2004), the abandonment of side channels comprising part of a broader multiple-channel (braided or anastromosing) river network. They do, however, demonstrate the ability of regional channel networks to be reconfigured during Mesolithic times, at least locally, and even in the context of floodplain habitats that after *c.* 7400 cal BC had developed thick stands of alder carr. Human agency is not usually regarded as exercising an influence on channel and floodplain geomorphology during the Mesolithic (e.g. Lewin *et al*. 2005), however, the possible impact of beavers cannot be discounted (e.g. Knight and Howard 2004), and potential links to climate change are also receiving increasing attention in analysis of the the wider British and European floodplain record (e.g. Macklin and Lewin 2008; Macklin *et al*. 2006; 2010). We return to this theme in Chapter 10.

## Woodland landscapes

Inland from the coast, and above the region's floodplain corridors, the wider landscape of low-lying glaciated and glaciofluvial terrain and the rising hill slopes and summits of the uplands witnessed the rapid replacement of Late Glacial tundra-dominated open ground by succession of grasslands, heath, birch, juniper scrub and ultimately closed-canopy woodland, that was frequently led by birch and, in most places from *c*. 8300 cal BC, hazel (Chapter 2). In his evocative impressions of the Mesolithic woodland landscape in the Cheviot valleys, Tipping (2010) emphasises the contrasts in the density and composition of forest cover that are likely to have characterised the Early Holocene *c*. 8000 cal BC, when most landscapes would have been dominated by a mix of hazel, birch and willow, and that some 2000 years later by which time the forest cover was approaching its most diverse and mature array of closed, mixed deciduous forest cover with variable amounts of oak, elm, hazel, pine and lime. By this time it is likely that virtually all regional landscapes were host to some degree of tree cover, even on the very highest summits, although here there is likely to have been sufficient gaps to afford wider views of the adjacent valleys and skyline (Tipping 2010).

Some localities will also have exhibited thinning or opening up of the woodland canopy due to disturbance events, and here there would have been opportunities for grasses, open-ground herbs, shrubs and shade-intolerant trees (e.g. birch, hazel and ash) to thrive (Chapter 2). In view of the frequency with which temporary and small-scale clearances are evident in Mesolithic pollen records from North-West Europe it is perhaps not surprising that considerable attention has been focused not only on the potential opportunities afforded by forest clearings for subsistence activities, but also the degree to which forest clearance may have been deliberately instigated (i.e. purposive deforestation, *cf*. Brown 1997a), as opposed to more opportunistic exploitation of naturally occurring disturbances. While it is recognised that Mesolithic communities will have had the capacity to manipulate or remove tree cover through firing, ring-barking and possibly coppicing (using tranchet axes), clearances may equally have arisen through natural processes such as climate change, fire (via lightning strikes), geomorphological events (e.g. floods, landslides), animal and insect damage and windthrow (e.g. Brown 1997a; Whitehouse 2006), and hence differentiating anthropogenic from natural clearance in Early–Middle Holocene pollen and charcoal records remains a challenge (Brown 1997a).

In this respect it is interesting to note that Tipping (2010) has recently reappraised his earlier (1996) interpretation of anthropogenically-driven later Mesolithic disturbance events at Yetholm Loch and Sourhope in favour of natural mechanisms; here the preferred trigger is climatic deterioration between *c*. 4500–3800 cal BC which has been identified in North Atlantic ocean sediment records (Bond *et al*. 2001) and terrestrial archives of Alpine and southern Norwegian neoglacial events (Matthews and Quentin Dresser 2008) (although it has yet to be clearly resolved in regional bog surface wetness records – see Chapter 2). A number of factors are cited in support of the climate change hypothesis, including the lack of any unambiguous anthropogenic pollen taxa, a perceived lack of Mesolithic flint assemblages in the Cheviot uplands, the long duration of disturbance (extending for some 1500 years at Sourhope – some sixty human generations) and the synchroneity of the onset of disturbance at these two sites (commencing *c*. 4600 cal BC) (Tipping 2010). The earlier episode of canopy opening between *c*. 7000–6000 cal BC to the east at Ford Moss is also of a relatively long duration, albeit interrupted by a phase of woodland regeneration, but this disturbance event coincides with climate deterioration only in its latter phases from *c*. 6500 cal BC (Chapter 2) and, unlike the Cheviot examples, can be linked to nearby Mesolithic rock shelter sites (see below).

## Geography and chronology of the Mesolithic

The preceding discussion indicates that the world inhabited by Mesolithic groups was conditioned by choices related to a very different landscape and environmental context than that of today, and one in which the pace of environmental change was, at particular times and places, liable to have been perceptible over the course of an individual's lifespan (Lewis 2009). Such changes will have been most profound along the retreating North-East coastline, but inland individuals are also liable to have witnessed occasional changes in river courses, perhaps following large flood events, that may have forced an adaptation to navigation both along and across channel and floodplain environments. They may also have appreciated the slower pace of migrating animal and plant species within the primary forest, and the more immediate changes invoked by canopy disturbances invoked by flood or fire. Perhaps the rhythms of climate changes were perceptible too, not only in terms of changing seasonality but also at times of transition into and out of the periodic neoglacials.

All of these considerations remind us that the Mesolithic environment was not a static backdrop to human activity, and hence it is implausible to view the economies, settlement patterns and land use of the British Mesolithic as being explained by a single model that posits large-scale mobility throughout the whole period. Rather, we should expect considerable change over time as human groups adapted to very different environmental circumstances and took advantage of new resources that became available as different flora and fauna colonised the area. But such variations are not just temporal; the geographic zoning of landscapes, particularly in those landscapes that are topographically discrete, as in the case of North Northumberland, means that spatial variations in human activity can also be expected. An obvious contrast is between groups inhabiting the coastal littoral and those inhabiting the inland valleys and uplands. Acknowledging this scope for regional variability, together with greater potential for dynamic economic and social organisation over the five and a half millennia span of the period, allows for more chronologically and regionally specific models to be developed as has been advocated by Rowley-Conwy (1993). This is not to deny the value of larger scales of analysis, or, indeed, the need for synthesis, but rather to adopt a complimentary approach that acknowledges variability and seeks to explain it. This approach stands in contrast to those interpretations that describe settlement during the entire Mesolithic period according to a single, generic model.

Although only a limited number of sites in North-East England have provided radiocarbon dates for this period, the beginnings of an objective chronological framework can be sketched out. The dating sequence from Howick provides the earliest dates so far for the region with the site being first occupied *c*. 7970–7760 BC (Bayliss *et al*. 2007, 71). This is a narrow-blade, micro-triangle site however, and therefore the Early Mesolithic broad-blade material in the region (see below) appears to testify to earlier occupation during the period *c*. 9600–8000 cal BC. Slightly later than Howick is another coastal site at Filpoke Beacon on the coast of County Durham which may have been a similar type of site to Howick. It produced a directly analogous flint assemblage and included a hearth area with large quantities of charred hazelnut shell (Coupland 1948; Weyman 1984, 44). A single radiocarbon determination of *c*. 8270–7540 cal BC (Q-1474) was obtained on charred hazelnut shells (Jacobi 1976, 71) indicating a continued interest in the coast throughout the eighth millennium cal BC. A so far unpublished radiocarbon determination dating to *c*. 5800 cal BC was briefly reported by Bonsall (1984, 398) for a later Mesolithic midden-type deposit sealed by a Bronze Age cairn eroding from the mid-Northumberland coastline at Low Hauxley. During 2010 a group of human and animal footprints was discovered in an inter-tidal peat a few hundred metres from the Low Hauxley site (Fig. 4.12), together with a large quantity of wood. This very thin peat lens has produced two radiocarbon determinations from the base of the peat of 5330–5210 cal BC (6296±34, OxA-22735) and 5220–4990 cal BC (SUERC-30015, 6160±35) and a sample of timber retrieved from next to a human footprint shows evidence for having been worked. It therefore remains possible that the activity represented by the footprints and worked timber could be contemporary with the occupation site investigated by Bonsall. Outside Northumberland there are important dates on micro-triangle lithic assemblages, similar to that from Howick, of *c*. 8000 cal BC in the case of East Barns (Gooder 2007) located on the south-east Scottish coast 80km north of Howick, and *c*. 8400 cal BC in the case of Cramond (Saville 2004) which is also situated in a coastal setting, overlooking the Firth of Forth, 50km west of East Barns.

Considering the dating information currently at our disposal it can be observed that the earliest Mesolithic, as represented by obliquely blunted broad blade microliths, burins, occasional tranchet axe heads and so forth (see below for full discussion), document a human presence between *c*. 10,500 and *c*. 8000 cal BC. From *c*. 8400 cal BC, narrow-blade micro-triangle material first appears in what were at this time essentially, and still are, coastal settings. These coastal sites appear to become more widespread throughout the subsequent eighth millennium cal BC. Beyond the eighth-millennium broad blade microliths appear to have gone out of use (Bayliss and Waddington 2007) and narrow blade assemblages predominate both inland as well as on the coast. Mesolithic activity continued in the region throughout the climatic optimum, as represented by the mid Holocene dated site at Low Hauxley, and presumably until the beginning of the fourth millennium cal BC when Neolithic activity makes its sudden debut *c*. 3900 cal BC.

## TECHNOLOGY AND MATERIAL CULTURE

Mesolithic stone implements, typically made from varieties of flint from secondary geological sources, have been found in their thousands across Northumberland, though it is only in recent years that the use of other locally available materials has been recognised (e.g. Waddington 1999). This brings the north Northumberland material into line with the lithic assemblages that have been collected in Scotland further up the Tweed valley and its tributary catchments (Lacaille 1954; Mulholland 1970). Flint can be found most easily along the coast where it is washed on to the beach from offshore deposits. In addition, the boulder clays that mantle the North-East coastal plain also contain secondary flint deposits and nodules can be collected from erosion scars on valley sides, or from the beach where the till erodes into the sea. The coastal and glacial flint can be quite distinctive and includes grey-orange, bright orange, and speckled red-brown varieties, as well as flints of various shades of grey. Previous studies have argued that much of the grey speckled flint found in North-East England probably derives from north-east Yorkshire (Young 1984; Weyman 1984; Waddington

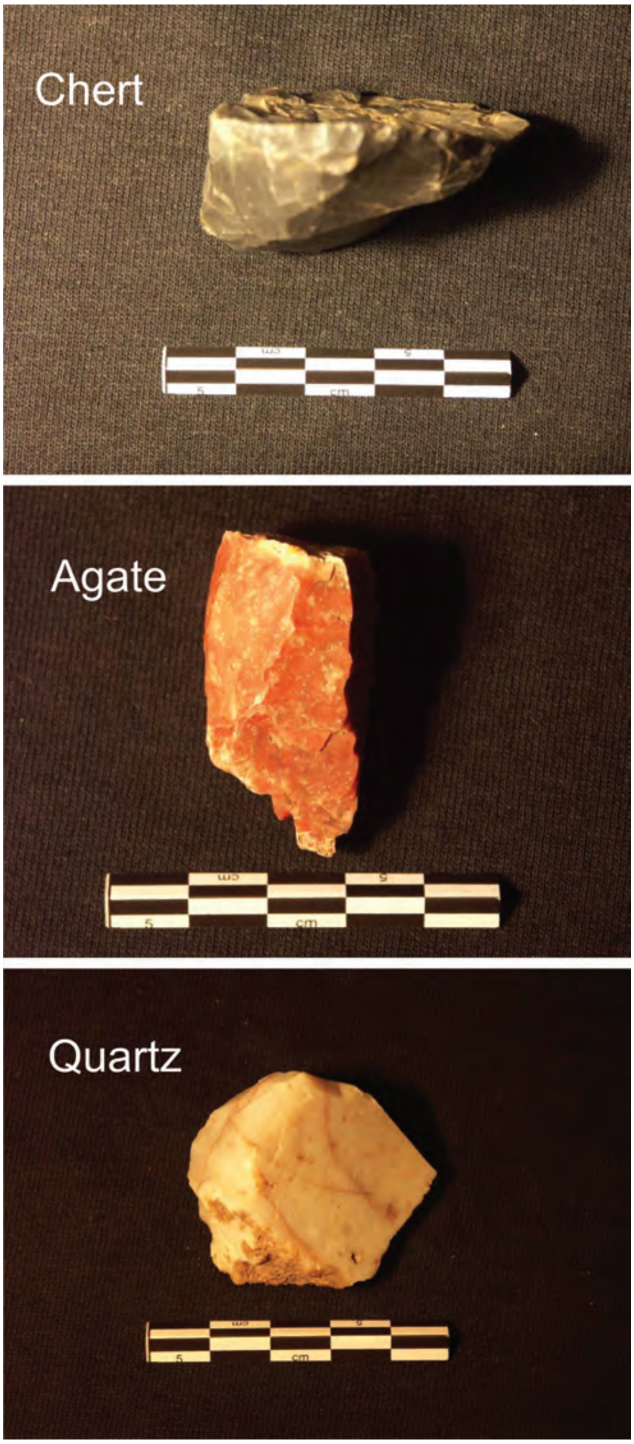



*Figure 4.6. A selection of Mesolithic cores made from different raw materials collected by fieldwalking during the Till-Tweed survey.*

1999), but given the discovery of speckled grey flint from beach pebble sources used at Howick this assumption of a Yorkshire origin, for much of the Northumberland material at least, need not be the case. In the light of this discovery the authors no longer stand by this previous view and, as with the pattern noted for Scotland by Saville (2004, 185), see

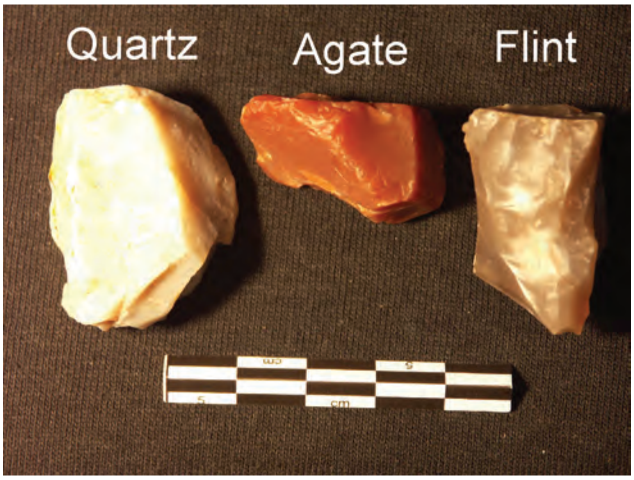



*Figure 4.7. A selection of Mesolithic platform cores made from different raw materials collected by fieldwalking during the Till-Tweed survey.*

the acquisition of raw material to have been based primarily around local, or at its widest, regional, sources with only limited evidence for inter-regional dispersal during the Mesolithic. This contrasts with the evidence for more widespread dispersal of material in some areas further to the south, such as between north-east Yorkshire and Weardale (Young 1984) and the Lincolnshire Edge and the South Pennines which lie 80km apart (Jacobi 1978, 304).

The transition from so called ‘broad blade’ to ‘narrow blade’ industries has long been seen as forming the division between the Early Mesolithic and Late Mesolithic (Buckley 1925; Switsur and Jacobi 1979). It has been widely acknowledged that their use followed on one from the other (e.g. Clark 1932; Radley and Mellars 1964; Jacobi 1976; Tolan-Smith 2008) with an implicit acceptance of their chronological exclusivity. The recent dates obtained on narrow-blade assemblages from the coast of north-east Britain at Cramond (Saville 2004), East Barns (Gooder 2007) and Howick (Waddington 2007a) have pushed the initial use of narrow-blade technology back to the late ninth and early eighth millennia cal BC. Recalibration and Bayesian modelling of those broad-blade and narrow-blade dates thought to be reliable has shown that the use of these different manufacturing traditions overlapped for between 1000 and 2000 years (Waddington *et al.* 2007, 223). Armed with this current evidence, a chronological replacement of one type with the other would now seem oversimplistic and not entirely accurate. Perhaps instead we should explore whether these differences in lithic style preferences are socially constituted, in the sense of their representing groups with different cultural identities and economic strategies, with narrow-blade traditions eventually becoming the lithic style of preference across all of Britain.

The reliance on locally available lithic materials throughout the Mesolithic in North Northumberland is striking. What is more, it is of particular significance as it demonstrates a concern for self-reliance whilst at the same time hinting towards restricted territories and levels of mobility. At first glance the range of materials utilised is wide-ranging including chert, agate, flint and quartz as well as other siliceous material such as jasper and chalcedony (Figs 4.6–4.7). However, when the geographic distribution of these different materials is considered the pattern is not uniform. Along the coastline the Mesolithic lithic scatters are usually entirely of flint, and more specifically beach flint, as for example those at Howick (Waddington 2007a), Spindlestone (Buckley 1922a) and Bamburgh (Buckley 1922b), whilst the Mesolithic sites known from the Milfield Basin are usually, though not always, dominated by struck agate and chert. Flint assemblages also occur along the main river valleys of the lower Tweed and Till, as at St Cuthbert's Farm in the Tweed valley and the Milfield North henge field in the Till valley, but these are usually dominated by Late Mesolithic narrow-blade material. Some of the material in the lower Tweed valley is undoubtedly beach flint whilst the flint utilised for Mesolithic implements in the Till valley is typically glacial flint that has come from till deposits, thus signifying, perhaps, the extent of inland penetration along the Till valley by coastal-based groups. Another observation worth making is that the non-flint lithic scatters usually contain microliths with oblique truncation but not exactly like that of Star Carr-type assemblages (Fig. 4.8).

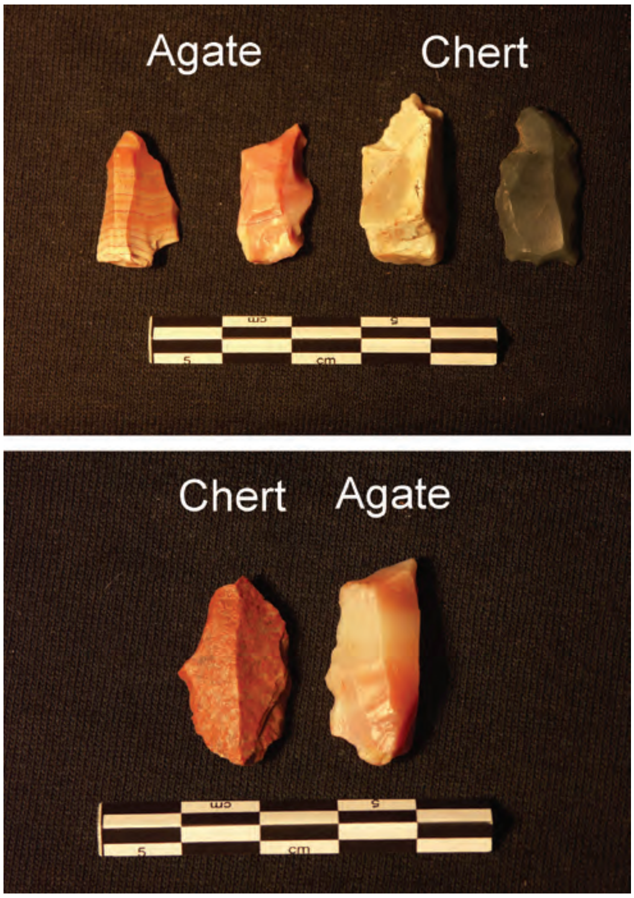



*Figure 4.8. Obliquely truncated microliths made from various locally available raw materials collected by fieldwalking during the Till-Tweed survey.*

It has been argued that the Early Mesolithic stone tool kit represents an adaptation to the specific hunting strategies and butchery practices required for the restricted species of game animals that inhabited the early Post Glacial landscape (e.g. Myers 1989). Although these implements must have been suited to their task they are also likely to have had further significance as expressions of identity and socio-stylistic markers. Jacobi recognised distinctive microlith groupings in Early Mesolithic Britain which he equated to different social groups (Jacobi 1979; 73–4), whilst Wymer recognised three early Post Glacial groupings based on assemblage composition (Wymer 1991), and in a more recent study Reynier acknowledges up to five distinct assemblage types: Star Carr, Deepcar, Horsham, long-blade and Honey Hill (Reynier 2005, 127).

Although the latter types are generally acknowledged, further sub-divisions have been suggested. Based on his own metrical analyses, Reynier believes that breaking down the Star Carr, Deepcar and Horsham assemblage types into smaller sub-divisions using detailed attribute analyses has been unsuccessful (Reynier 1994, 202–3; 2005, 24). At the assemblage-type scale such differences could represent functional variation at different sites or local responses to local conditions, such as scarcity of good quality flint or the need for a tool kit associated with the taking of a specific type of resource, such as fish or birds. There are clearly different microlith 'styles' and Reynier's recent (2005) study, which includes consideration of the available radiocarbon dates, suggests there is a chronological progression for the appearance of Star Carr, Deepcar and Horsham types, although it remains possible that these assemblage types could all be coeval. Based on current dating there is evidently overlap in the use of these types. This leads Reynier to implicitly accept the existence of different social groups, when he refers to Star Carr human groups in northern England employing an 'intercept' economic strategy and sometime after 8300 cal BC, Deepcar human groups appear in southern England employing an 'encounter' economic strategy (Reynier 2005). Intercept strategies consist of targeting a resource, such as red deer, where they are known to aggregate, whilst encounter strategies are geared around more opportunistic taking of single animals (see Myers 1989).

The recognition of tools in Northumberland that can be equated with the Early Mesolithic is perhaps


*Figure 4.9. Two unusually shaped obliquely truncated microliths made from locally available raw materials collected by fieldwalking during the Till-Tweed survey.*


*Figure 4.10. The blade end of a flint tranchet axehead that has been deliberately chipped off the rest of the axe by employing a bipolar strike. This Early Mesolithic artefact was picked up from a field immediately overlooking the Broomridgedean Burn by fieldwalking during the Till-Tweed survey.*

not as difficult as has been thought. The microliths tend to be broader, larger, thicker and irregular in shape (e.g. Figs 4.8, 4.9 and 4.10), compared with those from the later Mesolithic which are usually smaller, narrower and more geometric. As much of the broad-blade material in inland North Northumberland is made from poorer quality cherts and agates, the blade forms upon which the microliths are made tend to be short, stubby and fat on account of the flaking properties of this material.

Early Mesolithic microliths include obliquely blunted points of various kinds that relate to Star Carr-type assemblages (see Fig. 4.8). They are frequently made on non-flint materials such as agates and chert and are more frequent inland than on the coast. The retouch is often minimal and can be characterised as abrupt and unifacial and is sometimes produced by hard as well as soft hammers. Other types of lithic implements include burins and a variety of scrapers, the latter typified by abrupt retouch on thick-end scraper forms, although they may be of irregular shape (e.g. Volume 1 Fig. 3.34, nos 3095, 3259, 3314, 3452 and 3798). However, a tool that is widely regarded as an Early Mesolithic marker, the tranchet axehead, is rare within the region, although the discovery of a new example in the Milfield Basin in Field 63 (Waddington 1999; Fig. 4.10) adds to those previously reported from Monkwearmouth (Harding 1970) and the submerged forest at Seaton Carew, Hartlepool (Trechmann 1936).

The tranchet axe takes its name from the final transverse flake removed across the blade end which produces a sharp cutting edge that can be easily resharpened by detaching a new transverse flake. The lack of Mesolithic axeheads in northern Britain has been remarked upon before (Weyman 1984; Saville 2004) and it is often taken as defining a regional pattern different to southern England, Wales and Ireland. Saville has suggested that axes in the North were made from different types of perishable raw materials, such as red deer antler (Saville 2004, 200). It is argued here, however, that the main reason why axeheads are not found in any frequency in the north is because any flint artefact of such a size could be recycled into new tool forms. In a region where large pieces of flint rarely occur, a parsimonious attitude to flint discard prevailed so that all flint pieces of any size were regularly recycled throughout the Mesolithic. This concern for recycling can be clearly seen in many of the Mesolithic assemblages from the region, such as that from Howick, where previously chipped artefacts, indeed most of them considerably smaller than an axehead, were recycled into either microblade cores or new implements. The apparent absence of tranchet axeheads is probably more apparent than real in the north due to these implements being recycled rather than discarded. This is certainly the case with the one from the Milfield Basin where the blade end had been detached from the rest of the axehead as a result of intentional bipolar flaking. If further axeheads are to be found in the north then lithic specialists need to look out for traces of axe fragments in recycled tools.

The stone tool kit of the hunter-gatherers of the later Mesolithic was still based on a blade technology although a number of diagnostic traits characterise the implements of this period. The later Mesolithic microliths tend to be made from more regular blades struck in a systematic manner from carefully prepared platform cores of various types (Fig. 4.6 and see also

Volume 1 Fig. 3.33 nos 2680, 3460, 3630, 3663, 3667, 3800 and Waddington 2007a, fig. 7.2). Types of core vary greatly from prismatic (e.g. Volume 1 Fig. 3.33 no 1960) and cylindrical cores to opposed platform (e.g. Volume 1 Fig. 3.33 no 1583) and bipolar cores (e.g. Volume 1 Fig. 3.30 no 325), the latter particularly well used in the case of small pebble flint-derived assemblages, such as that from Howick and other coastal sites (e.g. Waddington 2007a, Fig. 7.1). Also common is the multi-platform core which is a pragmatic response to dealing with the small size, irregular shape and uneven purity of the locally available raw materials. Microliths are usually made on narrower, smaller and more regular blades than in the Early Mesolithic and sometimes include distinctive geometric forms (Fig. 4.11 and Waddington 2007a, Fig. 7.2) including backed blades, points, scalene triangles, crescents and, towards the end of the Late Mesolithic, very slender rectangular forms known as 'rods'. Some Late Mesolithic types are specific to particular areas, such as the hollow-based points of the Weald. At Howick the microlith component was dominated by scalene triangles dating to *c*. 7900 cal BC, although backed blades, crescents and needle points and some unusual 'thick-edged' microliths were also present. Other types of tools found on the site included scrapers, awls, occasional burins and a wide range of retouched blades and flakes. All the diagnostic flint recovered during the excavation was beach flint that could be picked up within the immediate environs of the site (Waddington 2007a).

The lithic assemblages from nearby Tweeddale and its tributary valleys on the Scottish side of the Border show a similar composition to the Milfield Basin assemblages, with local agates and cherts found in the river gravels being commonly used (Mulholland 1970). A similar scenario is evident in other areas of northern Britain; for example, in the stone tool assemblage recovered from the excavation of Mesolithic deposits on the Isle of Rhum, local bloodstone comprised over 50% of the material (Wickham-Jones 1990) while the chipped stone tools recovered during fieldwalking around Strath Tay were made almost exclusively from local quartz (Bradley 1995).

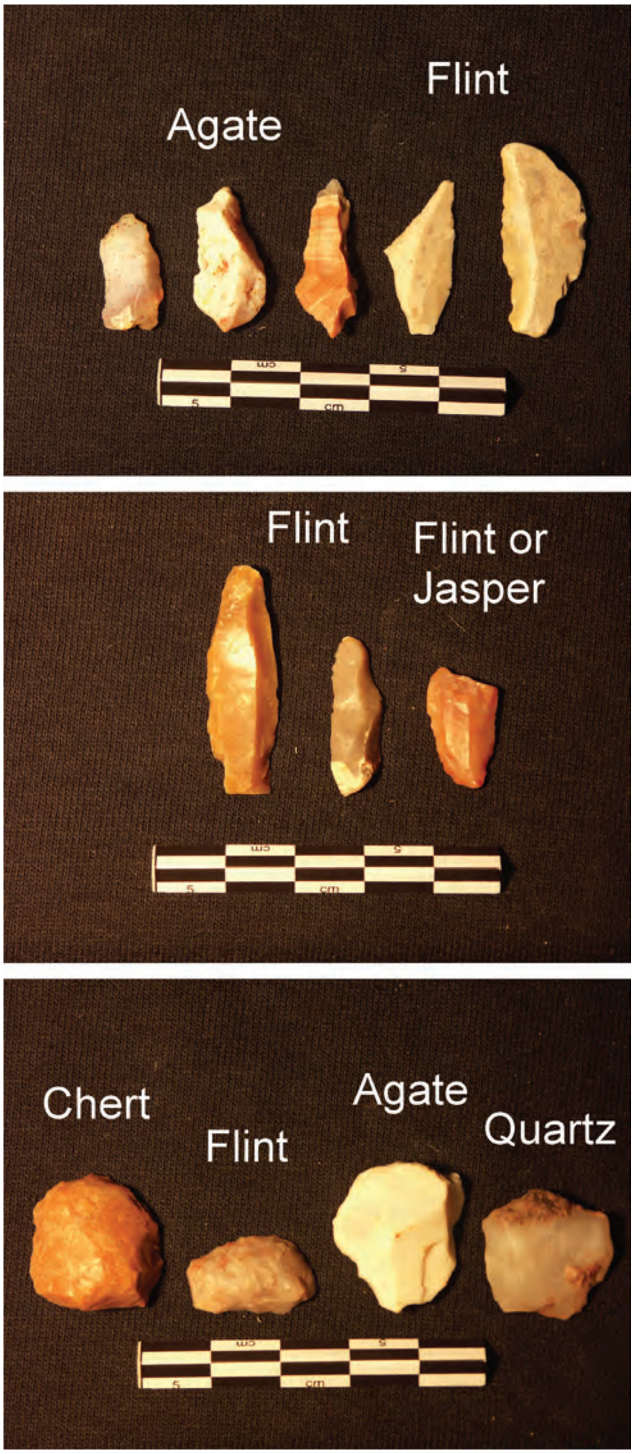



*Figure 4.11. A selection of Late Mesolithic microliths and scrapers made from different raw materials collected by fieldwalking during the Till-Tweed survey.*

## Other materials

Typically there are very few remains other than stone tools surviving from this period within Northumberland. No waterlogged sites have yet been identified within the study area, apart from the intertidal and submerged forest beds which have been known for many years at various locations on the shoreline, including those visible at Druridge Bay and Creswell, those previously reported at Newbiggin, Lyne Burn, Howick Burn and Amble (Raistrick and Blackburn 1932) and the recently discovered footprints and worked timber in the intertidal peat at Low Hauxley (Fig. 4.12; see also Burn 2010). Some palaeoenvironmental work has been undertaken on the Druridge Bay sediments (Frank 1982; Innes and Frank 1988; Drury *et al*. 1995; Burn 2010), however, despite the potential demonstrated by the recovery of Mesolithic material on similar land surfaces

*Figure 4.12. Human and animal footprints discovered within an intertidal peat at Low Hauxley, together with worked timber; the peat dates to the Late Mesolithic* c. *5330–4990 cal BC.*

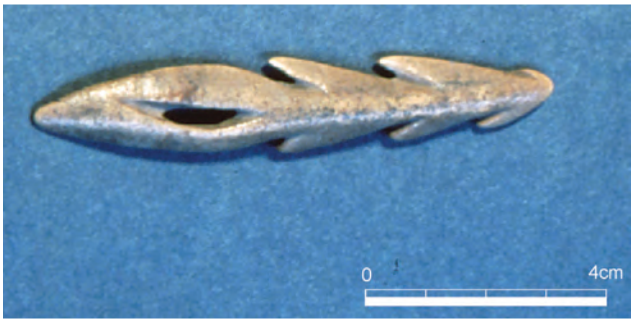



*Figure 4.13. The biserial bone harpoon from Whitburn where it was discovered washed up on the beach.*

further south at Hartlepool (Waughman *et al.* 2005), none of these deposits has been formally examined archaeologically. Occasional organic finds are washed on to the shore such as the biserial bone harpoon discovered on the County Durham coast at Whitburn (Fig. 4.13; Mellars 1970).

The Howick excavation and the worked timber remains from the intertidal peat at Low Hauxley have revealed the ability of the early hunter-gatherer-fishers to work and build with timber, whilst the residue analysis on some of the stone implements testifies to the processing of plants and other organic materials (Hardy and Shiel 2007). Unusually there was also evidence for the deliberate collection of copper-bearing rock at the site (Waddington 2007a, 46) and the identification of copper residue on a microlith suggests the material was perhaps being processed on the site (Hardy and Shiel 2007, 123), perhaps as use for pigment or dye. The nearest known source where copper occurs is within outcrops of volcanic rocks in the Cheviot Hills some 24km due west of the site where it can be found as secondary mineralisation (Carruthers *et al*. 1932). Attributing the Cheviot Hills as the source may however be misleading as the copper occurred as secondary mineralisation on small pieces of sedimentary sandstone rock indicating that it was probably collected from the Carboniferous rock strata upon which the site is located. Another material that was very common within the hearth pit fills inside the Howick house was ochre, a material with a multiplicity of uses ranging from pigment, sun block, insect repellent, antiseptic and blood-clotting agent to its use in hide preparation, symbolic deposits and as a fixative in the mastic used to seal joints in skin-covered, light water craft (Clarke and Waddington 2007, 119).

The 'bevelled pebble tool' is a later Mesolithic coarse stone tool that has been found more frequently in recent years in Northumberland, and is specific to narrow-blade microlith sites. A full discussion of bevelled pebble tools is contained in the Howick volume (Clarke and Waddington 2007, 110–19; Waddington *et al*. 2007, 193–96) and so it will suffice to say here that a connection with processing seal skins was suggested. This suggestion was made on the basis of their association with hearths that contained seal bone, and the fact that wax, oil or fat residue was identified on the working edge of the one sample examined (Hardy and Shiel 2007, 125). These tools also occur mainly in coastal locations, and typically adjacent to seal rookeries. The importance of seal skins was perhaps considerable to coastal communities who not only needed such furs to stay warm, but perhaps also to make skin boats. The presence of ochre in many of the hearths at Howick could have resulted from its use in a range of activities (see above) but the possibility that it was used as a caulking material for skin boats, as has been recorded for the American Chumash tribe (Cassidy *et al*. 2004), could provide a link with the bevelled pebble tools and seal bone found in the same hearth pits.

## SUBSISTENCE

The emergence of a near-complete and varied broad-leaf forest cover across the Mesolithic landscapes of Northumberland was accompanied by a diversity of flora and fauna that will have provided a markedly richer variety of potential foodstuffs than those available to any Palaeolithic groups in the region. These included freshwater and saltwater fish and a wider range of mammals, including red deer, roe deer, aurochs, fox, pine-marten, wild cat, boar, beaver and badger, as well as many more bird species and plant foods. At the same time, animals such as elk and horse, ill-suited to the warm wooded environment, disappeared. Archaeologists have traditionally seen Mesolithic groups as being largely dependent on hunting in the forest, particularly of deer, but also with some gathered resources such as nuts and berries to broaden the diet. However, this model is probably an inaccurate generalisation that fails to account for the wide range of choices available to groups living in different environmental settings, as well as the changing availability of a wide range of foods throughout the year.

The diet of Britain's late Stone Age hunter-gatherers was probably rich and varied although recent studies of stable isotope measurements from human skeletal remains from the period tend to show marked differences between different human groups. Some relied heavily on a marine diet for their principal source of protein and other groups relied on terrestrial meat. The stable isotope values for a Mesolithic female dated to *c*. 5740–5630 cal BC, recently discovered in an old channel belt of the river Trent at Staythorpe, revealed her to have been almost totally reliant on terrestrial meat for her diet (Davies *et al*. 2001), whilst the Caldey Island inhabitants relied on a marine diet (Schulting and Richards 2002a), as did the Late Mesolithic fisher groups at the Obanian sites in western Scotland (Schulting and Richards 2002b).

In Northumberland there is emerging evidence to suggest that marine resources were an important source of food for the early, narrow-blade, Mesolithic groups. At Howick, grey seal phalanges were recovered from within the hearth pits, testifying to the predation on this easily taken marine mammal which, even today, can be found on the rock steels of the foreshore. Further south, but still in Northumberland, a midden site was discovered at Low Hauxley (Bonsall 1984), eroding out of the cliff during high tides. Investigations at the site revealed a deposit of shell remains associated with charcoal and flint. This heap of refuse provided evidence for the collection of shellfish, which could have been consumed and/or used as bait, as well as fish and mammal remains. Fish bones have very limited chances of survival on archaeological sites and so waterlogged sites, or calcareous middens, provide the best opportunities for discovering such evidence. As the coast has been eroded, the midden sites that probably dotted the Mesolithic shoreline have, by and large, been destroyed. Direct evidence for sea fishing, however, is provided by the harpoon point from Whitburn mentioned above (Mellars 1970).

The coast was an extremely rich environment with access to fish, shellfish, seaweed, fowl, nesting birds and seals, as well as being in reach of land-based fauna such as deer, wild pig and wild cattle, and many plant foods such as nuts, berries, fruits and a range of green leafy plants, the latter abundant in wetland and riparian habitats. Rock carvings in Spain include images of people obtaining honey (Dams and Dams 1977), and this must have formed one of the most highly prized foods in the Mesolithic as there were few other sweet foods, other than fruit, available at this time. To take full advantage of coastal resources, however, requires specialist knowledge. The coast would, therefore, make an ideal place to stay over the long winter months when food was harder to come by. The site at Howick revealed evidence for the gathering of hazelnuts on a massive scale as well as the taking of wild pig, fox, birds and grey seal. The bones of either a wolf or domesticated dog were also found, the latter drawing a possible parallel with Star Carr (Clark 1972). This range of mammals includes very different types of creature, implying some were caught for their pelts while others were taken for their meat, skins or even feathers. The occasional shell was found in the archaeological sediments, hinting at the exploitation of shellfish on the nearby rocky shore. The absence of deer bones from Howick is at first sight puzzling. However, if this was the home of a group-oriented around a marine-based economy it is not beyond the realms of possibility that there may have been an intentional avoidance of deer, perhaps because of its association with the forests and inland groups, such as those who inhabited Star Carr (Clark 1972) several hundred years earlier. Alternatively, it may be that few deer strayed into areas close to the coastline around Howick.

Inland, hunting and gathering activities will have taken Mesolithic groups into the deep forests of the valley floors and uplands, including, perhaps especially, localised openings and thinned areas of the woodland canopy. There remains considerable debate as to whether these clearances were deliberately instigated or rather exploited (and possibly manipulated) on an opportunistic basis following natural disturbance (see discussion above). Hazelnuts, ever present on Mesolithic sites, have been recovered from the site at Howick at a scale that should alert us to the possibility of organised manipulation of woodlands to favour proliferation of hazel, even if the palaeoecological evidence for such purposeful activity remains equivocal (see above and Chapter 2). Evidence from lithic scatters would suggest that Mesolithic peoples penetrated into upland parts of Northumberland (see below), including perhaps the deeper valleys and summits of the Cheviots (*contra* Tipping 2010), and we know they had the tools with which to manipulate woodland (see above) should they have chosen to do so. Regardless of their mode of origin, however, there is little doubt that openings in the forest canopy would have promoted the flourishing of grasses, shrubs and herbaceous taxa that in turn would have served to attract foraging and grazing herbivores, thereby facilitating predictable hunting opportunities while also promoting the growth of hazel and other potential plant-food resources. Furthermore, in drawing attention to the lengthy timescales over which some forest openings persisted (some 1500 years at Sourhope, for example), Tipping (2010) reminds us that these areas are likely to have constituted a significant place in the landscape for many dozens of successive generations. Indeed, their significance may have extended beyond that of mere food procurement into the social and cultural realm, echoing the recent attention paid to the Mesolithic experience of 'wildwood' and the possibility that woodland clearances were being made, maintained or exploited as buffer zones, pathways or other non-resource-related purposes (see Davies *et al*. 2005 and references therein). Furthermore, Waddington has pointed out the possibility that the rock art that occurs in clusters on outcropping bedrock surfaces may have been positioned in these places because they had formed longstanding clearances within the woodland cover (Waddington 1998; 200), and such areas would have attracted browsing and grazing animals over many generations. As the dating of the first carving on outcropping bedrock has not yet been resolved, although it undoubtedly goes back as far as the late fourth millennium cal BC, it is still not clear whether we are dealing with a very Late Mesolithic or Early Neolithic phenomenon.

## SETTLEMENT AND ECONOMIC ORGANISATION

### Settlement geography

The pattern of Mesolithic site distribution has been referred to in general terms in Volume 1 of this study (Chapter 3). Here, the locations of Mesolithic flint scatters are considered in more detail. Dealing first with the Early Mesolithic finds it is apparent that during this period groups focused their activities close to freshwater sources and along the main river valleys (Fig. 4.14). Within the Tweed valley, Early Mesolithic material was recovered from bluffs above the river, as for example at Norham (Volume 1, Field 54) and on the crest of a drumlin at Whidden Hill (Volume 1, Field 39), while in the Till valley an area of sand and gravel terrace, next to an early Post Glacial palaeochannel immediately south of Milfield village, hosts an early lithic scatter. Other locales where Early Mesolithic material occurs include the low Cheviot slopes that fringe the Milfield Basin, such as at Whitton Hill, as well as the fluvioglacial sand and gravel terraces, such as those to the north of Milfield village, and the ponds and wetlands formed in kettle hole features, such as those developed on the ice-contact meltwater sands and gravels at New Bewick (Volume 1, Fig. 3.7). To the east of the Till a small agate scraper (Fig. 4.15) and obliquely snapped blade (Fig. 4.16) were found in Kimmerston Bog, which formed an area of wetland during the Early Holocene. The tranchet axehead (Fig. 4.10) was found above the course of the Broomridgedean Burn that occupies a small tributary valley which provides access from the Milfield Basin to a low point on the sandstone escarpment. It may testify to the use of this natural routeway from such early times.

The sandstone escarpment, to which the Broomridgedean Burn leads, commands a direct view to the coast from the top of Goatscrag. It also provides wide vistas over the Milfield Basin to the Cheviot Hills beyond. The rock outcrops of this escarpment evidently provided a useful strategic location from where the movement of animals and human groups could be monitored, whilst also providing for rapid and direct access to the centre of the Milfield Basin or over to the coast which lies just 16km distant at this point. A similar pattern can be observed elsewhere in the region, with Early Mesolithic material recognised on sandstone outcrops at Sheddon's Hill near Gateshead (Coupland 1925; Weyman 1984, 45–6) and Salter's Nick in mid-Northumberland (Davies pers. comm.). In summary, the locales favoured for Early Mesolithic activity include free-draining, dry ground close to water bodies in the lowlands as well as around wetlands such as Kimmerston Bog, palaeochannel belts, carr lands and kettle holes. On the higher ground the rock outcrops with good shelter and wide vistas were also attractive for what were presumably smaller logistical camps. Travel between the upland and lowland appears to have been via small tributary valleys.

As part of this study the entire lithic collection held by the Museum of Antiquities in Newcastle was inspected by Waddington. Given that the coast has been the favoured survey area for most previous lithic specialists, the rarity of Early Mesolithic pieces

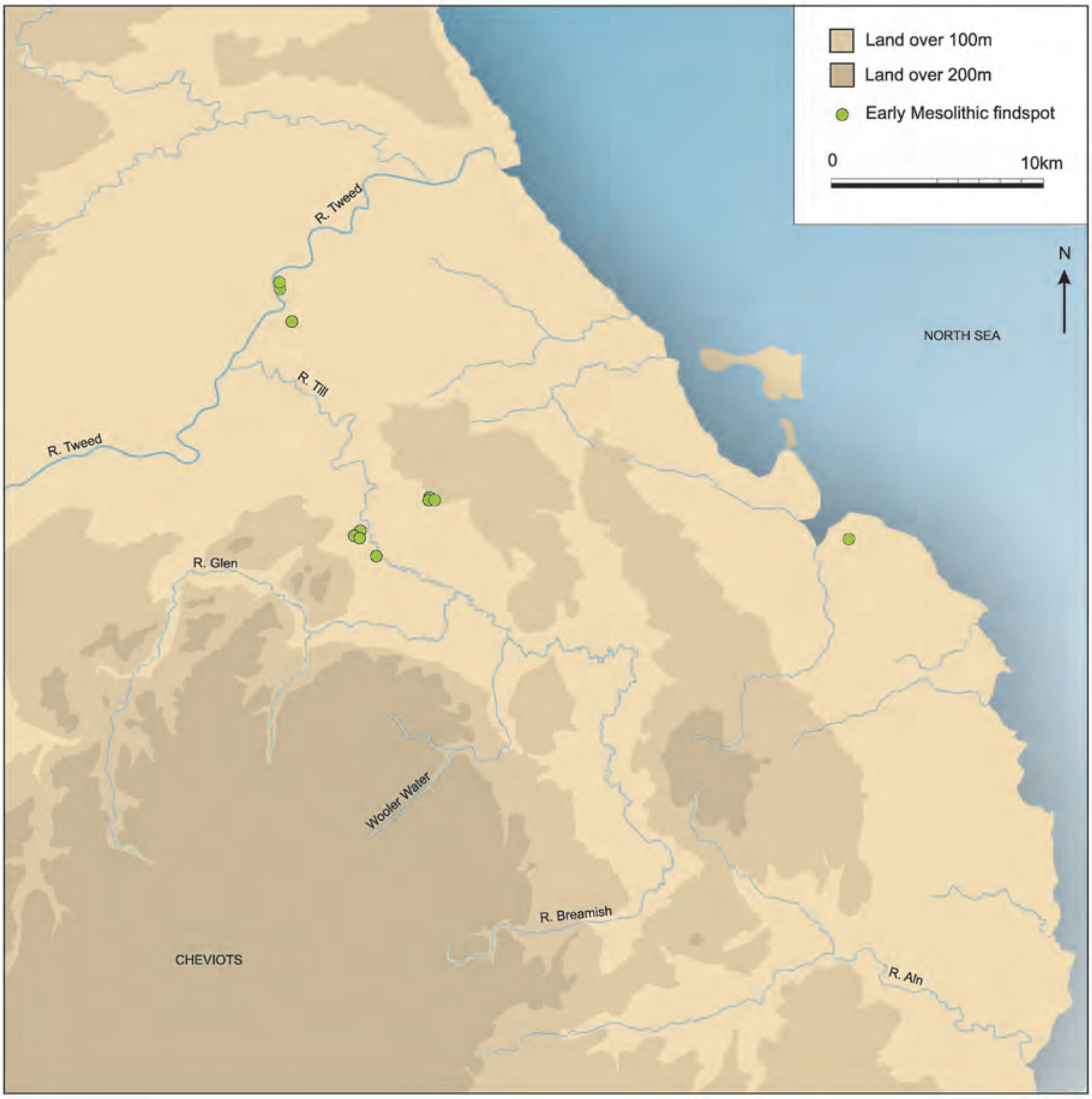



*Figure 4.14. The distribution of Early Mesolithic lithic findspots in North Northmberland.*

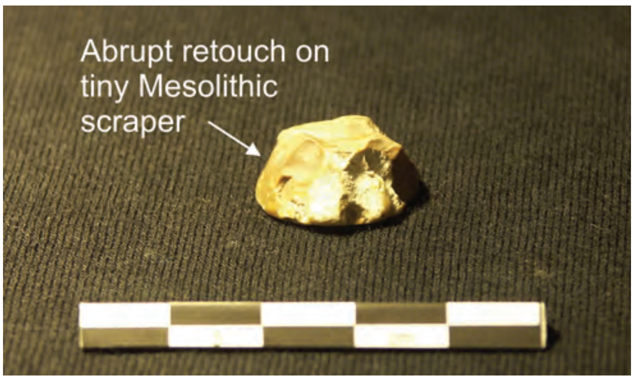



*Figure 4.15. A tiny agate scraper made from a thick blade with abrupt retouch picked up from the ploughed surface of the relict wetland in the Milfield Basin known as Kimmerston Bog.*


*Figure 4.16. An obliquely snapped blade also picked up from the relict wetland of Kimmerston Bog.*

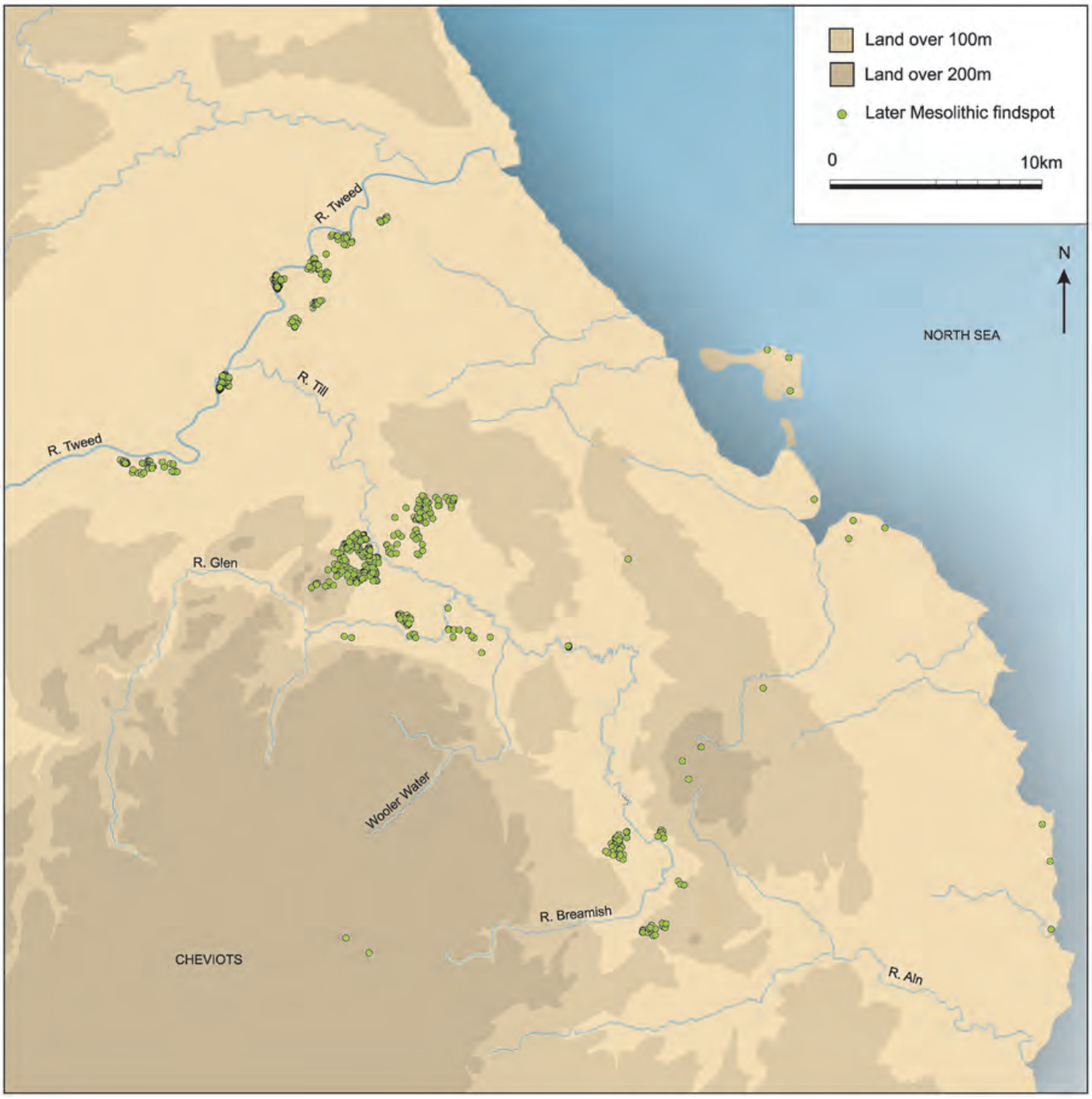



*Figure 4.17. The distribution of Late Mesolithic lithic findspots in North Northmberland.*

in these assemblages is notable. The only coastal assemblage where Early Mesolithic material could be identified included one obliquely blunted microlith from Buckley's excavated collection from Spindlestone (Buckley 1925; Waddington 2004, 79). This suggests that the coast was not a particularly favoured area during the cold of the Early Holocene. Indeed, this lack of movement between inland areas and the coast, and the lack of evidence for the use of coastal resources in the Early Mesolithic have been remarked upon before (e.g. Tolan-Smith 2008, 146). Occasional sites are known elsewhere in Britain, such as the Nab Head in Dyfed (David 1989), although this site's dating to the final part of the ninth millennium cal BC means that its use overlapped with the beginning of the Late Mesolithic, as defined by the first occurrence of narrow-blade microliths.

The lithic evidence for the Late Mesolithic is far more abundant than that for the Early Mesolithic. Despite the Late Mesolithic extending over a significantly longer period, the vastly larger volumes of Late Mesolithic material, and its presence across virtually all landscape niches implies there was widespread infilling of the landscape (Fig. 4.17). This is thought to have resulted in higher population densities, a point that has been previously advocated by Tolan-Smith (1998). However, climatic perturbations, such as that recognised in northern Scotland and elsewhere by Tipping and Tisdall (2004) in the terminal Mesolithic (see also Tipping 2010, 163 and Chapter 2 this volume), could have led to periods of population decline as well. Therefore, it is probably too simplistic to view the Late Mesolithic as a period where population change followed an ever expanding trajectory, but rather we should view it as one where oscillations in human population numbers occurred, though this is likely to have been within the context of a general upward trend.

The coast can be singled out as a key focus for later Mesolithic, narrow-blade occupation, with many findspots recorded along the length of the Northumberland coastline. Particular concentrations of material can be noted around Ross Links (Buckley 1925) and the intertidal flats of Budle Bay (Buckley 1923), the coastline crags at Spindlestone (Buckley 1925), Budle, Bamburgh and Craster (Buckley 1922a; 1922b; 1925), the estuarine sites at Howick (Waddington 2007a), Lynemouth and Newbiggin as well as discoveries at several places on Holy Island (Young 2007; Waddington 2004, 73). The assemblage compositions vary between these different sites, with a wide range of tools of all kinds evident at longer-term residential sites such as Howick, but with much smaller assemblages and a limited range of material at the crag sites, for example. This pattern is reflected on a wider scale when the south-east Scottish coastal sites are considered. Here, task-specific sites have been excavated on the coast at Morton (Coles 1971; 1983), Fife Ness (Wickham-Jones and Dalland 1998) and Cramond (Saville 2004), whilst a longer-term occupation site, directly analogous to Howick, has been excavated at East Barns (Gooder 2007).

The distribution map (Fig 4.16) reveals much greater infilling of the landscape in terms of the areas exploited during the course of the Late Mesolithic. Inland, the sand and gravel terraces within the river valleys form a particular focus for activity, with the site at St Cuthbert's Farm in the lower Tweed valley providing the highest concentration of later Mesolithic material recovered by fieldwalking anywhere in the study area (see Volume 1, 102–5). This could, perhaps, reflect the presence of a similar type of residential site to that at Howick. This site occupies a raised bluff immediately overlooking the River Tweed with easy water craft access downstream to the coast or further inland by way of the Tweed, or the important tributary rivers of the Whiteadder and Blackadder to the north, or the Till to the south. The regular clusters of Mesolithic material identified during this survey of the lower Tweed valley, as well as Mulholland's (1970) earlier survey of the upper Tweed, clearly identify this river as a major routeway for Mesolithic groups as well as an attractive area for settlement in its own right. In this way it should be considered similar to other strategic valleys that provide access deep inland from coastal areas, such as the Tyne, Trent, Thames and Severn.

The Milfield Basin, located at the junction of the Rivers Till and Glen and forming the largest inland lowland basin in North Northumberland, has previously been identified as a strategic settlement locale for later Mesolithic groups (Waddington 1999a; 2005). Late Glacial sand and gravel river terraces here have produced evidence in most areas for later Mesolithic activity, including, for example, low-lying Late Glacial fan deposits near Akeld (Volume 1, 94–6) and those adjacent to Holocene valley floor wetland environments described by Tipping (1998; 2010). The areas of heavy clays and the flood-prone areas of the Holocene alluvial valley floor appear to have been avoided for settlement, but the presence of later Mesolithic material on the low gravel terraces adjacent to the Holocene floodplains suggests that these wetlands formed locales around which other types of economic activity took place (see also Chapter 2). On higher-elevation Late Glacial terraces and hummocky sand and gravel deposits the importance of more localised wetlands, formed within kettle hole features, has already been mentioned for the Early Mesolithic and these sites show no sign of being any less important during the later period.

The relatively high lithic counts from fieldwalking in the Cheviot foothills and the sandstone escarpment (Waddington 1999a) show the significance of these areas for later Mesolithic groups who appear to have been using these upland locales in the course of their wider economic routines, presumably as short-stay logistical camps for hunting and foraging expeditions. The various sandstone rock shelter sites occupy a strategic location between the riparian and valley floor habitats around the Milfield Basin and the rich resources of the coast. Furthermore, they occupy locally steep crags and bluffs where thinner tree cover would have permitted good views across the valleys and escarpments and, in the case of the rock shelter sites at Goatscrag and Dove Crag, proximity to the openings in the forest canopy between *c*. 6000 and 5500 cal BC around Ford Moss (Chapter 2). Open lithic scatter sites also occur in the uplands of the region and these are, typically, located close to springs and often command wide views. Mesolithic activity has been confirmed within the Cheviot massif, an area where until relatively recently no Mesolithic material had been recovered (Burgess 1984). Mesolithic material has been found in lithic scatters extending up to the 250m contour in the Cheviot foothills (Waddington 1999a), whilst small amounts of Mesolithic material have been identified during excavations at Kennel Hall Knowe in North Tynedale at *c*. 200m (Jobey 1978), at Turf Knowe in the upper Breamish valley at *c*. 250m (Frodsham and Waddington 2004, 175), and in a small collection of material from Black Stichell Rig within the Otterburn military firing range, which lies above 300m. Other upland sites, also thought to be of a logistical nature, have been discovered at similar altitudes within the Pennines of southern Northumberland as at Birkside Fell, for example, where a Mesolithic flint scatter has been found eroding from the exposed peat at 380m (Tolan-Smith 2005).

Whether coastal or inland, the later Mesolithic sites tend to be located close to fresh water. In the case of Howick the building was located above the mouth of the Howick Burn, whilst the upland sites around the Milfield Basin are usually clustered not far from stream courses or springs. The exceptions to this are the rock shelter sites that are in elevated locations overlooking narrow valleys that contain streams, but even these are usually only several hundred metres from the nearest water course.

## Settlement form

Although relatively few formal Late Mesolithic settlements are known in the region, the picture that is emerging is one of considerable variety in site form and settlement construction. At one end of the continuum we have evidence for a longstanding residential base at Howick, which was used for "100 to 300 years at 68% probability" (Bayliss *et al*. 2007, 71), albeit not necessarily for continuous occupation, whilst at the other end we have evidence for small, short-stay, logistical camps in the form of a few flints within rock shelter sites. In the case of Goatscrag the associated postholes and gullies could suggest an elaborate rock shelter with a formal built structure, but we cannot be certain as these features may belong to the period of Bronze Age funerary activity also evidenced on the site (see Burgess 1972). The Howick building was a well made, robust structure with substantial timbers to support heavy roofing material, perhaps turf. The structure, with a floor space of *c*. 30 square metres, is ideally sized to accommodate a family of say six to eight individuals and has been interpreted as a residential base where possibly semi-sedentary occupation occurred (see Fig. 4.18 for different hypothetical models of settlement and economic organisation at Howick). This contrasts with the open sites and rock shelter sites which can be found in upland, coastal, hillside and valley floor locations, which have low numbers of lithics and are here thought to typically reflect short-stay logistical camps for small task groups drawn from one or more residential bases. Other types of specialised extraction site can be identified, such as the wetland margin sites mentioned above and a shell midden site at Low Hauxley (Bonsall 1984; Drury *et al*. 1995), although so far no structural evidence has been found at these sites to compare with those identified further north at Morton (Coles 1971; 1983).

In summary, the range of settlements appears to fall into three basic categories: residential home bases for semi-permanent or seasonal settlement, logistical camps and specialist extraction sites, although we must assume that a fourth category existed: aggregation sites, as dispersed groups have to meet at regular intervals for socio-economic and political reasons. The residential home base at Howick has been shown to have been used over several generations, demonstrating the attachment of what was, presumably, the same kinship group to a specific place. Being anchored to a specific place must have created a powerful sense of belonging which, in turn, must have contributed to the group's sense of identity and rights of access to surrounding resources. This window of detail on a hunter-gatherer-fisher home does, however, pose important questions about how later Mesolithic settlement organisation is viewed in Britain, and it finds support in the structural form and building longevity that has been recognised at East Barns (Gooder 2007) and at Mount Sandel (Woodman 1985; Bayliss and Woodman 2009).

## Patterns of settlement

The traditional view of hunter-gatherer behaviour in Britain characterises groups as leading highly mobile lives, moving around the landscape in order to take advantage of seasonal abundance in different places. As a result, hunter-gatherers are usually thought to have lived a highly mobile existence (e.g. Clark 1972; Rowley-Conwy 1995; Donahue and Lovis 2006), using lightly built, mobile shelters and following herds of deer between lowland base camps and upland logistical camps. This persistent view is ultimately based on the work of authors such as Clark who linked human patterns of residence to the annual movements of red deer. This was reinforced by later scholars who drew analogies with modern hunter-gatherer groups from mid-temperate latitudes in America (e.g. Binford 1980). Such views have led some to argue for increasingly extensive settlement organisation throughout the Mesolithic based around a system of long-distance logistic mobility (Donahue and Lovis 2006). It is considered here that long-distance logistic mobility would have been a viable adaptation to the cold Post Glacial environment in Britain where resources were widely spaced and unevenly distributed across the landscape (see hypothetical model of Early Mesolithic settlement organisation Fig. 4.19). The model proposed here works in a similar way to that proposed by Donahue and Lovis (2006) whereby residential bases are situated in lowland settings near to fresh water with long-range logistical camps up to as much as 100km distant, together with specialised camps for the taking of specific resources. Residency would be seasonal and groups could be expected to come together at aggregation locales at certain times of the year. Such a model does not, however, lend itself to much of the rest of the Mesolithic period, during which diverse and abundant landscape niches developed in close proximity to each other and a hugely productive, and lengthening, coastline emerged (due to Britain's coastline becoming increasingly indented leading to the eventual creation of Britain as an island). Moreover, as will be argued below, important cultural changes may also have affected later settlement

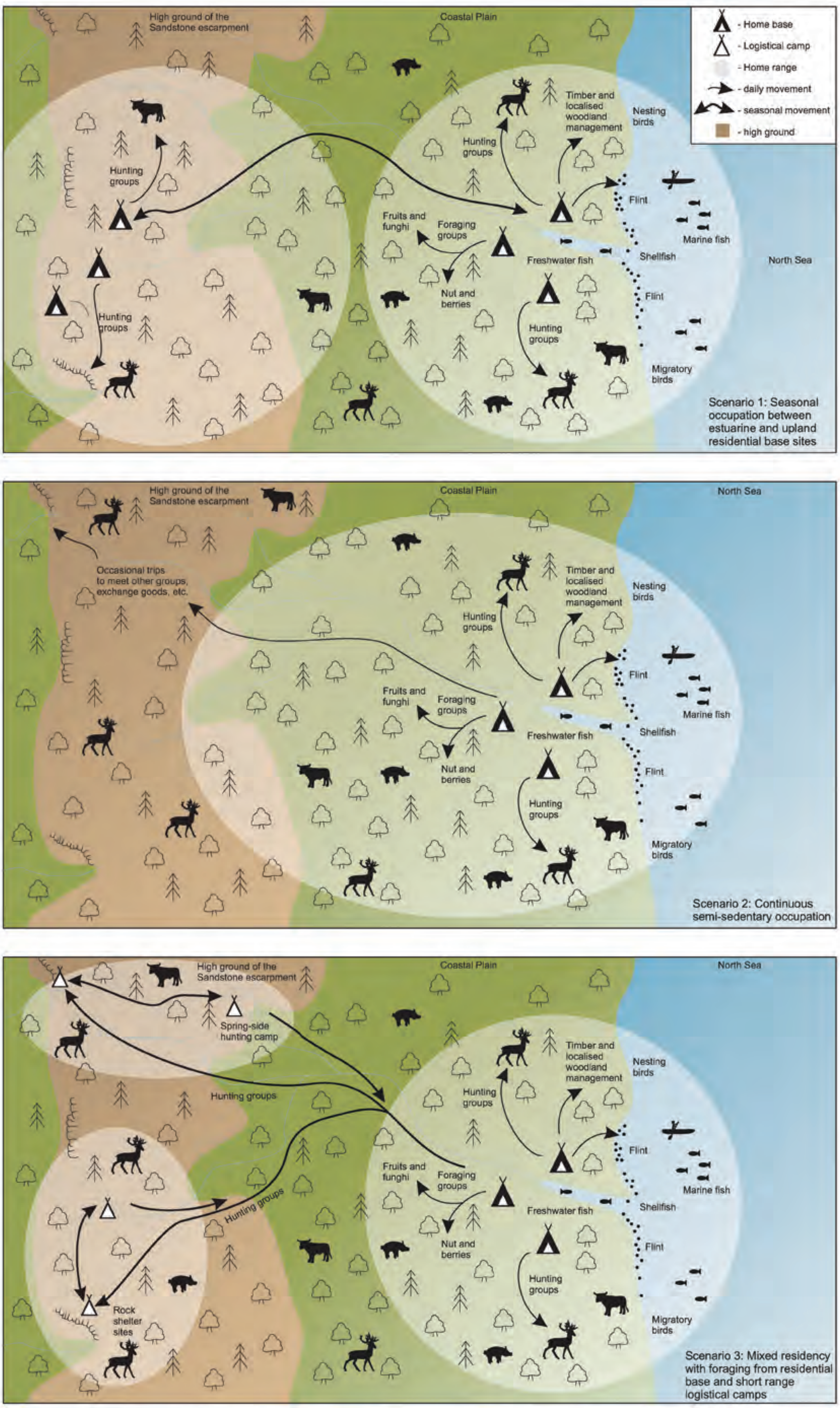



*Figure 4.18. Hypothetical models showing different types of settlement organisation that could be inferred for the residential base recently excavated at Howick on the Northumberland coast (see also Waddington 2007).*

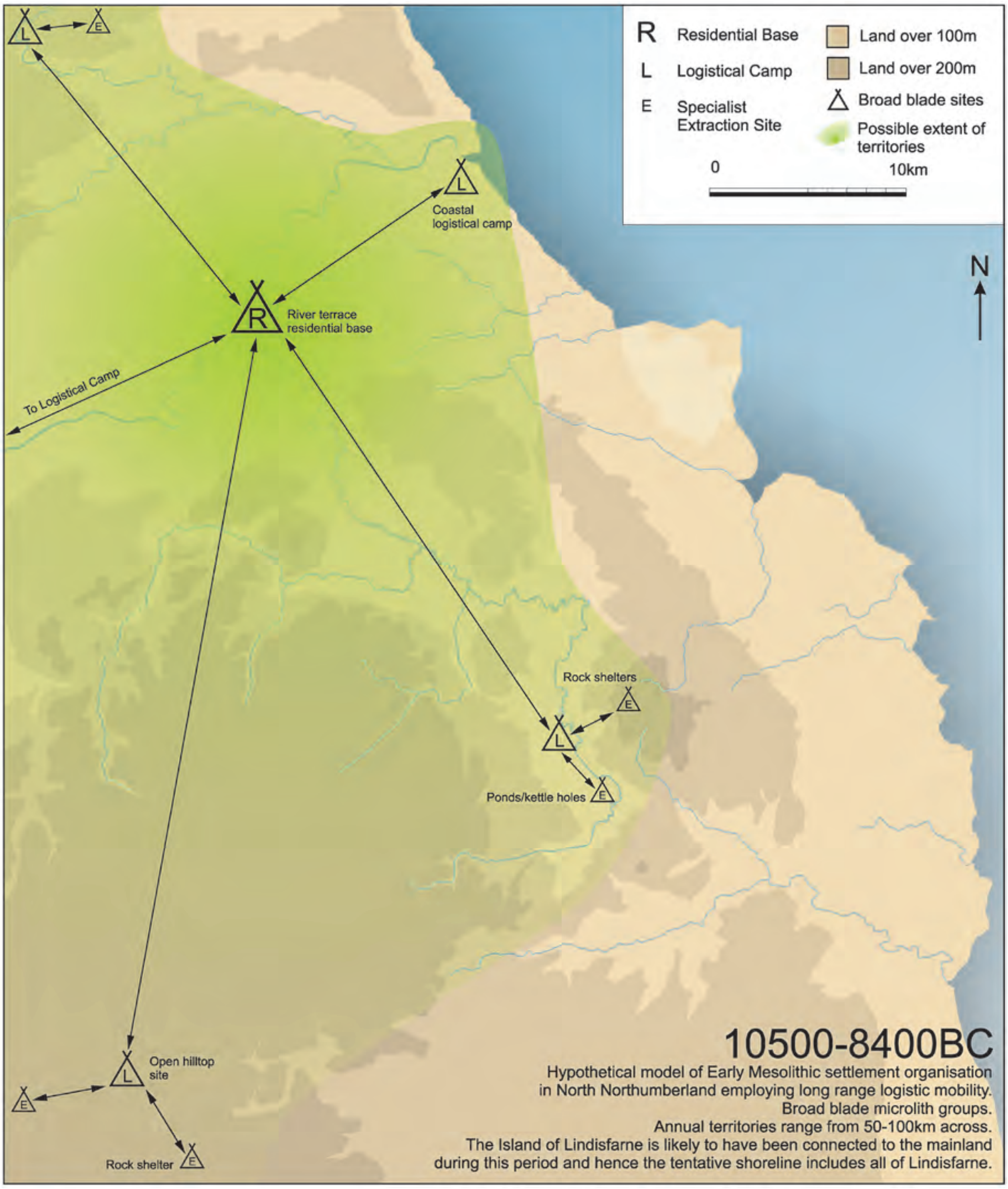



*Figure 4.19. A hypothetical model of Early Mesolithic settlement and economic organisation in north Northumberland.*

and economic organisation. In these vastly changed environmental and climatic circumstances, different models, which take account of regional variability, need to be developed and tested.

## A secondary colonisation of Britain?

When the earliest securely dated narrow-blade sites are put in chronological sequence, a clear trend can be observed (see Fig. 4.20 and also Waddington *et al*. 2007 for recent recalibration and Bayesian modelling of all the reliable overlapping dates for broad-blade and narrow-blade sites in the British Isles). On present evidence, the narrow-blade sites first appear in north-east Britain *c*. 8400 cal BC on the western shore of the North Sea Basin (e.g. Cramond). By *c*. 8000 cal BC they appear to be widespread along this coastline (e.g. East Barns, Howick), even reaching north Wales, perhaps via the northern seaways, as implied by the site at Prestatyn (see also David and Walker 2004). The single early date from Daer Reservoir, an inland


1 Broomhead Moor 5
2 Broomhill
3 Broxbourne 5
4 Caldey Island sites
5 Castleroe
6 Cramond
7 Daer Resevoir
8 East Barns
9 Filpoke Beacon
10 Howick
11 Kinloch
12 Lough Boora
13 Mount Sandel
14 Prestatyn
15 Warcock Hill 3
16 Midross

*Figure 4.20. Map showing the arrival of narrow blade groups around Britain shaded according to their date of arrival with the earliest sites clearly located in North East Britain. The arrows show the direction of spread based on the currently available radiocarbon dates (see also Waddington 2007). Only the earliest narrow-blade sites are included to avoid cluttering the map with slightly later dated narrow-blade sites which would otherwise just 'infill' the already colonised coastlines and areas of the interior of Britain and Ireland.*

high-altitude site in South Lanarkshire, is not included in this analysis as the site has also produced a later date suggesting mixed deposits, and publication is still awaited. By *c.* 7600, narrow-blade sites had spread north (e.g. Fife Ness), west (e.g. Kinloch) and south (e.g. Filpoke Beacon) from the early North-East British sites, and had also reached Ireland (e.g. Mount Sandel) and southern England (e.g. Broom Hill).

On this basis it can be suggested that the narrow-blade techno-complex arrived in Britain, and probably Ireland, by way of human movements around the North Sea Basin at a time of rapid sea level rise and inundation of the North Sea Plain. As groups abandoned low-lying coastal areas prone to inundation by the rising sea, the impetus was created for a new wave of colonisation that appears to have been directed at the north-east British littoral and, presumably, the north-west Scandinavian littoral, although the evidence for the latter has yet to be assessed. The populations represented by this flaking tradition could then have spread from north-east Britain to the rest of what shortly became the British Isles. Spread of the technology appears to have been rapid and, at least in the initial phases, resulted from movement along the seaways of the northern British littoral, and perhaps also along the south coast of Britain (Fig. 4.20). Over the following millennium, narrow-blade sites also become increasingly common inland, including upland locations in the Pennines, as well as along the main river valleys.

The recognition of this pattern has only emerged with the arrival of dates from the newly discovered north-east British sites and the re-dating of Mount Sandel and it contradicts the previously held perception that the spread of narrow blades, and indeed Mesolithic settlement generally, came into northern Britain by way of movement from the land bridge to southern England, then up the west coast and across to Ireland. Instead, a very different scenario can now be put forward with groups displaced from the North Sea Plain pushing up the sparsely inhabited North-East British coast and ultimately beyond to the west coast, Ireland and Wales. If it is accepted that such a movement took place then we may assume that, as the North Sea Plain was inundated at its southern end in what is now the English Channel, groups would also have pushed out along the coast of southern England, and this could explain the relatively early dates for the narrow-blade site at Broom Hill in Hampshire which overlooks the river Test and lies just 13km from its estuary (Fig. 4.20).

## Settlement and economy in the late ninth–eighth millennia cal BC

Contemporary with the arrival of the narrow-blade techno-complex, the climate was in the process of warming significantly, allowing broadleaf woodland to spread across much of Britain and the coast and rivers to become heavily stocked with varieties of fish. Hazel also colonised the British Isles at this time, a process dated to 8300–7800 cal BC (Hibbert and Switsur 1976; Boyd and Dickson 1986; Birks 1989). This has been linked directly to climate change and in particular to a period of aridity (e.g. Linnman 1981; Digerfeldt 1989; Huntley 1993), which has been attested locally in Tipping's study of the Bowmont Valley (Tipping 2010, 153–55). As the climatic optimum was reached during Middle Holocene times, Britain would have teemed with life, providing large and diverse quantities of resources over relatively short distances, and raw material use appears to be, in general, highly localised.

The narrow-blade coastal groups probably practised only short-range mobility from their coastal residential bases to nearby uplands (see hypothetical model of early narrow-blade, or 'middle', Mesolithic settlement organisation Fig. 4.21) whilst long-distance sea travel may have been common. Small, specialist logistical camps appear to have been employed for short-lived forays to other resource-rich terrestrial locales on the coastline, as well as into the immediate range of hills formed by the sandstone escarpment. The river valleys were probably the main routeways. Duration of occupation at residential bases could have been seasonal, or, in locales with a sufficient wealth of resources, potentially year round.

At the same time broad-blade groups, employing a different long-range mobility strategy, may have continued to occupy inland areas. In those areas where these different groups came into contact, such as at estuaries or other nodal points on the coast, this may have led to competition over resources and/or rights of access and control, which in turn could have created the need for expressions of territorial rights. Either way, the proximity of these groups must have led to social tensions even if these could be resolved peacefully and for mutual benefit. In such socio-economic circumstances the 'permanent' nature of the Howick house, and for that matter the houses at East Barns and Mount Sandel, could be interpreted as expressions of territoriality (see also Waddington 2007a, 197). The relative lack of interest in the coast among broad-blade groups has already been noted and it is just possible that northern Britain, with its very low density of broad-blade groups, provided a relatively empty coastline for displaced groups from the North Sea Plain to colonise. Such a scenario could account for the rapid spread of narrow-blade coastal settlements discussed above. Whatever the mechanisms involved, it is clear that broad-blade microlith use disappeared by around 7000 cal BC (Waddington 2007a, Figure 15.19). From around this time, narrow-blade assemblages are found all across inland Britain as well as in coastal locations. This infilling of the British landscape by hunter-gatherer-fisher groups is likely to have given

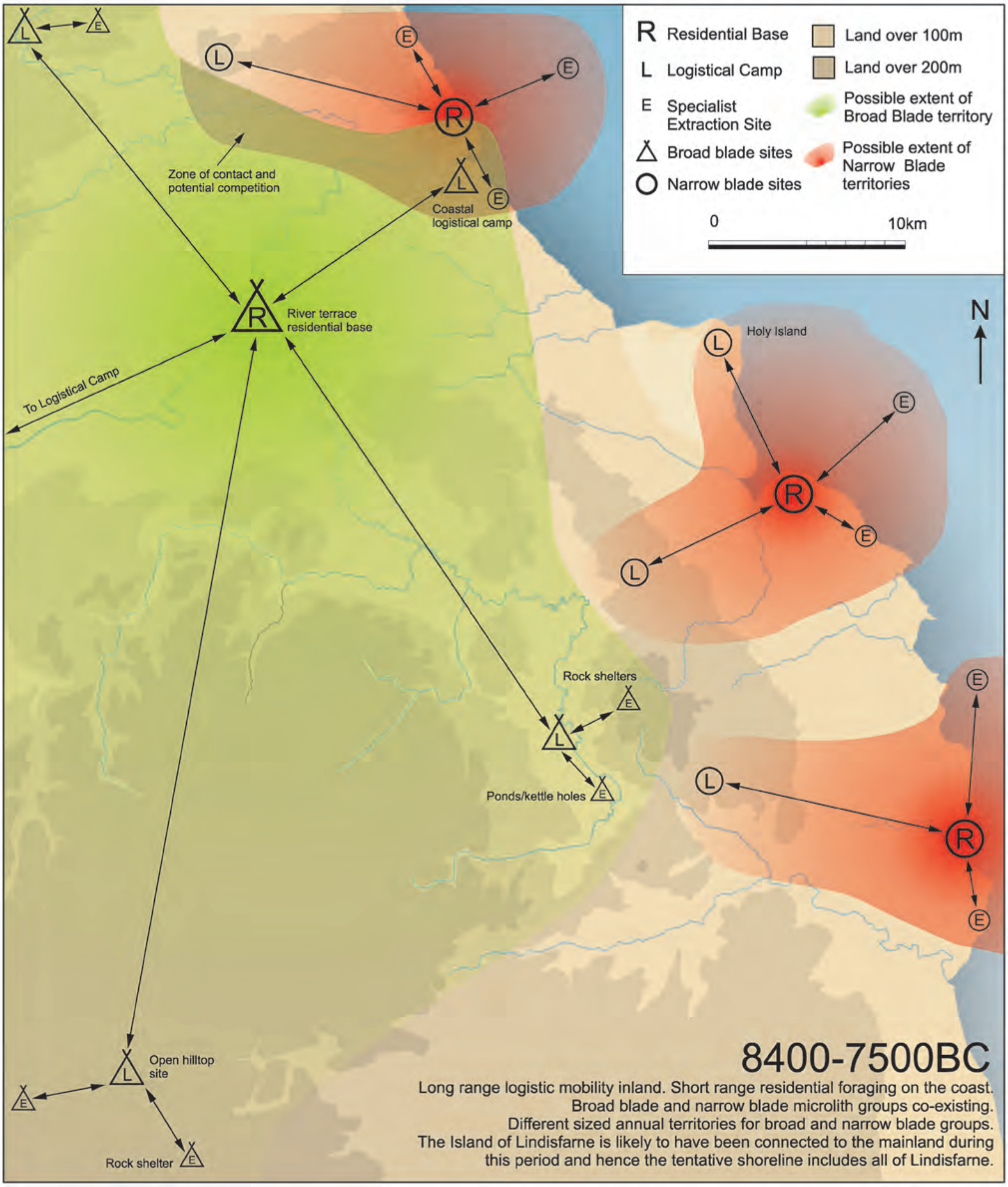



*Figure 4.21. A hypothetical model of early narrow-blade (or Middle Mesolithic) settlement and economic organisation in North Northumberland.*

rise to a multiplicity of settlement and economic strategies, with groups moving into new types of landscapes with widely varying potential for the way in which they were used and exploited. For example, the economic routines of groups occupying the inner Hebridean islands and adjacent coasts of mainland Britain were no doubt very different to those based in Pennine valleys or those of the chalk downs further south.

In the case of North Northumberland, the spread of narrow-blade sites inland appears to have taken place along the arterial route provided by the Tweed and its tributaries (see hypothetical model of Late Mesolithic settlement organisation Fig. 4.22) and a similar pattern can be identified for the Tyne (Tolan-Smith 1997) and the Wear (Young 1987) further south. These river valleys would have afforded not only rapid penetration inland, but also the familiarity of water as a means of travel and food procurement, given the apparent spread of these groups from the coast. Once residential bases were established on the bluffs and terraces above these rivers, new patterns of residential foraging from these bases could have been undertaken. As population infilling took place group territories are likely to have contracted, providing relatively small territories, possibly of just a few tens of kilometres around residential bases (see Fig 4.21).

In the settlement model proposed for North Northumberland we envisage territories containing several family units extending for somewhere in the region of 15–30km across on the coast, and perhaps up to 50km across further inland. A similar pattern has recently been observed in South-West Britain by Bell (2007) who, on the basis of raw material distribution, suggests annual home ranges of 30 to 50km and sometimes up to 100km, although he acknowledges that the size of annual territories is bound to vary significantly according to ecological abundance, the distribution of resources, population levels and social factors (Bell 2007, 332).

In another study of South-West Britain, Schulting and Richards (2002a) have identified coastal groups whose subsistence strategy was focused almost entirely on coastal resources year-round, based on their studies of AMS dates and stable and radioactive isotope results, which they view as "arguing strongly against seasonal movements between the coast and interior" (Schulting and Richards 2002a, 1017). Other groups are identified as showing a more balanced consumption of marine and terrestrial resources which could indicate seasonal movements inland. Elsewhere in their study area, the Early Mesolithic group represented by the human remains from Aveline's Hole show a distinctly terrestrial diet with no consumption of marine resources (Schulting and Wysocki 2002). It is clear from these studies that not only did different groups pursue different subsistence strategies but that they also had widely varying geographic annual ranges. This could in part be accounted for on chronological grounds, with the Early Mesolithic broad-blade group buried in Aveline's Hole committed to the exploitation of terrestrial resources whilst the later Mesolithic groups at Caldey Island were reliant on the exploitation of coastal and marine resources. However, variability over short areas is suggested by the results from cave sites on the Gower Peninsula, which lie only 25km from Caldey Island, where one Late Mesolithic human tooth from Foxhole Cave shows no contribution of marine foods to the diet (Schulting and Richards 2002a, 1018). In the case of South-West Britain then, there appears to be emerging evidence for a patchwork of varied settlement and subsistence strategies during the Mesolithic. Some of these could be accounted for on chronological grounds, reflecting changing strategies during the course of the Mesolithic, but in other cases we are dealing with a more complex pattern of potentially contemporaneous groups following different strategies in close proximity to one another.

The fieldwork undertaken as part of this study has shown that as time went on and infilling of the landscape took place, some Late Mesolithic groups occupied the fertile river valleys inland, where they could potentially have lived year-round. In the case of the Milfield area, this inland river basin forms an interface between contrasting geological and landscape settings, which allows access to different resources during the changing seasons of the year. This could include game hunting for forest-dwelling ungulates in the uplands during summer, collection of nuts and berries in the lower-lying forested areas during autumn, and the taking of beasts, such as wild boar, in the more sheltered areas during winter. Furthermore, the rivers that converge in this flood basin would have provided rich stocks of fish, including anadromous species such as salmon and sea trout, as well as beaver, wildfowl, nesting and migratory birds and plant foods. Being situated in the rain shadow of the Cheviot Massif, the basin, like the coast, enjoys a moderate climate, and movement to the coast may have only been required for specialist task groups and not necessarily by the whole community.

## PEOPLING THE LAND

Understanding the Mesolithic population dynamics in the British Isles is complicated by the marked environmental changes that took place between the end of the Late Glacial period and the start of the Neolithic. The view sketched out here is of early broad-blade groups, probably descended from the Late Upper Palaeolithic population, and new narrow-blade groups arriving from 'Doggerland' (the North Sea Plain). If broad-blade Mesolithic groups were descended from Late Upper Palaeolithic groups it could explain the general lack of interest in the coast, as these groups inherited knowledge from populations that were, by tradition, followers of reindeer herds and hunters of large ungulates. This was a knowledge that could be adapted to the new terrestrial flora and fauna of the Post Glacial environment, but less easily to coastal exploitation. Around the end of the ninth millennium cal BC the inundation of the North Sea Plain is thought to have displaced peoples adapted

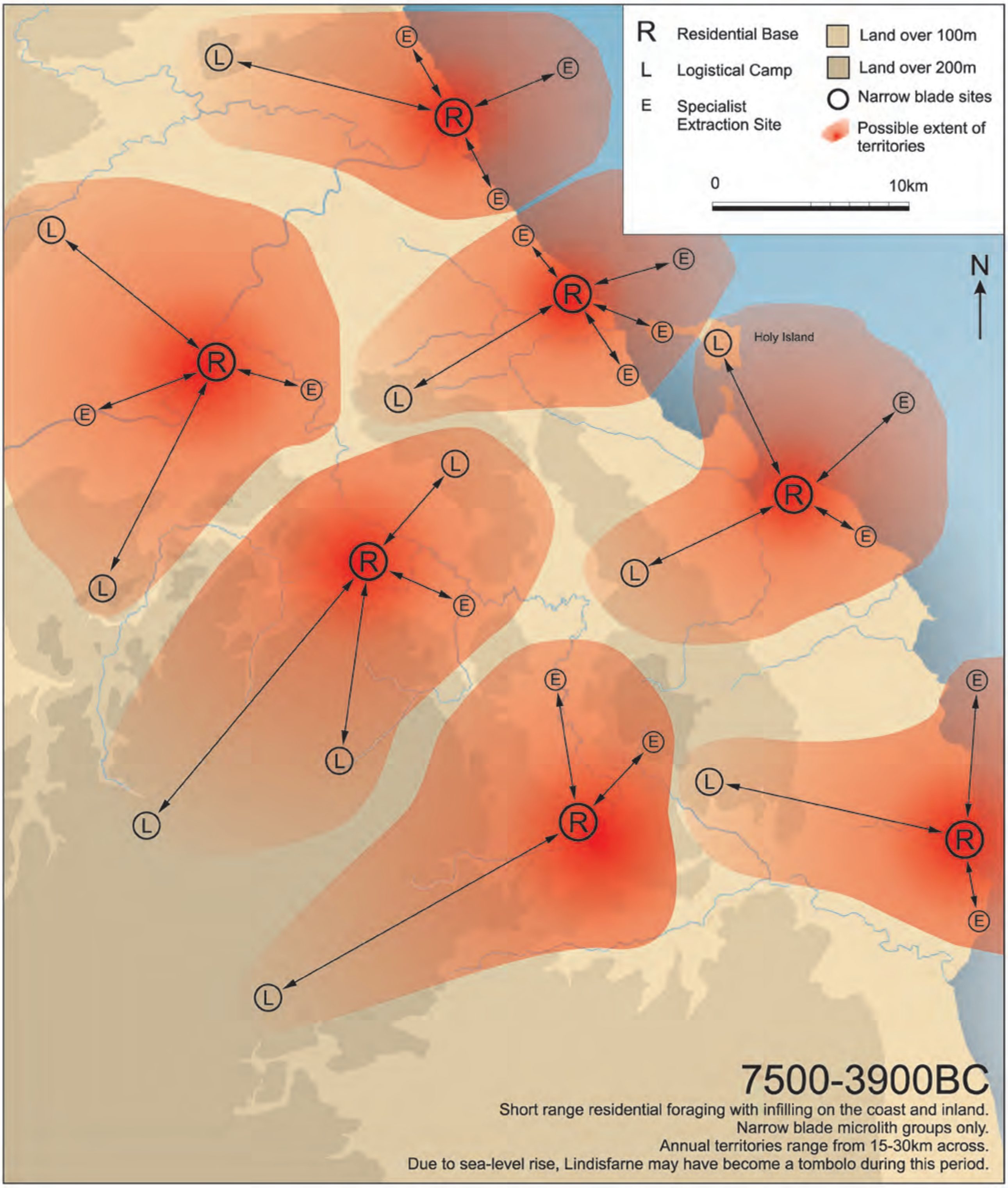



*Figure 4.22. A hypothetical model of Late Mesolithic settlement and economic organisation in north Northumberland.*

to a coastal way of life. The colonisation of the north-east British coastline by narrow-blade groups appears to have been rapid so that within a few centuries these communities had colonised the west coast of Scotland and Northern Ireland and spread along the coast of Wales. Within a few more centuries, narrow-blade groups were following river valleys inland and inhabiting areas as high as the Southern Pennines. It is perhaps no coincidence that around this time broad-blade microlith production ceases in the British Isles. Could this mean that some narrow-blade groups had adapted to a terrestrial lifestyle and were seeking to expand into the woodland interior and high ground, with a view to displacing, or replacing, earlier broad-blade groups?

By the time the so-called 'land bridge' was breached and Britain had become separated from the European landmass *c*. 6500 cal BC, the lithic traditions of both Britain and Ireland start showing evidence for insular development. In Ireland the macrolithic Bann flakes appear whilst the 'trapeze horizon', which develops across all of northern Europe, finds no parallels in either Britain or Ireland.

This view of demographic change during the British Mesolithic can be tested as more scientific data become available in the form of radiocarbon determinations, stable isotope analysis, DNA studies and the discovery of new sites with good artefactual and dating associations. Although far from being proven, this narrative provides an explanation for many of the patterns we are beginning to discern in the Mesolithic of the British Isles. The idea of different cultural groupings is, of course, not new and some critics might contend that the view expressed here is old-fashioned 'culture history'. Such labels are usually unhelpful as what we have sought to present is the basis for a new narrative for the British Mesolithic. The argument made here is that different social groups sought to define themselves through a rich combination of actions and ideas that were inextricably linked to a changing and variable environment and different ways of subsisting and living in the world. For example, it has been possible to observe how broad-blade and narrow-blade groups may have defined themselves by the landscapes they chose to inhabit and felt comfortable in, by the types of resources they lived off, and the subsistence and settlement routines they followed. Such differences would have necessitated not only different tool kit functionality, such as the use of bevelled pebble tools by narrow-blade coastal groups, but also the need to express stylistic difference in order to reinforce intra-group affinity. There were, no doubt, many more material expressions of group identity not now visible to us but we should not undervalue the importance of the stone tool kit for transmitting group affiliations. By acknowledging cultural diversity, and possibly competing groups at that, we are perhaps beginning to observe a much more complex and highly dynamic cultural milieu during the British Mesolithic than has previously been thought. Rather than a long period of unchanging human behaviour, geared around high levels of mobility between upland and lowland, we can now catch a glimpse of a much more dynamic period in which groups were regularly adapting to new environmental, economic and social circumstances, and one in which alliances, friendships and group cohesion would have been central to ensuring the long-term survival of any given group.

# 5 The First Agriculturalists 3900–1800 BC

*Clive Waddington and David G. Passmore*

## INTRODUCTION

The dawn of the 'Neolithic' in the British Isles has been a subject of much debate in recent years, with polarised positions frequently adopted. On the one hand some argue for incoming peoples bringing a fully developed farming package to Britain by way of 'demic diffusion'. On the other some argue for a gradual transition by the indigenous hunter-gatherer-fisher groups by way of what has been termed 'trait-adoption diffusion', with annual mobility and hunter-gatherer practices continuing alongside Neolithic activities (for examples see Ammerman and Cavalli-Sforza 1971; 1984; Thomas 1988; 2007; Whittle 1996; see various papers in Price 2000 and Whittle and Cummings 2007; Richards and Hedges 1999; Schulting 2000; Gkiasta *et al*. 2007; Bentley *et al*. 2007; Sheridan 2007). Characterising the Neolithic has also been a subject of much contention, with debate revolving around whether Neolithisation was primarily driven by economic or ideological impulses. These opposed standpoints create a false dichotomy that has stifled a more accurate and holistic characterisation of this pivotal transformation. Such debate can be moved forward by recognising that economic and ideological realms are inextricable parts of a linked whole and the practice of each reinforces the other – and similarly neither could take place without the other. In this chapter we sketch out the chronology and environmental history for this period, based on the dating and palaeoenvironmental data currently available, and then consider key topics, which include the Neolithic transition, settlement, subsistence, material culture and the monumentalising of the landscape.

The period 2400–1800 cal BC is a poorly defined period, termed by some as the Late Neolithic and by others as the Beaker period or the Early Bronze Age. In this chapter we identify this period as the 'Beaker' period and follow Needham's convention for terming the first few centuries of this period as the 'Chalcolithic'. This allows for greater precision when discussing chronological issues and helps untangle what has become, in much archaeological literature, the nebulous Neolithic-Early Bronze Age period.

## CLIMATE CHANGE AND ENVIRONMENT

### Geomorphology and climate

The period spanning *c*. 3900–1800 cal BC marks not only the transformation of prehistoric lifestyles and economy, but also witnesses a change in the trajectory of environmental conditions in Northumberland and the wider European mainland. On the North Northumberland coastal margin (north of Ross and the Farne Islands) it quite literally represents the high-water mark of Post Glacial relative sea level rise. Here, reconstructed relative sea levels peak at around 2.5m higher at *c*. 2000 cal BC (Shennan *et al*. 2000a) than at present, before declining through the later Holocene. South of Ross, relative sea level changes in central and southern parts of Northumberland are lower than those to the north (reflecting differential crustal movements), but exhibit a rising trend through the Neolithic, reaching levels between 0.5–1m higher by *c*. 2000 cal BC (Shennan *et al*. 2000a) than at the present.

Climate change, implicated by some workers (e.g. Tipping 2010) in promoting openings in the woodland canopy during the Early–Middle Holocene (see also Chapters 2 and 4), is also increasingly seen as a potential influence on the geomorphology of valley floors and the regional vegetation cover. Following the Holocene climatic optimum of the later Mesolithic period, *c*. 5500 cal BC, summer temperatures in the early part of the Neolithic are likely to have been similarly warm. Pollen-based summer temperature estimates for Northumberland (expressed as the mean temperature of the warmest month) are some 1 to 2° C warmer than those of today and appear to have been sustained until *c*. 3000 cal BC (see Chapter 2). These pollen-based estimates are higher than those obtained from the chironomid record at Talkin Tarn, Cumbria. Here, in the middle centuries of the fourth millennium cal BC, mean July temperatures are estimated to be *c*. 0.5° C lower than at present and show a variable but cooling trend through to *c*. 1950 cal BC when mean July temperatures were 1 to 1.5° C lower than at present (Langdon *et al*. 2004; see Chapter 2). Refining temperature estimates for the Neolithic remains a challenge, therefore, and a more cautious review of climate data would suggest that the later Neolithic and Chalcolithic period was associated with an overall shift to cooler and wetter conditions (Brown *et al*. in press), but punctuated by centennial-scale climate variations. This is reflected, for example, by evidence for neoglacial episodes at *c*. 3100 and *c*. 2550–2350 cal BC (Matthews and Quentin Dresser 2008), and the broadly corresponding shifts to wetter bog surface conditions occurring from *c*. 3300 and *c*. 2400–1990 cal BC at Walton Moss, Cumbria (Hughes *et al*. 2000).

Environmental changes on regional valley floors during Neolithic times are likely to have been manifested in slight changes in the tempo of activity rather than the character of channel and floodplain settings. Floodplain aggradation may have been occurring at this time in the lower reaches of the Glen and Wooler Water as they emerged into the low relief of the Milfield Basin. However, as demonstrated at Akeld Steads, rates of accumulation were probably slow and were certainly insufficient to invoke a change in floodplain habitats. As demonstrated on occasions during the preceding Mesolithic, however, river channels in the Till-Tweed Basin were occasionally prone to localised shifts in configuration and course. Chapter 4 has already shown that the period between *c*. 4300 and 3650 cal BC was associated with the onset of floodbasin peat accumulation in the River Glen at Cannon Mill, and channel abandonment in the Milfield Basin and River Breamish. Further episodes of channel cut-off in Neolithic times are evident in the central Milfield Basin near the Humbleton Burn, dating to shortly after *c*. 3640–3360 cal BC, and in the River Glen at Lanton at *c*. 2840–2450 cal BC (Allen 2007; Chapter 2).

By the beginning of the Chalcolithic period, from *c*. 2500 cal BC, independently dated geomorphological events are also recorded for the first time in smaller upland tributary valleys draining the Cheviot Hills. Here, aggradation of coarse gravels in the Halter Burn (a small tributary of the Bowmont Water) after *c*. 2560–2410 cal BC, and in the Wooler Water after *c*. 2250–1950 cal BC, acted to bury gleyed floodplain soil and valley floor peat, respectively, and is regarded by Tipping (2010) as signalling the transformation of valley floor environments in these localities. There is, however, little evidence for similarly dramatic changes in the character of channel and floodplain environments in the trunk stream reaches of the River Breamish/Till and Lower Tweed at this time, although an episode of channel abandonment in the River Till at Thirlings, dated to *c*. 2140–1740 cal BC (Passmore *et al*. 2002), appears broadly contemporary with the event in the Wooler Water.

In considering the potential drivers of geomorphological change in upland Cheviot valleys during the second half of the third millennium cal BC, Tipping's (2010) revision of earlier analyses (see Tipping 1992) argues that the impact of cereal cultivation is unlikely to have been sufficiently widespread to have destabilised the landscape in these localities until after *c*. 2000 cal BC, and hence climate deterioration is advanced as being of more significance in influencing transformation of these valley floors. This interpretation finds some support from records of cooler and/or wetter periods at *c*. 2550–2350 cal BC (Matthews and Quentin Dresser 2008) and *c*. 2400–1990 cal BC (Hughes *et al*. 2000), and in its earliest phase is also consistent with evidence of widespread climatically driven flooding in UK river systems around *c*. 2570 cal BC (Macklin and Lewin 2008; Macklin *et al*. 2009). It is interesting to note, however, that Macklin *et al*. (2009) identify the first half of the third millennium cal BC as witnessing a higher incidence of major flood events in North-East England, including an episode of channel abandonment in the River Rede at Otterburn *c*. 2600–2200 cal BC (Hildon 2004). From an archaeological perspective, perhaps the most important inference arising from these analyses is the probability that it is climate change, rather than human impact, that promoted Neolithic and Chalcolithic environmental change in regional valley floors, and we return to this discussion below (and in Chapter 10) in the context of reviewing the archaeological record.

## Woodland disturbance and the introduction of agriculture

Although of great cultural significance, the arrival of sedentary farming activity at the Mesolithic-Neolithic transition is reflected in regional vegetation histories in a relatively subtle and variable manner (see Chapter 2). Some parts of Northumberland appear to have experienced a continuation of the pattern of small-scale and temporary woodland clearance that had been established by earlier hunter-gatherer groups, and in some localities this coincides with the appearance of cereal pollen. In the northern Cheviot Hills, early examples of arable cultivation are recorded at Din Moss from *c*. 3950 cal BC (Hibbert and Switsur 1976) and at Swindon Hill, where barley appears to have been grown from *c*. 2850 cal BC (Tipping 1996; 2010). Upland pollen sites on the Fell Sandstones, at Fellend Moss, Steng Moss (Davies and Turner 1979) and Ford Moss, by contrast, show little or no evidence for Neolithic opening of the thick woodland cover (Chapter 2). Analysis of agricultural innovation at lower elevations in the region's main valley floors has, until recently, been inhibited by the relative lack of suitable dated pollen sequences. However, evidence from alluvial (palaeochannel) pollen sequences in the Milfield Basin are considered to support archaeological interpretation of cereal cultivation on glaciodeltaic terraces adjacent to the floodplain around *c*. 3970–3790 cal BC (see below and Chapter 2). Contemporary environmental changes also affected the composition of the regional woodland, most notably with respect to the decline in elm between *c*. 4295 and 4180 cal BC and *c*. 3825–3540 cal BC, and possibly also climatically driven transient declines in oak (Leuschner *et al*. 2002). Forest disturbance in colder and wetter higher-elevation parts of the region may also have been important in promoting the development of blanket bog and heath.

The tempo and scale of anthropogenic manipulation of forest cover and associated land use activities pick up in the Chalcolithic period. While evidence for contemporary woodland clearance and agricultural activity is not as emphatic as some parts of the east Durham plateau and the North York Moors (Innes 1999; see Chapter 2), several mid-altitude sites in Northumberland have been shown to record the first marked episodes of deforestation at this time, albeit not always associated with clear evidence of cereal cultivation. In the immediate Till-Tweed area these include sites on the eastern flanks of the Cheviots at Broad Moss (dated to the period *c*. 2880–2400 cal BC and *c*. 2460–1950 cal BC; Passmore and Stevenson 2004, Chapter 2), and on the Fell Sandstone escarpment at Ford Moss, where variable but sustained woodland disturbance commences *c*. 2280–1959 cal BC (Chapter 2). Deeper in the Cheviot interior valleys, woodland clearance in the period after *c*. 2000 cal BC is notable for being frequently associated with cultivation of barley, with only limited extent of pasture (Tipping 2010). In general, however, and despite the escalation of deforestation during this period, the activities of Chalcolithic communities in North Northumberland, like those of the preceding Neolithic and Mesolithic groups, were predominantly experienced in surroundings that still included extensive woodland cover.

## A CHRONOLOGICAL FRAMEWORK

***Peter Marshall and Clive Waddington***

The chronology of the Neolithic period in Britain has undergone many revisions over the course of the last century, and recent advances in radiocarbon dating, calibration curves and statistical modelling have allowed a considerably more refined chronology to begin to be developed (e.g. Bayliss and Whittle 2007; Sheridan 2007; Bayliss *et al*. 2008; Collard *et al*. 2010). Thanks to recent development-led excavations in North Northumberland (Johnson and Waddington 2008; Waddington 2009), together with new dating evidence from the important site at Thirlings (Miket *et al*. 2008), the radiocarbon chronology for the Neolithic in this area is now coming into sharper focus. The Neolithic ceramic sequence provides a mechanism for dividing the period, whilst the arrival of Beakers and metalwork appear to mark the rapid introduction of new ideas, symbols of power and an expansion of farming and settlement. At the same time many practices that characterised the Neolithic way of life appear to continue.

The advent of the Neolithic in Northumberland is characterised primarily by the presence of midden pits and hearths, many of which contain Carinated Bowl and related Plain Ware ceramics (hereafter referred to collectively as Carinated Bowls), and occasional charred cereal grains, stone axeheads, flint tools and knapping waste. Timber post-built buildings at Lanton Quarry, Thirlings and Threefords, Milfield (Fig. 5.7 and tables below; Miket *et al*. 2008, Miket pers. comm.) provide further evidence for Early Neolithic activity, together with an Early Neolithic Carinated Bowl assemblage from below a large circular cairn on Broomridge (Greenwell 1868; Greenwell and Rolleston 1877; Newbigin 1935), although there are no radiocarbon dates yet available for the latter site. On the basis of the evidence currently available, the earliest dated Neolithic pits define the beginning of the Neolithic in this region (Fig. 5.1). A series of radiocarbon determinations has been acquired for the Neolithic ceramic sequence, based on samples collected during fieldwork undertaken as part of this and other studies (see Volume 1; Johnson and Waddington 2008), as well as by a thorough reinterpretation of previously published results by several archaeologists (Harding 1981; Miket 1985; Miket *et al*. 2008).

Although the ceramic sequence and settlement sites are becoming increasingly well-dated in the region, the chronology of the ceremonial monuments is less well understood in Northumberland. There are only a handful of dates from the henges and related sites (see below), whilst there are no dates currently available for the suspected mortuary enclosures, possible ploughed-out long barrows or the areas of rock art that cloak so many of the Fell Sandstone outcrops. Only one small stone cairn has produced a single Neolithic date (Jobey 1968a) and there are a small number of dates from Miket's recent excavation at the Duddo stone circle, but these suggest the original monument could be coeval with the henge monument complex and is not, therefore, strictly Neolithic. An important regional research priority for the Neolithic is the acquisition of dating control on the various types of Neolithic ceremonial monuments so that they can be tied in with the settlement and ceramic evidence.

### Samples and context

A rigorous assessment of all the available radiocarbon measurements was undertaken prior to the construction of any models. The taphonomic relationship between a sample and its context is the most difficult to assess, since the mechanisms by which a sample came to be in its context are a matter of interpretive decision rather than certain knowledge.

The taphonomy of the samples that provided the measurements shown in Figs 5.1–5 has been assessed to ensure they meet the following criteria:

1. Organic-rich material adhering to the interior of sherds, (i.e. food residues) dates the last use of the ceramic vessel and if from conjoining sherds, single vessels or 'structured deposits', provides a date for the deposition of the context from which it was recovered;
2. Single-entity (Ashmore 1999) short-lived material from 'single-event' or 'structured' deposits provides a date for the deposition of its context;
3. Single fragments of charred plant remains functionally related to the context from which they were recovered, for example charred wood fuel from an oven/hearth/pyre;
4. Single fragments of short-lived plant remains from the postholes of timber buildings that are interpreted as deriving from the period of use of the structure (Reynolds 1995);
5. Bulk samples of short-lived charred material from contexts where the charcoal is functionally related to its context, for example a hearth;
6. Unidentified or bulk charcoal that might not relate to the date of deposition of the context from which it was recovered due to an age-at-death offset only provide a *terminus post quem* for its context. (In the models these can be identified by After);
7. Charcoal not from 'single-event' deposits (e.g. the fill of postholes) only provides a *terminus post quem* for contexts because it is potentially residual.

The dating samples mostly come from sites within North Northumberland, many of which are in the Milfield Basin, with only the Bolam Lake site being located in central Northumberland. The dates associated with Impressed Ware from Meldon Bridge have been included as not only is this site located nearby (40km further up the Tweed valley to the west), it also provides one of the best suites of dates for Impressed Ware in northern Britain. The single but reliable date for Impressed Ware from the Blairhall Burn site located further west still, in Dumfriesshire, has also been included for a similar reason.

## Calibration

The radiocarbon results are quoted in accordance with the format and standards set out in Chapter 1.

## The model for the start and end of the Neolithic

The model shown in Figure 5.1 shows good overall agreement ($A_{overall}$=67.8%) and provides an estimate for the start of Neolithic activity of *4080–3790 cal BC* (*95% probability*; *start_Neolithic Settlement [incl 'pits']*; Fig. 5.1) and probably *3900–3850 cal BC* (*68% probability*). This provides some of the earliest reliable dating for the beginning of the Neolithic in Britain and correlates with recent reviews dealing with the onset of Carinated Bowls in northern Britain (Sheridan 2007, 454–6) and the first use of cereals across Britain and Ireland (Brown 2007). Indeed the earliest apparent dates for Carinated Bowls in northern Britain are from the Coupland site excavated as part of this study (see Volume 1; Sheridan 2007, 454). The end of Neolithic activity is estimated to have taken place in *2570–2320 cal BC* (*95% probability*; *end_Neolithic Settlement [incl 'pits']*; Fig. 5.1) and probably *2550–2470 cal BC* (*68% probability*) based on the latest dates available for Grooved Ware ceramics. This accords with Needham's recent review, as well as the previous review by Kinnes *et al*. (1991), of the dating evidence for the arrival of Beakers in the British Isles, which he places at *c*. 2450 cal BC (Needham 2005), if it is accepted that the arrival of Beakers marks an end to the period we term the 'Neolithic' and the beginning of the period which Needham advocates we term the 'Chalcolithic' (Needham 2005; 2008). Given that Beakers are just one material culture marker in a wider 'package' that undoubtedly includes the knowledge of how to use metal, and primarily copper, gold and early copper alloys, it seems correct to accept the period attribution advocated by Needham, and which of course has been long recognised in Continental Europe. The small number of Beaker dates currently available for North Northumberland (see Table 5.5) provides an estimated start in *2540–1890 cal BC* (*95% probability; Boundary start_EBA_pottery;* Fig. 5.2) which, being so broad, accords with Needham's recent review. As more dates become available for Beaker ceramics in the region, a more precise date for the onset, and also decline, of Beakers will be possible.

## The overlapping ceramics model

In order to see what inferences would be made about the start and end dates of the ceramic traditions we have constructed a model in which the traditions are not assumed to be abutting but overlapping (Naylor and Smith 1988; Buck *et al.* 1992). From the overlapping model it is possible to test whether the ceramic traditions are likely to be abutting or not. The results, showing good overall agreement $A_{overall}$=86.4%, are shown in Figure 5.2 and summarised in Table 5.8.

Further analysis of the data from the individual models allows us to make an assessment of the relationship between events (i.e. the estimates for the start and end dates of the ceramic traditions; Fig. 5.3). Table 5.9 shows the probabilities that the estimated start and end dates of a ceramic tradition precede the start and end dates of the other ceramic traditions. For example the probability that Carinated Bowls go out of use before the start of use of Impressed Ware is *52.3%,* but the probability that Grooved Ware goes out of use before the start of use of EBA pottery is *90.6%*.

It is clear from the analysis that the radiocarbon results do not, on their own, suggest that the ceramic

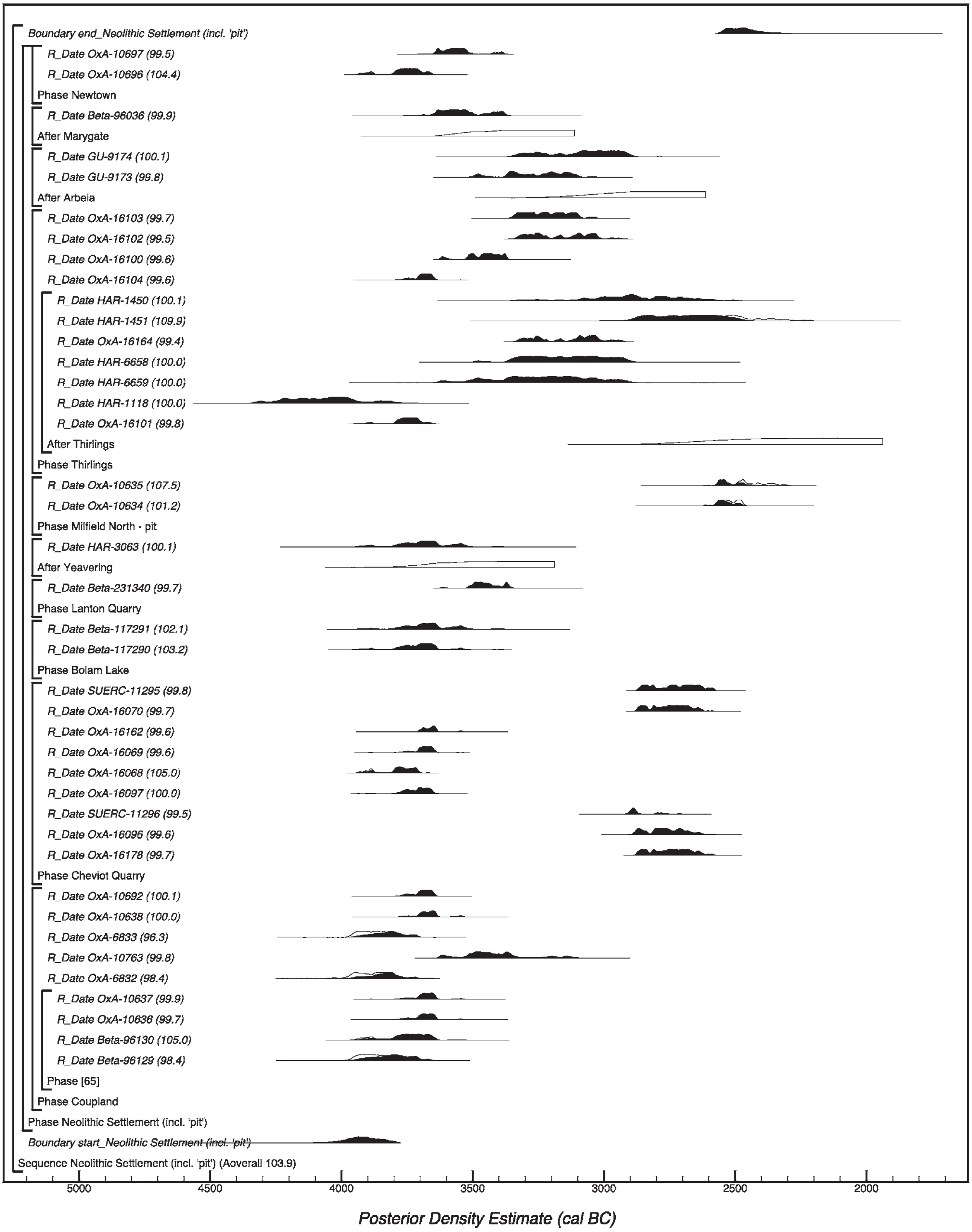



*Figure 5.1. Probability distributions of dates from Neolithic settlements (including pit sites): each distribution represents the relative probability that an event occurs at a particular time. For each of the radiocarbon dates two distributions have been plotted, one in outline, which is the result of simple radiocarbon calibration, and a solid one, which is based on the chronological model used. Distributions other than those relating to particular samples correspond to aspects of the model. For example, the distribution 'start_Neolithic Settlement (incl 'pits')' is the estimated date for the start of Neolithic settlement activity. The large square brackets down the left hand side along with the OxCal keywords define the model exactly.*

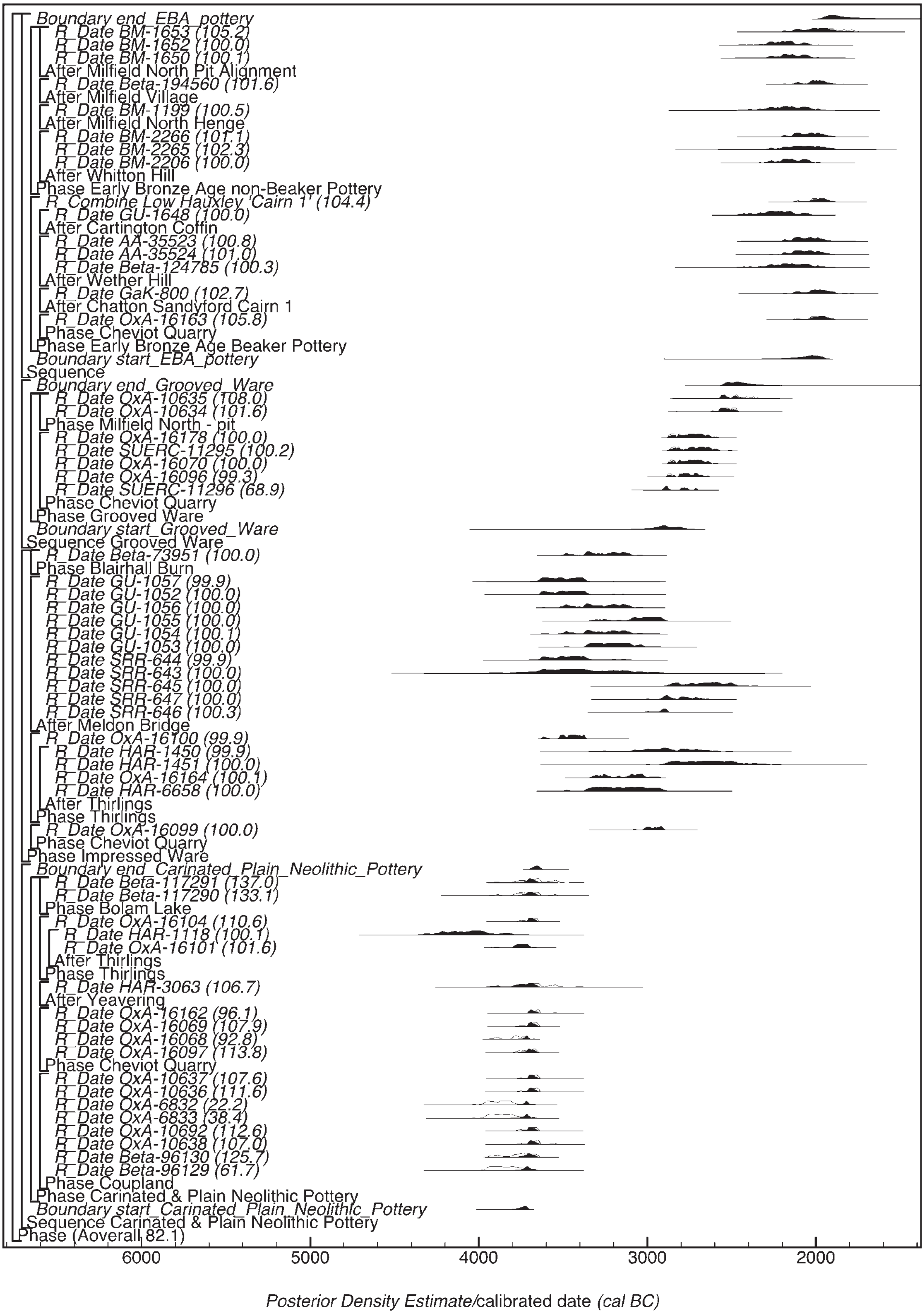



*Figure 5.2. Probability distributions of dates from Neolithic ceramics (independent or overlapping model): each distribution represents the relative probability that an event occurs at a particular time. The format is identical to that of Figure 5.1.*

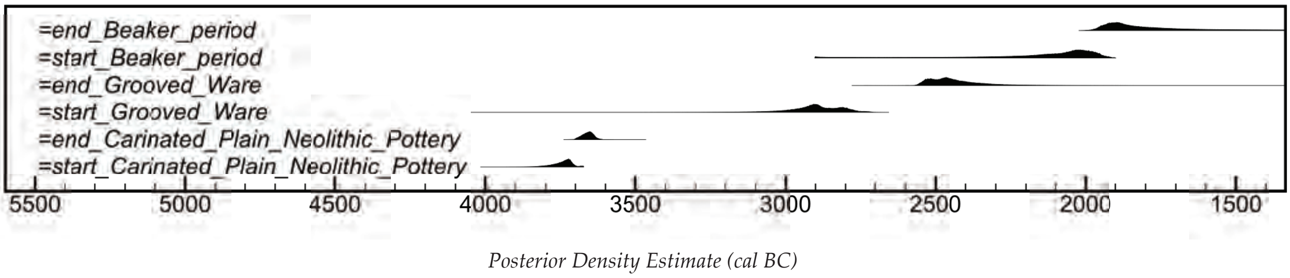



*Figure 5.3. Probability distribution of dates for the beginning and endings of ceramic traditions. The distributions are derived from the model shown in Figure 5.2.*

traditions are abutting. Although the general impression is that the traditions show a progression through time so that the start of each ceramic tradition occurs before the start of the following ceramic tradition, and the end of a tradition generally falls before the end of the next, there does seem to be some overlap in pottery use between the different ceramic traditions, although this could be restricted in some instances.

## Alternative: the abutting model

As an alternative we have constructed a model in which the traditions are assumed to be abutting (Naylor and Smith 1988; Buck *et al.* 1992). This model (Fig. 5.4) allows an estimate of the date of transition between ceramic phases to be calculated. The results show good overall agreement ($A_{overall}$=67.8%) and estimates for the dates of transition between ceramic traditions are summarised in Table 5.10.

Both of the models presented here for the ceramic sequence rely on interpretations of the past which we have sought to make explicit in the methodology described above. It is therefore a matter of archaeological choice which of these interpretations should carry more weight. Further consideration of the dating for the different ceramic types is included in the section on 'Material Culture' below. We would argue that a model of independent and potentially overlapping ceramic traditions is a more plausible interpretation of the archaeology of the region than one that does not allow for different ceramic traditions to be in use at the same time. However, the duration of overlap may be closely confined in some cases, for example with the transition between Carinated Bowl and Impressed Ware and between Grooved Ware and the introduction of Beakers, although it should be noted that in southern England there is probably some overlap between Grooved Ware and Beakers of a few centuries in the period *c.* 2450–2250 cal BC.

## The Milfield henge complex and related sites

All the relevant sample measurements from Coupland, Milfield North Henge, Milfield South Henge and the Whitton Hill henge-related monument only provide *termini post quem* because the samples consist of bulked unidentified charcoal and could therefore be affected by an unknown age-at-death offset. Thus, on the basis of the scant available evidence (Table 5.7, Figure 5.5), the Milfield henges so far dated appear not to be Neolithic, but rather to belong to the 'Chalcolithic' period, as defined here, or to be younger. Based on the currently available information, these monuments do not therefore date to the Late Neolithic as they do in some other areas such as northern Scotland. Although more reliable dating control is required for these and other components of the Milfield ritual complex, it does not seem unreasonable to assume that this cluster of monuments, related by their form and geographical clustering, are contemporary, as the few dates currently available for the existing monuments imply. The view that all the Milfield Basin henges are broadly contemporary and were in use at the same time acknowledges the unity of this ritual landscape and the geographical relationship of the henge and related monuments' distribution. However, this view requires further testing as part of any future fieldwork, and should form an important priority for Neolithic and Chalcolithic studies in the region.

Another component of the Milfield ritual landscape that requires attention is the so-called 'droveway' or 'avenue' (Harding 1981; see also Volume 1). This enigmatic monument has been investigated by excavation on two occasions; once by Harding in a small section to the south of the Milfield South henge (Harding 1981) and once by Waddington in the section that passes through the north entrance into the Coupland henge/enclosure (Volume 1, Chapter 5). In both instances the excavations revealed truncated, shallow U-shaped linear ditches filled with sand and silts. However, to test whether the sandy base of the ditches was the *in-situ* natural sediment, Waddington boxed out his sections. This revealed the U-shaped ditch, in this section of the monument at least, to be a recut into an earlier ditch that had a continuous slot with packing stones, presumably for timber uprights, running along its base (see Volume 1, Chapter 5). Therefore, it is possible that Harding only excavated

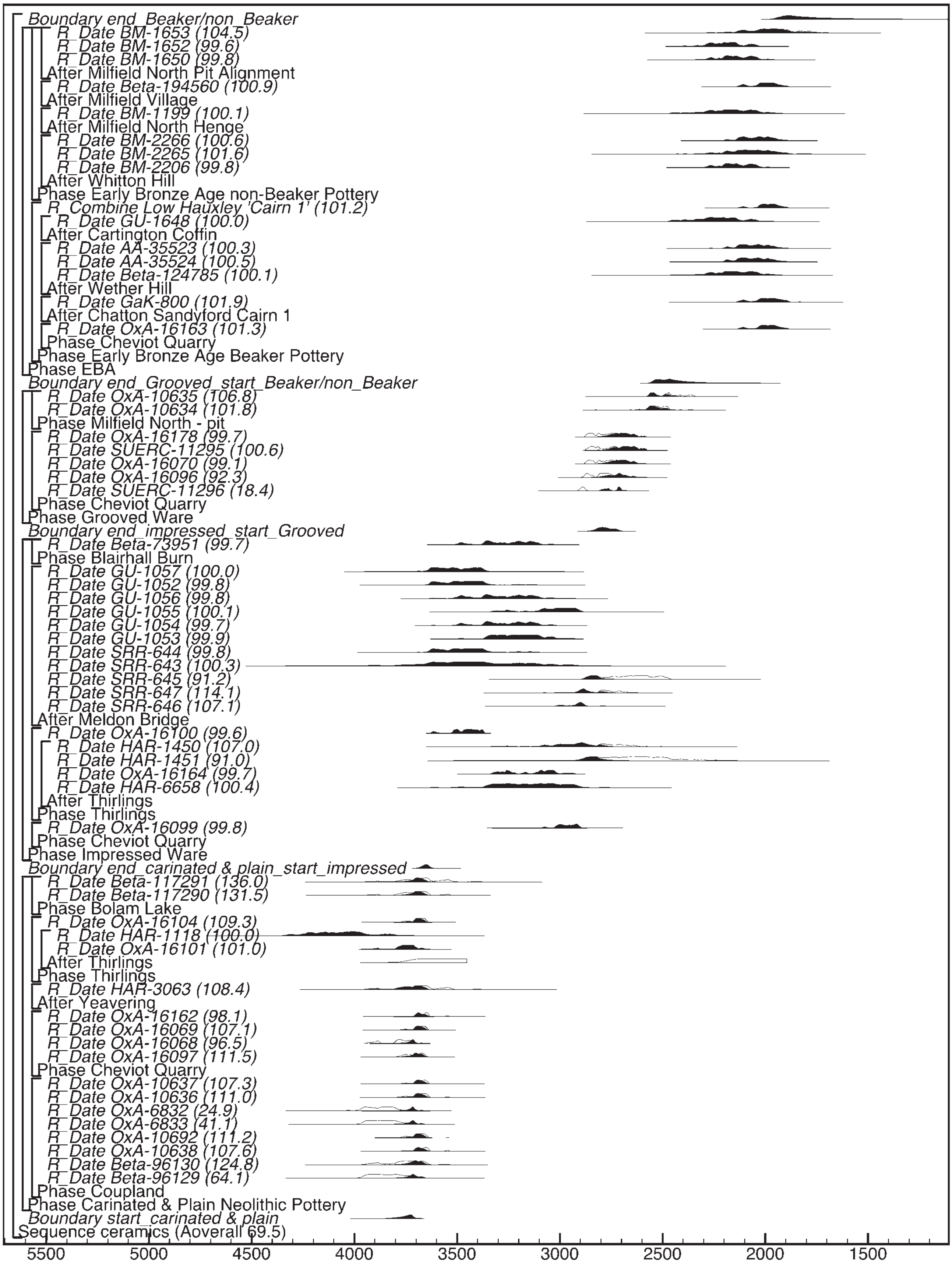



*Figure 5.4. Probability distributions of dates from Neolithic ceramics (abutting model): each distribution represents the relative probability that an event occurs at a particular time. The format is identical to that of Figure 5.1.*

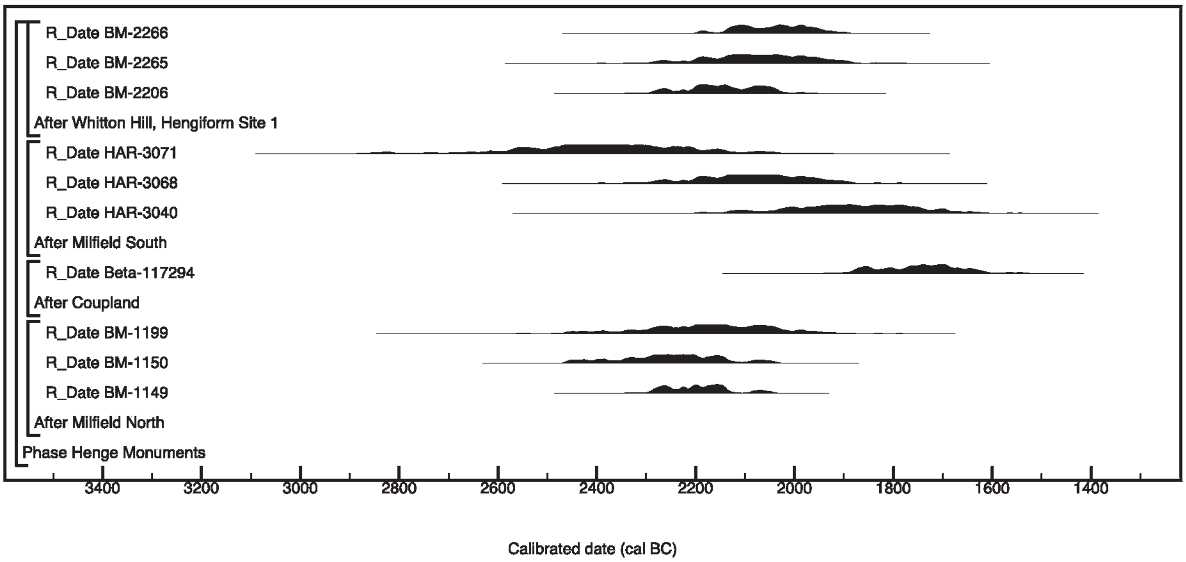



*Figure 5.5. Probability distributions of dates from 'henge monuments'. Each distribution represents the relative probability that an event occurred at a particular time. These distributions are the result of simple radiocarbon calibration (Stuiver and Reimer 1993).*

the fill of the upper ditch and did not reach the base of the original feature, because, as demonstrated during Waddington's examination, it was virtually impossible to detect without resorting to box-sectioning the feature. Although this does not establish the form of this monument along its entire course, it presents the possibility that this linear monument, in its original form, consisted of two continuous timber fences, perhaps around 1.5m high above ground, creating a confined north-south routeway across the glaciodeltaic terrace surface and centred on the Coupland henge through which it runs. The dating of this monument is not yet satisfactorily established but there is good reason to assume contemporaneity with the henge complex. Firstly, its passage from the Meldon Burn past the west entrance of the Milfield South henge, its respecting of the Coupland henge entrances as it passes through them, and then its slight swerve at the southern end to respect the East Marleyknowe henge before it links with the head of the Galewood Depression, all imply that it is constructionally later than the henge monuments. The Early Neolithic dates from a deposit partly contained within the west droveway ditch fill, in the northern entrance of the Coupland site, is considered by the excavator to most likely be an earlier deposit through which the linear ditch was partly cut (see Volume 1, Chapter 5). Taking these dating associations into account, the fact that this linear monument unites these central henges suggests contemporary use of these monuments. However, radiocarbon dating from the fill of the linear ditches is required to establish its date, as well as further sections along its length to establish whether it is of consistent or varying constructional form.

Another element of the Milfield ritual complex that implies linear movement associated with the henges is the 'avenue' formed by the Milfield North double pit alignment. Small-scale evaluation excavations were undertaken on this feature by Harding (1981) and this produced Chalcolithic period dates on charred wood (see Table 5.6 for up to date recalibration). The few dates so far available for the Milfield henges and related sites mean that no statistical modelling can be undertaken, but despite this the dates currently available for these sites correspond with the spread of dates for Beaker ceramics (see Needham 2005).

## TAMING OF THE LAND: TRANSITION OR REVOLUTION?

The Mesolithic-Neolithic transition has attracted considerable attention from archaeologists and palaeoecologists, as it represents a fundamental change in terms of human thinking, behaviour and land use activities. The impact upon the Northumberland landscape during this period is likely to have been one of variable change – sometimes subtle, sometimes dramatic. While some parts of Northumberland show little or no evidence for openings in the thick woodland cover during the Neolithic, other areas provide convincing evidence for areas of open ground with agricultural plots (see above and Chapter 2).

For much of the last two decades the debate about Neolithisation has tended towards a view that places ideological change (or 'world view') as the main driver for this process, with change considered to be gradual, as indigenous hunter-gatherers adopted these new practices. Proponents of this view (e.g. Whittle 1996; Thomas 1988; 1991; 2003) eschewed the view of relatively sudden economic and ideological change allied to the notion of incoming peoples – a process sometimes termed 'demic diffusion' (as advocated by Case 1969 and more recently by Schulting 2000; Gkiasta *et al*. 2003; Sheridan 2007). However, the gradualist, or 'trait-adoption diffusion' position is becoming increasingly unsustainable as the argument has now moved on in the light of the application of scientific techniques. In particular, AMS dating allied with Bayesian modelling, as well as stable isotope, DNA and palaeoecological analysis, together with more in-depth consideration of early ceramic and monument forms (e.g. Sheridan 2007; in press; Collard *et al*. 2010), have provided more accurate, informed and reliable data for addressing this topic, most of which appear consistent with the rapid immigrant farmer hypothesis.

Sheridan has recently advocated the existence of several separate Neolithic colonising groups in Britain, of which the the 'Carinated Bowl Neolithic', or 'trans-Manche east' strand, from the Nord-Pas-de-Calais and/or Picardie area, is thought to have arrived in eastern Britain sometime between 4000 and 3800 cal BC (Sheridan 2007; in press). Subsequently, Bayliss *et al*. have applied Bayesian modelling to date the onset of the Neolithic in South-East England to *4315–3880 cal BC (95% probability)* and probably *4120–3935 cal BC (68% probability)* (Bayliss *et al*. 2008, 35). It is this Neolithic strand, or 'package', that can be identified in the material culture of North Northumberland and its adjoining regions. It is becoming increasingly clear that for most eastern parts of the British Isles, the beginning of the Neolithic is defined by the presence of Carinated Bowl pottery and domesticated cereal grains, typically of emmer wheat and barley. Most of the Early Neolithic monument forms seem to come a little later in the sequence (e.g. Schulting 2000; papers in Bayliss and Whittle 2007; Bayliss *et al*. 2008), although some dates from mortuary enclosures and a causewayed enclosure at Magheraboy in Sligo north-west Ireland (Schulting 2000; Sheridan 2007, 441), suggest that some limited monument building may have also occurred as part of the primary Neolithic in some areas. Recent reviews of the dates for Carinated Bowls and domestic cereals in Britain concur that the start of the Neolithic, as defined above, takes place around *c*. 3900 cal BC (Brown 2007; Sheridan 2007). The start date for the Neolithic in Northumberland correlates with this national picture (see above, Fig. 5.1), although the dating is early for northern Britain and probably slightly later than for South-East England. Although there is evidence from remote and marginal locations that hunter-gatherer-fisher activity still took place during the critical centuries between 4000 and 3800 cal BC, and included the use of microlith technology, as at Oronsay (Mellars 1987) and on remote Pennine sites such as South Haw (Chatterton 2007) and March Hill (Spikins 2002), it is beyond doubt that much of the rest of Britain was witnessing Neolithic activity suddenly, and at broadly the same time (Schulting 2000; Thomas 2003; Sheridan 2007).

Another important generalisation with respect to Early Neolithic settlement concerns the geography of the archaeological record. It has long been recognised that river valley floors in European river systems were important settings for Neolithic settlement, offering a combination of well-defined and frequently navigable routeways through the landscape, and fertile, relatively level ground in sheltered locations (e.g. Roberts 1998; Dolukhanov and Shukurov 2004; Davison *et al*. 2006; Brown *et al*. in press). In Britain and Ireland, arterial river systems often form the main foci for Early Neolithic activity, whether these are large rivers, such as the Trent and Thames, or smaller rivers, such as the Eden (Cumbria), Avon (Wiltshire) or Boyne (Ireland). The Neolithic record for Northumberland conforms well to this pattern. A few Early Neolithic sites are known from coastal settings in Northumberland, usually attested by isolated finds of leaf-shaped arrowheads (e.g. at Howick, Craster Heughs and other sites), dated stakeholes on Lindisfarne (Archaeological Practice 1996) and Neolithic pits and a probable segmented enclosure above the Tyne estuary at South Shields (Hodgson *et al*. 2001), together with occasional glimpses of coastal economic activity such as the radiocarbon-dated wattle screen, thought to be part of a fish trap, from Hartlepool, also on the North-East coast of England (Waughman *et al*. 2005). It is noteworthy, however, that the earliest dates for the Neolithic in Northumberland come from the river terraces above a navigable tributary of the Tweed (from the remains at Coupland, see Volume 1). In fact, when the distribution of all the Early Neolithic archaeological evidence in North Northumberland is considered (Fig. 5.6), it is clear from the distribution of stone axeheads and Carinated Bowls, as well as lithic evidence from fieldwalking (see Waddington 1999a), that Early Neolithic settlement was focused along the raised terraces of river valleys. This distribution of Early Neolithic activity suggests the rapid settlement of immigrant farmers arriving in water craft from the Continent.

In terms of the shared traits of the Neolithic, it is clear that ceramics, cereal cultivation and the use of domesticated animals were shared across all areas where Early Neolithic activity is documented in Britain (the latter two to varying degrees), together with the deliberate disposal of midden waste in pits. It is this same group of traits which is widely acknowledged to be the earliest dated Neolithic marker. Monument building, which as we have mentioned appears in most areas to be a slightly later and secondary phenomenon, is more varied between regions (see Thomas 2003). This can be seen in the different styles of burial monuments erected in different areas, which variously include earthen long mounds across much of England, round cairns and mounds and mortuary enclosures in northern England and eastern Scotland, chambered cairns in northern and western Scotland, Ireland and South-West England, and portal dolmens in South-West England and Wales. Causewayed enclosures are largely confined to southern England and the Midlands (Thomas 2003), with different forms of Neolithic enclosures in the north (for example see Waddington 2001). In other areas, timber 'halls' are more frequent, as for example in Ireland and parts of Scotland and England, whilst cup- and ring-marked outcrop rocks, which are thought by the authors to date, in the first instance, from the Early Neolithic, are largely located across parts of northern England, southern and western Scotland and parts of Ireland. However, as the Neolithic progresses, greater regional diversity becomes apparent. This can be seen, for example, in the distribution of passage grave art and increasingly defined regional ceramic styles, as well as other forms of regionally specific monuments such as bank barrows and cursus monuments.

Taking these observations into account, the Neolithic 'package' at the start of the period appears considerably more restricted than is commonly thought. This stands in contrast to the emphasis some scholars have placed on regional diversity, which in many cases is based on differentiations that only begin to manifest as secondary phenomena. Instead we should perhaps view the beginning of the Neolithic in northern and eastern Britain as comprising a more restricted set of material traits, one that specifically includes Carinated Bowls, cereals, domesticated animals and midden pits, which together form a unifying repertoire that defines Neolithisation in this area. In terms of how the Neolithic was constituted, it is clearly much more than a set of economic practices and material culture uptake. Neolithisation must have required a different relationship with the world, different ways of doing things, and different ways of dealing with other groups. The material manifestations that we find as archaeologists are the physical reification of people *being* Neolithic. In short, the onset of the Neolithic can be legitimately viewed as a restricted 'package', or 'repertoire' as Thomas prefers to term it (Thomas 2003, 72), that manifests itself swiftly and was expressed in a remarkably uniform way across much of Britain and Ireland, although whether this equates to uniform social and economic change remains to be debated. Recent studies of the radiocarbon dating evidence shows the onset of farming to be one of the most sudden and profound changes we can document at any time in British prehistory, which is in direct contradiction to the gradualist hypothesis (see Sheridan 2007; Brown 2007; Collard *et al*. 2010). Nevertheless, describing the onset of farming as a 'revolution' is, perhaps, not particularly helpful, as it carries with it connotations of upheaval and violence which, though possible, may not necessarily have accompanied the rapid demographic, ideological, economic, social and land use changes witnessed. Instead, it might be more useful to employ the term 'Neolithisation', with its connotations of a process of becoming, and which many of the material signatures of the Early Neolithic must have surely symbolised at some psychological level.

Explaining the process of Neolithisation still poses a considerable challenge to archaeologists and awaits the significant contribution that genetic analyses and stable-isotope studies will one day make to this debate. Given that it is now widely accepted that Neolithisation took place suddenly across much of Britain and Ireland carrying with it the first appearance of domesticated foods and highly burnished, finely made ceramics, it seems plausible that some degree of colonisation, by established farming groups from the Continent, could account for such rapid and widespread adoption. Explaining the suddenness and widespread extent of Neolithisation poses problems if we are to accept the notion of indigenous uptake, although Bradley reasons that existing knowledge of insular geography could have facilitated this (Bradley 2007, 36). We can be more certain that the uptake of domesticates must have required some movement of people to bring these new food resources across the water and to bring the specialist knowledge of how to produce food in these ways, as well as how to store, prepare, consume and safeguard the food. Clearly this drew on influences, resources and above all people, from western Continental Europe. The uptake of new technologies such as ceramics, certain stone tool forms and the use of ground and polished axeheads in England and Scotland (though the latter have been found in Mesolithic contexts in Ireland and to some extent Wales), marks a disjuncture with the preceding Mesolithic, although the use of a blade-based lithic industry suggests elements of continuity.

Because there is some limited evidence for elements of indigenous continuity on the one hand and clear evidence for the importation of elements of the Neolithic repertoire on the other, we should acknowledge these various strands as they could be pointing to a combination of indigenous change coupled with interactions with groups of incomers. The complexities of such a process will be difficult to unpick but the fusion of Neolithisation with indigenous hunter-gatherer beliefs could account for the distinctive 'Neolithic' of northern Europe and the western seaboard, an area with clear commonalities in the timing, monument forms and material culture of the Neolithic. However, much still remains to be understood and until stable isotope and genetic analyses have yielded more definitive information on the geographic and genetic origins of individuals, the debate is sure to continue.

Rather than stressing the regional variations in

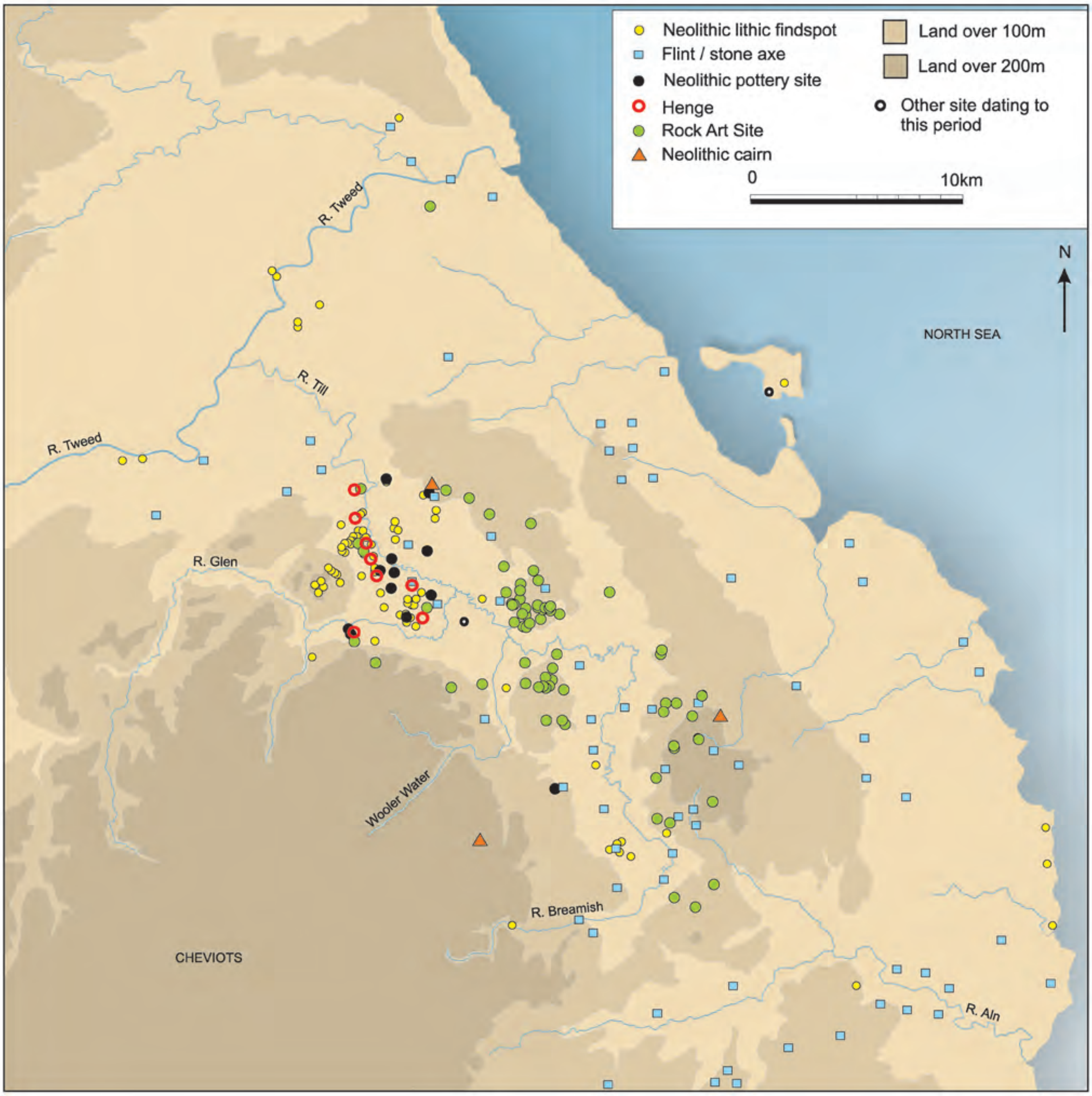



*Figure 5.6. Early Neolithic archaeological sites in North Northumberland.*

the way the first farming groups expressed their 'Neolithic' identity, we should perhaps stress instead the remarkable uniformity of the earliest Neolithic over such a large and diverse area, comprising scattered islands with highly varied topography and climate. Once we accept the significance of the overriding similarities of the earliest Neolithic over much of the British Isles, it is surely the case that communications across this archipelago must have been highly developed, rapid and reliable by *c.* 3900 BC if not before. Furthermore, the ideology and world view underpinning Neolithisation must have been widely shared and consistent. This is not to deny regional differences in expression but rather to avoid missing an essential truth: that the degree of uniformity in material culture and the use of the same types of domestic plants and animals across what is an incredibly diverse island grouping, within the space of around a century, is truly remarkable and is a phenomenon that is virtually without parallel in British and Irish history.

## SETTLEMENT

### Post-built structures

Until relatively recently, Neolithic settlement evidence was considered a rare occurrence in northern counties of England, with the period typically represented by and conceived through a variety of monument forms such as cairns, long mounds, henges and occasional 'midden pits'. This state of affairs has changed significantly, for North Northumberland at least, with the discovery of Neolithic pits and at least one structure at Thirlings (Miket 1976; Miket *et al*. 2008) and subsequently a range of Neolithic structures and related hearth and midden pits at sites including Bolam Lake (Waddington and Davies 2002), Whitton Park in Milfield village (Waddington 2006), Cheviot Quarry North, Cheviot Quarry South (Johnson and Waddington 2008), Lanton Quarry (Waddington 2009) and Threefords, also in Milfield village (Miket pers. comm.) (see also Figs 5.7, 5.8 and 5.9). At the Bolam Lake site, for example, a cluster of midden pits containing Carinated Bowl ceramics, struck flints and a broken stone axehead fragment were located 7m to the east of a structure that comprised a triangular arrangement of postholes spatially associated with two further heavily truncated pits (F9 and F10), which both contained Carinated Bowl pottery. Two radiocarbon measurements from single-entity hazelnut shell fragments from midden pits F4 and F5 placed these features in the first half of the fourth millennium cal BC (Waddington and Davies 2002). No dates were obtained on the triangular structure but, contrary to the recent statement by Miket *et al*. (2008, 99) that the Bolam Lake site should be considered a 'pit site' only, it is worth drawing attention to the fact that a thin mat of undisturbed organic-rich soil survived across the area of the triangular structure in a defined patch, which can be interpreted as occupation debris or 'floor deposits' (Waddington and Davies 2002, 10). The artefacts within this floor deposit were confined to the area in and immediately around the structure (see Fig. 5.7) and included Neolithic struck flints, including a leaf-shaped arrowhead, as well as fragments of Carinated Bowl pottery. It remains possible that the triangular post-built feature is later and is cut precisely into this confined floor deposit, next to pits that also contained Carinated Bowl ceramics, but such a view seems the least likely interpretation, and therefore the weight of argument leans towards this being considered a Neolithic structure, although such an attribution remains probable and not proven.

Since the Bolam Lake excavation, the triangular posthole arrangement with associated pits has found direct analogies with Neolithic remains discovered at Lanton Quarry in North Northumberland (Figs 5.7, 5.8 and 5.9). There at least seven post-built structures have been found to date, thought to be of Neolithic date on account of their ceramic associations and some preliminary radiocarbon dates. Furthermore, in several cases Neolithic midden pits are located within, close by, or next to these structures. So far a radiocarbon measurement from a single-entity charred hazelnut shell from one of the postholes that forms Building 7 (Fig. 5.7) has provided a calibrated date of 3620–3350 cal BC (Table 1; Beta-231340) and a date on a single-entity hazelnut shell obtained from a midden pit within Building 8 (Fig. 5.7 and 5.8) has produced a date of 3660–3520 cal BC (SUERC-31575), suggesting both buildings date to the mid fourth millennium cal BC. Although the remains of these structures were heavily truncated and had no floor deposits surviving within or around them, Carinated Bowl sherds were was discovered in the internal pits and hearth pits that were noted in Buildings 7 and 8 (Fig. 5.7). Furthermore, small quantities of burnt animal bone were also found in these features and a quernstone was found placed on the base of pit F255 in Building 8. More radiocarbon measurements will be obtained for these structures as the long-term excavations on this quarry site proceed. A further post-built timber structure was excavated in advance of a modern house construction in Milfield village (Fig. 5.7; Waddington 2006). Again, this structure was defined by a series of postholes in a triangular arrangement and a single-entity charred hazelnut shell from post-hole 27 dates to 2120–1880 cal BC (*ibid*; Beta-194560), unusually placing it in the Beaker period or 'Chalcolithic'.

Taken together, this evidence suggests a new kind of Neolithic structure not yet before recognised in England; that of a triangular arrangement of timber supports for relatively small buildings. Some have internal hearth pits, and they are usually positioned close to clusters of midden pits containing domestic artefact debris. It is not yet possible to ascertain the purpose of these structures; however, given the associations with domestic debris, food waste and in some cases hearth pits, it is difficult to see them having anything other than a residential or settlement purpose. Furthermore, their position on tracts of light, fertile and free-draining ground, typically in relatively sheltered valley floor locations, provides a further circumstantial argument for understanding these structures as being connected with residential activity. That said, it is unlikely that such a residential purpose excluded symbolically structured and ideologically related behaviour. Indeed, it would be at odds with what is known from ethnographic studies if this were not the case, and such an explanation may yet account for the deposition of midden material in pits in and around settlement structures.

Given that these structures are highly truncated and difficult to identify on exposed gravel surfaces after topsoil stripping, it is not surprising that they have

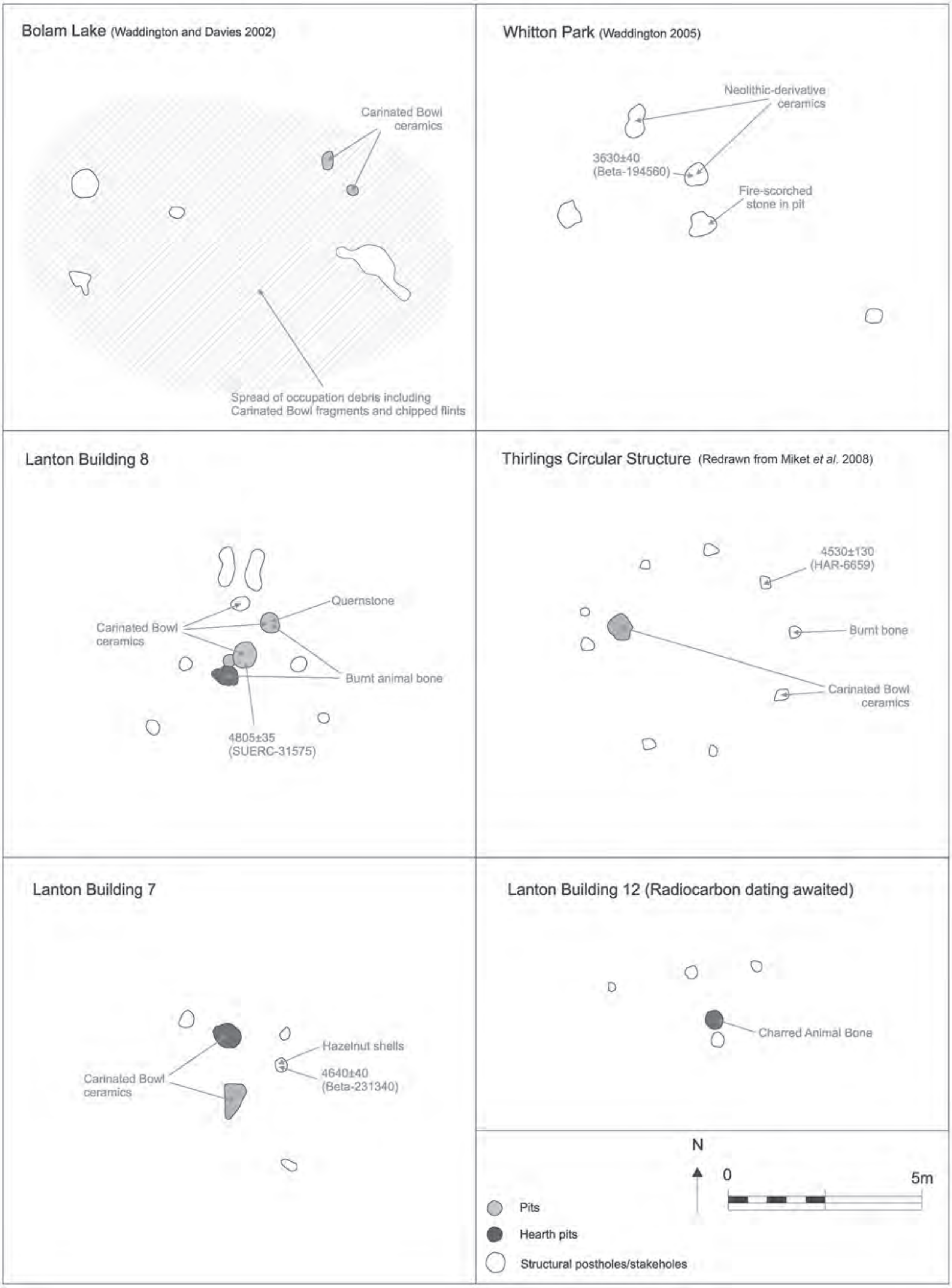



*Figure 5.7. Plans of different types of Neolithic 'settlement' structures in Northumberland.*

not been found previously. There has been a focus on rectangular buildings, and more recently more square-shaped structures, in many archaeologists' conceptions of Neolithic settlement in Britain (e.g. Parker Pearson *et al*. 2007). However, we actually know very little about the form of the common Neolithic home in Britain, and as new evidence continues to emerge from large open area excavations in different areas, a much greater heterogeneity of residential structures can reasonably be anticipated, as hinted at by the recent discovery of several possible dwelling structures at Sewerby Cottage Farm, Bridlington (Fenton Thomas 2009). Far from the recognition of triangular-shaped structures precluding other Neolithic structural forms in the region, there is emerging evidence for diversity in form within Northumberland. At Thirlings an arrangement of post pits defined a circular structure (Fig. 5.7) and from one of the post pits (F430) a bulked sample of unidentified charred wood provided a date in the mid–late fourth millennium cal BC (Miket *et al*. 2008, 14–15) which, although potentially affected by an unknown old-wood-offset, is in keeping with the two small body sherds of what is thought to be Carinated Bowl pottery from a posthole (F429) and internal pit (F428) forming part of the structure (*ibid*, 50).

These relatively insubstantial structures are typically quite small, with the areas defined by the postholes ranging between *c*. $5m^2$ and $12m^2$. It should also be noted that the plan formed by the main posthole foundations may not relate to the shape of the covering superstructure, and therefore the triangular-plan structures may be somewhat misleading when it comes to understanding the shape of the original covering structure and its full dimensions. This may mean that the buildings were larger than the space contained by the postholes and this could perhaps double their floor area. In southern England the Neolithic structures at Durrington Walls currently range from $7.5m^2$ to $30m^2$ (Parker Pearson *et al*. 2007, 632–34), making the Lanton Quarry structures comparable in size. As only a handful of the triangular arrangements have been identified so far it is not possible to establish whether there is any significance in their axial alignment, which on current evidence shows both east-west and north-south orientations (Fig. 5.7). More precise dating of these structures is an important requirement of future work, but taking into account those dates that are currently available, and the ceramic associations with the various structures, it appears that this heterogeneous group of post-built structures could extend in use from the Early Neolithic through to, and including, the Chalcolithic period.

The large timber 'halls' that have been identified further north in Scotland (see Brophy 2007 for most recent review), at Crathes (Murray 2005; Murray *et al*. 2009), Claish (Barclay *et al*. 2002) and Balbridie (Ralston 1982; Fairweather and Ralston 1993), may not be typical as settlements given that they each have floor areas in excess of $200m^2$. Rather, they may have been special high-status buildings that served a variety of roles. It is possible that such structures may yet be found in Northumberland and other parts of northern England, expanding on the two found at Lismore Fields in northern Derbyshire (Garton 1991). Understanding the relationship between these 'halls' and what are becoming the more typical small settlement structures remains an important consideration.

The landscape setting of the Northumberland settlement structures is revealing, as with the exception of the site near Bolam Lake, all are situated on Late Devensian sand and gravel terraces in low-lying settings, less than two kilometres from a river. This patterning is directly supported by the lithic data recovered from fieldwalking which show the greatest density of Neolithic stone tools on the sand and gravel terraces of the main valley floors (Volume 1, Chapter 3). Additionally, the distribution of stone axeheads also shows a clear river valley pattern (Burgess 1984, 133–35), strengthening the view that the Neolithic occupation of Northumberland was very much initiated from the fertile lands along the courses of the main river valleys, together with some settlement at estuaries (e.g. Hodgson *et al*. 2001) and the fertile coastal tracts.

## Neolithic pits

The other main group of excavated evidence that is considered to reflect Neolithic settlement are the various types of Neolithic pits (see arguments presented by Garrow 2006; 2007, 10). In the case of the sites around the Milfield Basin these include burning (hearth) pits and 'midden' pits, the former differentiated by their relatively small diameter and shallow depth with clear evidence for *in situ* burning, and the latter typically being of larger diameter, significantly deeper, and containing redeposited domestic 'midden' material with no evidence for burning *in situ* (Fig. 5.10). There is another type of pit that has been recognised at the Bolam Lake site: the rock-cut storage pit lined with some kind of organic material, but this too was ultimately backfilled with redeposited midden material (Waddington and Davies 2002). Midden pits are typically located within, next to, or close by the various types of structures mentioned above, in small clusters, as at Cheviot Quarry North (Johnson and Waddington 2008), or as large clusters, as at Cheviot Quarry South (Johnson and Waddington 2008). The burning pits, such as those encountered at Coupland (Volume 1, Chapter 5), contain cooking debris, or midden, in the form of occasional broken ceramics with adhering food residues and charred material including hazelnuts and cereals. The midden pits have a wider range of material that can include varying quantities of pottery, broken before deposition, together with flint tools and waste,

Figure 5.8. Neolithic trapezoidal post-built Building 8 after excavation: Lanton Quarry.


Figure 5.9. Neolithic triangular post-built Building 12 after excavation: Lanton Quarry.

within a charred soil matrix that typically contains charred wood, charred hazelnut shells and cereal grains. Other finds that have been discovered in such midden pits include a broken Group VI axehead in the rock-cut pit at Bolam Lake (Waddington and Davies 2002), and a hammerstone, whetstones and a flawed carved stone ball roughout from pit F009 at Cheviot Quarry North (Johnson and Waddington 2008).

Despite the current, and pervasive, argument for recognising 'structured deposition' in Neolithic pits and other depositional contexts, as originally advocated by Richards and Thomas (1984), there are very few Neolithic pits in Northumberland that show any evidence for artefacts having been specially placed or arranged within them. Indeed, most reveal a pattern whereby a pit is dug and very quickly infilled with redeposited midden material, with the ceramics having already been fragmented, and in some cases abraded, before being deposited in the pit. Most such pits have a single fill, indicating immediate filling of the pit, but there are a few examples where pits have been dug, burnt midden material thrown in and the lower filling subsequently capped off with an unburnt upper fill, as occurred in pits F009 and F031 at Cheviot Quarry North (Johnson and Waddington 2008). However, there are two examples of pits where


*Figure 5.10. A part-excavated 'midden pit' from Cheviot Quarry North where the lower fill of redeposited burnt material containing domestic refuse can clearly be seen capped by an upper inorganic layer that is probably the redeposited topsoil.*

arranged ceramics have been noted. These are pit F466 at Thirlings and the Milfield North pit referred to in Volume 1 (Chapter 5). In both cases the broken sherds had been pressed against the edge of their respective pit walls, although in the case of pit F466 at Thirlings the pit walls had been lined with clay. The ceramic type that was being specially placed in pit F466 was Impressed Ware whilst that placed against the edge of the Milfield North pit was Grooved Ware, there being no examples of pits in Northumberland with specially placed Carinated Bowl, which echoes the pattern observed by Garrow for East Anglia (Garrow 2007). In these two instances it is evident that certain protocols were being followed in the way the pits were backfilled. This may indicate a concern for, or taboos associated with, digging into the ground, or alternatively the appropriate disposal of certain types of waste, perhaps after special types of activities such as feasts or ceremonies.

A further point to observe in relation to the various Neolithic pit sites in Northumberland is that most of them tend to be multi-phase, with sequencing of Neolithic activity evidenced at most sites (e.g. Bolam Lake, Thirlings, Cheviot Quarry and Lanton Quarry). Indeed, several sites document activity throughout all the ceramic phases of the Neolithic, with Carinated Bowl, Impressed Ware, Grooved Ware and Beaker evident at sites such as Lanton Quarry, Thirlings and across the two Cheviot Quarry sites. Although this does not necessarily mean that occupation of these locales was continuous, it implies that knowledge of using these specific locales for occupation could have persisted for around 2000 years. The patterns of residency and deposition were repeated, albeit perhaps modified, over time through the Neolithic into the Beaker period, when the overt monumentalisation of the valley floor took place (see above).

Whether the pit sites represent long-term settlement, seasonal settlement or aggregation locales for large groups living together for short periods is not yet clear and it is possible that all such explanations could have relevance at different sites. That said, the recurrence of cereal grains, and in some cases the presence of emmer wheat chaff (e.g. Cheviot Quarry North pit F009), in the midden fills imply that grain production and processing took place nearby. On balance this makes sedentary occupation at these sites the more likely interpretation in relation to those particular pits. The lack of structural remains at some sites, as at Cheviot Quarry North and South for example, could result from heavy truncation of sub-surface deposits in these locations. Indeed at Cheviot Quarry North the posthole remains of the Late Bronze Age roundhouse 2 were so ephemeral that some only survived to a depth of a few centimetres in the sand and gravel substrate, whilst the Neolithic midden pits survived well as they had been dug in some cases around 0.5m into the sand and gravel. But despite such allowances being made this does not explain why at other sites, such as Thirlings and Lanton, which had been truncated to roughly the same extent as those at Cheviot Quarry, the midden pits were accompanied by the structural remains of buildings. It is possible that we might be able to distinguish between those sites where settlement structures and associated midden pits are indicative of long-term or repeated settlement and sites with middens only, where perhaps shorter stays in lighter shelters took place. At the Bolam Lake site, although structural remains were present, they were considered to have supported only a lightweight frame that could have provided, at best, only short-term residency of months not years, a conclusion arrived at after undertaking an experimental reconstruction (see Waddington and Davies 2002). In this case, however, the site was located in the foothills of an interfluve between two river valleys and it was tentatively interpreted as a stockherders' camp, perhaps on a transhumance route from lowland to upland pasture. Interestingly the site lies only a short distance from cup- and ring-marked outcrop rocks on the Fell Sandstone moorland, and a presumed Neolithic burial mound with standing stone known as the 'Poind and his Man'.

### Geography of Neolithic settlement in Northumberland

In summary, the settlement evidence that is now emerging for Northumberland, in the form of structural remains, pits, cereal grains and chaff, lithic and stone axehead distributions, reveals a clear focus of occupation on the sand and gravel terraces of valley floors, and in close proximity to river courses with some coastal settlement also evident. This compares directly with Garrows' (2007) analysis of midden pit site distribution in East Anglia where a corresponding pattern has been observed. Although the quantity of sites we are dealing with in Northumberland is much less than that available for East Anglia, the patterning is so similar as to be remarkable and, again, emphasises regional similarity above regional difference in our understanding of the phenomenon we term 'the Neolithic'.

The distribution of Neolithic ceramic findspots in North Northumberland shows a pattern whereby earlier and later Neolithic ceramics are focused around the valley floor. With the arrival of Beakers, however, activity is noted not just on the valley floor, but also more widely spread into the surrounding uplands. This patterning is further supported when the distribution of lithic findspots from fieldwalking is considered. In the case of the Milfield Basin, Beaker-period material was noted in parts of the landscape, such as areas of till to the east of the river Till between 40m and 100m OD, where no previous Neolithic activity had been evidenced (see Waddington 1999a).

This geographical expansion of settlement out of river valleys into areas of the surrounding landscape previously given over to different land use is a key feature of the Chalcolithic in Britain and is a phenomenon that has been noted, not just in East Anglia (Garrow 2007), but also in other areas of southern Britain (Gardiner 1984; Ford 1987; Thomas 1999). Chalcolithic-period activity is, however, still represented on the valley floor by the triangular structure at Whitton Park (Waddington 2006) as well as various Beaker pits dug amongst the midden pit locales of the preceding Neolithic, as at Yeavering, Cheviot Quarry South and Lanton Quarry. Therefore, Burgess' idea (Burgess 1984, 142–43) that the sand and gravel terraces were abandoned for settlement at this time and the land given over as part of a spiritual response to mounting environmental pressures seems unlikely. Rather, settlement activity appears to have continued in the same places as before across this area, although the frequency of Beaker pits is much lower than that of Carinated Bowl pits, which tend to dominate the current record. At the same time, judging by the volume of Beaker burials that have come to light, large-scale expansion into the surrounding uplands of the Fell Sandstones, the till-covered slopes and Cheviot Hills appears to have taken place and this finds support in the pollen record (see above and Chapter 2).

## LAND USE AND SUBSISTENCE

Archaeological evidence for diet during the Neolithic of northern England is notoriously difficult to resolve, given the predominance of acidic soils and the paucity of base-rich environments, such as chalklands, which would otherwise assist with the preservation of bone. Palaeoecological data, by contrast, are more readily available in the region and have the potential to elucidate land use activities. Suitable sites, however, are rarely located in areas most favourable for agriculture, and the interpretation of the fossil record is often handicapped by inadequate dating control, sampling resolution and a variety of taphonomic considerations (e.g. Tipping 2010; Chapter 2). One way forward is to combine palaeoenvironmental data with the botanical macro-fossil data from excavated deposits, together with the analysis of organic residues adhering to ceramics. In the following section we demonstrate how these techniques can begin to illuminate both the type of foodstuffs consumed during the Neolithic, and the way the landscape, especially in valley floor settings, was being utilised for subsistence activities.

Neolithic midden pit deposits in the Milfield Basin have, in particular, yielded significant quantities of botanical macrofossils that permit insights into contemporary foodstuffs and cropping practice. Midden pits dated to the early fourth millennium cal BC at Coupland (see Volume 1, Chapter 5), for example, have provided evidence for the cultivation and processing of emmer wheat (i.e. grains and chaff), the presence of a little barley, together with cereal grain impressions on two of the ceramic vessels. At Cheviot Quarry North the midden pits contained wheat grains, including some identifiable as emmer, together with chaff (Johnson and Waddington 2008), while at Thirlings single grains of barley and oat (the latter could not be identified with certainty as a domesticate) were recovered from pits containing Grooved Ware, in addition to fruit stones from hawthorn and bramble (Miket *et al*. 2008). Various pits and hearths at the recently excavated Lanton Quarry site, found in association with Neolithic structures (see above), produced small amounts of cereal grains including wheat, barley and wild oats, as well as hazelnut shell and fruit stones from the hawthorn and cherry family (ASUD 2008). Weeds from arable fields and disturbed ground, such as small vetches, brome grass, fat hen and chickweed, were also evident at Thirlings. Evidence for chaff is relatively rare in Britain (see Bogaard and Jones 2007) and hence, although small in quantity, this is a surprisingly high cereal count for one area in the British Isles. The importance of emmer wheat and barley accords with a recent review of Neolithic botanical macrofossils in Britain, and links the type of arable activity found in the Milfield Basin with that found in other valley reaches around Britain (*ibid.*).

The analysis of carbonised residues by gas chromatography-mass spectrometry and bulk stable isotope analysis and gas chromatography-combustion isotope ratio-mass spectrometry on a mixture of Carinated Bowls, Impressed Ware, Grooved Ware and Beaker from Cheviot Quarry North and South showed clear evidence for vessels of all styles containing dairy products (Stern in Johnson and Waddington 2008). At Lanton Quarry the large Carinated Bowl assemblage has also produced good evidence for an intensive and well-developed dairy economy that included the processing of milk, cheese and butter from early in the Neolithic (Lucy Cramp pers. comm.). The presence on Carinated Bowl sherds of clear evidence for dairying would suggest that the keeping of cattle and the use of 'secondary products' was important from the earliest Neolithic onwards, something that has only recently been observed in other parts of Britain (Copley *et al*. 2005). At Cheviot Quarry, evidence for animal fat and plant foods was found on two of the Impressed Ware sherds, whilst another Impressed Ware sherd had beeswax adhering to its internal surface (Stern, in Johnson and Waddington 2008). The presence of beeswax implies the collecting of honey, which was no doubt a highly prized foodstuff, and one which could be combined with barley to brew ale/mead (see Dineley and Dineley 2000 for further discussion).

This slender evidence helps to provide a picture of a mixed food-producing economy with the keeping of cattle and exploitation of secondary products from the outset, together with cultivation of emmer wheat and barley, as well as exploitation of wild foodstuffs such as hazelnuts, berries, fruit and honey. Hazelnuts are especially ubiquitous at midden pit sites, (e.g. Lanton Quarry, Bolam Lake, Coupland, Thirlings, Whitton Park, Yeavering Palace, Cheviot Quarry North) and their quantities suggest hazelnut harvesting was probably an organised routine and not just opportunistic exploitation. Evidence for other gathered foodstuffs includes hawthorn and bramble at Thirlings (van der Veen 1982a), whilst at the later Neolithic Milfield North pit site elderberry was identified (Volume 1, Chapter 5). We cannot be certain of the range over which such resources were gathered, nor the exact location of the first arable field systems. As has been argued from a wider European perspective (Brown *et al*. in press), however, it would seem reasonable to assume that the glaciofluvial and glaciodeltaic sand and gravel terraces of the Till-Tweed valley floors, offering as they did a combination of free-draining, workable soils, low-relief terrain, proximity to navigable waters and relatively sheltered locations, were a preferred location for foraging and, especially, the pioneering farming activity in the Neolithic. In the Milfield Basin the absence of organic-rich sedimentary sequences of Holocene age on the Late Glacial terraces precludes pollen analysis relating to land use on the major settlement sites. However, archaeological evidence for cereal production and hazelnut gathering on these terraces is lent some support by pollen assemblages from sediment cores recovered from the adjacent Holocene alluvial valley floor, less than 1km from the eastern edge of the glaciodeltaic terrace in the central part of the Milfield Basin (cores Mil119–9 and MSH1–19; Chapter 2). While the interpretation and chronological controls of these pollen sequences remain provisional at present, the data suggest that in the period immediately before and shortly after *c*. 4000–3800 cal BC, the relatively dry and elevated terrace surfaces supported mixed oak and hazel woodland with patches of grassland and small cereal plots (see Chapter 2). Palaeoecological evidence at Akeld Steads next to the Lanton Quarry settlement suggests that woodland clearance and pastoral activities were also a feature of the south-eastern margin of the glaciodeltaic terrace from *c*. 4000 cal BC, but in this pollen sequence there is no evidence of cereal production (Tipping 1998; 2010).

Foraging activities and management of pastoral and arable agriculture on the elevated glaciodeltaic terrace in the Milfield Basin are likely to have been accompanied by exploitation of the adjacent and low-lying alluvial environments. Here, floodplain wetlands and alder carr must have provided an important source of fowl, game, birds, eggs, fish and plant resources. Activity in and around the floodplain of the Glen and Humbleton Burn has been attested by Neolithic flint scatters located on the low-lying glaciofluvial gravel terraces that lie 1–2m above the modern alluvial surface. In Neolithic times these surfaces may have been perched 3–4m higher than the contemporary floodplains, thereby occupying a greater area, as their margins have been buried by subsequent alluviation. At least their lower margins will have been susceptible to inundation during large flood events (see Chapter 2), but this does not seem to have deterred foraging activities. Indeed, test-pitting on one of these locales, below a flint scatter, revealed a stakehole that produced Neolithic radiocarbon dates in the early fourth millennium cal BC (see also Volume 1, Chapter 3).

The combination of palaeoenvironmental and archaeological evidence for the area on, and surrounding, glaciodeltaic and glaciofluvial terraces in the Milfield Basin would suggest a pattern of Early Neolithic foraging, animal husbandry and small-scale cereal production. Not all valley floors were utilised in this manner, however, since the relatively confined floors of the Bowmont valley in the Cheviot interior have only yielded evidence of limited livestock grazing within a wooded environment (Tipping 2010). Yet in the upland locale around Swindon Hill, lying at 365m OD in the upper Bowmont valley, there is evidence of barley cultivation in small woodland gaps from *c*. 2850 cal BC (Tipping 1996; 2010). To the east at Broad Moss, on the eastern flanks of the Cheviots and at the slightly higher elevation of 395m OD, the pollen record suggests only a slight opening of the woodland canopy, possibly accompanied by some grazing, from *c*. 2880–2400 cal BC, followed by a more distinctive clearance event shortly before *c*. 2460–1950 cal BC.

The overall balance of palaeoenvironmental and archaeological evidence currently available in the Till-Tweed region presents, therefore, a relatively complex geography of Neolithic subsistence practices that is at odds with a simple upland-valley floor zonation of land use activity such as that advanced by Topping (1997; see also Tipping 2010). Nor does contemporary climatic deterioration appear to have prevented Neolithic exploitation of higher-elevation terrain. Indeed, it may be the case that small clearings in the woodland, promoted by climatic factors, were subsequently turned over to early cultivation by Neolithic farmers (e.g. Davies *et al*. 2005; Tipping 2010). Livestock management might have included driving stock into the surrounding uplands and back at certain times of the year, and stockherding activities on the Fell Sandstone escarpment, as suggested by Waddington and Davies (2002; see also below), are perhaps consistent with the palaeoenvironmental evidence of only limited impact on forest cover in these areas.

The domesticated foods represent starkly different 'foodways' from the preceding Mesolithic, requiring different ways of procuring, preparing, consuming and storing food. The use of domesticates emphasises the importance of planning and regulating production and consumption of food, whilst the use of pottery vessels provides new opportunities for the combining, preparation and serving of foods. With this new approach to food, both the foodstuffs themselves and their consumption would have provided the opportunity to make social and cultural distinctions, including new ways of signifying status, largesse and friendships. The complexities of Neolithic foodways have yet to be understood in any detail in Northumberland, but, as improved excavation practices and the latest range of scientific techniques are applied to excavated data, a more thorough understanding is being developed.

## TECHNOLOGY AND MATERIAL CULTURE

### Ceramics

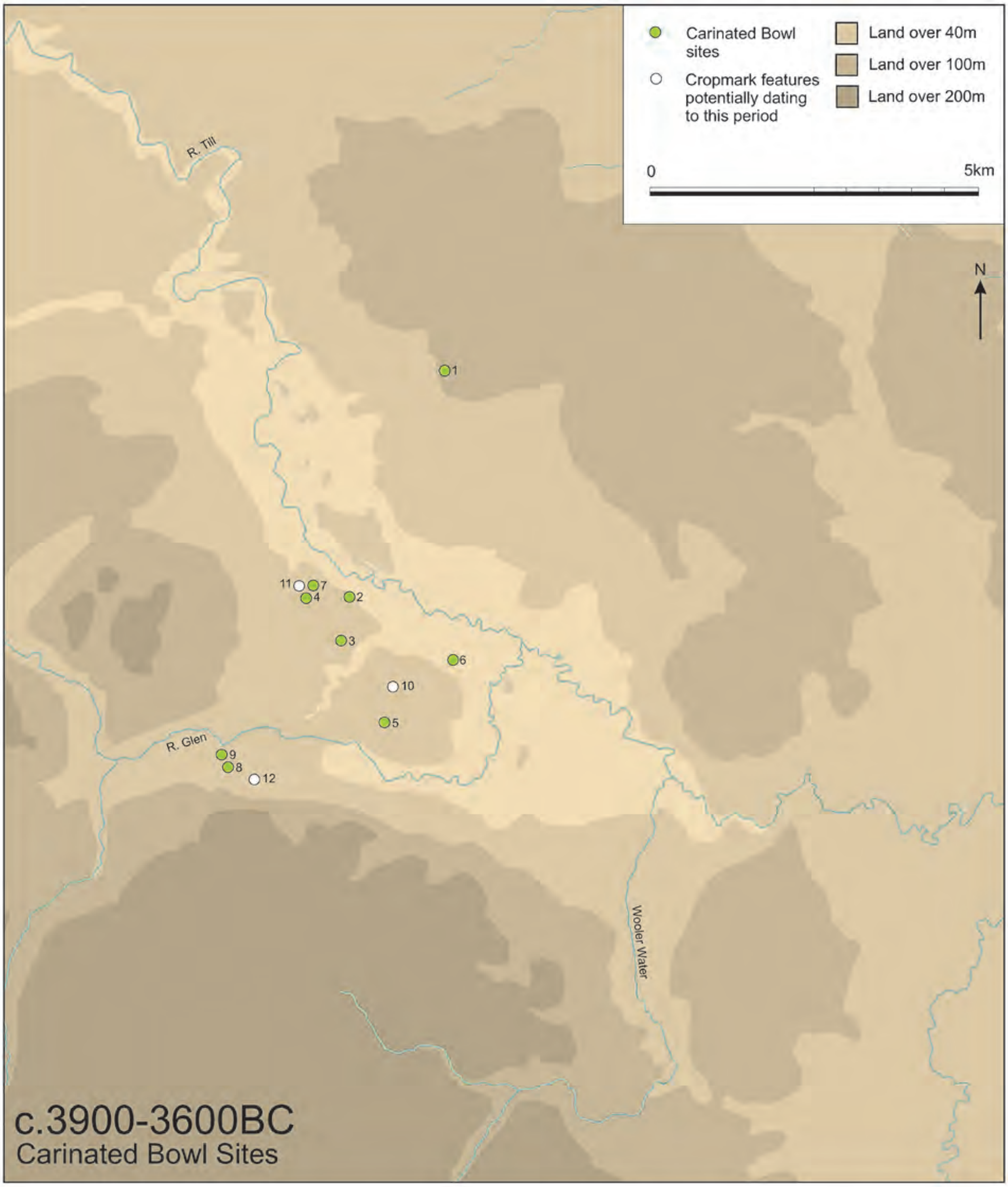
The process of Neolithisation comprised more than profound changes in the way food was obtained, prepared and consumed; it also included the use of new technologies and material culture. The most visible of these in the archaeological record is the first use of pottery. In other areas, such as southern Scandinavia, ceramics were introduced during Late Mesolithic times, but across the British Isles, ceramics form part of Neolithisation itself. The chronology of Neolithic pottery across Britain is coming into sharper focus with the advent of new and synthetic studies. The currently available chronology for the Northumberland ceramics is set out in Figures 5.2–5.5 and in Tables 5.2–5.6. This dating shows a clear, sequential pattern, starting with Carinated Bowls, then Impressed Wares, Grooved Ware, Beakers and their accompanying 'non-Beaker' pottery. The extent to which these styles overlap chronologically is still not clear from the dating evidence available (see above), but rapid change from one style to the next is by no means impossible, although there are hints in the typological sequence of rims developing from the plain rims of Carinated Bowls *sensu stricto* to the enlarged rims associated with Impressed Ware.

The earliest ceramics are usually referred to as 'Carinated Bowls', although this term encompasses a suite of round-based vessels, some of which have carinations in the lower part of their body, while others have a higher shoulder below the neck, which Herne (1988) has differentiated as 'Shouldered Bowls', together with slack bag-shaped vessels, cups and other non-carinated 'Plain Wares'. The corpus of material has grown significantly in recent years, with several hundred sherds coming from each of the sites at Cheviot Quarry and Lanton Quarry, as well as important assemblages from Coupland and Bolam Lake, together with the existing assemblages from Thirlings, Yeavering and Broomridge. This early ceramic style is usually characterised by a coarse but evenly fired fabric that includes crushed quartz or, occasionally, crushed sandstone as opening agents. It typically, though not always, has a very well burnished finish on both its inner and outer surfaces. Typical surface colours range from buff-brown to dark grey. The rims can be upright, everted or rolled over, whilst decoration is seldom noted except for the occasional light drag line or finger fluting on a rim (see Fig. 5.15). The range of vessels is wide and includes large open storage vessels, cooking pots, serving bowls and cups. Occasionally vessels have applied and perforated lugs, as revealed by finds from Cheviot Quarry South, and Lanton Quarry (Fig. 5.16), indicating their suspension, presumably during the cooking process. The Carinated Bowl with handle from Lanton Quarry is a rare example and, together with the examples that have finger fluting along the rim, can be included in what Sheridan has termed 'Modified Carinated Bowls'. It is possible that these modified forms are both chronologically and typologically later than the plain Carinated Bowl forms, but further targeted radiocarbon dating will be required on these recently discovered assemblages to determine this issue.

Finds of Impressed Ware are relatively rare in Northumberland and their chronology and use remains perhaps the most poorly understood of the Neolithic ceramic types in the region. The sherds from Cheviot Quarry, Lanton Quarry and Thirlings have a coarse fabric, often with a bright orange or orange-grey surface colour, and they are often unevenly fired. These vessels can vary in size but some very large examples have been noted. They have roughly burnished surfaces with typical repeated fingernail, comb and stab decoration. The rims are often enlarged and distinctive and include flattened 'T' profiles, bevelled rims and large rounded rims – all of which can be richly decorated on their outer, upper and inner lips (Fig. 5.17). The Impressed Ware ceramics have a distinctive fabric – they tend to be hard, thick-walled, and sometimes fairly coarse pots. They often contain large prepared angular crushed stone inclusions, which can frequently be seen erupting on the surface. As with Impressed Ware ceramics from elsewhere in the British Isles, the material from Northumberland can have rounded, and occasionally flat, bases (see also Johnson and Waddington 2008; Miket *et al*. 2008).

Finds of Grooved Ware are not as common as was previously thought in Northumberland, as Gibson's recent re-evaluation of the material has shown (Gibson 2002a), and its chronology and use is only just beginning to be understood. The Grooved Ware ceramics from Northumberland are usually well made pots of varying size which are typically well fired with burnt-out organics sometimes noted. They usually contain finely prepared crushed stone inclusions and grog is sometimes used as an opening agent. The body sherds tend to be straight-sided, whilst flat bases have been noted in the Cheviot Quarry and Lanton Quarry material. This evidence points, in the main, towards bucket-shaped vessels, although barrel-shaped and tub-shaped vessels are also noted. An unusually shaped and decorated sherd from Cheviot Quarry indicates an open dish vessel, perhaps with a rounded base, with a plain rounded rim but with tightly spaced parallel groove decoration running from the rim towards the base. The simple rounded rim, grooved decoration and lozenge motifs on the Lanton Quarry pot and some of the Cheviot Quarry sherds show parallels with Smith's 'Clacton' style (Smith 1956), whereas the presence of fingernail impressions on some of the Cheviot Quarry material recalls Smith's 'Woodlands' style, and the near-vertical internal bevel on one pot from Cheviot Quarry is typical of 'Durrington Walls' style (Fig. 5.18). This range of Grooved Ware sub-styles is present elsewhere in the Milfield Basin, at the nearby sites of Old Yeavering, Ewart 1 pit alignment, Redscar Bridge and Milfield North (see Gibson 2002a for site reviews). Decorative features include herringbone patterns, chevrons, lozenges, parallel lines (including oblique), fingernail impressions and grids of small squares formed by grooving. Charred organic deposits have been noted on several pots, indicating that some were used to hold foodstuffs prior to deposition, whilst occasional grain impressions have also been noted. Raised cordons also occur and can be horizontally or vertically arranged. The radiocarbon chronology for Grooved Ware in the region has been poorly served but some new dates have recently been obtained on Grooved Ware material from Cheviot Quarry (Waddington and Johnson 2008), the Milfield North pit (Volume 1, Chapter 5) and from Lanton Quarry (see Table 5.4).

Northumberland has produced an extensive assemblage of Beakers of widely varying types (Tait 1965) from early All-Over-Cord (AOC) forms through bell, short-neck, long-neck and barrel types. The typology of Beakers has formed a subject of intense archaeological debate over the last one hundred years and there is still no entirely satisfactorily established sequence. A recent review of British Beakers by Needham (2005) has, however, brought together a corpus of the more reliable radiocarbon dates associated with different 'types' and incorporated these data into a study of the processes of Beaker transmission in North-West Europe. Examples that fit into all of Needham's classificatory system can be found in the Northumberland repertoire: Low-Carinated Beakers (e.g. Wards Hill, Rothbury), Tall Mid-Carinated Beakers (e.g. Borewell Farm, Scremerston), Weak-Carinated



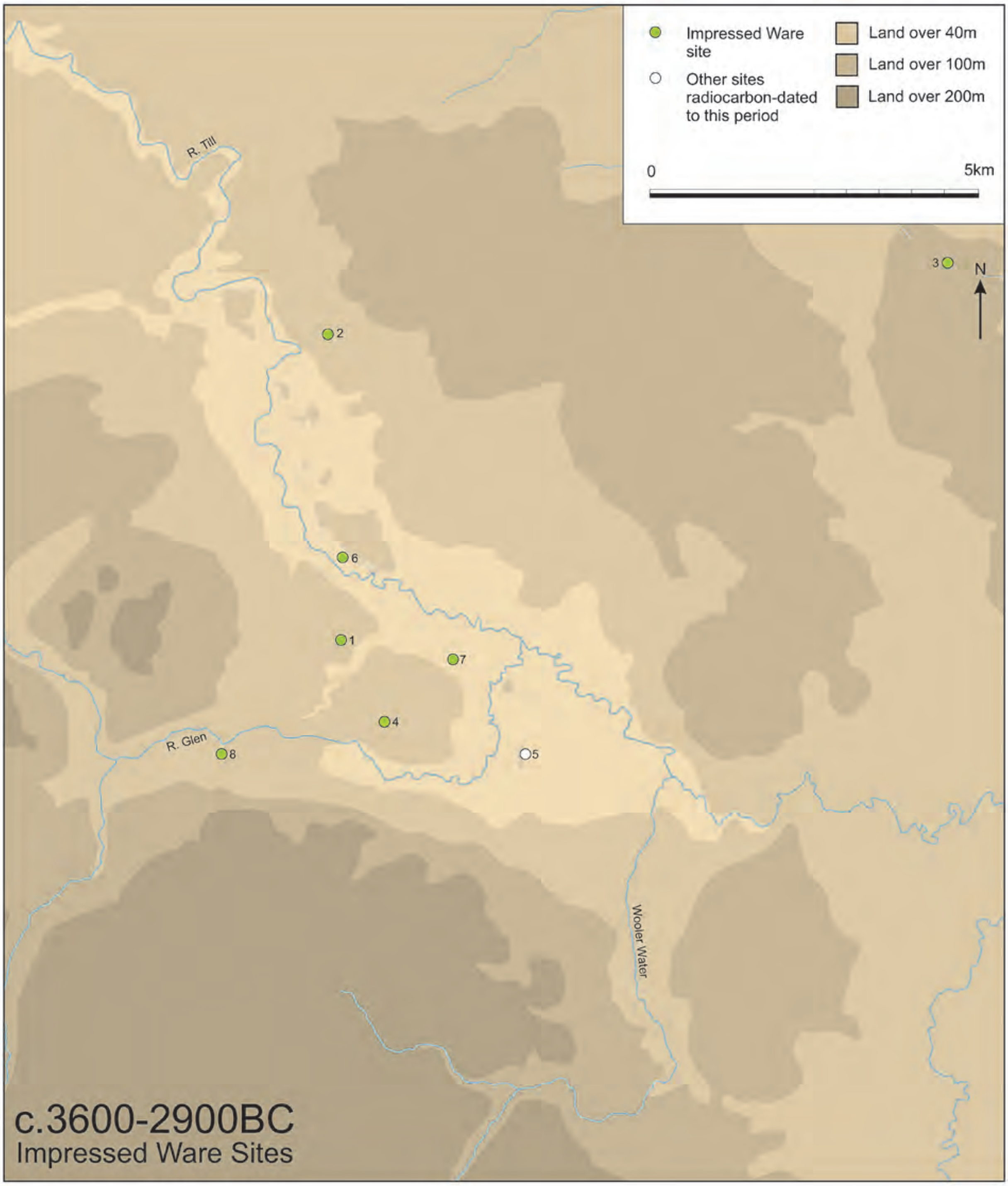

1. Broomridge
2. Cheviot Quarry North
3. Cheviot Quarry South
4. Coupland
5. Lanton Quarry
6. Thirlings
7. Threefords
8. Yeavering henge

Sites existing as cropmarks potentially dated to this period

9. Yeavering palace
10. Ewart - possible mortuary enclosure
11. Milfield - possible long barrow
12. Yeavering - possible long barrow

*Figure 5.11. Map of Carinated Bowl sites in the Milfield Basin.*

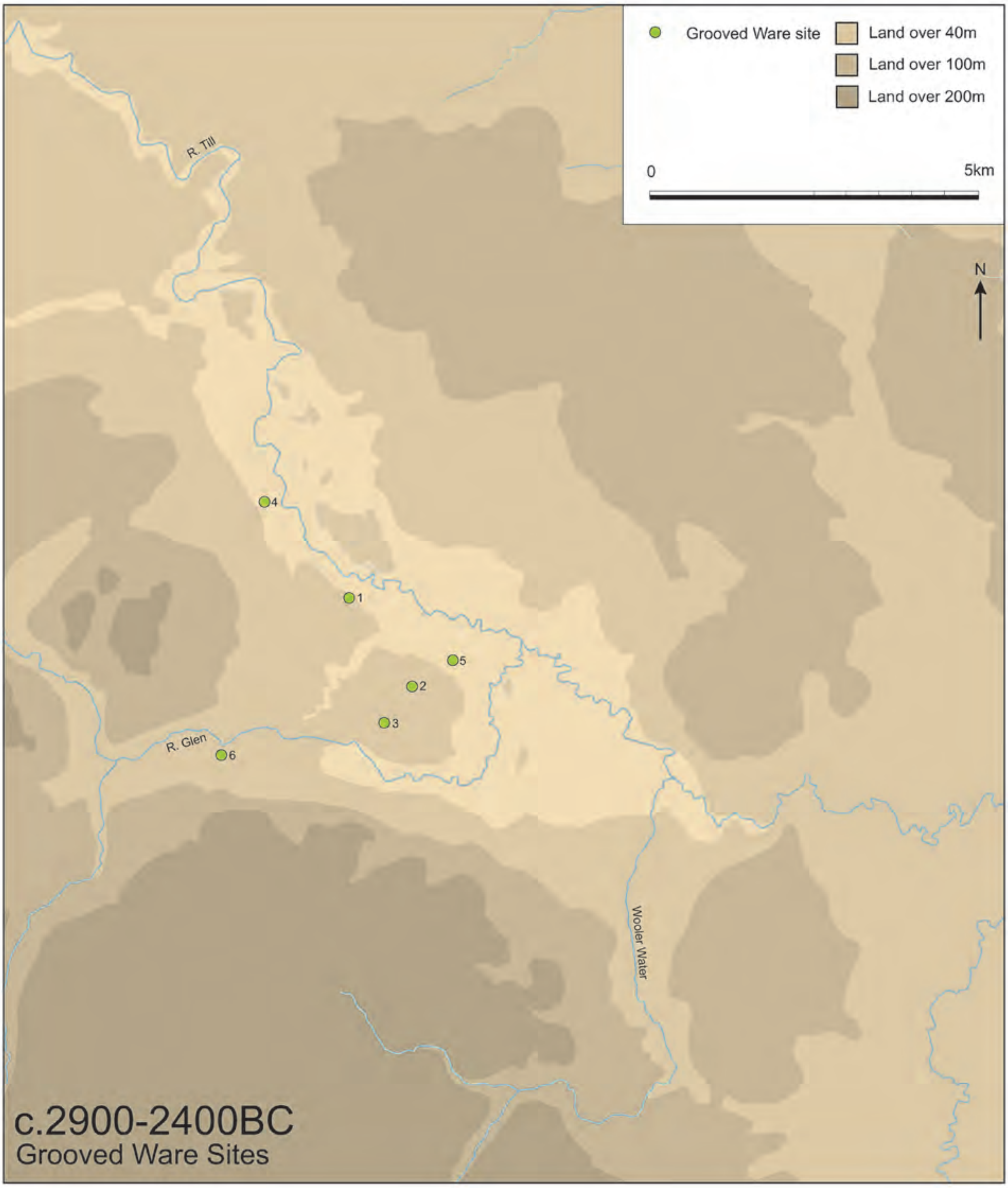
Beakers (e.g. Bedlington), Short-Necked Beakers (e.g. Smalesmouth, Bellingham), Long-Necked Beakers (e.g. Etal Moor, Ford) and S-Profile Beakers (e.g. North Sunderland) (Needham 2005; Tait 1965). The dating of Northumberland Beakers is in its infancy and, as yet, there are insufficient radiocarbon dates available to identify a reliable chrono-typological progression. The Beaker ceramics from Northumberland are




1. Cheviot Quarry South
2. Ford Castle
3. Kyloe Crags
4. Lanton Quarry
5. Newtown Farm
6. Redscar Bridge
7. Thirlings
8. Yeavering Palace site

*Figure 5.12. Map of Impressed Ware sites in the Milfield Basin.*

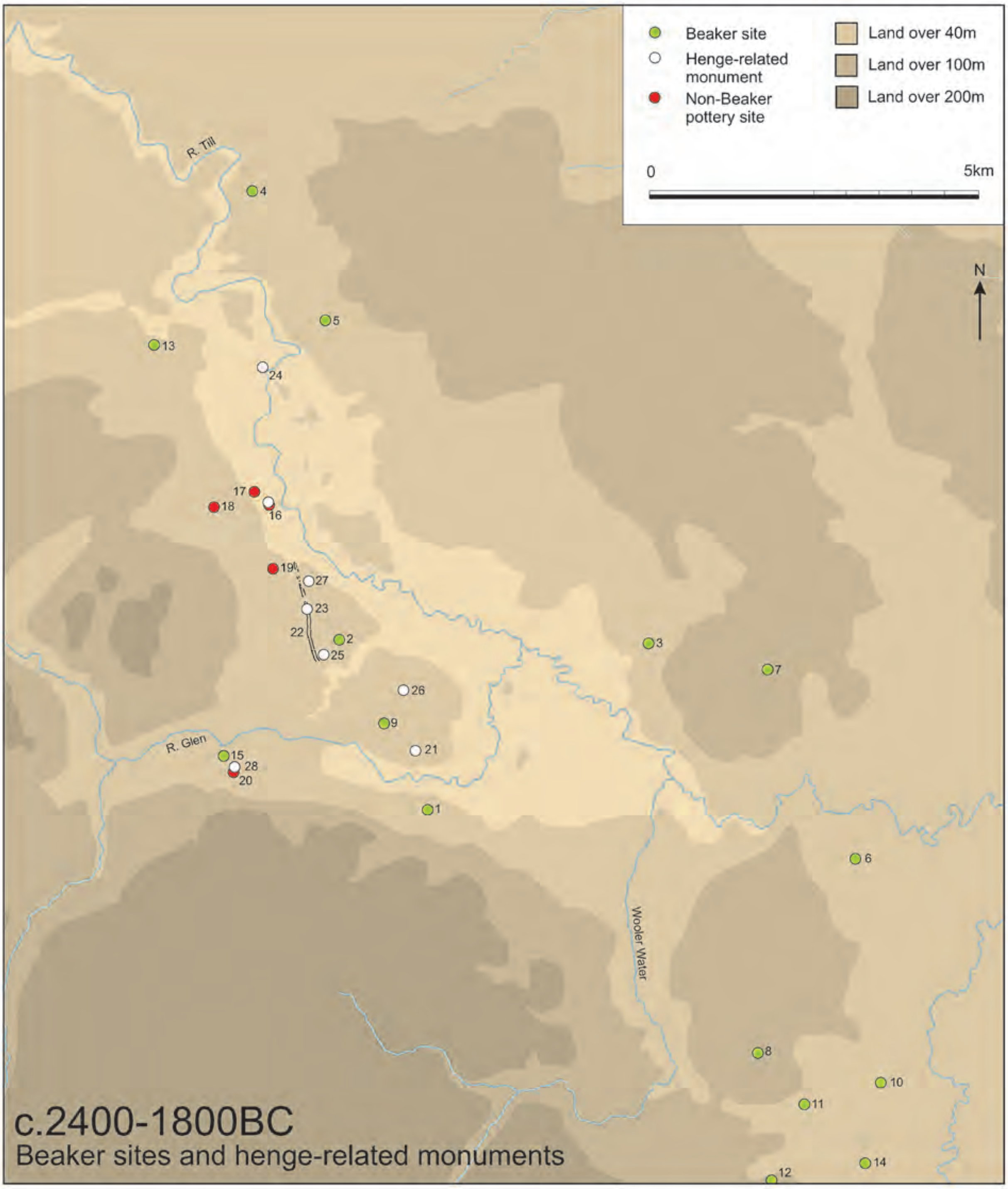
almost universally well made pots (e.g. Fig. 5.19) with prepared, fine inclusions of stone, quartz and sand, with thin walls that have been evenly fired. A wide range of decoration can be observed including comb impressions, grooves forming lozenges and triangles, cord and fingertip decoration, as well as the occasional presence of cordons (e.g. Woodhorn and an unprovenanced pot from 'Northumberland'; Tait




1. Cheviot Quarry North
2. Ewart Park pit alignment
3. Lanton Quarry
4. Milfield North Pit
5. Thirlings
6. Yeavering Palace site

*Figure 5.13. Map of Grooved Ware sites in the Milfield Basin.*

1965, 23 and catalogue nos 70 and 71). Zoned areas filled with decoration and use of geometric patterns formed by grooves, jabbed and fingernail impressions are common. It should be noted that it is sometimes difficult to tell Beaker and Grooved ceramics apart when only small sherd fragments are available for inspection, as the two traditions share a range of decorative motifs in this region.




Beaker sites

1. Akeld
2. Cheviot Quarry South
3. Doddington Village
4. Etal Moor
5. Ford
6. Fowberry
7. Horton Castle
8. Ilderton
9. Lanton Quarry
10. Lilburn Hill
11. Lilburn Tower Farm
12. Lilburnsteads
13. Pace Hill
14. West Lilburn
15. Yeavering Palace site

Beaker period
Neolithic-derivative pottery

16. Milfield North
17. Milfield North pit alignment
18. Whitton Hill I and II
19. Whitton Park
20. Yeavering henge

Henge-related monuments

21. Akeld Steads
22. Droveway / Avenue
23. Coupland
24. Ford Bridge West
25. East Marleyknowe
26. Ewart Park
16. Milfield North
27. Milfield South
28. Old Yeavering
18. Whitton Hill I and II

*Figure 5.14. Map of Beaker period ceramic sites in the Milfield Basin.*

*Figure 5.15. Examples of Carinated Bowl and related pottery from Northumberland.*

*Figure 5.16. 'Modified' Carinated Bowl fragments from Lanton Quarry including one with a handle attached to the rim and shoulder and another whose rim has fingertip fluting.*

In addition to Beakers, other non-Beaker (or, as it used to be termed, 'domestic-beaker') pottery can be ascribed to this same 'Chalcolithic' period. For example, sherds from three non-Beaker vessels were found in pits containing Beaker sherds at Cheviot Quarry South (Johnson and Waddington 2008), whilst other pottery from the Milfield North pit alignment, the Milfield North henge and the Whitton Hill henge-related monument also date to the Beaker period (see above, Table 5.6). The recent review by Gibson (2002a) rightly contests the previous classifications of this material as Grooved Ware and Impressed Ware respectively and instead draws attention to stylistic similarities with the emerging Food Vessel Urn tradition. However, these ceramics undoubtedly draw on indigenous later Neolithic stylistic traits and forms, so in order to differentiate them from Grooved Ware *sensu stricto* and from the imported Beaker tradition, one of the authors has published elsewhere with other authors a case for terming such material 'Neolithic-derivative' pottery (Millson *et al*. 2011). With Beakers being such a specialised vessel form, intended primarily as receptacles for liquid and usually deposited in specialised settings – typically within graves – other vessel forms must have undoubtedly been used alongside them. We know very little about domestic ceramics during the Chalcolithic, however, and one of the main reasons for this may be that the


*Figure 5.17. Examples of Impressed Ware pottery from Northumberland.*

midden pits, so common throughout the Neolithic period, are less frequently encountered during this period. Without such pits there would be considerably less evidence for Neolithic domestic ceramics. With the onset of the Chalcolithic, therefore, the long-held practice of routinely discarding domestic midden material in pits appears to become less common in Northumberland, though it by no means ceases altogether, thereby signifying alterations in established behavioural routines and perhaps ideological beliefs. This reduction in midden-pit discard also goes some way to explaining why there is such a paucity of Chalcolithic, non-Beaker pottery and why attention is so focused on the highly specialised Beaker.

## Lithics

As with the arrival of pottery, the stone tool kit shows some sudden and profound changes with the onset of Neolithisation. In Northumberland this includes, most obviously, the use of pressure flaking to make new tool forms such as the invasively retouched leaf-shaped arrowhead (Fig. 5.20) and grinding and polishing to produce stone axeheads (Figs 5.21 and 5.22). Furthermore, the use of microliths appears to stop altogether and very suddenly. There is, however, another key change that has only recently come to light in this region. Although the volumes of struck lithics from Neolithic sites in Northumberland are relatively low, at all sites the entire Neolithic assemblages comprise flint artefacts, whereas during the Mesolithic there is a bias in favour of locally available materials that in many cases includes non-flint materials such as agates, chert and quartz (see Chapter 4). Furthermore, much of the flint from Neolithic sites is high-quality nodular flint that has evidently been imported over considerable distances from source areas in the chalklands to the south. This contrasts directly with the reliance on localised procurement throughout the Mesolithic. This switch in procurement patterns signifies access to long-distance exchange networks as well as faith in the security of supply. The existence of such networks supports the observation of widespread similarities during the Neolithisation of Britain, as such networks could allow for the rapid transmission of ideas, routines, new skills and materials.

Tool forms typical of the Early Neolithic in Northumberland include leaf-shaped arrowheads (Fig. 5.20 and see Volume 1 Figs 3.32 and 3.36) and end scrapers (see Volume 1 Fig. 3.31 scrapers 437, 633, 1708, 428 and 249; Fig. 5.14 scraper 1) made on blades, which can be differentiated from Mesolithic end scrapers as they are larger and sometimes have trimming along their long edges. Other tool types include a variety of retouched blade tools and serrated blades, together with stone axeheads made from flint and a variety of other stone types (Figs 5.21 and 5.22). The latter includes local rock sources such as the Cheviot Andesite (see Waddington and Schofield 1999), Whinstone and even the Fell Sandstone,

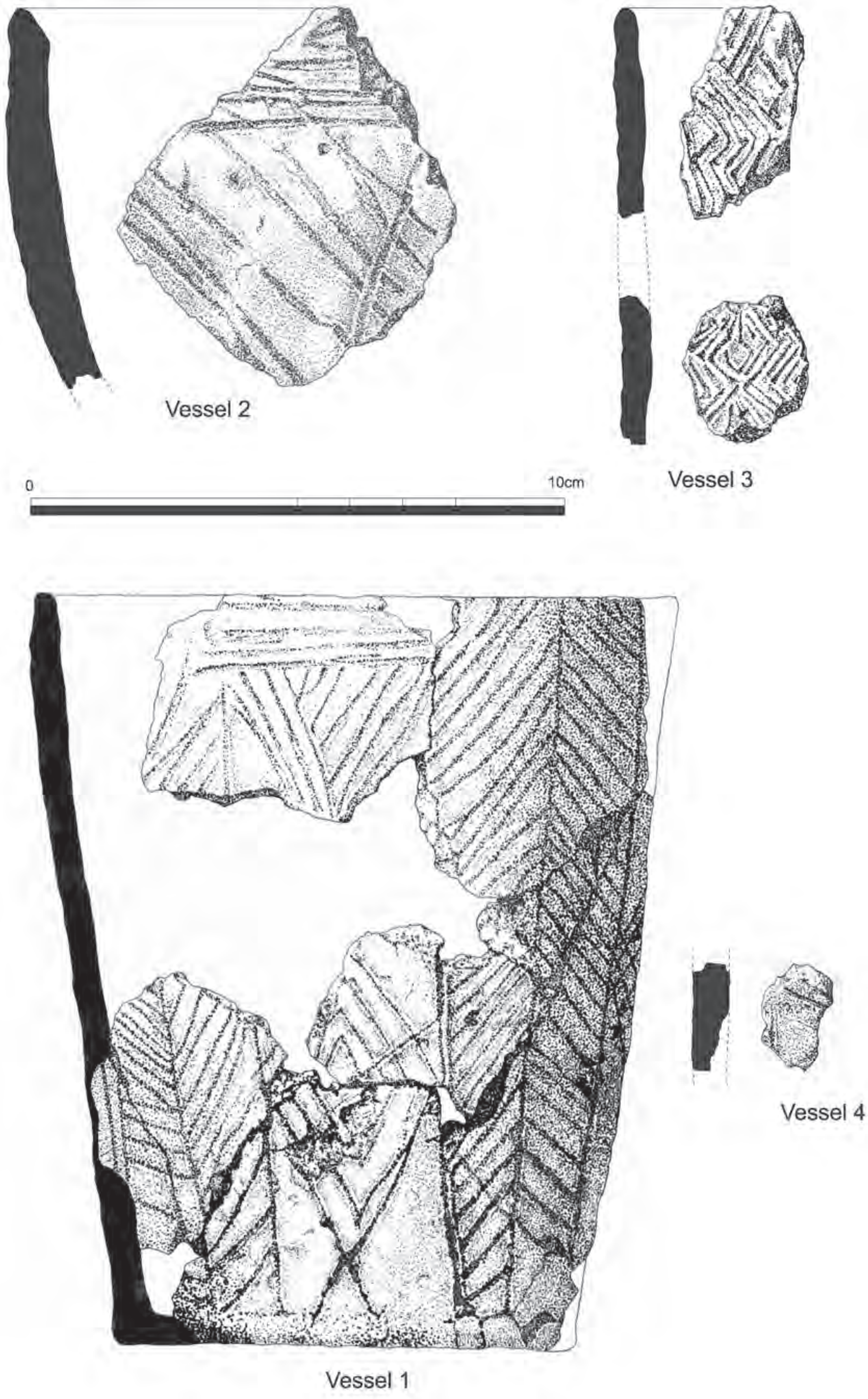



*Figure 5.18. A Grooved Ware pot from Lanton Quarry.*

*Figure 5.19. A short-necked Beaker recovered from a cist at the Sneep, Bellingham (Courtesy Peter Forrester).*

together with imported axeheads, notably Group VI types from Langdale in Cumbria. As the Neolithic progresses, a wider range of flint tools is evident. This includes new arrowhead forms, such as transverse arrowheads (see Volume 1 Fig. 3.36 no. 2645), as well as side scrapers, disc scrapers and other tool forms not necessarily made on blade blanks (see Volume 1 Figs 3.30, 3.31 and 3.32).

The lithic repertoire of Northumberland's Chalcolithic or Beaker period shows important developments from the preceding Neolithic. In particular this includes the widespread use of barbed and tanged arrowheads and their variants (Fig. 5.23), which can be found as grave goods or as casual finds from fieldwalking. As with leaf-shaped arrowheads the quality of these pieces can vary enormously, with exquisitely made specimens at one end of the spectrum and very rough, opportunistically produced specimens at the other. Small thumbnail scrapers, reminiscent of Mesolithic tiny scrapers, are frequently found but these usually have a slightly more rounded dorsal profile than the more abrupt-edged dorsal sides that are common amongst local Mesolithic forms. A range of high-status pieces, which require significant skill and investment of labour, also comes into circulation, suggesting the emergence of specialised flintworkers as evidenced by forms such as daggers and spearheads, some of which may be attempts to copy metal tools in stone. Plano-convex knives (Fig. 5.24) make their first appearance at this time and, as with thumbnail scrapers and barbed and tanged arrowheads, are sometimes found associated with Beaker burials. Other types of scraper, such as side scrapers, remain common and were made on a variety of flake forms.


*Figure 5.20. Leaf-shaped arrowheads recovered from fieldwalking.*

In addition to struck flints, other types of stone objects were used during the Neolithic. This includes occasional use of carved stone balls, the most recent example being a flawed roughout from an Early Neolithic pit dated *c*. 3790–3640 BC (OxA-16097) from the Cheviot Quarry North site (Johnson and Waddington 2008), although the best example from the county is that from Hetton to the east of the


*Figure 5.21. Examples of different types of stone axeheads from Northumberland (Courtesy Peter Forrester).*


*Figure 5.22. Two beautifully made flint axeheads which have been chipped and then their blades ground and polished, both from Northumberland (Courtesy Peter Forrester).*

*Figure 5.23. Different types of barbed and tanged arrowheads from Northumberland.*


*Figure 5.24. A plano-convex flint knife from Stargate, Ryton (Courtesy Peter Forrester).*

Milfield Basin (Speak and Aylett 1996). Maceheads have also been discovered, such as the finely ground example from Wallington (see Waddington 2004, 47) and the fragmentary quartzite specimen found at St Cuthbert's Farm in the Tweed Valley (see Volume 1, Fig. 3.36), testifying to a new range of ceremonial paraphernalia. Jet buttons and spacers for necklaces are occasionally found, together with a few examples of amber, usually from burial contexts, as in the case of the Blawearie cairn (Hewitt and Beckensall 1996), and the rarity of these imported materials suggests these objects conferred significant status on the individuals who possessed them.

Complementing these new high-status objects is the introduction of early metalwork forms which appear to coincide with the arrival of Beakers, although more precise dating is required to confirm this picture at a national scale. The early metalwork in the region is typified by copper-rich flat axes, double-ended awls, copper wire and tanged and riveted daggers, together with basket-shaped 'ear rings' made from gold, such as those found with an early Beaker form at Kirkhaugh (e.g. Figs 5.25 and 5.26). The use of objects made from copper alloys and precious metals provided a new medium for expressing prestige, power and status, as well as a valuable commodity that was no doubt used in networks of exchange and trade. Although there was clearly selection of individuals for burial during the Neolithic, the emphasis on prestige and power objects for the individual is considerably more marked in the Chalcolithic, and this is reinforced by the widespread occurrence of single burials witnessed across the county. These typically take the form of cist burials in flat graves, within ring ditches or below cairns. However, we must be careful in characterising the funerary record for this period as comprising single burials only.

Although burials themselves are usually of individuals they can also occur in a more corporate context in monuments that contain more than one cist or have additional cists inserted. Ring cairns, such as that at Blawearie, contained six cist graves (Hewitt and Beckensall 1996) whilst at Wether Hill, the timber cist burial recently excavated by the Northumberland Archaeology Group has revealed a sequence of successive Beaker insertions (Topping 2001), each presumably with remains of the deceased, into the same cist. Whether such practices represent the burial of related kin in some kind of family tomb remains to be established, although a similar scenario has been suggested by Barnatt for the East Moors area of the Peak District (Barnatt 1987; 1996, 37–40). The development of cairn cemeteries across the uplands of Northumberland, sometimes comprising several hundred cairns or more, indicates the accretion of burial monuments over time. The regular use of these locales for burial suggests that people of the same kin or group affiliation were being intentionally buried close to one another within designated burial areas that in some cases extend over several hectares of landscape. Many of these cairn cemeteries extend in time from the Chalcolithic through to the Early Bronze Age period.

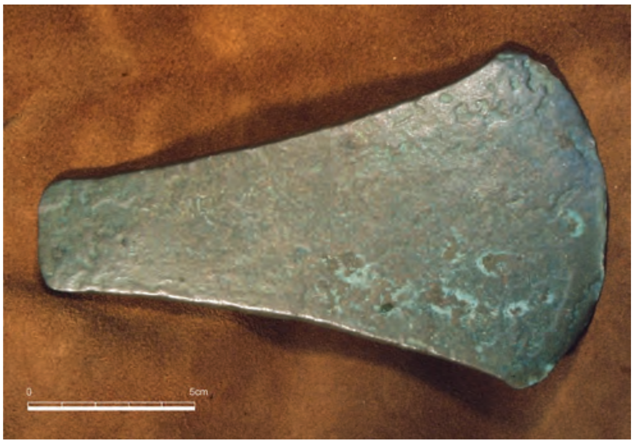



*Figure 5.25. A bronze flat axe from Northumberland. Flat axes are one of the earliest types of bronze artefacts to appear in the British Isles (Courtesy Peter Forrester).*


*Figure 5.26. Gold basket-shaped ear ring from a Beaker burial at Kirkhaugh, Northumberland (courtesy Peter Forrester).*

## MONUMENTALISING THE LAND

### Neolithic

Another defining feature of the Neolithic in the British Isles is the construction of monuments,

*Figure 5.27. The Dod Hill long cairn, situated on a south-facing flank of the Cheviot Hills.*

some to house the dead and others as places for the living to meet. In contrast to some parts of Britain, the number of Neolithic monuments known in the county is relatively low, whilst the number of known settlement sites is increasing all the time as a result of 'strip, map and sample' archaeological conditions on large-scale developments. With little investigation of Northumberland's Neolithic monuments having taken place there is, currently, only limited scope to discuss and interpret them.

The earliest Neolithic monument forms dated elsewhere in Britain are, by and large, the causewayed enclosures, long mounds and mortuary enclosures. Northumberland does host a group of long mounds and, with the exception of the Dod Hill cairn in the eastern Cheviots (Gates 1982b and Fig. 5.27), these are located in the valleys of the North Tyne and its main tributary, the Rede, that skirt the western side of the Cheviot Massif. This group includes Bellshiel Law (Newbigin 1936), and the Devil's Lapful (Masters 1984), whilst the site at Spithope, near Byrness in Redesdale, has recently been refound after clearance of forest plantation. Since the publication of Masters' review in 1984, the cairn on Dour Hill has been surveyed in detail and has been shown to be a chambered tomb with several collapsed corbelled chambers (Fig. 5.28) and an interlinking passage (Waddington *et al*. 1998), together with what appear to be later extensions at each end. These were possibly added during the Early Bronze Age, given the presence of cist boxes. These mounds are aligned broadly east-west with the wider and higher end towards the east, as is common for long mounds around Britain. The Tynedale sites show close morphological similarities with other sites in Cumbria to the south-west and southern Scotland to the west and north, and the Tynedale group is perhaps best viewed as revealing a Neolithic cultural ambit that extended in these directions rather than eastwards across the Cheviot Massif. The lack of such monuments in northern and eastern Northumberland suggests that, as Neolithisation progressed, regional distinctions appear to have emerged between eastern and western Northumberland, with the Cheviot Massif forming a natural boundary between these areas. Eastern Northumberland can be seen to have similarities with areas such as North Yorkshire with large and small round cairns in use (see below), whilst western Northumberland has similarities with Cumbria and south-west Scotland in the form of long cairns and chambered cairns.

To the east of the Cheviots there is the single, supposed, long cairn on Dod Hill (Gates 1981; Fig. 5.27), which has yet to be tested by excavation. It is of a short stubby form that does not compare closely, in morphological terms, with those in Redesdale and Tynedale to the south-west. However, here there is a glimpse of what may be a separate tradition of round cairns in the Neolithic. The renowned antiquarian Canon Greenwell described a low, circular cairn at the end of Broomridge, on the east side of the Milfield Basin, on the Fell Sandstone escarpment which was constructed over a burnt deposit containing more than 200 sherds of Carinated Bowl pottery, a stone axehead, flints and burnt human remains (Greenwell and Rolleston 1877; Newbigin 1935). The cairn measured approximately 5m in diameter and about 1m in height when Greenwell investigated it. There is a group of robbed circular cairns amongst rock outcrops and

*Figure 5.28. The Dour Hill chambered cairn with the collapsed corbelled roof of chamber 2 visible in the foreground.*

*Figure 5.29. Robbed cairns amongst boulders on the slopes of Old Bewick, 300 yards north-west of the hillfort and possible location from which an Early Neolithic vessel, now in the British Museum, was found.*

natural boulders on the north-west slopes of Old Bewick Hill, about 300m below the ramparts of the Iron Age fort (Fig. 5.29). These could account for the puzzle of the Early Neolithic bowl housed in the British Museum from Old Bewick that was found with a pencilled note inside stating that it was a "small bowl of form AC found 300 yards north-west of camp under a stone projecting from face of hill" (Piggott 1931, 151 and fig. 6 ill. 6). If this note relates the pot to the area of these robbed cairns, these monuments may

*Figure 5.30. The cup- and ring-marked rock at Roughting Lynn.*

provide a further example of Early Neolithic round cairns on the Fell Sandstone escarpment.

Further south at Copt Hill in County Durham, another site that Greenwell investigated, a large burial mound had been raised over what are thought to be Neolithic burnt bone deposits, although secondary Bronze Age burials and possibly mound modification subsequently took place. Other good contenders for Neolithic round mounds include those at Warden Law and Hasting Hill, both in County Durham. The round mounds of eastern Northumberland and County Durham suggest linkages with the Yorkshire round mound tradition (see also Burgess 1984). Small low cairns may have also featured in the burial record for this period, however, given that a small round cairn on Chatton Sandyfords Moor has produced a fourth millennium cal BC radiocarbon date from the sealed pit deposit below the cairn which the excavator thought to be a burial pit (Jobey 1968a).

There are other large round mounds known in East Northumberland, although many have been heavily quarried for stone over the centuries and none have been investigated in modern times. They include the various large cairns on Simonside as well as sites such as the 'Five Barrows' in Upper Coquetdale above Holystone and the large circular mound, with adjacent standing stone, known as 'The Poind and his Man' near Bolam Lake. These upland monuments are all of stone, but in lowland settings it is more usual for long and round mounds to be earthen monuments. It is possible that the ploughed-out remains of several earthen long mounds are located around the fringes of the Milfield Basin on the sand and gravel terraces. There is a possible site mentioned by Miket (1976) situated to the east of Milfield village, but re-examination of the aerial photographs by one of the authors does not allow for any certainty and this attribution requires testing through excavation. Another two possible cropmark sites were located by McCord and St Joseph to the east of the Yeavering henge site (McCord and Jobey 1971; 120 and Plate XII, no. 2). These could represent the ploughed-out remains of long mounds or mortuary enclosures, but again, without recourse to excavation, the attribution of these sites remains equivocal (see also Chapter 3 this volume).

A good example of a large circular mound in a relatively lowland setting (115m OD) that appears to be constructed as a stone and earthen monument is the Shortflatt mound or 'barrow' recorded by Davies and Davidson (1990) in central Northumberland not far from Bolam Lake. Earthen round mounds such as this have yet to be tested by excavation in Northumberland.

The only other possible Neolithic burial that is currently known is the pit containing some Carinated Bowl sherds from the Yeavering Palace site that also contained some burnt bone, though it is not known if it is human (Hope-Taylor 1977). Bearing in mind that the bone from below the Broomridge round cairn was also burnt there is a suggestion that in eastern Northumberland an early cremation

*Figure 5.31. A cup-marked rock from the wall of chamber 1 in the Dour Hill chambered cairn.*

tradition may have existed. This would be in contrast to the interment of bones that can be reasonably inferred for the long cairns and chambered tombs of south-west Northumberland. The practice of cremation in eastern Northumberland adds further to the argument that this area shared traditions with Yorkshire, where cremation burials are also evident in the Neolithic (Manby 1988). Based on the remarkably scant evidence so far available, it seems possible that by the time the Northumberland monuments were being constructed, presumably in the second quarter of the fourth millennium cal BC onwards, by analogy with the dating now emerging from similar Neolithic monument types elsewhere in Britain, different funerary traditions were being followed in eastern and western Northumberland.

Two promising contenders for Neolithic monuments are the oval-shaped enclosures with entrance causeways, recognisable as cropmarks, which are likely to be mortuary enclosures, although neither has yet been tested by excavation. Both are in eastern Northumberland; one is located at Ewart, in the same field as the Ewart henge (Miket 1976), and the other is located 13km to the north-west, outside Wark, on the River Tweed (see Volume 1, Chapter 3). Both are located on sand and gravel terraces close to major river channels in areas favoured for Neolithic settlement (see above). A stone axehead, made from the locally available Cheviot Andesite, was discovered on the ploughed field surface in the area enclosed by the Ewart monument by Colin Richards, who kindly passed it on to one of the authors (Waddington and Schofield 1999). This diagnostic artefact adds further to the argument for this monument being of Neolithic date, as does the proximity of the Ewart henge and a group of single pit alignments which, in the case of the Ewart I alignment, produced sherds of Grooved Ware ceramics (Miket 1981). Until there is further field investigation of these monuments, though, their morphological and chronological status will remain elusive. Other possible mortuary enclosures include the two possible ploughed-out long barrow sites mentioned above (see also Chapter 3).

A review of Neolithic enclosures in northern Britain has previously been published (Waddington 2001) though Coupland henge and Gardoms Edge can now be discounted. Neither did this article include the recently discovered possible causewayed enclosure site at Flodden Hill, to the north-west of Milfield village (Gates and Palmer 2004). However, Gates and Palmer (2004) acknowledge that the enigmatic nature of the aerial photographic evidence means the feature could be ascribed to a different monument type entirely, and therefore a Neolithic attribution for this monument needs to be tested by field investigation. A further, more certain, candidate is the monument revealed by a line of interrupted ditches and associated with a group of radiocarbon dated Neolithic pits that was sealed by the Iron Age and Roman layers below the Roman fort at South Shields (Waddington in Hodgson *et al*. 2001). The curve of the ditches suggests that the monument

*Figure 5.32. Northumberland's tallest standing stone at Swinburne, which carries cup- and ring-marked decoration across its surface.*

*Figure 5.33. The Duddo stone circle under excavation during 2008 (courtesy Roger Miket).*

may have encompassed the prominent domed hilltop known as the 'Law Top', which is in keeping with the 'upland-oriented' Neolithic enclosures Oswald *et al*. have identified in Britain (Oswald *et al*. 2001, 99). In Coquetdale, examination of the outer 'rampart' circuit at Harehaugh Hillfort revealed a potentially early origin for this part of the circuit. An upper organic horizon that contained charred material, and which was immediately sealed by the earthen dump, dates to 3340–2920 cal BC (4440±60 BP, Beta-96128), suggesting a Neolithic origin for some of the earthworks on the site (Waddington *et al*. 1998). It should be noted, however, that this would be a relatively late date for a Neolithic enclosure. Being located on a watershed towards the head of a valley, this monument occupies a landscape position between Upper Coquetdale to the east and Redesdale to the west. This placement on the edge of naturally defined territories, and one which appears to have had real resonance based on the different treatment of the dead noted above between eastern and western Northumberland, accords with the patterning that has been observed for Neolithic enclosures elsewhere in Britain, where they have been noted as being towards the periphery of territories on 'neutral' ground where groups could have come together (e.g. Oswald *et al*. 2001, 119).

Northumberland is well endowed with standing stones (e.g. Fig. 5.32) and stone circles (Fig. 5.33), but, with the exception of the recent excavations by Miket at the Duddo site (Miket pers. comm.; Fig. 5.33), none has been systematically excavated or scientifically dated. Some of the structures are likely to be Early Bronze Age, such as the classic 'four-poster' sites which include the so-called 'Three Kings' site in Redesdale (Burl and Jone 1972), the Goatstones in Tynedale (5.34) and the Doddington Moor 'stone circle' on the east side of the Milfield Basin (Fig. 6.22), which reveal a southward extension of what is widely regarded as a north-east Scottish tradition. However, the larger open circles such as Threestoneburn (Waddington and Williams 2002), Hethpool (Topping 1981a) and Duddo (Craw 1935) are all more likely to be of Neolithic-Chalcolithic date, but the dating of these monuments, and the many standing stones and occasional stone rows, such as the 'Five Kings' in Upper Coquetdale (Fig. 5. 35) and 'Standingstones Rigg' near Sewingshields, can only be surmised at this stage.

It is notable that the standing stones are found around the fringe of the main settlement areas or on natural routeways which, as we have seen above, are largely focused in valley floor locations on raised gravel terraces. The stone circles at Threestoneburn and Hethpool are located within valleys that lead up to the central domes of the Cheviot Hills: Cheviot and Hedgehope. Prominent andesite outcrops occur along the crests of these valley sides and, given that Cheviot Andesite is known to have been used as a source for ground and polished stone axeheads (see Waddington and Schofield 1999), the siting of stone circles on the routes to such potential 'axe factory' sites recalls the relationship between stone circles and 'axe factories' noted in Cumbria (Bradley and Edmonds 1993).

Although it has not yet been securely dated in outcrop settings, the rock art often referred to as 'cup and ring marks' (see Fig. 5.30) undoubtedly has its origins in the later fourth millennium cal BC, and probably earlier. This is demonstrated by the occurrence of a weathered cup-marked slab, intentionally placed

*Figure 5.34. The four-poster stone setting known as 'The Goatstones' in Tynedale. One of the orthostats has cup marks on its upper surface.*

*Figure 5.35. The Five Kings stone row, upper Coquetdale.*

over a pit before the construction of the long cairn at Dalladies in Scotland; a monument whose construction has been dated to the later fourth millennium cal BC (Piggott 1972; 1973; Waddington 2007b). There are other examples where cup- and cup- and ring-marked rocks are found in such early settings, such as the cup-marked stone in the Dour Hill chambered cairn in Redesdale (Fig. 5.31), the cup-marked rocks incorporated within the cairn material of the Streethouse Neolithic Cairn in Cleveland (Vyner 1984) and Midhowe in Orkney, as well as the various cup markings on Dolmens and the cup and ring mark on one of the capstones at the Cairnholy chambered cairns in Galloway. Without rehearsing the entire chronological scheme for cup and ring marks in Britain, which has been reviewed in detail elsewhere (Waddington 1998; 2007; Waddington *et al*. 2005), it is argued here that the early inscribings on bedrock are an essentially Neolithic phenomenon that may even have been associated with the formative process of Neolithisation.

In Northumberland there is a clear geographic patterning to the distribution of rock art, with virtually all known examples being positioned on the abundant rock outcrops on the Fell Sandstone escarpments, a sweep of prominent ridges that runs down the east side of North Northumberland and which then swings westwards around the southern extent of the Cheviot massif. In the Breamish/Till valley these

*Figure 5.36. An example of a cist inset within a stone cairn which itself overlaps outcropping rock surfaces that bear cup and ring decoration. Known as the 'Football Cairn', this site is positioned on Chirnell's Moor so as to command a wide vista over Upper Coquetdale.*

west-facing crags and bare rock outcrops formed the skyline (where gaps in the forest cover permitted line-of-sight) on the east side of the valley, and would have been readily accessible from the settlement foci on the valley floors. Rock outcrops are less abundant on the eastern flanks of the Cheviots, and deeper in the interior of the massif they are most conspicuous as relatively high-elevation tors on summit ridges and crests, and as deeply incised crags flanking upland tributary streams. There are only two known inscribed rocks in the Cheviots; these are located on their northern flanks, facing the Milfield Basin, and have been made on boulders rather than outcropping bedrock.

Marked contrasts in the distribution of rock art between the Cheviot Hills and the Fell Sandstones have prompted speculation that these landscapes were thought about, and used, in different ways. On the balance of current evidence, it would appear that the variety of Neolithic land uses recorded in the Cheviot Hills, including barley cultivation, some limited traces of grazing and quarrying of stone for stone axe production, is not matched on the Fell Sandstones to the east where the earliest, and highly tentative, indication of cereal cultivation is not until shortly after *c*. 2000 cal BC, and may have been delayed until the mid-first millennium cal BC (see above Chapter 2 and Davis and Turner 1979). While a more comprehensive evaluation of Neolithic land use activities on the Fell Sandstones is not yet available from the palaeoenvironmental record, it is considered likely that the sandstone crags and areas of rock outcrop will have coincided with natural clearings, or thinner woodland cover, and hence will have offered potential grazing opportunities for both wild and domestic animals. The placement of cup and ring marks on rock outcrop surfaces may have begun as a way of acknowledging the importance of these locales for the taking of wild animals and/or managing of livestock – activities central to the lifeways of Neolithic inhabitants of the region (see also Waddington 1998).

The incorporation of rock art into monuments is widely evidenced across Northumberland, but this is a secondary phenomenon. During the fourth and beginning of the third millennia cal BC, cup and ring marks are found incorporated into a wide variety of Neolithic monuments. In Northumberland this includes the cup-marked rock in the corbelling at Dour Hill chambered cairn, the various cup- and ring-marked standing stones, such as those at Swinburne (Fig. 32) and Matfen, and the orthostats of stone circles, as at Duddo. Although this practice has been considered in some detail in previous publications (e.g. Bradley 1997; Waddington 1998), it is worth noting here that what we might be witnessing is the deliberate incorporation of this symbolic tradition into the plethora of Neolithic monument forms, which in many cases appears to comprise the reuse of already carved slabs removed from outcrop locations. The inclusion of these symbolic motifs may reflect a concern for sanctioning these new monuments by reference to an older, established, set of beliefs.

Few of the Neolithic monuments have experienced modern systematic excavation. Until some of these monuments are scientifically examined the monumental and ceremonial aspects of Neolithic Northumberland will remain elusive and discussion of their significance limited. What can be noted, though, is that the various stone burial monuments that have been recognised so far are located on valley sides, in areas where cup- and-ring marked outcrops occur, and in locations that overlook fertile valley floors where Neolithic settlement is known to be focused. The possible earthen long mounds and mortuary enclosures are, however, located on the sand and gravel terraces, in close proximity to settlements. In contrast, the probable Neolithic enclosures appear to be located towards the edges of territories. The enclosure at South Shields is located above the wide estuary of the Tyne and the Harehaugh enclosure towards the head of a valley in Coquetdale, close to the watershed. Carved rock outcrops are not, however, sited within areas of intensive settlement but, rather, on the high ground fringing the main settlement foci and so within a day's return walk of these locations. As with the rock art, the open stone circles are also positioned on the fringe of the settlement foci. The Duddo site is located on the crest of a drumlin overlooking the northern routeway into the Milfield Basin, whilst the stone circles at Hethpool and Threestoneburn are sited in narrow, steep-sided valleys that lead towards the main Cheviot peaks (see above).

## Chalcolithic

By around 2450 cal BC, metalwork and Beakers make their first appearance in Britain and Grooved Ware ceramics *sensu stricto* appear to go out of use, a pattern that appears to be borne out by the spread of radiocarbon dates for these ceramics in Northumberland (Figs 5.2–5.4). Many of the existing Neolithic monuments that were still in use around Britain were transformed by the widespread practice of inserting Beaker ceramics, often with a burial, into these monuments and sometimes by remodelling of the monument. Such practices could serve to rededicate the monument in some way or to associate the people producing the Beaker ceramics with these already existing ancient monuments in order for them to gain legitimacy and acceptance. In Northumberland, cists are frequently noted inserted into earlier monuments, as at Dour Hill (Waddington *et al*. 1998) or the Poind and His Man (see Davies and Davidson 1990, 73–4).

However, it is with the advent of the 'Beaker', or 'Chalcolithic' period that the better known prehistoric ritual monuments of North Northumberland appear to have been constructed. In particular this appears to include the construction of the henge and henge-related monuments across the sand and gravel terraces of the Milfield Basin (see above and Fig. 6), as well as a double pit alignment, ring-ditch cemeteries and burial mounds of stone or earth, raised over distinctive cist and pit burials to create extensive ceremonial and burial landscapes. It is also possible that some of the single pit alignments may date to this period, such as those encompassing the Ewart henge complex (Miket 1981; Waddington 1997). This possibility is lent some support by the recent publication of excavations on single pit alignments in south-east Scotland, 45km north-west of the Milfield Basin at Eweford East and Knowes (Shearer and McLellan 2008). Here, the short 12m pit alignment at Knowes had three pits at its west end that each contained Impressed Ware pottery, whilst at Eweford East there were two pit alignments associated with a timber-built circular enclosure that showed evidence for having held timber posts in the form of post pipes. Seven radiocarbon dates were obtained on short-lived species samples from these two alignments, of which three dates were clearly residual, with the other dates falling predominantly in the second half of the third millennium cal BC, and one possibly as early as 2800–2580 cal BC (Shearer and McLellan 2008, 56). Those dates falling in the second half of the third millennium cal BC are coeval with the date ranges currently available for the Milfield henge sites. Some sherds of Grooved Ware plus other ceramic that was not considered to be strictly Grooved Ware, the latter echoing the Neolithic-derivative ceramics from the Milfield North henge and Whitton Hill henges, together with a few chipped stone tools, were recovered from several of the pits, whilst a cup-marked stone was also found in a pit in the southern alignment. It is becoming evident that single pit alignments can vary in date. Many clearly belong to the later prehistoric period, but others, it seems, can date to the Neolithic-Chalcolithic periods, whilst yet others can be Romano-British and possibly post-Roman in date (Passmore and Waddington 2009a, Chapter 5). The structural form of these pit alignments was also varied. Some, such as those at Eweford East, appear to have held upright timber posts, whilst others may have been left as open pits. Either way, these linear boundaries serve to provide mechanisms for bounding space and/or allotting land, and this in itself suggests a need to regulate access or movement, and perhaps exercise 'ownership', or some other form of control. Such needs may imply competing demands for land, perhaps as a result of intensifying land use, and this could reflect periods of rising population. For the Neolithic-Chalcolithic there may be other impulses at work, as the need to proscribe movement in and around ceremonial centres could also account for the bounding of areas at this time (see also Waddington 1997).

The henges of the Milfield Basin are the largest complex of such monuments currently known in Britain, although, with the exception of the Coupland site, they are all small in size, averaging a little over 20m across their internal diameter. There are at least nine such sites now known, if the Whitton Hill (Miket 1985) henge-related site is included, and together with the broad-ditched 'ring ditch' below Wooler Cricket Pitch, photographed from the air by Stan Beckensall, there could be up to ten and perhaps more of these monuments. A good candidate for a new henge site has been discovered as part of the aerial photographic analysis for this study at Ford Bridge West (see Chapter 3).

The Coupland site stands out from all the other henge sites in the Milfield complex as it covers an areal extent around four times greater than any of the other henges. In terms of dating all that can be concluded of the Coupland monument on present evidence is that it was built sometime after *c*. 3600 cal BC but had presumably gone out of use when the ditch had become heavily silted prior to *c*. 1750 cal BC (see Passmore and Waddington 2009a, Chapter 5). Without obtaining secure dating evidence from the other undated henge monuments we can only speculate on their age. Based on the aerial photographic images, and the excavation data so far available, each of the monuments is slightly different, but the complex is united by the fact that they are geographically clustered across the sand and gravel terrace surface of the Milfield Basin, and most appear to have had an inner ring of timber uprights. They are spread across the Milfield Basin in a broadly linear distribution from north to south, with the Yeavering henge forming the southern end of the distribution and that to the north coinciding with the probable Ford Bridge West henge. In a previous interpretation one of the authors (CW) has suggested that if it is accepted that these monuments were in use contemporaneously then it is possible that one way in which these monuments may have been used was as part of a processional way, with people moving from one monument to the next and ending at Yeavering henge (Waddington 1999a). With the recognition of the probable henge at Ford Bridge West the northern end of any such processional way must now be extended from the previous site at Milfield North. Overall, though, this interpretation is still viewed as valid, although as more precise dating becomes available such a view can, in part, be tested.

The double-ditched 'droveway' that runs past the Milfield South henge, through the Coupland monument and on to the East Marleyknowe henge, remains enigmatic and has been discussed above. Bradley has been bold in his interpretation of this feature (Bradley 1993); he has gone so far as to suggest an Anglo-Saxon date on account of the fact that its north end terminates within the Maelmin cropmark complex that formed a royal Northumbrian township, as well as passing by a henge monument that was reused for Anglo-Saxon burials (Scull and Harding 1990). The fact that this linear feature evidently narrows to respect the entrances of the Coupland enclosure, and that it appears to change course slightly so as to respect the position of the East Marleyknowe henge, indicates that it is structurally later than these monuments but was probably used in concert with them. This monument was evidently used to funnel the movement of people, and perhaps animals, in a north-south corridor across the sand and gravel terraces of the Milfield Basin, passing by and through monuments that appear to constitute a largely Beaker-period ceremonial complex. This concern for controlling passage through monument complexes sits most comfortably in a Late Neolithic-Chalcolithic context where many such examples, albeit defined by standing stone or timber post avenues, are known throughout Britain (e.g. Loveday 1998).

On the Fell Sandstone escarpment, cup- and ring-marked outcrops were deliberately broken through at this time, with some slabs reused in cist burials. In other cases the cup- and ring-marked panels have cairns erected over them, as at Fowberry (Beckensall 2001, 130–6), Hunterheugh Crags (Waddington *et al*. 2005) and the Football Cairn on Chirnell's Moor. In the case of Hunterheugh Crags, new, though somewhat degenerate, carvings were inscribed onto the newly exposed rock surfaces after an area of original carving had been removed (Waddington *et al*. 2005). This phenomenon has been noted elsewhere, perhaps most clearly at Fowberry North Plantation, where Bradley (1997, 140 and plate 28; Beckensall 2001, 62–3) is probably correct in suggesting that this slab was removed for use in a cist box. The original significance of these carvings may have been lost by this time or at least undergoing deliberate transformation. Indeed, the deliberate siting of burial monuments over these carved outcrops, and the breaking up of others for incorporation into the tombs of the dead, imply a deliberate attempt to either remove these carvings from the world of the living and associate them with the world of the dead, or an attempt to appropriate their reference to past wisdom for a new elite or ideological order. A combination of the two seems rather tempting given the adoption of the Beaker cult in Britain and the emerging evidence for the movement of at least small numbers of high-status individuals from the Continent at this time. If the Beaker phenomenon is bound up with the knowledge of how to work metal then the need for embedding what may have been viewed as a new 'magic' into the existing ideological order may have prompted the widely documented reuse and modification of Neolithic ceremonial monuments in Beaker times.

The widespread occurrence of cairn cemeteries across all upland areas of North Northumberland, including both the Fell Sandstone escarpment and the Cheviot Hills, suggests that a period of settlement expansion, and presumably population increase, took place at this time; this is supported to some extent by the palaeoenvironmental record (see above and Chapter 2). The overall picture of vegetation change in the region appears to be consistent with an expansion of human activity into forested terrain across both lowland and upland settings, with widespread development of settlement and agriculture and associated environmental and, to some extent, geomorphological impacts.

The period around 2450–1800 cal BC clearly marks a departure in social, economic, land use and ideological terms. This can be seen in the adoption of the Beaker 'package', the advent of the first metalwork into the region, the expansion of settlement and farming into some of the uplands, the overt monumentalisation of the main settlement belt on the sand and gravel terraces, the adoption of cist burials, the breaking up of rock art panels (Waddington 1998; Waddington *et al*. 2005) and the inclusion of the latter into the new henge monuments, as at Milfield South (Harding 1981). It is these changes that effectively bring the Neolithic to a close in our region, whilst heralding a new era defined by new cult practices, ceremonial behaviour, intensification of agricultural production, population expansion and technological innovation.

*Table 5.1. Radiocarbon dates for Neolithic settlement sites (including 'midden pit' sites) in Northumberland.*

| Laboratory Number | Material and context | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|
| **Coupland** | | | | | |
| Beta-96129 | Charcoal [65] | -25.0 | 5040±70 | 3980–3650 cal BC | Passmore and Waddington 2009a |
| Beta-96130 | Charcoal [65] | -25.0 | 4950±70 | 3950–3630 cal BC | Passmore and Waddington 2009a |
| OxA-10636 | Hazelnut shell [65] | -25.9 | 4895±45 | 3780–3630 cal BC | Passmore and Waddington 2009a |
| OxA-10637 | Hazelnut shell [65] | -23.9 | 4895±40 | 3770–3630 cal BC | Passmore and Waddington 2009a |
| OxA-6832 | Hazelnut shell | | 5090±60 | 4040–3710 cal BC | Passmore and Waddington 2009a |
| OxA-10763 | Charred residue | -29.0 | 4635±70 | 3640–3110 cal BC | Passmore and Waddington 2009a |
| OxA-6833 | Hazelnut shell | | 5060±60 | 3980–3700 cal BC | Passmore and Waddington 2009a |
| OxA-10638 | Hazelnut shell | -23.0 | 4880±45 | 3760–3540 cal BC | Passmore and Waddington 2009a |
| OxA-10692 | Hazelnut shell | -22.7 | 4910±40 | 3780–3630 cal BC | Passmore and Waddington 2009a |
| **Cheviot Quarry** | | | | | |
| OxA-16178 | Pit, carbonised residue Impressed Ware | -27.2 | 4148 ±32 | 2880–2580 cal BC | Johnson and Waddington 2008 |
| OxA-16096 | Pit, hazelnut | -23.2 | 4177 ±33 | 2900–2620 cal BC | Johnson and Waddington 2008 |
| SUERC-11296 | Pit, hazelnut | -26.0 | 4250 ±35 | 2920–2760 cal BC | Johnson and Waddington 2008 |
| OxA-16097 | Pit, hazelnut | -25.9 | 4933 ±35 | 3790–3640 cal BC | Johnson and Waddington 2008 |
| OxA-16068 | Pit, hazelnut | -24.2 | 4999 ±32 | 3940–3700 cal BC | Johnson and Waddington 2008 |
| OxA-16069 | Pit, carbonised residue, Carinated Bowl | -27.2 | 4906 ±34 | 3770–3630 cal BC | Johnson and Waddington 2008 |
| OxA-16070 | Pit, hazelnut | -23.7 | 4152 ±31 | 2880–2600 cal BC | Johnson and Waddington 2008 |
| SUERC-11295 | Pit, hazelnut | -24.2 | 4130 ±35 | 2880–2570 cal BC | Johnson and Waddington 2008 |
| **Bolam Lake** | | | | | |
| Beta-117290 | Pit, hazelnut | | 4910 ±70 | 3930–3530 cal BC | Waddington and Davies 2002 |
| Beta-117291 | Pit, hazelnut | | 4880 ±80 | 3910–3510 cal BC | Waddington and Davies 2002 |
| **Lanton Quarry** | | | | | |
| Beta-231340 | Hazelnut | | 4640 ±40 | 3620–3350 cal BC | Waddington 2009 |
| **Yeavering** | | | | | |
| HAR-3063 | Charcoal, from pit outside west entrance, middle fill | | 4890 ±90 | 3940–3380 cal BC | Harding 1981 |
| **Milfield North Pit** | | | | | |
| OxA-10634 | Pit, hazelnut | -24.9 | 3997±38 | 2620–2460 cal BC | Passmore and Waddington 2009a |
| OxA-10635 | Pit, hazelnut | -23.2 | 3955±38 | 2570–2340 cal BC | Passmore and Waddington 2009a |

*Table 5.1. continued.*

| Laboratory Number | Material and context | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|
| **Thirlings** | | | | | |
| OxA-16101 | Posthole, cremated bone, unidentified | -21.1 | 4972 ±34 | 3910–3650 cal BC | Miket *et al*. 2008 |
| OxA-16104 | Posthole, carbonised hazelnut shell | -23.4 | 4912 ±35 | 3780–3640 cal BC | Miket *et al*. 2008 |
| OxA-16100 | Pit, carbonised hazelnut shell | -25.2 | 4678 ±34 | 3630–3360 cal BC | Miket *et al*. 2008 |
| HAR-1118 | Pit, charcoal (1 fragment *Quercus* sp. and 1 fragment of *Corylus* sp.) | -26.1 | 5230 ±110 | 4340–3780 cal BC | Miket *et al*. 2008 |
| HAR-6659 | Pit, charcoal, unidentified | -26.4 | 4530 ±130 | 3640–2890 cal BC | Miket *et al*. 2008 |
| OxA-16102 | Pit, carbonised hazelnut shell | -26.2 | 4453 ±34 | 3340–2940 cal BC | Miket *et al*. 2008 |
| OxA-16103 | Posthole, carbonised hazelnut shell | -24.8 | 4496 ±35 | 3360–3020 cal BC | Miket *et al*. 2008 |
| HAR-6658 | Pit, bulk charcoal (*c*. 50% identified as *Crataegus* sp., and *Corylus avellana* L.) | -26.1 | 4450 ±100 | 3500–2880 cal BC | Miket *et al*. 2008 |
| OxA-16164 | Posthole, cremated bone, unidentified | -25.6 | 4442 ±35 | 3340–2920 cal BC | Miket *et al*. 2008 |
| HAR-1451 | Pit, bulk charcoal (*c*. 20% identified; *Quercus* sp., *Corylus* sp., and possibly *Populus* sp.) | -25.9 | 4080 ±130 | 2920–2210 cal BC | Miket *et al*. 2008 |
| HAR-1450 | Pit, bulk charcoal with earth (*c*. 20% identified as *Crataegus/Pynes/Sorbus/ Malus* sp., *Corylus avellana* L., and probably *Prunus* sp.) | -26.5 | 4270 ±100 | 3270–2580 cal BC | Miket *et al*. 2008 |
| **Arbeia (South Shields)** | | | | | |
| GU-9173 | Pit | | 4560 ±60 | 3500–3090 cal BC | Hodgson *et al*. 2001 |
| GU-9174 | Pit | | 4400 ±80 | 3360–2880 cal BC | Hodgson *et al*. 2001 |
| **Marygate** | | | | | |
| Beta-96036 | Stakehole | | 4770 ±70 | 3700–3370 cal BC | Archaeological Practice 1996 |
| **Newtown** | | | | | |
| OxA-10696 | Stakehole, charcoal, *Quercus* sp. | -26.1 | 4975±45 | 3940–3650 cal BC | Passmore and Waddington 2009a |
| OxA-10697 | Stakehole, charcoal, *Quercus* sp. | -25.7 | 4780±45 | 3650–3380 cal BC | Passmore and Waddington 2009a |

*Table 5.2. Radiocarbon dates for Carinated Bowl pottery in Northumberland.*

| Laboratory Number | Material and context | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date (95% confidence) | Reference |
|---|---|---|---|---|---|
| **Coupland** | | | | | |
| OxA-10638 | Hazelnut shell from pit 1 (context 19) | -23.0 | 4880 ±45 | 3760–3530 cal BC | Passmore and Waddington 2009a |
| OxA-10692 | Hazelnut shell from pit 1 (context 19) | -22.7 | 4910 ±40 | 3780–3630 cal BC | Passmore and Waddington 2009a |
| OxA-6833 | Hazelnut shell from pit 2 (context 21) | -22.3 | 5060 ±60 | 3980–3700 cal BC | Passmore and Waddington 2009a |
| OxA-6832 | Hazelnut shell from pit 3 (context 27) | -22.4 | 5090±60 | 4040–3710 cal BC | Passmore and Waddington 2009a |
| Beta-96129 | Charcoal from early deposit probably cut into by west droveway ditch | -25.0 | 5040±70 | 3980–3650 cal BC | Passmore and Waddington 2009a |
| Beta-96130 | Charcoal from early deposit probably cut into by west droveway ditch | -25.0 | 4950±70 | 3950–3630 cal BC | Passmore and Waddington 2009a |
| OxA-10636 | Hazelnut shell from early deposit probably cut into by west droveway ditch | -25.9 | 4895±45 | 3780–3630 cal BC | Passmore and Waddington 2009a |
| OxA-10637 | Hazelnut shell from early deposit probably cut into by west droveway ditch | -23.9 | 4895±40 | 3770–3630 cal BC | Passmore and Waddington 2009a |
| **Cheviot Quarry** | | | | | |
| OxA-16097 | Charred hazelnut shell from pit fill 051 containing Carinated Bowl | -26.5 | 4933 ±35 | 3790–3640 cal BC | Johnson and Waddington 2008 |
| OxA-16068 | Charred hazelnut shell from pit fill 052 containing Carinated Bowl | -24.2 | 4999 ±32 | 3940–3700 cal BC | Johnson and Waddington 2008 |
| OxA-16069 | Carbonised residue from Carinated Bowl sherd from pit fill 052 | -27.2 | 4906 ±34 | 3770–3630 cal BC | Johnson and Waddington 2008 |
| OxA-16162 | Carbonised residue on Carinated Bowl from pit fill 051 | -27.4 | 4870±40 | 3710–3530 cal BC | Johnson and Waddington 2008 |
| **Yeavering** | | | | | |
| HAR-3063 | Charcoal from pit outside W entrance, middle fill | | 4890 ±90 | 3940–3380 cal BC | Harding 1981 |
| **Thirlings** | | | | | |
| OxA-16101 | Posthole from post alignment, burnt bone | -21.1 | 4972 ±34 | 3910–3650 cal BC | Miket *et al*. 2008 |
| OxA-16104 | Posthole from poss trapezoidal structure, charred hazelnut | -23.4 | 4912 ±35 | 3780–3640 cal BC | Miket *et al*. 2008 |
| HAR-1118 | Pit, oak and hazel charcoal | -26.2 | 5230 ±110 | 4340–3780 cal BC | Miket *et al*. 2008 |
| **Bolam Lake** | | | | | |
| Beta-117290 | Pit, hazelnut | -25.0 | 4910 ±70 | 3930–3530 cal BC | Waddington and Davies 2002 |
| Beta-117291 | Pit, hazelnut | -25.0 | 4880 ±80 | 3910–3510 cal BC | Waddington and Davies 2002 |

*Table 5.3. Radiocarbon dates for Impressed Ware Pottery in Northumberland and selected Scottish Sites.*

| Laboratory Number | Material and context | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|
| **Cheviot Quarry** | | | | | |
| OxA-16178 | Pit, carbonised residue | -27.2 | 4148 ±32 | 2880–2580 cal BC | Johnson and Waddington 2008 |
| OxA-16099 | Carbonised residue from Impressed Ware sherd from pit MAP/F204 | -27.4 | 4348±34 | 3090–2890 cal BC | Johnson and Waddington 2008 |
| **Thirlings** | | | | | |
| OxA-16100 | Pit, charred hazelnut | -25.2 | 4678 ±34 | 3630–3360 cal BC | Miket *et al*. 2008 |
| HAR-6658 | Charcoal, AML 757515, id as *c*. 50% hawthorn, hazel, from fairly large branches and timbers , Pit, bulk charred wood | -26.1 | 4450 ±100 | 3500–2880 cal BC | Miket *et al*. 2008 |
| OxA-16164 | Posthole from poss trapezoidal structure, burnt bone | -25.6 | 4442 ±35 | 3340–2920 cal BC | Miket *et al*. 2008 |
| HAR-1451 | Pit, bulk oak and hazel | -25.9 | 4080 ±130 | 2920–2210 cal BC | Miket *et al*. 2008 |
| HAR-1450 | Charcoal: *c*. 20% hawthorn type (*Crataegus* / *Pyrus* / *Sorbus* / *Malus* sp), hazel (*Corylus*),from pit | -26.5 | 4270 ±100 | 3270–2570 cal BC | Miket *et al*. 2008 |
| **Meldon Bridge** | | | | | |
| SRR-646 | Oak, hazel and poss ash charcoal from pit B12 inside large timber enclosure | -25.1 | 4286 ±50 | 3020–2770 cal BC | Speak and Burgess 1999 |
| SRR-647 | Charred hazelnut shells from pit B12 inside large timber enclosure | -26.0 | 4240 ±60 | 2930–2630 cal BC | Speak and Burgess 1999 |
| SRR-645 | Charred indet wood in pit B06 inside large timber enclosure | -26.5 | 4080 ±80 | 2890–2460 cal BC | Speak and Burgess 1999 |
| SRR-643 | Hazelnut and wood charcoal from pit B14 inside large timber enclosure | -25.6 | 4676 ±180 | 3910–2910 cal BC | Speak and Burgess 1999 |
| SRR-644 | Wood charcoal from pit B15 inside large timber enclosure | -27.2 | 4686 ±90 | 3650–3120 cal BC | Speak and Burgess 1999 |
| GU-1053 | Wood charcoal from pit S13 inside large timber enclosure | -25.2 | 4505 ±65 | 3490–2930 cal BC | Speak and Burgess 1999 |
| GU-1054 | Wood charcoal from pit S14 inside large timber enclosure | -25.1 | 4560 ±65 | 3510–3020 cal BC | Speak and Burgess 1999 |
| GU-1055 | Wood charcoal from pit S15 inside large timber enclosure | -25.1 | 4380 ±65 | 3340–2880 cal BC | Speak and Burgess 1999 |
| GU-1056 | Wood charcoal from pit N40 inside large timber enclosure | -25.5 | 4570 ±75 | 3620–3020 cal BC | Speak and Burgess 1999 |
| GU-1052 | Wood charcoal from pit N43 inside large timber enclosure | -25.4 | 4685 ±85 | 3650–3130 cal BC | Speak and Burgess 1999 |
| GU-1057 | Wood charcoal from pit N45 inside large timber enclosure | -25.5 | 4725 ±90 | 3700–3340 cal BC | Speak and Burgess 1999 |
| **Blairhall Burn** | | | | | |
| Beta-73951 | Hazelnut from fill of posthole 328 | -25.0 | 4560 ±60 | 3500–3090 cal BC | Strachan *et al.* 1998 |

*Table 5.4. Radiocarbon dates for Grooved Ware in Northumberland.*

| Laboratory Number | Material and context | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|
| **Cheviot Quarry** | | | | | |
| SUERC-11296 | Charred hazelnut shell from pit fill 2168 containing Grooved Ware | -26 | 4250 ±35 | 2920–2760 cal BC | Johnson and Waddington 2008 |
| OxA-16096 | Charred hazelnut shell from pit fill 2168 containing Grooved Ware | -23.3 | 4177 ±33 | 2890–2630 cal BC | Johnson and Waddington 2008 |
| OxA-16070 | Charred hazelnut shell from pit fill 2133 containing Grooved Ware | -23.7 | 4152 ±31 | 2880–2600 cal BC | Johnson and Waddington 2008 |
| SUERC-11295 | Charred hazelnut shell from pit fill 2133 containing Grooved Ware | -24.4 | 4130 ±35 | 2880–2570 cal BC | Johnson and Waddington 2008 |
| **Milfield North Pit (see Volume 1)** | | | | | |
| OxA-10634 | Charred hazelnut shell from pit 1 lower fill (9) | -24.9 | 3997 ±38 | 2620–2460 cal BC | Passmore and Waddington 2009a |
| OxA-10635 | Charred hazelnut shell from pit 1 lower fill (9) | -23.2 | 3955 ±38 | 2570–2340 cal BC | Passmore and Waddington 2009a |

*Table 5.5. Radiocarbon dates for Beaker pottery in Northumberland.*

| Laboratory Number | Material and context | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|
| **Cheviot Quarry** | | | | | |
| OxA-16163 | Carbonised residue on beaker sherd from pit | -25.8 | 3625 ±40 | 2140–1880 cal BC | Johnson and Waddington 2008 |
| **Chatton Sandyford Cairn 1** | | | | | |
| GaK- 800 | Charred oak stakes from stakeholes for Beaker inhumation grave B1 in cairn 1 | | 3620 ±50 | 2140–1880 cal BC | Jobey 1968 |
| **Wether Hill** | | | | | |
| Beta-124785 | Timber cist | | 3740 ±70 | 2400–1940 cal BC | ASUD 1999 |
| AA-35524 | Plank from side of timber cist | -25.6 | 3675 ±55 | 2210–1890 cal BC | Pete Topping pers comm. |
| AA-35523 | Plank from lid of timber cist | -26.2 | 3670 ±50 | 2200–1910 cal BC | Pete Topping pers comm. |
| **Cartington Coffin** | | | | | |
| GU-1648 | Sample of wood from the outer growth rings of a hollowed out oak coffin associated with a now lost 'drinking cup' (ie. Beaker) | | 3790 ±65 | 2470–2020 cal BC | Jobey 1984 |
| **Low Hauxley 'Cairn' 1** | | | | | |
| OxA-5553 | Skeletal material from Cairn 1 associated with a Bell Beaker | | 3615 ±45 | 2140–1880 cal BC | Drury *et al*. 1995 |
| OxA-5554 | Skeletal material from Cairn 1 associated with a Bell Beaker | | 3630 ±55 | 2200–1880 cal BC | Drury *et al*. 1995 |

*Table 5.6. Radiocarbon dates for Beaker period Neolithic-derivative pottery in Northumberland.*

| Laboratory Number | Material and context | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|
| **Whitton Hill** | | | | | |
| BM-2206 | Charcoal from timber set in upper fill of ditch | -25.3 | 3740 ±50 | 2300–1980 cal BC | Miket 1985 |
| BM-2265 | Charcoal from timber set in upper fill of ditch | -26.2 | 3680 ±80 | 2300–1880 cal BC | Miket 1985 |
| BM-2266 | Charcoal from central burial (pit 28) inside hengiform | -25.9 | 3660 ±50 | 2200–1890 cal BC | Miket 1985 |
| **Milfield North Henge** | | | | | |
| HAR-1199 | Indet. charcoal from internal pit C from layer above the pot | -26.2 | 3750 ±80 | 2470–1930 cal BC | Harding 1981 |
| **Milfield Village (Whitton Park)** | | | | | |
| Beta-194560 | Charred wood from short-lived specie in posthole of structure | -25.9 | 3630 ±40 | 2140–1880 cal BC | Waddington 2006 |
| **Milfield North Double Pit Alignment** | | | | | |
| BM-1650* | Charcoal from layer 11, Pit 2 associated with Grooved Ware pottery, sample 1978/128 | -25.7 | 3740 ±50 | 2300–1980 cal BC | Harding 1981 |
| BM-1652* | Charcoal from layer 12, Pit 2 associated with Grooved Ware pottery, sample 1978/125 | -25.4 | 3770 ±50 | 2350–2030 cal BC | Harding 1981 |
| BM-1653* | Charcoal from layer 13, Pit 2 associated with Grooved Ware pottery, sample 1978/124 | -23.8 | 3610 ±80 | 2200–1740 cal BC | Harding 1981 |

* Published BM radiocarbon result known to be in error but for which no correction can be issued (Bowman *et al.* 1990).

*Table 5.7 Radiocarbon dates for 'henge' and related monuments.*

| Laboratory Number | Material and context | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|
| **Milfield North** | | | | | |
| BM-1149 | Charcoal, sample 15 from primary silt of ditch, SW sec, beside S entrance | -25.8 | 3774 ±39 | 2300–2040 cal BC | Harding 1981 |
| BM-1150 | Charcoal, sample 6 from burnt layer in middle silt of ditch (ca 50cm above Sample 15, BM-1150), SW sec, beside S entrance. | -24.7 | 3801 ±62 | 2470–2030 cal BC | Harding 1981 |
| HAR-1199 | Charcoal from a 2nd grave-pit containing an Early Bronze age globular vessel | | 3750 ±80 | 2470–1930 cal BC | Harding 1981 |
| **Coupland** | | | | | |
| Beta-117294 | Fill of later cut into secondary fill (abandonment deposit) | | 3430 ±60 | 1900–1600 cal BC | Passmore and Waddington 2009a |
| **Milfield South** | | | | | |
| HAR-3040 | Charcoal from central pit, fill of stone setting | | 3540 ±100 | 2190–1620 cal BC | Harding 1981 |
| HAR-3068 | Charcoal from central pit, middle fill | | 3690 ±80 | 2300–1880 cal BC | Harding 1981 |
| HAR-3071 | Charcoal from central pit, fill of stone setting | | 3900 ±110 | 2840–2030 cal BC | Harding 1981 |
| **Whitton Hill Hengiform Site** | | | | | |
| BM-2206 | Charcoal, ref T1/2, from timber structure within ditch (Site 1). | -25.3 | 3740 ±50 | 2300–1980 cal BC | Miket 1985 |
| BM-2265 | Charcoal, ref T1/1, from timber structure within ditch (Site 1), from similar context to BM-2206, | -26.2 | 3680 ±80 | 2300–1880 cal BC | Miket 1985 |
| BM-2266 | Charcoal, ref T1/3, from central burial in Site 1. | -25.9 | 3660 ±50 | 2200–1890 cal BC | Miket 1985 |

*Table 5.8 Posterior density estimates for the beginnings and endings of ceramic traditions, derived from the model described in Figure 5.2.*

| | **start** | | **end** | |
|---|---|---|---|---|
| | *95% probability* | *68% probability* | *95% probability* | *68% probability* |
| **Carinated Bowl & Plain Ware** | *3840–3670 cal BC* | *3780–3700 cal BC* | *3700–3620 cal BC* | *3680–3630 cal BC* |
| **Impressed Ware** | *4830–3380 cal BC* | *3970–3390 cal BC* | *2720–1290 cal BC* | *2680–2040 cal BC (67%)* |
| **Grooved Ware** | *3180–2710 cal BC* | *2980–2780 cal BC* | *2570–2160 cal BC* | *2550–2380 cal BC* |
| **Beaker & Non-Beaker** | *2540–1890 cal BC* | *2140–1950 cal BC* | *2000–1410 cal BC* | *1970–1800 cal BC* |

*Table 5.9 Percentage probabilities of the relative order of the beginnings and endings of the ceramic traditions. The cells show the probability of the distribution in the left-hand column being earlier than the distribution in the top row. For example, the probability that end of use of Impressed Ware was before the start of use of Early Bronze Age (Beaker) pottery is 63.9%.*

| | ***95% probability*** | ***68% probability*** |
|---|---|---|
| ***start_ Carinated & Plain*** | *3840–3670 cal BC* | *3780–3710 cal BC* |
| ***End Carinated & Plain _start Impressed Ware*** | *3700–3620 cal BC* | *3680–3630 cal BC* |
| ***Impressed Ware_start Grooved Ware*** | *2840–2690 cal BC* | *2810–2710 cal BC* |
| ***End-Grooved Ware_ start_Early Bronze Age*** | *2560–2090 cal BC (92%)* | *2550–2310 cal BC* |
| ***End_Early Bronze Age*** | *2000–1270 cal BC* | *1960–1720 cal BC* |

*Table 5.10 Posterior density estimates for the beginnings and endings of ceramic traditions, derived from the model described in Figure 5.4.*

| | start_carinated_Plain | Start_Impressed | Start_Grooved | Start_EBA |
|---|---|---|---|---|
| start_carinated_Plain | | 52.3% | 99.8% | 100.0% |
| end_carinated | 0.5% | 42.1% | 99.7% | 100.0% |
| Start_Impressed | 47.7% | | 99.8% | 100.0% |
| End_Impressed | 0.0% | 0.0% | 0.1% | 63.9% |
| Start_Grooved | 0.2% | 0.2% | | 98.2% |
| End_Grooved | 0.0% | 0.0% | 0.0% | 90.6% |
| Start_EBA | 0.0% | 0.0% | 1.8% | |
| End_EBA | 0.0% | 0.0% | 0.0% | 0.8% |

*Table 5.11 Date for Neolithic Burial in Northumberland.*

| Laboratory Number | Material and Content | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date Range (95% confidence) | Reference |
|---|---|---|---|---|---|
| **Chatton Sandyford** | | | | | |
| GaK-1507 | Charred wood from within assumed 'grave pit' below cairn E | | 4840±90 | 3800–3370 cal BC | Jobey 1968a |

# 6 From Sacred Landscapes to Organised Agriculture 2100–1000 BC

*Clive Waddington and David G. Passmore*

## INTRODUCTION

This chapter deals with the Early and Middle Bronze Ages, or, in terms of the metalwork typology, the periods extending from the Migdale to Wilburton phases. With the decline of Beaker ceramics in the centuries after 2000 cal BC and the emergence of new kinds of distinctive ceramics in the form of 'Food Vessels' and 'Urns', other pivotal changes can be observed in the archaeological record. In North Northumberland the limited dating currently available for henges and related monuments suggests the Milfield ritual complex goes out of use by the beginning of the Early Bronze Age. New types of formalised sedentary settlements emerge in the form of unenclosed roundhouses, often with associated field systems, although dating for the onset of this significant development has still not been tied down precisely. We cannot be certain, therefore, that the end of use of the ritual complex is precisely coeval with the emergence of the agricultural landscapes, but that one follows the other is certainly clear. Although there have been some metalwork finds in recent years in Northumberland, such as the 'Colette Hoard' from near Berwick (Lindsay Allason-Jones pers comm.; Needham *et al*. 2007), those from the Tweed Valley (e.g. Miket 2004) and the pristine bronze rapier from the beach at Low Hauxley (see accessions in Great North Museum, Newcastle upon Tyne), the existing corpus of Bronze Age metalwork from the region has had a significant impact on shaping our understanding of metalwork sequences in Britain, in large part attributable to the work of Colin Burgess (e.g. Burgess 1968; 1980). There are not yet any radiocarbon dates associated with Northumbrian metalwork of this period, but this is to some extent mitigated by the well-established chronological sequence that is now available for the national corpus and which largely follows Burgess' sequence, though with the addition of a potential 'Blackmoor' phase in the Late Bronze Age between Wilburton and Ewart Park (Needham *et al*. 1997).

The past decade has witnessed a resurgence of interest in the Bronze Age of the British Isles, with both established and new researchers making important contributions to artefact, settlement and land use studies as well as the limited application of social approaches. There has been some new work on the Bronze Age in Northumberland although most of this has comprised site-based investigations, with few attempts at synthesis. There have been new excavations of burial sites, including those at Turf Knowe (Frodsham and Waddington 2004), Wether Hill (Topping 2004), Howick (Waddington *et al*. 2006) and Low Hauxley (Waddington and Cockburn 2009), settlements such as Linhope Burn (Topping 1993), Cheviot Quarry North (Johnson and Waddington 2008), Lanton Quarry (Waddington 2009) and Kidlandlee Dean (Carne and Pope 2007) as well as field systems and cultivation terraces (Frodsham and Waddington 2004). In addition, the excavation of the settlement at Halls Hill has now been published (Gates 2009) with its important sequence of radiocarbon dates and evidence for agricultural production.

Many questions remain to be addressed, not least of which are those that relate to the ebb and flow of upland settlement and the eventual abandonment of upland farms. Understanding the diversity and development of funerary practices throughout the second millennium cal BC remains a key theme as the county hosts an impressive array of funerary structures, many of which have associated ceramic assemblages. As yet, however, the chronological sequence remains poorly understood. With the exception of a recent study by Chris Fowler (Fowler in prep.), there has been little attempt to synthesise the diverse evidence for mortuary structures, cemetery morphology, landscape setting, burial customs and grave good assemblages, or to study the demographics and skeletal data of the buried population.

Recent discoveries of unenclosed Bronze Age roundhouses in lowland settings are helping to fill one of the important settlement voids in the region's prehistory. In addition to the two-phase house at

Lookout Plantation (Monaghan 1994), two houses have been discovered at Cheviot Quarry North (Johnson and Waddington 2008) and three have been found so far at Lanton Quarry (Waddington 2009). All of these discoveries have resulted from development-driven archaeology and the stripping of substantial areas of topsoil. The houses are circular, post-built timber buildings that only survive as heavily truncated groups of postholes. Such sites only rarely show on aerial photographs (as occurred in the case of the Lookout Plantation site) and they are unlikely to be picked up by geophysical survey or fieldwalking. There is, therefore, considerable reliance on large-scale surface stripping to identify more of them. As a result of these discoveries the apparent absence of lowland settlement during the Bronze Age noted by Burgess (1984) is no longer a valid proposition. The extent and intensity of the lowland settlement pattern, however, remains to be established.

## CHRONOLOGY

***By Peter Marshall and Clive Waddington***

In the following figures and tables we have assembled the various dates for a wide range of Bronze Age monument types. These include the dates for unenclosed roundhouses in both upland and lowland settings (Table 6.1 and Fig. 6.1). In addition to the dates available from Northumberland we have included those from upland sites in neighbouring Scotland (Green Knowe) and County Durham (Bracken Rigg) as these assist in establishing the regional picture. Dates have also been recently obtained for Bronze Age activity during excavations on the line of the A1 trunk road improvements between Dunbar and Haddington (Lelong and MacGregor 2008). We have also assembled the dates for Early Bronze Age (Table 6.2 and Fig. 6.2) and later Bronze Age burials in Northumberland (Table 6.4 and Fig. 6.4). The dates for the use of cultivation terraces (Table 6.3 and Fig. 6.3) and burnt mounds (Table 6.5 and Fig. 6.5) have been included too. The tables contain the radiocarbon dates and their calibrated date ranges, while the corresponding figure shows the probability distributions.

The model shown in Figure 6.1 shows good agreement (Amodel=96.3%) between the radiocarbon results and prior information. It provides the following estimates for the:

- start of upland settlement activity of *2070–1170 cal BC* (*95% probability; start_upland*; Fig. 6.1) and probably *1630–1290 cal BC* (*68% probability*).
- start of lowland settlement activity of *1580–1320 cal BC* (*95% probability; start_lowland*; Fig. 6.1) and probably *1530–1410 cal BC* (*68% probability*).

The estimate for the start of unenclosed roundhouse activity is *2040–1320 cal BC* (*95% probability; start_unenclosed roundhouses*; Fig. 6.1) and probably *1620–1410 cal BC* (*68% probability*).

This modelling provides a useful basis for assessing the timing of the first roundhouses in Northumberland and the Borders region, although one must bear in mind that relatively few sites have been radiocarbon dated and that the Early Bronze Age ceramics from the Houseledge site (Burgess 1995) suggest, on ceramic typology grounds, an earlier start than the modelled *1620–1410 cal BC probability (68%)*. Based on the currently available dates and the analysis presented here, the construction of roundhouses appears to be broadly synchronous in both the lowlands and uplands starting in the second quarter of the second millennium cal BC. Whether a phase of upland abandonment occurs in the centuries around 1100 cal BC as claimed by some (e.g. Burgess 1985) is not yet clear as the currently available dates do not allow the necessary level of precision. It is noteworthy, however, that the intermediate lowland-upland site at Halls Hill spans this period. More dates are needed from true upland sites in order to establish when abandonment of these sites and their surrounding farmland took place. A recent review of the Scottish dates for the first unenclosed roundhouses (Ashmore 2004) indicates they started to be built around 1800–1700 cal BC and the early dates currently available for Lookout Plantation, taken on their own, offer support for a potential early timing in Northumberland despite the Bayesian modelled estimates (see above) which have the effect of pulling date ranges closer together, although it should be noted that the dates from this site provide *termini post quem* only.

The model shown in Figure 6.2 shows good agreement (Amodel=90.6%) between the radiocarbon results and prior information. It provides the following estimates for the:

- start of Early Bronze Age burials of *2530–2060 cal BC* (*95% probability; start_EBA_burials*; Fig. 6.2) and probably *2390–2160 cal BC* (*68% probability*).
- end of Early Bronze Age burials of *1410–1070 cal BC* (*95% probability; start_EBA_burials*; Fig. 6.2) and probably *1380–1210 cal BC* (*68% probability*).

The criterion for including dates in this group was based upon the burials having associations with non-Beaker Bronze Age ceramics (such as Food Vessels and Urns). The start of such burials appears to be in the latter half of the third millennium cal BC, overlapping with the end of the 'Chalcolithic' period and the practice of Beaker burials which appear to cease by *c*. 1900 cal BC. The latest dates currently available for the various Early Bronze Age burials and associated monuments date to *c*. 1500 cal BC, which ties in with the transition to the Middle Bronze Age as defined by the metalwork typology. With dates only available from a handful of sites in Northumberland, it is

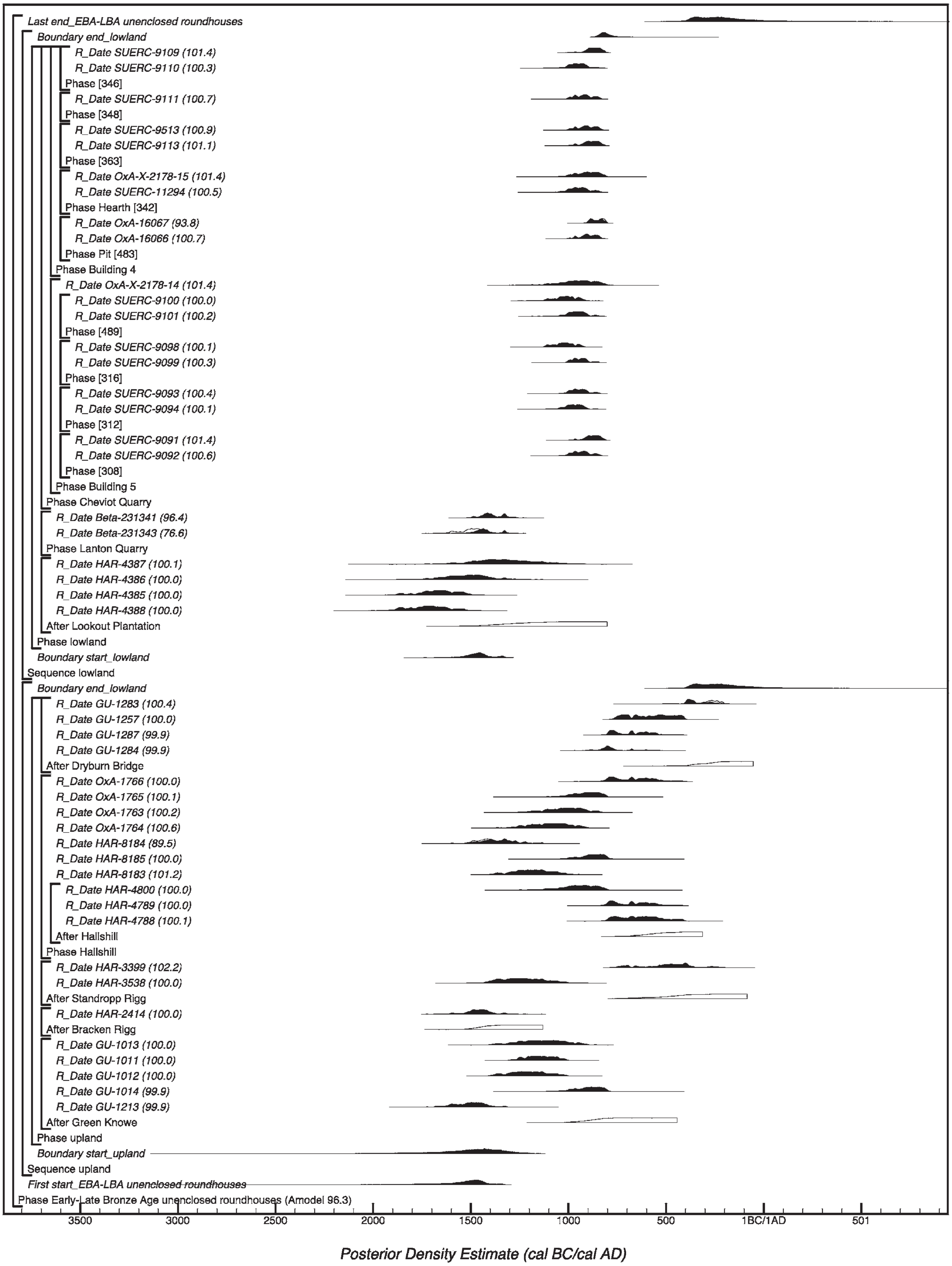



*Figure 6.1. Probability distributions of dates for Early–Late Bronze Age unenclosed roundhouses: each distribution represents the relative probability that an event occurs at a particular time. The format is identical to that of Figure 5.1. The large square brackets down the left hand side along with the OxCal keywords define the model exactly. Distributions other than those relating to particular samples correspond to aspects of the model. For example, the distribution 'start_upland' is the estimated date for the start of activity associated with upland unenclosed roundhouses.*

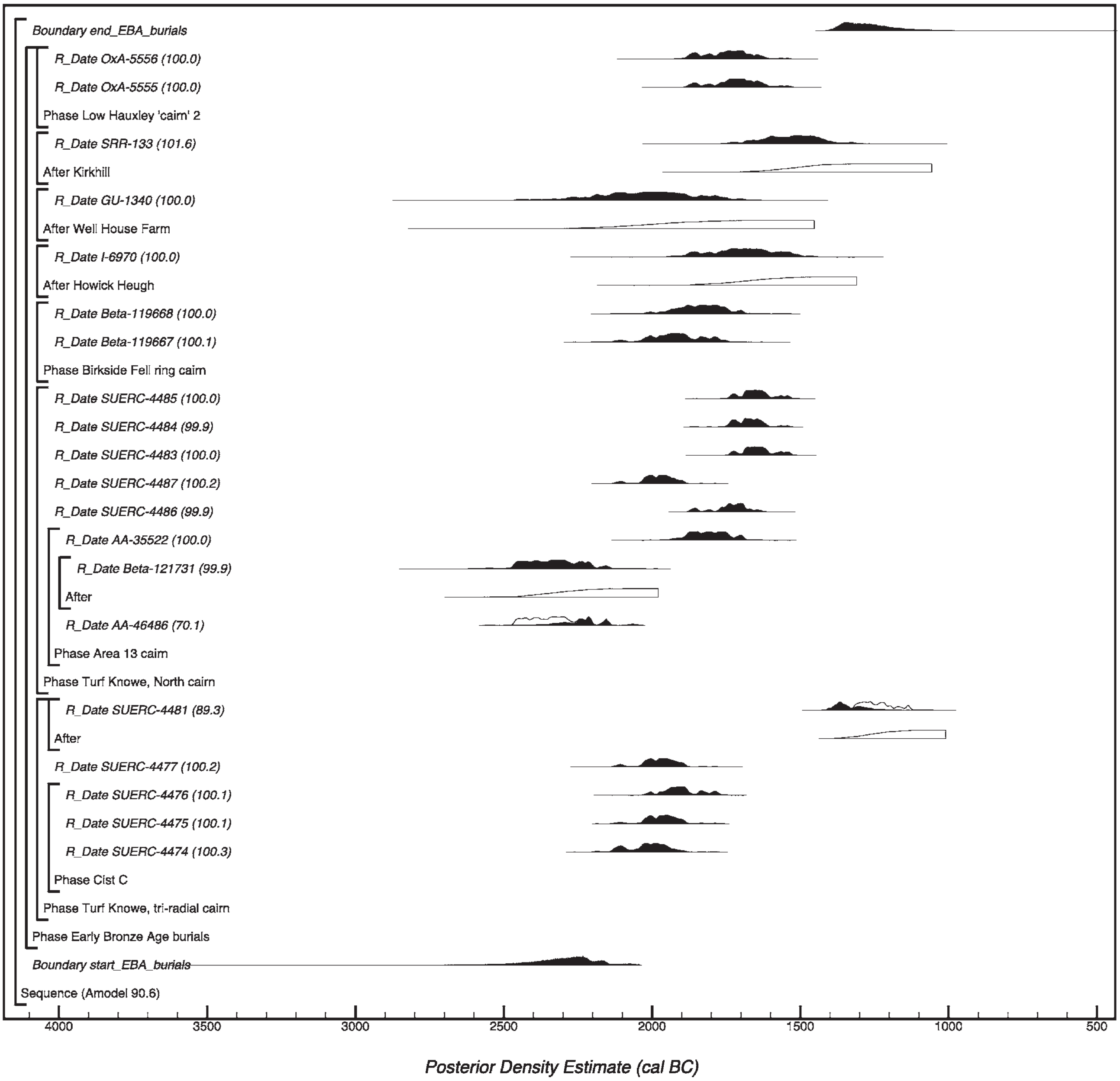



*Figure 6.2. Probability distributions of dates for Early Bronze Age Burials: each distribution represents the relative probability that an event occurs at a particular time. The format is identical to that of Figure 5.1. The large square brackets down the left hand side along with the OxCal keywords define the model exactly. Distributions other than those relating to particular samples correspond to aspects of the model. For example, the distribution 'start_EBA_burials' is the estimated date for the start of Early Bronze Age burials.*

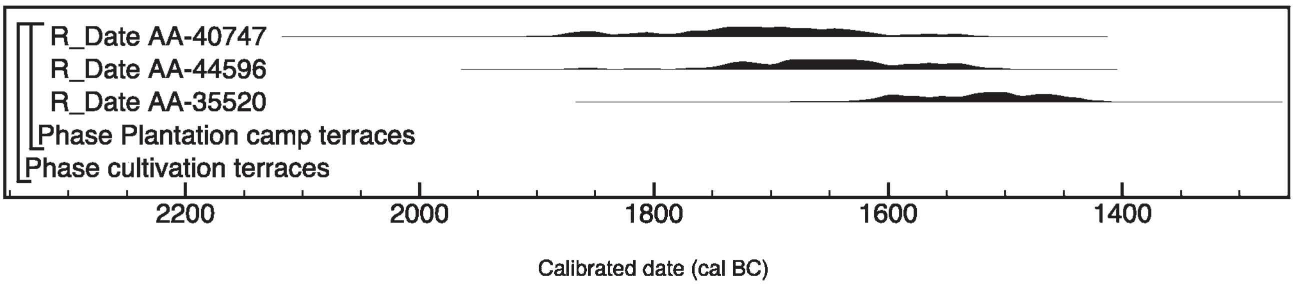



*Figure 6.3. Probability distributions of dates from cultivation terraces. Each distribution represents the relative probability that an event occurred at a particular time. These distributions are the result of simple radiocarbon calibration (Stuiver and Reimer 1993).*

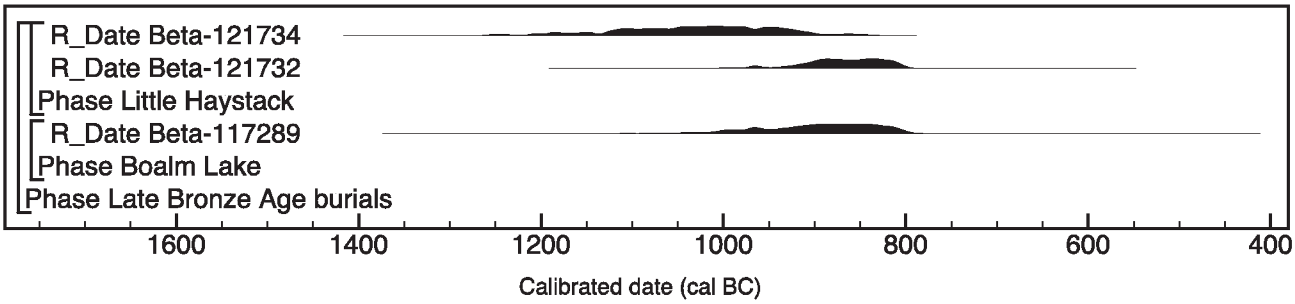



*Figure 6.4. Probability distributions of dates from Late Bronze Age burials. Each distribution represents the relative probability that an event occurred at a particular time. These distributions are the result of simple radiocarbon calibration (Stuiver and Reimer 1993).*

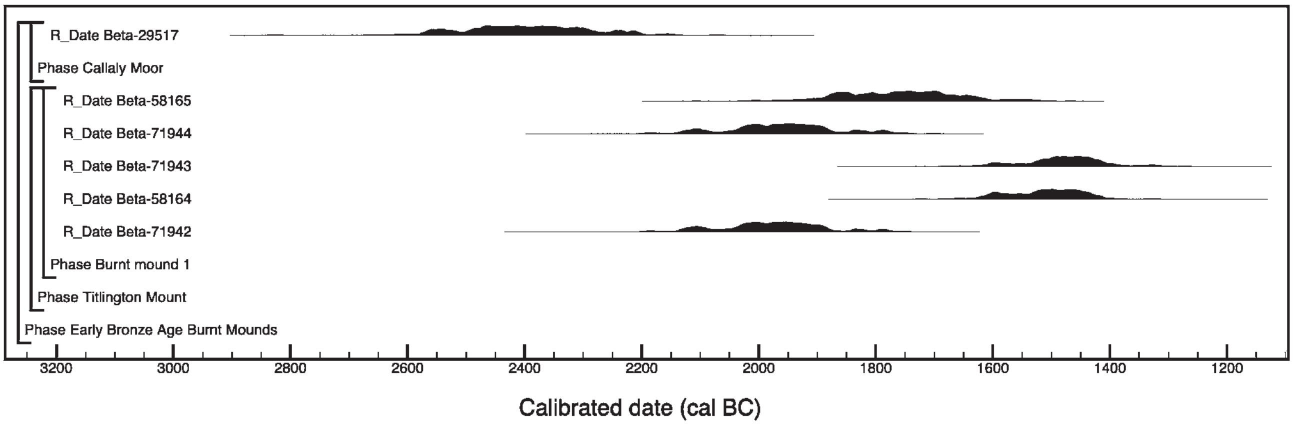



*Figure 6.5. Probability distributions of dates from Early Bronze Age burnt mounds. Each distribution represents the relative probability that an event occurred at a particular time. These distributions are the result of simple radiocarbon calibration (Stuiver and Reimer 1993).*

perhaps premature to compare those for Food Vessel and related burials with those for Urned burials. As more become available, however, comparison of the dating for each funerary tradition and their associated ceramics will be possible.

The cultivation terraces and lynchets that scar the steep slopes of many Cheviot hillsides are poorly understood and remain in need of further concerted programmes of investigation to establish their date and the nature of the agriculture they supported. The limited investigations that have taken place on these features to date (see ASUD 1997; 2000; Frodsham and Waddington 2004) suggest that they date to a range of periods, which has also been borne out by field survey. The sequence of terraces at Plantation Camp on the east slopes of Brough Law appears to be cut by a late prehistoric trackway that leads to the Plantation Camp enclosure. Dates from a buried soil on terrace 4 which provides a *terminus ante quem* for the construction, and first use, of this cultivation terrace, and from terrace 1, have provided statistically consistent Bronze Age dates. This suggests that the use of these terraces falls in the second quarter of the second millennium cal BC, the same time bracket as the first roundhouses (see above). Other dates, ranging from the Early Holocene to the Early Neolithic, have been obtained from organic material sealed by the terrace revetments at Plantation Camp. The authors consider these dates to be on residual material incorporated during the construction of the terraces.

Only three dates are currently available for Late Bronze Age burials. Two of these, from pits at Little Haystack, are only tentative, as the presence of burials was not certain. All that can be said is that formal burials continued to take place in the centuries around *c.* 1000 cal BC, although they are no longer accompanied by special ceramic vessels. In the case of the Bolam Lake site, the burials comprised cremations in small pits below a low, roughly made stone cairn (Waddington and Davies 2002 and Chapter 7).

Excluding the single date from Callaly Moor, radiocarbon dates are only available from one certain burnt mound site in Northumberland, at Titlington Mount. The dates and stratigraphy from this site suggest two separate phases of activity. Although only very limited dating is so far available, the use of burnt mounds appears to correspond to the time span for Early Bronze Age burials and the use of Food Vessels and Urn-related ceramics.

## CLIMATE AND ENVIRONMENT

Climatic conditions in the Bronze Age will have been generally familiar to those living in the preceding Chalcolithic and Late Neolithic periods, being slightly cooler than the Middle Holocene thermal optimum and subject to at least one centennial-scale cooling event. This short-lived climatic downturn is registered as shifts to wetter bog surface conditions at Walton Moss, centred on *c*. 1500 cal BC (Hughes *et al*. 2000), and more generally in northern British mire systems at *c*. 1650 cal BC (Charman *et al*. 2006). Estimates for mean July temperatures for the Middle Bronze Age at Talkin Tarn suggest a cooling in the order of 0.5°C (Langdon *et al*. 2004). Later Bronze Age communities will have experienced amelioration in climate that lasted until the very end of the second millennium cal BC, since it is now widely accepted that the end of the Bronze Age also coincided with a marked climatic downturn, commencing *c*. 1170 cal BC, and especially from *c*. 950 cal BC. This was experienced throughout North-West Europe and possibly the entire northern hemisphere (van Geel *et al*. 1996; 1998a and b). Linked to changes in solar activity and ocean circulation patterns (van Geel *et al*. 1998a and b; Mauquoy *et al*. 2004), this climate event registered as one of the longer neoglacial phases (*c*. 950–550 cal BC) identified in the European glacier record (Matthews and Quentin Dresser 2008) and is reflected in wetter mire surfaces in northern Britain and a likely drop in summer temperatures in the order of 1–2°C (see Chapter 2).

Along the Northumberland coast, the relatively rapid tempo of sea level changes during the Early to Middle Holocene had slowed by the beginning of the Bronze Age, and in the northern part of the region this coincides with relative sea levels at their maximum elevation some 2–2.5m above the present. The subsequent tendency to a relative fall in sea level is evident at Bridge Mill, near Holy Island, where a regressive transition from saltmarsh into fluvial sediments has been dated to *c*. 1802–1462 cal BC (Shennan *et al*. 2000). Further south, transgressive contacts in sediment sequences at Newton Links (Beadnell Bay), dated to *c*. 2224–1840 cal BC, Warkworth (*c*. 1462–1175 cal BC) and Cresswell Ponds, on the southernmost limit of Druridge Bay (*c*. 1812–1482 cal BC), are indicative of relative sea levels peaking during Bronze Age times in the central and southern part of the Northumberland coast (Shennan *et al*. 2000).

Inland, river valleys in North-East England have not hitherto been identified as having experienced significant geomorphological changes during the Middle to Late Bronze Age (Macklin *et al*. 2009). The record is restricted to evidence for an episode of channel abandonment in the River Rede at Otterburn at *c*. 1600 cal BC (Hildon 2004), and localised alluviation in Coe Burn, a small upland stream on Callaly Moor, sometime between *c*. 2450 and *c*. 800 cal BC (Macklin *et al*. 1991). This stands in contrast to the broader fluvial archive in the UK which registers widespread flooding centred around *c*. 1560–1590 cal BC (Macklin *et al*. 2006), a period that also corresponds with evidence for cooler and/or wetter conditions in the bog surface wetness record in Cumbria (Hughes *et al*. 2000; Charman *et al*. 2006). New data from the Till-Tweed project can now add an enhanced North-East component to the Middle to Late Bronze Age fluvial record, with episodes of channel abandonment evident in the River Till at *c*. 1630–1430 and *c*. 1200–930 cal BC on the eastern side of the Milfield Basin near Doddington, at *c*. 1670–1450 cal BC downstream at Etal, and also at *c*. 1460–1210 cal BC in the River Breamish at Hedgeley (Chapter 2). It is tempting, therefore, to suggest that the picture of channel and floodplain development in north-eastern river valleys is beginning to show at least some degree of correspondence with the wider UK flood record in the middle centuries of the second millennium cal BC.

### Woodland composition and land use

In the Cheviot interior, the pattern of small-scale woodland clearance and associated barley cultivation, established during the Neolithic period (see Chapter 5), appears to have continued through much of the Bronze Age before a cessation of cultivation activities between *c*. 1300 and 1150 cal BC (Tipping 2010). Only at Swindon Hill is there robust evidence of subsequent woodland regeneration, however, here the predominance of birch may be a reflection of deliberate woodland management (Tipping 2010). A continuous Bronze Age presence is also evident in pollen records from the eastern flanks of the Cheviots (Broad Moss) and the Fell Sandstones to the east (Ford Moss). These sites offer a picture of Bronze Age occupation in upland and mid-altitude environments that is broadly consistent with the chronology and character of vegetation changes evident in similar settings elsewhere in Northumberland. This comprises continued woodland clearance (but typically within the context of a still extensively wooded landscape), increased heather moorland, pastoralism and (for example at Broad Moss) some evidence of occasional cereal cultivation (see Chapter 2). Fewer dated palaeoenvironmental records are available from lowland settings in Northumberland, although alluvial pollen sequences in Redesdale at Otterburn (Moores 1998), and in the Milfield Basin near the glaciodeltaic terrace at Thirlings (core Mil-22; see Chapter 2), suggest that drier terraces on regional valley floors were the focus for pastoral and some arable agriculture during the early part of the second millennium cal BC. On the eastern side of the Milfield Basin, near Doddington, a further two alluvial pollen assemblages (Mil 171–5 and Mil 171–4) dated to the Middle and Late Bronze Age respectively, have yielded evidence for open grassland and pasture amidst areas of oak and hazel woodland and floodplain alder carr (Chapter 2). Some insight into the Bronze Age environment of the coastal lowlands to the east and south-east of the Till-Tweed area may also be derived from the sites along the Northumberland coast described above, and also at Howick (Boomer *et al*. 2007b). Localities at Bridge Mill (near Holy Island), and further south at Newton Links (Beadnell Bay), Warkworth and Cresswell Ponds (Druridge Bay) all exhibit pollen records showing that Bronze Age environments were dominated by oak, elm and hazel but with grassland and some saltmarsh taxa (Shennan *et al*. 2000). The scale of human impact appears to have been rather greater at Howick, however, since here the periods between *c*. 2410–2130 cal BC and *c*. 1380–1100 cal BC, and especially from the Middle Bronze Age at *c*. 1690–1510 cal BC, witnessed marked declines in oak and alder woodland and an associated spread of grassland and ruderal taxa, including possibly some limited cereal cultivation (Boomer *et al*. 2007a; 2007b).

## LAND USE, FARMING AND UPLAND EXPANSION

The Bronze Age is perhaps most notable for the widespread construction of farmsteads with associated field systems, grazing land and cultivation plots extending into upland locations above the 400m contour. At no other period do we have evidence for abundant, permanent settlement at such high altitudes; the scale of survival can be seen most clearly on aerial photographs (see Chapter 3). Visible archaeological remains are best preserved in the uplands of the Cheviot Hills where upstanding stone boundaries, clearance cairns, cleared plots and house stances can be seen as grassed-over remains, providing, in some cases, a stunning glimpse of a long-abandoned way of life. This is a phenomenon that is evident across many parts of upland Britain, from Dartmoor and the Peak District to Northumberland and the Borders (e.g. Halliday 1985; Barnatt 1987; Fleming 1988), and the origins of the moorlands and heath in many parts of Britain can be traced back to the effects of Bronze Age woodland clearance, intensive agricultural production and the exploitation of vulnerable upland soils for cultivation (Roberts 1998).

The barren character of today's Cheviot Hills and Fell Sandstone moors is regarded by many as testimony to this age of agricultural expansion (e.g. Burgess 1984) and, while it has been noted that we cannot be certain as to what drove the Bronze Age commitment to upland settlement and farming activities (e.g. Tipping 2010), it would certainly seem to imply a mounting demand for foodstuffs. This could have been prompted by one, or a combination, of the following factors: an expanding population, the desire to produce a surplus as a means of acquiring wealth, power and prestige, or perhaps the consequence of greater social and political stability. Given that farming at this time remained a highly labour-intensive activity, with evidence for both ard-pulling and hand-dug cultivation plots (Topping 1989; 1993), population levels in the uplands are thought to have been greater than in parts of North Northumberland today. Recently, however, the long-held view that the Cheviot unenclosed houses were permanent, sedentary settlements has been called into question on the basis of the Scottish and Borders evidence (Halliday 2007). In the Cheviot interior, furthermore, Tipping's (2010) review of pollen-based records in the Bowmont valley provides evidence for barley production, but in the context of small-scale clearances that were no more extensive than in the preceding Neolithic period. We return to the consideration of the scale and character of upland settlement and land use below, following a review of the current archaeological evidence.

In excess of 100 unenclosed settlements are currently known in Northumberland, with the majority located in the uplands where they survive as upstanding features (Fig. 6.6). The survival of upland sites owes much to their location beyond the limit of medieval and modern ploughing, although their distribution presents only a partial picture of contemporary settlement patterns. Recent excavations at Cheviot (Johnson and Waddington 2008) and Lanton Quarries (Waddington 2009) have demonstrated a clear Bronze Age presence on the valley floor of the River Till, for example, while unenclosed roundhouses have also been noted from the air in small numbers on the low slopes of the Fell Sandstone escarpment, as well as in lowland settings, such as those at Low House West overlooking the River Tweed (see Chapter 3, Till-Tweed Studies Volume 1). Several unenclosed roundhouses have been found during the course of excavations of later sites but no direct dating has been obtained for them. Examples include the ring groove buildings at Burradon (Jobey 1970), Hartburn (Jobey 1973a) and Murton High Crags I (Jobey and Jobey 1987). Gates (1983, 106 and Chapter 3 this volume) has made the important point that the ring ditch cropmark, which revealed the site at Lookout Plantation, serves to question how many other such cropmarks relate to unenclosed roundhouses rather than burial monuments. Although such attributions can ultimately only be tested by excavation, it remains possible that a significant number of 'ring ditch' sites could indeed be unenclosed Bronze Age settlements (see also Chapter 3).

In view of the new data from the two quarry sites reported here, it is reasonable to suggest that the fertile lowland areas were no less attractive for farming and

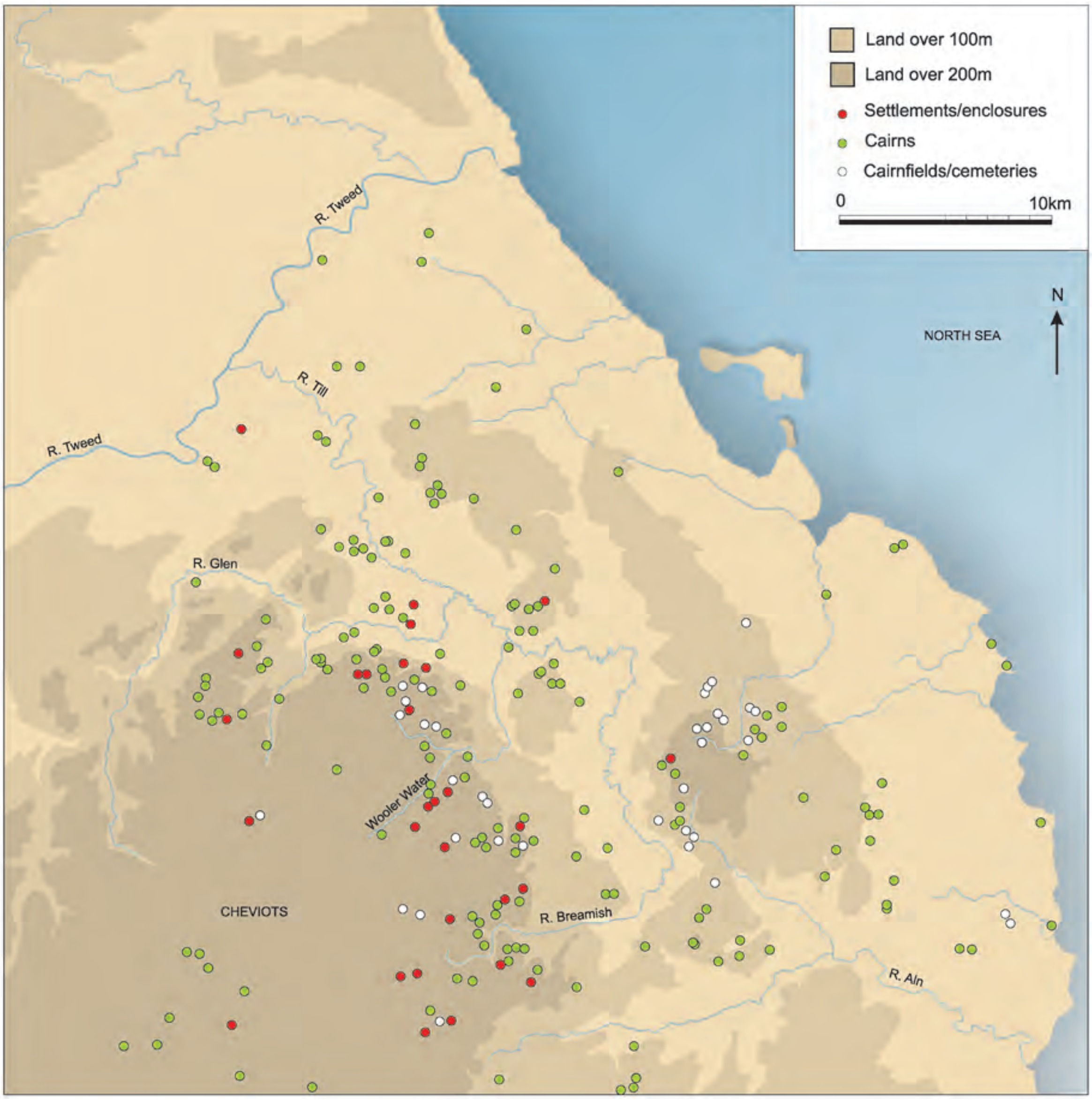



*Figure 6.6. The location of Bronze Age settlements and cairnfields.*

settlement than the Cheviot uplands at this time. This is an interpretation that finds further support in the discovery of lowland settlements during large-scale excavations elsewhere, notably at Dryburn Bridge in East Lothian (Triscott 1982). No unenclosed settlements have yet been found on the coastal littoral, but here the presence of significant numbers of Early Bronze Age burial mounds and cist cemeteries provide a proxy for what appears to be intensive Bronze Age settlement in these areas (see for example Waddington *et al.* 2006). The lack of known sites on the Fell Sandstone uplands has prompted speculation that poor soil fertility may have acted to deter settlement in these mid-altitude settings (e.g. Gates 1983). However, the presence of extensive cairnfields, some for burial and others no doubt resulting from clearance, suggest that settlement did not lie far away, and this is supported by palaeoenvironmental evidence for local clearance activity at this time (see above and Chapter 2). At Steng Moss this appears to have been associated with the first instance of barley and wheat cultivation from *c*. 1050 cal BC (Davies and Turner 1979). A further explanation for the lack of known unenclosed houses in these areas may be that they were timber-built, in the same way as those in the lowlands. If this were the case then few surface traces of these buildings are likely to survive.

In Northumberland, modern excavations of unenclosed settlements have taken place at eight sites: Standrop Rigg (Jobey 1983), Houseledge (Burgess 1984), Linhope Burn (Topping 1993) and Kidlandlee Dean (Carne and Pope 2007; www.liv.ac.uk/sace/research/unearthed_2008/kidlandlee.htm) in the Cheviot Hills, Halls Hill in Redesdale (Gates 1983;

*Figure 6.7. The truncated remains of House 4 at Cheviot Quarry North with porch in foreground, central hearth pit, internal midden pit to the left of the entrance and the outer ring of postholes.*

2009; van der Veen 1992) and Lookout Plantation (Monaghan 1994), Cheviot Quarry (Johnson and Waddington 2008) and Lanton Quarry (Waddington 2009) in the Milfield Basin. Based on field survey and the results from these excavations, a range of house types can be identified: house platforms, ring banks, ring grooves, ring ditches and post-built buildings (e.g. Fig. 6.7). At several of the excavated sites, houses have been shown to be multi-phase, indicating that occupation took place over a considerable period, perhaps several generations. This can be seen at Lookout Plantation, Houseledge, Halls Hill and possibly House 4 at Standrop Rigg. In contrast, other houses appear to have only one structural phase, as in the case of Linhope Burn House 1, Standrop Rigg House 1 and those at Cheviot Quarry. However, the detailed radiocarbon dating and Bayesian modelling of the two houses at Cheviot Quarry indicated that these houses were fairly long-lived, and in use for one, and perhaps two or three, generations (Johnson and Waddington 2008, 251).

The field systems associated with the settlements vary in size but average around 2ha in extent (Gates 1983, 11). Some plots were cleared of stones, most probably indicating their use for cultivation, while others may have served as stock compounds. The field systems do not just include earthen and rubble banks, however, as cultivation terraces and lynchets can also form part of these systems. Clearance cairns around settlement sites are widespread and it should be noted that the recent excavations at the cairnfield on Todlaw Pike in Redesdale (Hale 2007) have produced a *terminus post quem* for cairn F64 of 2200–1950 cal BC (Beta-184092; 3710 ±40 BP), which hints at an earlier date for Bronze Age farming settlements than is currently available from the excavated roundhouses. Field survey in the northern Cheviots, around the College Valley and Kirknewton, has allowed Topping (1981b; 1983; 1989) to identify cultivation terraces that underlie Iron Age and Roman settlements, as at Kilham Hill and also Elsdon Burn, where cultivation terraces are overlain by cord rig cultivation adjacent to an unenclosed scooped settlement (Topping 1989, plate 28b and plate 30a respectively). The excavation of a cultivation terrace at Plantation Camp in the Breamish Valley, over which a trackway to a presumed Iron Age enclosed site had been constructed, has also provided Early Bronze Age dates (see above Table 6.3 and Figs 6.3, 6.8 and 6.9; Frodsham and Waddington 2004).

The construction of cultivation terraces is an important development that requires further comment. Firstly, they provide a means of bringing sloping ground into production and building up soil depth, which adds further credence to the view that a determined attempt at increasing production was underway in the Early Bronze Age. Secondly, cultivation terraces are a response to soil erosion that has either taken place or is envisaged. This implies that

*Figure 6.8. The Plantation Camp cultivation terraces under excavation during the 1999 season.*

*Figure 6.9. The revetment wall of terrace 4 at the Plantation Camp terraces during excavation in 1999.*

there had been substantial removal of the tree cover and large areas of ground were broken up and exposed to erosional events associated with surface run-off and rilling. The cultivation terraces investigated at Plantation Camp and Linhope Burn show variation in construction, and those at Plantation Camp also showed variation between different terraces on the same site. At Linhope Burn, the terrace was formed by a natural break of slope, emphasised by a single course of revetment stones (Topping 1993), whereas at

Plantation Camp the revetment for Terrace 4 consisted of a roughly constructed low wall with rubble fill, whilst further up the slope in the same complex the terrace edge had simply been cut back to create a steep scarp (Frodsham and Waddington 2004). However these cultivation terraces were certainly effective. At Plantation Camp the soil thickness was in excess of 1m in some cases, while analysis of the modern soil profile revealed it to closely resemble a colluvial Brown Earth (ASUD 2000), showing that good quality soils existed on these hills and that they could be enhanced by terracing.

A mixed farming regime has been inferred at unenclosed settlement sites in the uplands (e.g. Burgess 1984; Jobey 1985), and this strategy also appears to have been followed at their lowland counterparts (Johnson and Waddington 2008). Supporting evidence for cereal production is forthcoming from palaeoenvironmental records in the Cheviots, notably at Swindon Hill, Sourhope and Cocklawhead (Tipping 2010), and possibly also at Broad Moss (Chapter 2), but on the Fell Sandstones it is limited to the pollen record from Steng Moss (Davies and Turner 1979). Archaeological field evidence for arable production is abundant, however, in the form of 'cleared' areas of up to 5ha adjacent to upland settlements (see Gates 1983), the recognition of ard marks at the Linhope Burn site (Topping 1993), and the cultivation terraces referred to above. Further evidence for cereal cultivation has come from the excavation of houses at Halls Hill (van der Veen 1992) and Cheviot Quarry (Johnson and Waddington 2008). Both produced large quantities of barley seeds, together with emmer wheat and wheat chaff, providing clear indications that cereals were processed. This observation is supported by the recovery of several quernstones from within Building 4 at Cheviot Quarry and from the revetment of Terrace 4 at Plantation Camp. At Halls Hill, in addition to the processing of barley, van der Veen identified spelt wheat arriving on the site at the end of the second millennium cal BC (van der Veen 1992). Further evidence for the importance of barley in the Early Bronze Age includes a Food Vessel with a temper of barley seeds, found as part of a secondary insertion into the Wether Hill cist (Topping 2008, 338). The presence of quernstones at the Cheviot Quarry site implies that emmer wheat was ground into flour, and perhaps some of the barley too. The barley could also have been used for other purposes, such as brewing, as well as forming a useful source of winter fodder for stock. The presence of a single sloe stone and an apple pip, along with a small number of charred hazelnuts, indicates the small-scale harvesting of fruits and wild resources (Johnson and Waddington 2008).

Widespread evidence for pastoralism in regional Bronze Age pollen records corresponds well to archaeological evidence for pens and stock yards at various upland sites (e.g. Houseledge; Burgess 1984), and the fragments of burnt cattle and probably sheep/goat bone from Building 4 at Cheviot Quarry. In addition, the organic residues on the sherds of 'Flat-Rimmed Ware' from the same site provided evidence for dairying, as well as revealing the presence of beeswax (Stern in Johnson and Waddington 2008), presumably as a sealant, which also implies the collection of honey.

Overall, we can reconstruct a picture of modest-sized farmsteads geared towards a mixed farming strategy. These farms appear to have been intended as being largely self-sufficient, and with the capacity to produce a modest surplus. Such a scenario is consistent with the widely held assumption of an expanded population in upland localities but, as noted earlier in this section, runs counter to the recent interpretation of the Bronze Age archaeological record of the Cheviots as the product of short-lived, but regularly shifting, settlements associated with a relatively small population (Halliday 2007). Halliday's alternative view is ultimately based on the excavated evidence not being considered 'complex enough' to suggest that these houses were occupied for long periods. This has led Halliday to speculate that few stood for longer than ten years and, in many instances, for considerably less time than this (Halliday 2007, 54). This view need not be correct and we do not see it as a necessarily valid way of interpreting the excavation evidence. The demonstrable multi-phase occupation of at least three unenclosed houses in the region's uplands (see above) points to a long-term presence in some localities, while the association of houses with stone clearance and cultivation plots, lynchet development and cultivation terraces, and the large quantities of grain recovered from sites such as Halls Hill (van der Veen 1992), rather suggests there was a long-term presence at, and investment in, these settlements and the land around them. The lack of evidence for maintenance and rebuilding on some sites could simply be a product of taphonomy. There are many houses, of later periods, in the archaeological record that show a similar or lower level of complexity in their ground plans to the Bronze Age unenclosed houses but are not considered to be short-lived, temporary settlements.

The available palaeoecological records cannot offer a definitive solution to this issue. On the one hand, the relatively low intensity of clearance and farming activity exhibited in the upland Cheviot sites described by Tipping (2010) may be taken as consistent with Halliday's (2007) vision of a low population density. In many other upland areas, however, including the eastern flanks of the Cheviots at Broad Moss and several sites on the Fell Sandstones, clearance episodes appear to have been locally more extensive (see above and Chapter 2), albeit never as emphatic as those recorded in upland parts of the North York Moors and especially the lowland areas of east Durham (Innes 1999; Chapter 2). In other parts of upland Britain, some have also sought to link episodes of floodplain alluviation and gully erosion to the impact of Bronze Age catchment disturbance (e.g. Harvey and Renwick 1987; Taylor and Macklin 1997; Chiverrell *et al*. 2007; Fyfe *et al*. 2003), and in this respect we can now point to an enhanced record of Bronze Age river channel and floodplain adjustment in certain reaches of the River Breamish/Till (see above and Chapter 2). Recent analysis of the fluvial record in Great Britain and Ireland would caution against the reliability of making direct links between land use change and valley floor geomorphology. Rather, land use change is more likely to be significant in acting to sensitise catchments to the impact of flooding (Foulds and Macklin 2006).

Therefore, although Halliday's (2007) questioning of the duration of occupation is an interesting and challenging view, it has yet to be proven. On the balance of evidence currently available it is argued here that the longevity of occupation suggested by Halliday is simply too short, although it may be applicable to some settlements in the most marginal locations. On a final note, we can perhaps be clearer about the social and cultural implications of the Bronze Age practice of laying out formal field systems in association with unenclosed houses. This marks a departure from the preceding Neolithic and Beaker periods in the region, where the evidence for earlier land allotment that does exist appears to be associated with the demarcation of ritualised space rather than land units given over to agriculture. The need to divide land for agriculture in a formalised way, from perhaps as early as 1800 cal BC, clearly reflects a change in the way people thought about and related to the land, the organisation of food production, as well as the social structuring of communities. At this time the large ritual monuments in use during the Neolithic and Beaker periods finally go out of use, and there is a focus in the burial record on graves of one, or just a few, individuals. Significantly, these burials occur close to the houses, and sometimes within the fields, of the Bronze Age farmers. This change in burial practice can be seen as a shift from large-group ceremony and cult practice to small-scale, family-focused, monuments. Quite what prompted these changes in the ideological arena is unclear, but the resultant circumscribing of land must also have expressed some new kind of tenure – perhaps even the concept of land 'ownership'.

## SETTLEMENT MORPHOLOGY

The settlements of Bronze Age Northumberland are dominated by roundhouses of varying form and construction. However, during the earliest part of the Early Bronze Age, in the final quarter of the third and the first quarter of the second millennium cal BC, there are few dated settlements. The small triangular structure at Whitton Park falls within this gap (Waddington 2006 and see Chapter 5 this volume), suggesting that settlements in the 'Neolithic' tradition continued, but as dates from more unenclosed roundhouse sites become available it is possible that the beginnings of roundhouse settlement may prove to be a century or two earlier than is currently recognised by the radiocarbon dated examples available.

The roundhouses take a wide variety of forms, with all the lowland houses in Northumberland being post-built timber structures, whilst those in the uplands can be timber-built, constructed on dry-stone foundation walls ('ring banks'), or have cleared stone mounded up against the outside of timber and wattle walls, as at Green Knowe (Jobey 1980), Houseledge (Burgess 1984) and Halls Hill (Gates 2009). The upland sites can take the form of platforms or 'scooped' settlements, which are usually cut into the hillside along the contour, with the front of the platform comprising the material quarried from the back. Other types of surface morphology include raised platforms and ring grooves. Upland sites are usually located close to water, occupy south-facing slopes, and are typically intervisible with other sites. This is perhaps nowhere better demonstrated than at the neighbouring sites of Standrop Rigg and Linhope Burn (Jobey 1983; Topping 1993). The different constructional forms do not seem to be chronologically specific, but appear to reflect the ready availability of different raw materials. Early stone-founded houses include those from Houseledge (Burgess 1984) and Bracken Rigg in nearby Teesdale, County Durham (Coggins and Fairless 1984). Early post-built timber houses include the site at Lookout Plantation at the north end of the Milfield Basin (Monaghan 1994). Some of the upland houses show several phases of rebuilding, including the replacement of timber with stone-founded houses on the same footprints at Houseledge (Burgess 1984) and Green Knowe (Jobey 1980), contra Halliday's assertion of a lack of complexity. Where scooped stances, raised platforms or ring banks have not been used, and outlines have not been preserved by rings of field clearance stones against the once-standing timber walls, no surface traces of these buildings are likely to survive, except in exceptional circumstances. Burgess (1984) points out that this may account for the apparent absence of houses at many putative Bronze Age field system and cairn sites. Therefore, the visible evidence for Bronze Age settlements in the uplands, although very extensive, is probably only a small fraction of the actual settlement pattern.

The size of the roundhouses can vary in terms of their internal diameters (Fig. 6.10) with excavated examples ranging from 5.8m (Cheviot Quarry House 4) to 10m across (Green Knowe Houses 2 and 3), equating to available floor areas of 26 square metres

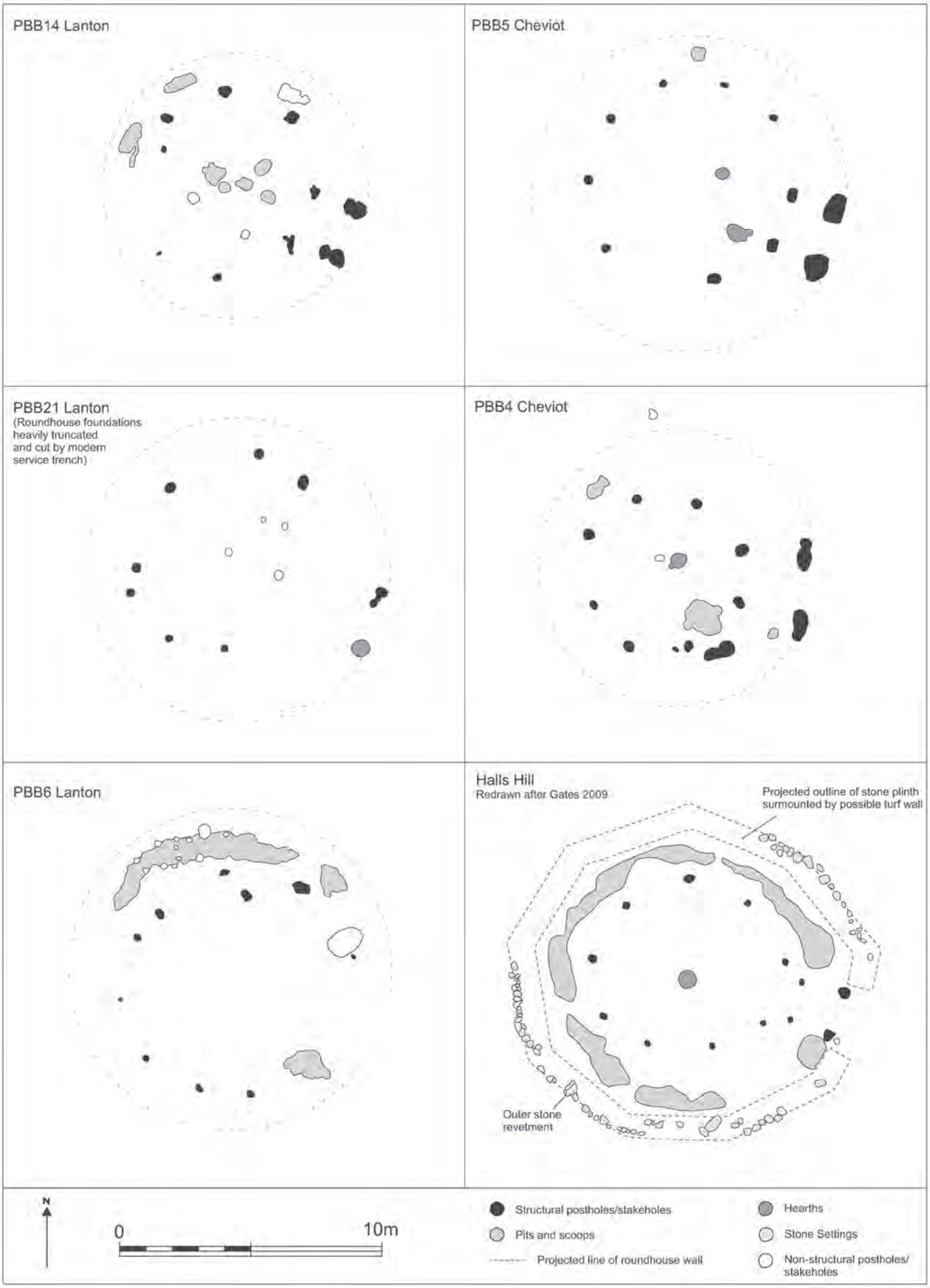



*Figure 6.10. Comparative plans of excavated unenclosed Bronze Age houses redrawn from original publications.*

*Figure 6.11. The truncated remains of the six-post structures at Lanton Quarry excavated during 2006.*

and 79 square metres respectively. Internal diameters in the region of 8m are most common, equating to an area of 50 square metres (e.g. Standrop Rigg House 4, Linhope Burn Site 1, Cheviot Quarry Building 5, Bracken Rigg). Being circular, it is assumed these houses supported conical roofs but little evidence has yet been recovered to demonstrate this. The entrances are typically located in the south or east quadrants, facing the rising sun, although this is not always the case. A further discovery is the evidence for 'porchways' or short 'entrance passages' from the post-built houses at Lookout Plantation (Monaghan 1994), Cheviot Quarry North (Johnson and Waddington 2008), Lanton Quarry (Waddington 2009) and Halls Hill (Gates 2009). In the case of the quarry sites these entranceways also have double postholes, indicating an embellished façade that does not appear to serve a structural purpose. This structural detail suggests deliberate enhancement of the doorway, perhaps to impress visitors or to display group affiliation or enhanced status. The interpretation of these structures as entrance passages rather than protruding porches, as Gates has observed for Halls Hill, probably also applies to the lowland examples where, unfortunately, due to truncation they have no surviving evidence for an outer wall beyond the posthole ring (see also Fig. 6.10), but if this is the case then the internal floor area will be greater than the internal ring diameters as quoted above.

A further detail, which most of the excavated houses have in common, is the presence of a central hearth. In the cases of the Cheviot and Lanton Quarry sites the truncated remains of hearth pits have been found at, or near, the centre of these buildings (Fig. 6.7). The stone-founded houses also have evidence for central hearths, as at Standrop Rigg House 4 (Jobey 1983), Halls Hill (Gates 2009) and Bracken Rigg (Coggins and Fairless 1984). A further feature, noted inside the Cheviot and Lanton Quarry houses, is an internal 'midden' pit, usually on the left hand side as one enters the building. At the less truncated of the two houses at Cheviot Quarry North, Building 4, the pit contained two broken querns, Flat-Rimmed Ware sherds representing at least 31 domestic vessels, and burnt cooking debris that included seeds, chaff and animal bone. Whether such pits were frequently cleared out and reused remains unknown but another possibility is that they formed foundation deposits with their contents reflecting the domestic resources and needs of the occupants.

Given their floor areas, these houses can reasonably be assumed to have been inhabited by family-sized units of between six and a dozen individuals. The apparent single space created by many of the roundhouses implies that family life was conducted, for the most part, openly with communal eating and sleeping arrangements. There is little evidence for internal divisions, although it is possible that traces of internal stakeholes may have been removed by truncation in some cases. Living in such proximity there would have been few opportunities for privacy. With such tightly knit groups, kinsfolk would no doubt have been fiercely protective of and loyal to each other.

In addition to the houses there is evidence for stock pens on the upland sites, whilst the lowland roundhouses at Cheviot and Lanton Quarries have produced evidence for additional post-built structures. At Cheviot Quarry North this included a small irregular structure that may have been rebuilt on one or more occasions, whilst at Lanton Quarry three small six-post rectangular structures have been discovered (Fig. 6.11) fairly close to each of the three roundhouses. So far one of these structures, Building 22, has produced a radiocarbon date on birch wood from one of its postholes of 1420–1260 cal BC (3080 ±30 BP; SUERC-31574), suggesting contemporaneity with roundhouse occupation on the site. It is possible they served as raised granaries as they are small, averaging 3.5m long by 2.5m wide, making them unlikely candidates for residential use. Furthermore they are constructed with substantial, deeply set posts (the postholes average 0.4m in diameter and around 0.3m deep from the top of the archaeological horizon) which suggests they supported tall and stoutly made structures. A raised structure would be in keeping with their use as stores for grain or other foodstuffs. At Houseledge, Burgess observed that although the platforms were indistinguishable in terms of surface appearance, they supported structures which he interpreted as serving widely different functions. For example, some were considered to be houses on account of their levelled floors, doors, porches and roofs, while others were thought to have served as stock pens.

The small finds recovered during excavations on settlement sites range from very sparse, as in the case of Linhope Burn (Topping 1993), to fairly rich at sites such as Cheviot Quarry Building 4 (Johnson and Waddington 2008). Typical finds include coarse quernstones, rubbers and pounders, fragments of shale and amber and, at several sites, assemblages of 'Flat-Rimmed Ware' pottery (e.g. Green Knowe and Cheviot Quarry) (see below for discussion of ceramic styles). At Houseledge a longer ceramic sequence has been identified by Burgess (1984) from a comb-impressed Beaker sherd and cord-ornamented sherds to later Bronze Age ceramics (Burgess 1995). Occasional chipped stone tools, such as the plano-convex knife from Houseledge, are also found.

The Bronze Age unenclosed roundhouses can be found as isolated single dwellings or as larger groups of up to 12, though the average number, in the uplands at least, is six (see Gates 1983). Whether all houses within a group were occupied simultaneously or whether they result from accretion of buildings over time is yet to be established, and a thorough dating programme across a discrete group of houses is overdue. Of relevance here however are the dating results from the two adjacent houses at Cheviot Quarry North that provided statistically consistent radiocarbon determinations indicating the strong likelihood that they were occupied contemporaneously (Johnson and Waddington 2008). Both of these houses were single-phase buildings and neither had any evidence for rebuilding, in contrast to upland sites such as Green Knowe and Houseledge, and the lowland site at Lookout Plantation. Where roundhouses occur in groups they are typically arranged in a linear pattern, sometimes referred to as a 'string of beads' (e.g. Burgess 1984) along the contour of the slope. This patterning has been noted at Houseledge in the Cheviots and at the cropmark site at Low House West on the banks of the Tweed (see Till-Tweed Studies Volume 1, Fig. 4.11). Their occurrence in small clusters suggests that limited settlement aggregation was taking place at this time, with families living in nucleated farming groups occupying the same houses, in some cases over what appears to be several generations.

## UPLAND RETREAT

During the 1980s Burgess proposed that a phase of upland abandonment occurred between *c*. 1200 and 900 cal BC as a result of an economic and environmental catastrophe brought about by changing climatic conditions and in particular the effect of the eruption of the Icelandic volcano Hekla (the Hekla 3 eruption of 950 BC) (Burgess 1984; 1985; 1989; 1995). Although based on a logical argument, Burgess' view has courted considerable controversy. In recent reviews his argument has been contested on several counts including the signal provided by pollen evidence, the radiocarbon dating of upland settlement sites and the selective use of a volcanic eruption (Young and Simmonds 1995; Tipping 2002). A closer examination of the argument is required in order to understand the central fact that Bronze Age upland settlement did contract at some stage towards the end of the second millennium cal BC, leading to the survival of the fossilised Bronze Age farming landscapes that survive to this day, although whether this contraction amounted to a retreat from the higher altitudes only or an abandonment of hill farming altogether, as Burgess implies, is not yet clear.

While the Hekla 3 eruption may have had some impact on Britain's climate there is little direct evidence of it (Buckland *et al*. 1997) and its impact is unlikely to have persisted for more than a few years (Dark 2005). Young and Simmonds (1995) note that links between volcanic eruptions, climatic deterioration and landscape abandonment, fails to take account of known eruptions of hugely destructive proportions of which there is no discernible effect in the archaeological record. Burgess is clearly aware of this difficulty and he refers to the 1628 BC eruption (thought by some to be Santorini) as "the one that got away" (Burgess 1989, 329), despite this being known to have had climatic effects on a global scale. However, volcanic activity may have affected the climate adversely at a time when farming in upland areas was becoming more marginal due to other factors, such as soil degradation, and such effects may have been sufficient to have caused the abandonment of the most marginal farms. However, it is worth keeping the effects of extreme environmental events in mind when considering this conundrum. It remains possible that the 1628 BC event did not have such an impact in places such as Britain, as the upland soils were only beginning to be exploited for farming purposes, though by the later centuries of the 2nd millennium cal BC the soils would have degraded and become less productive; in such circumstances an extreme volcanic event may have had a far bigger impact on upland settlement. However, the impact of volcanic activity appears less significant than the marked climatic downturn that occurred shortly after Hekla 3 at the end of the Bronze Age, and which introduced a relatively protracted period (*c*. 400 years) of cooler and wetter conditions (see above).

The pollen record is instructive with respect to land use trends that span the Late Bronze Age and Early Iron Age, including the climatic perturbations noted here. In particular, it is worth noting Young and Simmonds' (1995) observation that a clearance episode recorded at Steng Moss (Davies and Turner 1979), which appears to have lasted for 250 years with its maximum extent dated to *c*. 1420–1130 cal BC, falls in precisely the period during which Burgess suggests upland abandonment took place. More generally, Tipping's (2002) analysis of pollen-based evidence for land use change, spanning the Bronze Age and Early Iron Age in marginal areas of upland northern Britain, found no clear evidence of abandonment. In her analysis of pollen sequences spanning the Late Bronze Age and Early Iron Age in Britain, Dark (2005) attempted to assess whether contemporary climatic deterioration was sufficient to cause widespread land abandonment across a range of environmental settings. She found instead a general picture of land use continuity, or even increased agricultural activity, albeit with some regional variations. In the four sites in the North-East (Dogden Moss, Steng Moss, Camp Hill Moss and Crag Lough) the pollen record of *c*. 850–350 cal BC was found to be indicative of woodland clearance and/or increased agricultural activity. Further corroboration of this trend is forthcoming from the Till-Tweed study area at Broad Moss, where the period between *c*. 2460–1950 and *c*. 410–200 cal BC is characterised by a broadly progressive increase in the incidence of localised, temporary clearances of the forest cover for subsistence activity (including traces of cereal cultivation; Passmore and Stevenson 2004). At Ford Moss, the pattern of limited clearance activity and pastoralism established during the Chalcolithic also continues, albeit with short-lived fluctuations, through to *c*. 810–550 cal BC before the onset of marked deforestation (Chapter 2). More recently, Tipping *et al*. (2008) have argued that agricultural communities in north-east Scotland responded to the climatic downturn at the end of the Bronze Age by restructuring their agricultural activities rather than wholesale abandonment of the landscape. A similar scenario is advocated for the Cheviot uplands where later Bronze Age farmers appear to be well aware of the limitations on cereal cultivation at altitudes above 300m OD (Tipping 2010).

Radiocarbon dating will ultimately assist in resolving the timing, character and extent of upland settlement retreat in the Bronze Age, but in order for this to happen, more sites require investigation. The information available is growing, but it remains ambiguous. Burgess argued for a *c*. 300-year gap in the upland settlement record, corresponding with his abandonment phase of *c*. 1200–900 cal BC. As Young and Simmonds (1995) point out, this is difficult to sustain without selective use of radiocarbon dates. The site at Halls Hill has produced dates during Burgess' abandonment period and four additional dates attest to an occupation around 1200 cal BC (van der Veen 1992; see also Table 6.1). Furthermore, van der Veen has been able to demonstrate that spelt wheat was introduced at the site at the very beginning of the first millennium cal BC – precisely the time when the site should be abandoned according to Burgess' discontinuity argument (cf. Young and Simmonds 1995). On closer inspection however, this site may not be altogether helpful in addressing the debate. Halls Hill lies at *c*. 230m OD and although it is an upland site by today's standards it lies at an intermediate height on a valley side and is not comparable to the true upland sites at 300m and above in the high Cheviot Hills. It is therefore important that future dating information comes from sites across the full range of altitude zones so that the ebb and flow of upland settlement can be more accurately addressed, particularly as the cycle of contraction and expansion continues through the Iron Age, Romano-British and medieval periods.

The polarisation of views in relation to upland settlement abandonment has left little room for considering this process in terms of 'retreat' rather than wholesale 'abandonment' and the differential responses of settlements in the most favourable upland locales and those in the most marginal locales. Furthermore, it leaves little room for accommodating regional responses or the effects of moving onto new ground once existing farmland had been exhausted. Abandonment of the highest farmsteads certainly took place at some point. That these farmers were aware of soil erosion and degradation cannot be denied as they took steps to combat these processes, ranging from the construction of cultivation terraces to stave off soil loss to the accumulation and spreading of midden on field plots – a practice noted at sites throughout Britain including Houseledge (Burgess 1984; 1995).

Another consideration that should feature in this debate is the effect of a possible resource crisis from around 1200 cal BC (see for example Burgess 1980), perhaps fuelled by the combined effects of the climatic downturn and soil degradation. Such a crisis is hinted at by a new development in the settlement record – the move to enclosure and defence. Although defensive enclosures become common from the beginning of the 1st millennium cal BC onwards, and will be dealt with in detail in the following chapter, evidence has been accumulating over the last few decades for defensive sites constructed in the later centuries of the second millennium cal BC. The need to defend farmsteads, food and flocks may yet prove to be a significant factor in explaining the abandonment of upland unenclosed settlements. Early palisaded sites in the north include High Crosby, Cumbria (EH web pages www.engh. gov.uk/ArchRev/rev94_5/highcros.htm); Roecliffe, North Yorkshire (North Yorkshire Historic Environment Record); Eston Nab, Teesdale (Vyner 1988; 1991); Thwing, North Yorkshire (Manby *et al*. 2003) and Standingstone and East Linton, both in East Lothian (Haselgrove 2009). Similarly early phases have been dated at several hillforts such as Traprain Law, East Lothian (Armitt *et al*. 2002); Grimthorpe, North Yorkshire (Stead 1968); Dinorben (Savory 1971) and The Breiddin (Musson 1991) in Clwyd, amongst others, although it should be recognised that the dates from some of the putative early hillfort sites have very wide errors associated with them. The circular 'ring forts' or 'ringworks' identified in southern England, such as those at Rams Hill, Berkshire and Springfield Lyons and Mucking, both in Essex, have yet to be found in northern England, but the various circular palisades and multivallate timber 'forts' identified as cropmarks in lowland Northumberland (see also Chapter 3), such as those at Sandy House 1 (Fig. 3.6) and Flodden Hill, could yet be found to date to this period. Testing these sites by excavation forms an important research priority for the region.

## MATERIAL CULTURE

### Ceramics

The ceramic sequence for the Early Bronze Age in Northumberland is dominated by pottery found in burial contexts, namely Food Vessels (Fig. 6.12) and, at a slightly later date, Urns (Fig 6.13). Much has been published on these ceramic forms (e.g. Cowie 1978; Gibson 1978; 2002b; Burgess 1980; Longworth 1984; Kinnes and Varndell 1995; Sheridan 2004; Ashmore 2004; Brindley 2007) and therefore they are only given brief consideration here, although their absolute chronology in the region still remains to be determined (see above Table 6.2 and Fig. 6.2).

In the century or two before 2000 cal BC (see Sheridan 2004; Brindley 2007), a new type of pottery vessel, specifically associated with funerary deposits, became widely adopted in Britain and Ireland. Commonly known as 'Food Vessels', in Britain they can be more aptly described as an assortment of bowls and vases which may or may not have held food, although the label has stuck since the early part of the 20th century and so it is retained here. The use of Food Vessels in England is poorly dated but a recent detailed study of the Irish material (Brindley 2007) and an ongoing study of the Scottish material (Sheridan 2004) provide a dating envelope of broadly 2200–1700 cal BC. It is clear from the dates associated with the Northumberland material provided in this volume, that the production and use of Beakers and Food Vessels undoubtedly overlap in this region, which mirrors the picture for Scotland where the overlap could potentially be as much as 500 years (Sheridan 2004, 258). This could be accounted for by the Food Vessel form deriving from insular, Late Neolithic-derivative forms, the ultimate ancestry of which can perhaps be traced back to Grooved Ware and Impressed Ware, forming a counterpart funerary-specific vessel to the Beakers, which are unquestionably an introduced ceramic albeit with indigenous uptake and adaptations. Food Vessels can be found with individual inhumations or cremations, often in cists. Sometimes they are found in the same burial monuments as Beakers, with the Food Vessels always being part of a later, secondary insertion, as in the case of the recently excavated cist on Wether Hill (Topping 2001). In Northumberland, three main shapes of Food Vessels are found: bipartite, tripartite and bowl-shaped. Larger vessels more than 20cm in height are usually referred to as 'Food Vessel Urns' and can have relief (encrusted) decoration.

Although they share some decorative elements with Beakers, such as corded decoration and comb impressions, the closest predecessors to the Food Vessel form are the Neolithic Impressed Wares such as 'Meldon Bridge Ware'. They share the concave neck, decorated heavy rims and, in some cases, the steeply angled body and small flat base. Instead of being curved or flat, Food Vessel rims tend to have a bevelled moulding. The decoration ranges from very fine to crudely executed, and makes great use of incised lines and impressed decoration. Cord decoration, herringbone patterns and chevrons are common motifs. Two finely made vessels from Bolton and Lowick, North Northumberland, are so similar that they have led Alex Gibson to suggest


*Figure 6.12. A tri-partite Food Vessel from near Wooler (courtesy Peter Forrester).*


*Figure 6.13. A Collared Urn from near West Hepple, Northumberland (courtesy Peter Forrester).*


*Figure 6.14. An Accessory Cup from Haydon Bridge (courtesy Peter Forrester).*

that they may have been made by the same potter (Gibson 2002b). The relief decoration on Encrusted Food Vessel Urns tends to be restricted to the neck, usually involving chevrons, with the spaces filled with twisted cord or incised patterns.

Another type of Early Bronze Age pottery, again specifically associated with funerary contexts, is the Cinerary Urn. Urns have been classified into various forms including Bucket Urns, Encrusted Urns, Cordoned Urns and Collared Urns, based on variations in shape and form (see Burgess 1986; Gibson 2002b). If the Scottish material is anything to go by, and as the few dates available for Northumberland in Table 6.2 indicate, then the Northumberland Urns overlap with Food Vessels. Bucket Urns are potentially the earliest form and Collared and Cordoned Urns come in a century or two later (see Sheridan 2004 for discussion of the Scottish material). In Northumberland, when found in burial mounds that contain Beaker and Food Vessel burials, the Urns are always latest in the sequence, as secondary interments (Gibson 1978). As with Food Vessels, Cinerary Urns appear to have developed from Late Neolithic ceramic traditions and represent an insular development. Urns are most commonly associated with cremation rites, and many of the Northumberland examples contain the ashes and burnt bones of the dead. More often than not the Urn is inverted into a pit or mound with the mouth sometimes sealed by a flat stone or clay plug. In the case of an Urn from Yeavering, however, the ashes were inserted afterwards by breaking the base of the pot when it was set in position. Little is known about the type of people buried in or with urns, though most of the identifiable remains tend to be of women and children.

A slightly more unusual form of Early Bronze Age ceramic is the small vessel known as an Accessory or Incense Cup (Fig. 6.14). Despite their small size, these cups/bowls are usually highly decorated and frequently have perforations in their side walls, which have led some to interpret them as containers for incense, or a similar substance, perhaps for use in rituals. They are usually found in burials and some fine examples have been discovered in Northumberland.


*Figure 6.15. 'Flat-Rimmed Ware' ceramics recovered from House 4 and 5 from Cheviot Quarry North.*

Domestic ceramics from Northumberland, in contrast, are poorly understood and, with the exception of the sites at Houseledge (Burgess 1984; 1995) and Standrop Rigg (Jobey 1983), there is little material from the late Early Bronze Age period until the use of coarse plain wares, often referred to as 'Flat Rimmed Ware', from the Middle Bronze Age onwards. Halliday (1988), and more recently Burgess (1995), have cautioned against the use of the term 'Flat-Rimmed Ware' as a catch-all label for diverse types of coarse pottery, but as yet there is too little information on sequence or types of decoration to provide a new label, so it is retained here. Although the term 'Flat-Rimmed Ware' has in the past been used (as Hedges outlined some time ago; 1975, 69) to refer to coarse wares dating from the third to first millennia cal BC (Coles and Taylor 1970, 97), it is more correctly used to refer to predominantly flat-rimmed and bevel-rimmed vessels that date to the late second and early first millennia cal BC. This somewhat featureless ceramic material is the principal pottery of the Middle to Late Bronze Age outside Deverel-Rimbury and Trevisker areas. As Hedges stated, the term covers "simple, crude, bucket- and barrel-shaped pots", although it is a little unfair on the potters to label it, as Piggott amusingly remarked, "the lowest common denominator of bad pottery" (Piggott 1955, 57). It fills the ceramic void between the 'cord-decorated' and 'decorated band pottery' that Burgess (1995) identified for the late Early Bronze Age, based primarily on the as yet unpublished Houseledge material, and the coarsewares of the Iron Age.

In contrast to the upland settlement sites, the lowland sites at Cheviot and Lanton Quarries, although heavily truncated, have produced significant assemblages of Middle Bronze Age Flat-Rimmed ceramics (Johnson and Waddington 2008; Tinsley and Waddington 2009). The pottery from these houses is all coarseware (Fig. 6.15) and its form (a mixture of flat-based and bowl-shaped vessels) and contents show that it was associated with storage, cooking, serving, eating and drinking (Johnson and Waddington 2008). The sherds from these sites display the typical attributes associated with Flat-Rimmed Ware pottery, including flat but also bevelled and slightly rounded rims, coarse fabrics, an absence of decoration and a mixture of bowl, situlate (barrel), bucket and flowerpot-shaped vessels (see Feacham 1961, 83–4; Jobey 1980, 85–7; Gibson and Woods 1997, 156–7). There are a few examples of slightly more developed rim forms which, though still flat, flare out beyond the wall of the vessel. They range in size from large storage and cooking vessels to small bowls. The presence of burnt encrustations on a number of sherds indicates the use of these vessels for cooking purposes including dairying. Cordons and grooving, though present in some Flat-Rimmed Ware assemblages from the wider region, such as those from Green Knowe (Jobey 1980), Dalnagar (Coles 1962) and Culbin Sands (Coles and Taylor 1970), are only occasionally found.

The fabrics of the Flat-Rimmed Ware from the Cheviot and Lanton Quarry sites all contain coarse, crushed stone inclusions of sandstone or quartz, some of which erupt on both surfaces. The fabrics are usually evenly fired throughout, making the

| Major Period | Stage | Type-find title |
|---|---|---|
| Copper Stages | I | Castletown Roche |
| 2700-2100 BC | II | Knocknague |
| | III | Frankford |
| Early Bronze | IV | Migdale-Killaha |
| 2100-1400BC | V | Aylesford-Colleonard |
| | VI | Willerby Wold |
| | VII | Arreton-Inch Island |
| Middle Bronze | VIII | Acton Park 1 |
| 1500-1000 BC | | 2 |
| | IX | Taunton |
| | X | Penard 1 |
| | | 2 |
| Late Bronze | XI | Wilburton |
| 1000-600 BC | XII | Ewart Park 1 |
| | | 2 |
| | XIII | Llyn Fawr |

*Figure 6.16. The Bronze Age sequence redrawn from Needham* et al. *1997.*

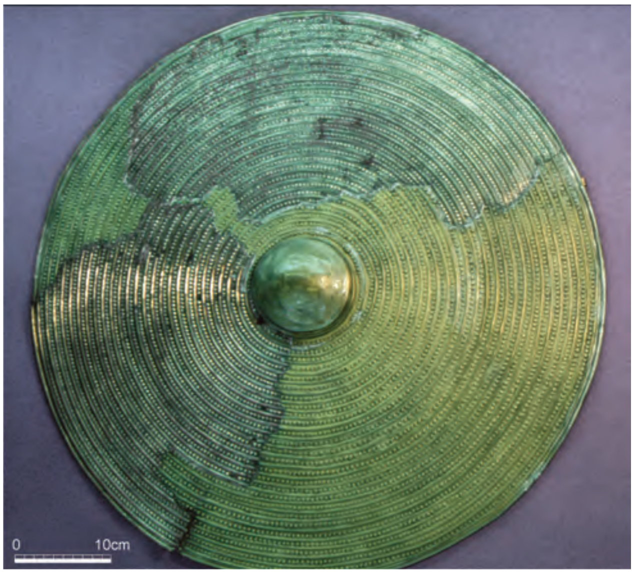



*Figure 6.17. The bronze shield from Tribley Farm near Chester le Street, County Durham (courtesy Peter Forrester).*


*Figure 6.18. Late Bronze Age Ewart Park type swords from Ewart, Newcastle and Glanton (courtesy Peter Forrester).*

pots strong and durable. Both thick- and thin-walled vessels are evident, with most between 4mm and 13mm thick. Pitted surfaces are common where organics have burnt out during the firing process. The consistent colouring on most pots indicates an even firing process. The pots are coarsely made, although some have a burnished finish on both the inner and outer surfaces, with grass-wiping common. A number of the sherds have fractured along coil lines.

### Metalwork

The metalwork from Northumberland is considerable and varied, with much of the material housed in the collection of the Society of Antiquaries of Newcastle upon Tyne in the newly opened Great North Museum, and in the Duke of Northumberland's Alnwick Castle

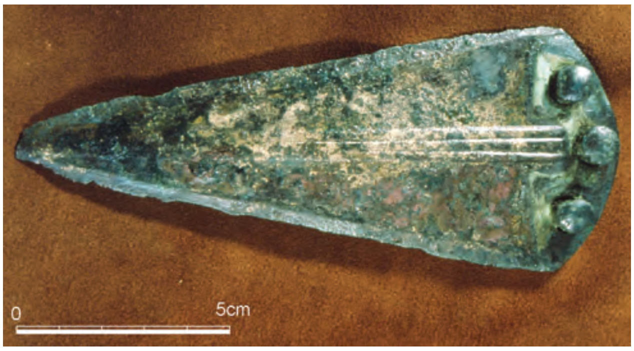



*Figure 6.19. An Early Bronze Age riveted dagger from Barrasford (courtesy Peter Forrester).*

Museum. The Bronze Age has in the past been divided into stages on the basis of its metalwork typology (e.g. Burgess 1980; Fig. 6.16), and although the scheme set out by Burgess has proven to be broadly correct, based on subsequent testing by radiocarbon dating (Needham 1996; Needham *et al*. 1997), the changes evident in the settlement pattern, funerary behaviour and socio-political realms over the period provide a more useful context for understanding wider developments in society. Barber (2003, 37) has made the prescient point that "to understand metal there is a need to understand the social contexts in which metal was used, rather than – as has generally been the case in the past – to use the metal itself to define the period in which it was used." For this reason we use a simple division into Early, Middle and Late Bronze Age (see Needham *et al*. 1997; Fig. 6.16). The assemblage from Northumberland includes a wide range of Early and Middle Bronze Age daggers and spearheads, together with later rapiers and dirks and finally shields (Fig. 6.17) and swords (Fig. 6.18). There are abundant axeheads as well, including early flat axes (Fig. 6.15), flanged axes, palstaves, daggers (Fig. 6.19) and Late Bronze Age socketed axes. Other types of metalwork include an assortment of pins, razors and personal adornments, such as bronze bracelets and gold lock rings.

The discovery of stone moulds for bronze metalwork provides evidence for local smelting and production, at least in the Early to Middle Bronze Age, which must have relied on the import of the raw material and/or recycling of imported objects. The context of discovery for the metalwork is heavily biased towards intentional discard outside everyday contexts, such as settlement sites, which have remained stubbornly bare of metalwork or its debris. In the Early Bronze Age, metalwork can be found in hoards but also occasionally in graves, usually cist burials, and associated with funerary ceramics. Such metalwork can include early axes and daggers. From the Middle Bronze Age onwards metalwork was no longer deposited in funerary settings but typically comes

*Figure 6.20. The Wallington Hoard (courtesy Peter Forrester).*

from hoards or votive deposits. Examples of the former include the Wallington (Fig. 6.20), Whittingham (Fig. 6.21) and Colette hoards, whilst the latter include the beaten bronze shields from Tribley, near Chester le Street (Fig. 6.17), and those from Yetholm, Ingham and Aydon Castle, and the Ewart Park swords that had been thrust tip-first into the ground in the central area of the Milfield Basin (Cowen 1933). This practice has been paralleled elsewhere in Northumberland in the case of the Whittingham hoard and as far away as Shuna Island, Argyll (Anderson 1879, 332–3). In both cases swords were thrust tip-first into peat.

Hoards are typically found buried in pits or beneath stones, or in the case of the Heathery Burn hoard, County Durham, in a cave. Other votive deposits are typically found in wet places such as rivers or bogs; the Tyne has yielded bronze swords as a result of dredging in the Newcastle area (Cowen 1967) but Northumbrian rivers are yet to produce the quantities of material that have come from the Trent, Witham or Thames. The recently discovered pristine rapier from Low Hauxley on the Northumberland coast was found in the intertidal zone, where it had


*Figure 6.21. The Whittingham Hoard (courtesy Peter Forrester).*

been washed out from an unknown context in the cliff line. This serves as a salutary reminder of the impact of coastal erosion in this county. Burgess has discussed the Northumberland finds as well as the national corpus in detail (Burgess 1968; 1974; 1980), although with the addition of new discoveries it is timely for the Bronze Age metalwork of this region to be reviewed, particularly in relation to contexts of deposition and evidence for use, exchange and contact with other regions.

The innovation of hardened tinned bronze and the production of flanged axes and palstaves may have been crucial in enabling the large-scale clearance of trees in the uplands, which allowed increasing amounts of 'marginal' land to be brought into agricultural production from the early second millennium cal BC. The emphasis on weaponry from the Middle Bronze Age onwards, culminating in the advent of sword warfare in the Late Bronze Age, could be taken to reflect an increasing concern for militarisation within society during the second half of the second millennium cal BC and the need to safeguard people, land and resources. This trend in the metalwork record finds support in the concern for constructing defended enclosures by the last quarter of the second millennium cal BC in the north, which has long been attested in the Deverel-Rimbury areas of the south.

## FUNERARY AND CEREMONIAL ACTIVITY

Funerary activity in the second millennium cal BC underwent considerable change from the varied and widespread small cairns of the late Early Bronze Age to the virtual invisibility of Middle and Late Bronze Age graves. At the beginning of the second millennium cal BC the large ceremonial monuments, such as henges, appear to have gone out of use and no other large corporate monuments appeared in their stead. By contrast, there is a great increase in the raising of small cairns, some elaborate, others unremarkable, as well as flat graves which were generally intended for a single individual, although secondary burials are not uncommon. But even this style of burial went out of fashion by the Middle Bronze Age, with only one or two later exceptions.

By the close of the millennium the concern for depositing high-status metalwork in wet places and other votive settings reveals a different type of ritualised activity, although the deliberate deposition of stone axeheads in such circumstances can be traced back to the Neolithic. It is clear therefore that funerary and ceremonial impulses throughout the Bronze Age underwent considerable change, with large-scale, corporate ceremony perhaps replaced by smaller-group, private ceremony. The corporate ritual would have no doubt served as a mechanism for maintaining social bonds, belief systems and taboos and allowing perpetuating control of constituent groups and individuals through cult practice. However, the switch to small-scale monuments, with the emphasis on individuals and small-group ritual, implies that a new process emerged for maintaining large-group cohesion, and this is a theme to which we will return below.

### Funerary practice

The burial monuments of the Bronze Age in Northumberland have long been the subject of archaeological investigation, from the early diggings of Greenwell and others (e.g. Greenwell 1863; 1868; Greenwell and Rolleston 1877) to the present day (e.g. ASUD 1996; 1997; Topping 2001; Waddington *et al*. 2003; Frodsham and Waddington 2004), but it is remarkable that despite the large number of sites that have been investigated and published, the first systematic study of the region's corpus is only now underway. The study currently embarked upon (Fowler in prep.) should provide the in-depth analysis that this subject matter deserves. Some preliminary remarks are, however, required in order to set these abundant remains into some form of context.

During the Beaker period and Early Bronze Age, small burial cairns became a very familiar sight. Strung out across the moors of Northumberland, on both the Cheviot and sandstone uplands, are thousands of stone cairns marking the resting places of Bronze Age people. On the lower ground these burial mounds were sometimes made of earth, though most of these have been ploughed flat by later farming. There are also 'flat graves' with no evidence for a mound, such as those recorded at Bendor, Humbleton Burn, Sandy Knowe, Walker Walls and Wooler in the Milfield Basin (Miket 1987, 172). The form of these burial monuments varies greatly, even within the same cairn 'cemeteries'. The more common types include the 'cist' burials of the Beaker period and Early Bronze Age, which give way to flat graves, ring ditches, simple low circular cairns with or without kerbs, ring cairns, enclosed cremation cemeteries (Jobey 1968a) and, possibly, a new type of cairn that has not been widely recognised before: the 'tri-radial' cairn (see Frodsham and Waddington 2004, 173–5), although this has not been universally accepted. Small cist boxes can be found as part of a variety of cairn types, such as at the ring cairn at Blawearie (Hewitt and Beckensall 1996), or the round cairn at Turf Knowe (Frodsham and Waddington 2004). Other burial contexts include the use of rock shelters, as at Goatscrag (Burgess 1972), where a cremation was found inside an inverted Enlarged Food Vessel, placed into a pit, on the floor of the shelter. Some of the upland cairns were very neatly made with well-fitted kerbs made from dressed sandstone orthostats, set on end in the case of the large cairn at Chatton Sandyford (Jobey 1968a).

If the monument forms are many and varied then the mortuary practices of this period should be considered equally diverse. Both inhumation and cremation are evident in the Early Bronze Age and while less is known about burial practice in the Middle and Late Bronze Age, the few burials that are known are invariably cremations. During the Early Bronze Age, cremations were frequently associated with Urns, as discussed above. Inhumations are common in cist burials although they may also have secondary cremations inserted into them. Sometimes cremations, or pyre material, are found within the cairn but in other cases they are simply placed into a pit. Inhumations are typically crouched, perhaps showing a concern for the deceased to be placed in the foetal position.

For the first time in the burial record of prehistoric Northumberland the Bronze Age provides a significant corpus of material for studying mortuary practices. Even a rapid review shows some interesting patterns. First, all sections of the community are represented in the burial monuments of the Bronze Age: males, females, infants, adolescents, adults and the elderly. A further interesting trend that can be observed is the sheer number of infants and young children represented. This can be inferred from the large number of small cists, some with surviving skeletal evidence for very young children. At the North Knoll cairn in the Breamish Valley the cremated remains of a young child were found inside an enlarged Food Vessel Urn set within an Early Bronze Age cairn (Frodsham and Waddington 2004, 176). At Howick, four of the five cists were only large enough to have held infants and one of these contained fragments of a small skull (Waddington *et al*. 2003). The site at Howick overlooks the coast and had limestone cobbles containing fossils, together with ochre, associated with the burials. This concern for the burial of young people in the Early Bronze Age demonstrates a different attitude compared to what is currently known for the Neolithic. Given that only the elite within society are likely to have received such special burial it is possible that the burial of children indicates that status was becoming ascribed through lineage and not just achieved during life. This contrasts with the Neolithic period where special burials appear to be geared around ancestor cults and status appears to have been connected with the wielding of spiritual power. But the large number of child burials also implies a high incidence of infant mortality, regardless of social status, at this time. No synthetic studies have yet been undertaken on child remains from Northumberland and so data for the total number and breakdown by age group are not yet available.

Some of the cist burials also appear to have been selected for the placement of cup-, and cup-and ring-marked rocks as part of the cist structure, usually on the capstone or side slabs, with the rock art positioned to face inwards towards the corpse. There are many examples of this practice in the county including the cup-marked rock in the cist at Dour Hill (Jobey 1977a), the decorated capstone of a cist at Lowstead Farm near Howick (MacLauchlan 1867, 6–7; Bateson 1895, 364) and those from Doddington Moor, Beanley Moor and Pike Hill (Beckensall 2001). Occasionally, cup-marked rocks are found within the cairn material, as at Fowberry, Weetwood Moor (Beckensall 2001) and Hunterheugh (Waddington *et al*. 2005), again positioned to face inwards. In many cases these decorated slabs appear to have been quarried from pre-existing, weathered rock outcrops; examples include North Plantation b (Bradley 1997) and perhaps Hunterheugh (Waddington *et al*. 2005). In other instances the capstones may have been specially carved for the cist, as in the case of Doddington where the carving was probably made with a metal implement and is symmetrically placed on a shaped slab (Fig. 6.18).

Grave goods also show great variety in the Early Bronze Age, and include flint, ceramic, metalwork, jet, amber, ochre and limestone cobbles, but there are few in the Middle and Late Bronze Age. Some of the Early Bronze Age burials are simple and unadorned, while others are rich and complex, although whether this has a chronological basis is yet to be established. Beakers and Food Vessels can be associated with cist burials whilst Urns have not yet been found to have such an association. This could be related to an association between cists and inhumations, whereas urns were intended for holding cremations. But it is notable that cremations can, on occasion, be found in cists although they are invariably secondary deposits.

The chronologically overlapping ceramic types associated with Early Bronze Age burials reflect a diversity of contemporary funerary practice, including crouched inhumations and cremation burials. Traditionally, Beakers and Food Vessels are associated with inhumation and Urns with cremation, but this is not always the case. At Low Hauxley, for example, two cremation burials have been found with Beakers and at the Turf Knowe North cairn the cremated remains of an infant were found inside an inverted Food Vessel (Frodsham and Waddington 2004, 175–6). As the modern techniques of residue analysis are applied to the contents of these vessels we should learn more about what they once contained and how they were used, but so far no such analysis has been attempted on these vessels in Northumberland.

A less common 'grave good' association, noted during the recent excavation of a cist cemetery at Howick, is the deliberate placing of limestone cobbles and lumps of ochre on the capstones of some cists. Cobbles associated with cists 2 and 3 were formed of smoothed Carboniferous Limestone that had acquired a pale patina, leaving them with a smooth chalky surface. Cobbles may have been selected from the Carboniferous Limestone outcrops on the sea cliffs below the site because they contained visible fossils. Perhaps these rocks provided a symbolic allegory for the bodies of the dead being entombed within the ground, or within the rock of the cist box. The placing of natural pebbles and fossils with Early Bronze Age burials is not confined to Howick, as demonstrated by the recent discovery of an unusual grooved pebble and a small fossil crinoid from cists A and H respectively at Leven, Fife (Sheridan 2004, 33–4). Sheridan views these rocks as potential amulets that could have provided perceived links with the Otherworld. She also notes that fossils have been found associated with Early Bronze Age funerary contexts at Seamer Moor, Yorkshire (Smith 1994, 153, NYM 73). A number of yellow ochre nodules were found on, or next to, cists 2 and 3 at Howick and clearly represented placed deposits. These did not show signs of shaping or use but their presence suggests a link between pigments and the funerary process. Ochre can change colour during heating so the significance of the colour yellow could be misleading. Other cist burials that have ochreous material associated with them include cist H at Leven (Sheridan 2004, 34) and several cists around Kilmartin, Argyll (Craw 1929, 160 and 162), and the recently excavated cremation 2 at Low Hauxley (Waddington and Cockburn 2009).

The location of Bronze Age burials provides another avenue of enquiry that has hardly been explored in any detail in this region, although some preliminary observations can be made. Burial mounds are frequently found on hilltops, ridge lines, false crests and localised high points in lowland settings, whether within stabilised sand dune systems, on low glacial mounds or on cliff edges, where they would be visible from the sea. Such mounds appear to be sited at places intended to be looked at rather than to look from, although many sites do possess outstanding views. Cairnfields, of which there are many throughout the uplands, can include several hundred low stone cairns, as at Whinney Hill (Deakin 2007). How many of these are burial cairns and how many are related to clearance remains unknown but there are undoubtedly funerary monuments amongst the cairnfields, evidenced by those with kerbs and the enclosed cremation cemeteries. Whinney Hill occupies a considerable expanse of dip slope on the Fell Sandstone escarpment on Chatton Sandyford Moor with what would have been an uninterrupted view eastwards to the North Sea. Burial cairns were in some cases sited within 'cemeteries' but are also found singly or in small clusters throughout the farming landscape close to houses, paddocks and fields. By 'presencing' the tombs of the dead amongst the landscapes of the living, Bronze Age farming groups made a break from earlier times when burial appears in most cases to have been set apart from the domestic arena. Furthermore, the siting of tombs in prominent places within the agricultural landscape may have served to reinforce claims of tenure and ownership by symbolising ancestral ties with specific areas of land. Flat graves, meanwhile, can be located on areas of flat and gently sloping ground, often on valley floors within fertile agricultural landscapes. To what extent these sites were marked in some way above ground remains unknown.

During the Middle and Late Bronze Age the archaeological evidence for burial decreases and it is supposed that bodies were disposed of in other ways. This may have included burning the bodies and scattering the ashes, burial in shallow graves that have left no trace, or the disposal of bodies in rivers and wet places. We must be cautious, however, in assuming that the lack of known burials for these periods means that formal burial did not take place. The human cremations below a low stone cairn near Bolam Lake, dated to the end of the Late Bronze Age (Waddington and Davies 2002), indicate that cairn burials persisted throughout the Bronze Age in at least some parts of the region.

## Votive Deposits

From the Middle Bronze Age onwards metalwork appears to have been regularly deposited in unusual circumstances, in many cases in wetland settings, which has led most archaeologists to accept that such deposits were some form of votive offering (e.g. Bradley 1990). This practice, which has its origins in the Neolithic and appears to continue into the Iron Age, provides the principal means by which we can glimpse something of the ritual practice of the period. However, with such meagre contextual information the artefacts themselves have so far provided only limited insight into this type of cult practice. The power of water to transform materials is universal but the deposition of bronzes and bodies in watery contexts appears to make reference to their liminal status between the mundane environment and the underworld, so the placing of votive deposits in wet settings, and the location of cemeteries next to the sea, may have formed a means of contact with the spirit world. The hoarding of metalwork, which also continues through the Iron Age, may in some cases have had a votive aspect but in others could have been the stock of smiths or personal wealth buried for safekeeping. Depositing metalwork in watery places can also be viewed as a statement of position and possession as such gifts to the gods are irretrievable, implying that the owner can always obtain more. In-depth study of the depositional context of metalwork from North-East England is long overdue.

## Burnt mounds

Burnt mounds are discussed separately because they can not be reliably interpreted as either domestic or ritual structures. Although an interpretation as something like saunas is favoured here, such a use may not account for all sites, and some may have been used primarily as cooking places. Burnt mounds consist of heaps of burnt and fire-cracked stones that usually cover, or lie adjacent to, a stone-lined trough and hearth pit and are invariably located close to water courses. In recent years their distribution has been shown to extend across most of the British Isles, although they were first identified in Scotland and Ireland where they can be found in large numbers. Many of the English examples have been ploughed out, hence the difficulty in recognising them, but upstanding sites, particularly in the uplands, have been recorded in increasing numbers not only in Northumberland (Topping 1998; Cowley 1991), but also in neighbouring Cumbria (Hodgson 2007) and the Yorkshire Dales (Laurie 2004). One of the first northern English sites to be investigated was on Titlington Mount in Northumberland where two out of four mounds were investigated by Pete Topping and the Northumberland Archaeological Group (Topping 1998). The radiocarbon dates from the excavation showed that the sites were used during the period 2000 cal BC to 1500 cal BC, but it is possible that each of the two phases of use evidenced at the site may have only been short-lived, as has been demonstrated recently at other burnt mound sites (Best *et al*. 2007; Marshall *et al*. in 2009). Vertical stone slabs, a stone setting and stakeholes were also discovered, indicating other structural features associated with the hearths and troughs prior to the mound of burnt stones being piled over them. Burnt mounds are thought to have worked by heating stones in the hearth and then placing them into the stone-lined trough and pouring water over them. The water heated up until it gave off steam.

As mentioned, the function of these enigmatic monuments remains hotly debated. Hedges (1975) argued that burnt mounds were cooking places, based largely on sites excavated in Ireland and Scotland. This view ultimately drew on ethnographic accounts and early Irish literature that recount various ways by which meat was boiled in a trough made from animal skins or in a pit in the ground (see references in Hedges 1975, 71–2). Others have argued that they served as sweat lodges or saunas (Barfield and Hodder 1987), with the steam given off by the boiling water being used to fill small buildings around the trough. At Titlington only two small slivers of bone were discovered but more would be reasonably expected if it were primarily a cooking site, unless the meat joints had been removed elsewhere for butchery. Indeed, small finds are conspicuously absent from most burnt mound sites even though many show little or no signs of truncation, and therefore the absence of finds can not simply be put down to taphonomic processes. Rather, the activities that took place at many of these sites appear not to have produced much in the way of domestic debris. The idea of a sweatlodge is supported by the finds from Isbister on South Ronaldsway, Orkney, where a stone trough within a building with a paved floor had stone-lined ducts running from it underneath the paving (Hedges 1975). The intentional production of a hot and wet atmosphere in a small building accords with the use of the site as some kind of sauna for a small group of people. Could these sites have provided localised places for surrounding farming groups to cleanse and purify themselves, physically and ritually? However, with date ranges spanning the Early Bronze Age to the late 2nd millennium cal BC the use of burnt mounds extends beyond that of cist burials, Food Vessels and Urns, which suggests that their use was not exclusively linked to changing belief systems related to death and the afterlife.

## Four-posters and reuse of existing monuments

In common with the abundant small-scale burial monuments, a new type of small stone setting or 'circle' was introduced into Northumberland during the Early Bronze Age, reinforcing the impression of a move to localised, small-group, ritual practice. These stone settings, referred to as 'four-posters' (Burl 1988), usually consist of four free-standing orthostats set into a broadly square shape sometimes with a single central burial pit, within them, occasionally below a low mound. The presence of the burial could suggest that these structures formed elaborate funerary monuments, but as they are of fundamentally different form to stone cairns, it is perhaps more likely that the central burials formed a dedicatory deposit for a small-scale ritual monument where open-air ceremonies took place. The site of the so-called 'Three Kings' in Upper Redesdale, excavated by Burl and Jone (1972), which in fact had four upright stones, is the most impressive of the Northumbrian examples. Other sites include the Goatstones at Simonburn (Frodsham 2004), where thirteen cup marks have been noted on the south-east stone, suggesting a need to confer the power of these ancient markings on to a new monument. Two possible new sites include the Doddington Moor four-poster, which has been erroneously described as a stone circle. Here the large upstanding orthostat and the two partly fallen ones are in their original positions whilst the fourth has been re-erected in its original posthole, but only after having been toppled and split, the other part now lying nearby (Fig. 6.22). In size and shape this setting provides a close analogy to the Three Kings in Redesdale. The second possible contender is a small arrangement of low stones at Whinney Hill, at the east end of a large cairnfield, on the lee side of Chatton Sandyford Moor. Some of the stones appear to bear cup marks and, although much smaller, this setting has echoes of the Goatstones.

These sites are spread across both the Cheviot and Fell Sandstone uplands in central and northern Northumberland and more sites of this type are likely to be found. Their origin appears to be the Perthshire area, based on their distribution, although they are found in large numbers in southern Scotland too. Few sites of this type are known further south than Northumberland and therefore the presence of this distinctive monument form reveals ceremonial and perhaps ideological linkages with populations to the north, something that may also be evidenced by the distribution of burnt mounds.

Recent excavations at the Duddo circle by Roger Miket included the dating of a human bone from secondary backfill in the central area of the monument. This produced an Early Bronze Age date (3395 ±30 BP, SUERC-21366), spanning 1770–1610 cal BC, demonstrating the reuse of this monument for burial several centuries after its construction, which is currently dated to the final quarter of the third millennium cal BC (Miket pers. comm.).

*Figure 6.22. The Doddington Moor 'stone circle', more aptly described as a 'four-poster' (Courtesy Peter Forrester).*

## A SOCIAL PERSPECTIVE

By the Middle Bronze Age, most traces of the Neolithic legacy have vanished from the archaeological record; Beakers and Food Vessels were no longer used, burial practice changed so as to become largely absent from the archaeological record, and various types of ceremonial monuments went out of use. Metal replaced stone as the principal material for tools and weapons, whilst all the Early Bronze Age metalwork forms were replaced by new types. Small family monuments were constructed amongst the houses and field plots of what were arguably intensively farmed areas. The neglect of the old monuments, such as the henges of the Milfield Plain, and the channelling of human endeavour into the removal of tree cover, stone clearance for new cultivation plots, and the construction of cultivation terraces, robust settlements and boundaries in the uplands, marks a shift from landscapes governed by the sacred to landscapes organised around secular principles and requirements. The prominence of the old religious elite, as can be inferred from the corporate monuments, was removed and individuals came to the fore in the burial record. There are considerable numbers of single graves given over to neonates, and young children and women are frequently encountered too. Perhaps in these practices we can see the origins of a clan structure based on lineage and secular power.

These changes had taken place by the mid-second millennium cal BC, heralding an important watershed in prehistory. This is not to say that religion, cult and taboos were not important from the Middle Bronze Age onwards, but rather that the all-pervasive authority of group-based ritual and ceremony had broken down, and secular concerns attained an equal, or greater, prominence in the archaeological record. Alongside this watershed can be traced what appears to be a step change in the demographic profile of the region: considerable expansion and intensification of agricultural production, which can be observed in lowland as well as upland landscapes.

The Middle and Late Bronze Age was a time of significant change, both in the organisation of people's lives and in the way the landscape was used. Few monuments of the late second millennium cal BC have been found anywhere in the British Isles, and the few burials that are known in Northumberland tend to consist of cremations below small stone cairns (e.g. Waddington and Davies 2002) or secondary insertions into earlier cairns and barrows. Some recurring ritual acts can be observed in the archaeological record, most notably the preoccupation with votive deposits of metalwork, often in wet places. The display of personal wealth and power became important, as perhaps demonstrated by the 'ornament horizon' of the metalwork sequence, which corresponds with the emergence of defended settlements from around *c*. 1200 cal BC onwards, perhaps a century or two later in Northumberland. This seems to indicate a rise in social tension and a need to defend wealth and resources. Given that Bronze Age farming groups were anchored to the land they could not simply move on if threatened by raiding groups, new settlers or invaders. The construction of palisaded enclosures from the late second millennium cal BC onwards has been documented across most parts of Britain. Burgess has noted (1974; 1980) that British copper mines went out of use by around 1200 cal BC, invoking a change in the control of copper supply. Together with at least some level of settlement retreat from the most marginal upland areas it appears that a range of factors combined to place significant stress on populations across Britain at this time, although it has yet to be studied in detail. Whether this amounted to a resource crisis is not yet clear but similar processes are evident elsewhere in Western Europe and the Mediterranean, suggesting the problems were widespread.

*Table 6.1. Dates for Early–Late Bronze Age unenclosed settlement.*

| Site | Material and context | Laboratory Number | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|---|
| **Upland** | | | | | | |
| Green Knowe | Charcoal: mainly oak from Platform 5 | GU-1213 | | 3220±75 | 1690–1320 cal BC | Jobey 1980 |
| Green Knowe | Carbonised wood, combined sample, from small stakeholes, Platform 8 | GU-1014 | | 2731±75 | 1050–790 cal BC | Jobey 1980 |
| Green Knowe | Carbonised branch or stake, 20–50mm diam House 2, burnt wattle wall | GU-1012 | | 2975±63 | 1410–1000 cal BC | Jobey 1980 |
| Green Knowe | Carbonised branch or stake House 3, burnt wattle wall | GU-1011 | | 2934±45 | 1300–1000 cal BC | Jobey 1980 |
| Green Knowe | Carbonised branch or stake House 3, clearance to east of doorway | GU-1013 | | 2922±87 | 1400–890 cal BC | Jobey 1980 |
| Bracken Rigg | Posthole, charcoal | HAR-2414 | | 3180±60 | 1610–1310 cal BC | Coggins and Fairless 1984 |
| Standrop Rigg | House 2 | HAR-3538 | | 3000±80 | 1440–1000 cal BC | Jobey 1983 |
| Standrop Rigg | Charred wood from internal deposit built up against ring bank wall of house 2 providing taq on house construction | HAR-3399 | | 2360±70 | 760–230 cal BC | Jobey 1983 |
| Halls Hill | House, central burning area (8) house destruction, bulk charcoal | HAR-4788 | | 2520±70 | 820–400 cal BC | Van der Veen 1992 |
| Halls Hill | House, central burning area (8) house destruction, bulk charcoal | HAR-4789 | | 2560±60 | 830–510 cal BC | Van der Veen 1992 |
| Halls Hill | Pit in house (23), charcoal *Alnus* sp. | HAR-8183 | -27.2 | 2960±60 | 1390–1000 cal BC | Van der Veen 1992 |
| Halls Hill | Pit in house (27), charcoal *Alnus* sp. | HAR-8185 | -26.6 | 2710±70 | 1010–780 cal BC | Van der Veen 1992 |
| Halls Hill | Post hole (10) | HAR-4800 | | 2780±80 | 1190–790 cal BC | Van der Veen 1992 |
| Halls Hill | Post hole (21); charcoal: *Corylus avellana* | HAR-8184 | -27.0 | 3130±70 | 1530–1210 cal BC | Van der Veen 1992 |
| Halls Hill | Pit in house (23), spelt wheat grain | OxA-1764 | -26.0 | 2895±70 | 1310–900 cal BC | Van der Veen 1992 |
| Halls Hill | Pit in house (23), spelt wheat chaff | OxA-1763 | -26.0 | 2840±70 | 1260–830 cal BC | Van der Veen 1992 |
| Halls Hill | Pit in house (27), spelt wheat grain | OxA-1765 | -26.0 | 2750±70 | 1060–790 cal BC | Van der Veen 1992 |
| Halls Hill | House, central burning area (8), emmer wheat grain | OxA-1766 | -26.0 | 2560±70 | 840–410 cal BC | Van der Veen 1992 |
| Dryburn Bridge | House 2, charcoal from burnt post | GU-1284 | | 2615±55 | 900–590 cal BC | Triscott 1982 |

*Table 6.1. continued.*

| Site | Material and context | Laboratory Number | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|---|
| Dryburn Bridge | House 2, charcoal from terminal of inner wall bedding trench | GU-1287 | | 2550±50 | 810–520 cal BC | Triscott 1982 |
| Dryburn Bridge | House 2, charcoal from outer wall bedding trench | GU-1257 | | 2450±50 | 780–390 cal BC | Triscott 1982 |
| Dryburn Bridge | House 2, charcoal from burnt post | GU-1283 | | 2280±55 | 410–200 cal BC | Triscott 1982 |
| **Lowland** | | | | | | |
| Lookout Plantation | Charred wood from posthole (F7) on east side of roundhouse entrance | HAR-4388 | | 3410±80 | 1930–1510 cal BC | Monaghan 1994 |
| Lookout Plantation | Charred wood from postpipe (F8) on west side of roundhouse entrance | HAR-4385 | | 3370±80 | 1890–1460 cal BC | Monaghan 1994 |
| Lookout Plantation | Charred wood from posthole (F31) on north-east side of inner post ring of roundhouse | HAR-4386 | | 3230±110 | 1750–1260 cal BC | Monaghan 1994 |
| Lookout Plantation | Charred wood from posthole (F30) on north side of inner post ring of roundhouse | HAR-4387 | | 3090±130 | 1660–1000 cal BC | Monaghan 1994 |
| Lanton Quarry Building 6 | Barley grain from posthole (1170) in House 6 | Beta-231343 | -23.1 | 3220±50 | 1620–1400 cal BC | Stafford and Johnson 2007 |
| Lanton Quarry Building 14 | Indet. Cereal grain from posthole fill (465) from House 14 | Beta-231341 | -24.2 | 3130±40 | 1500–1310 cal BC | Stafford and Johnson 2007 |
| Cheviot Quarry Building 4 | Charred birch twig from posthole 346 Building 4 | SUERC-9109 | -27.9 | 2725±35 | 970–800 cal BC | Johnson and Waddington 2008 |
| Cheviot Quarry Building 4 | Charred hazel twig from posthole 346 Building 4 | SUERC-9110 | -25.6 | 2800±35 | 1050–840 cal BC | Johnson and Waddington 2008 |
| Cheviot Quarry Building 4 | Pomoideae charcoal from fill of Pit 348 Building 4 | SUERC-9111 | -25.5 | 2775±35 | 1010–830 cal BC | Johnson and Waddington 2008 |
| Cheviot Quarry Building 4 | Charred hazel twig from posthole 363 Building 4 | SUERC-9513 | -25.6 | 2765±35 | 1010–820 cal BC | Johnson and Waddington 2008 |
| Cheviot Quarry Building 4 | Emmer wheat from posthole 363 Building 4 | SUERC-9113 | -23.0 | 2745±35 | 980–810 cal BC | Johnson and Waddington 2008 |
| Cheviot Quarry Building 4 | Barley seed from fill of hearth 342 Building 4 | SUERC-11294 | -24.9 | 2795±40 | 1050–830 cal BC | Johnson and Waddington 2008 |
| Cheviot Quarry Building 4 | Barley seed from fill of hearth 342 Building 4 | OxA-X-2178–15 | -28.3 | 2755±55 | 1190–800 cal BC | Johnson and Waddington 2008 |
| Cheviot Quarry Building 4 | Barley seed from basal fill 483 of Pit F340 Building 4 | OxA-16066 | -25.4 | 2759±30 | 1000–820 cal BC | Johnson and Waddington 2008 |
| Cheviot Quarry Building 4 | Carbonised residue from pot sherd from basal fill 483 of Pit F340 Building 4 | OxA-16067 | -25.9 | 2693±30 | 910–800 cal BC | Johnson and Waddington 2008 |

*Table 6.1. continued.*

| Site | Material and context | Laboratory Number | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|---|
| Cheviot Quarry Building 5 | Hulled barley seed from posthole 489 Building 5 | SUERC-9101 | -24.2 | 2805±35 | 1050–840 cal BC | Johnson and Waddington 2008 |
| Cheviot Quarry Building 5 | Charred hazel twig from entrance posthole 489 Building 5 | SUERC-9100 | -27.6 | 2850±35 | 1130–910 cal BC | Johnson and Waddington 2008 |
| Cheviot Quarry Building 5 | Charred willow/poplar twig from entrance posthole 312 Building 5 | SUERC-9094 | -25.8 | 2820±35 | 1060–890 cal BC | Johnson and Waddington 2008 |
| Cheviot Quarry Building 5 | Charred hazel twig from entrance posthole 312 Building 5 | SUERC-9093 | -27.0 | 2795±35 | 1030–840 cal BC | Johnson and Waddington 2008 |
| Cheviot Quarry Building 5 | Charred hazel twig from posthole 308 Building 5 | SUERC-9092 | -26.4 | 2785±35 | 1020–830 cal BC | Johnson and Waddington 2008 |
| Cheviot Quarry Building 5 | Charred hazel twig from posthole 308 Building 5 | SUERC-9091 | -25.4 | 2735±35 | 980–800 cal BC | Johnson and Waddington 2008 |
| Cheviot Quarry Building 5 | Charred hazel twig from posthole 316 Building 5 | SUERC-9098 | -27.5 | 2855±35 | 1130–910 cal BC | Johnson and Waddington 2008 |
| Cheviot Quarry Building 5 | Charred hazel twig from posthole 316 Building 5 | SUERC-9099 | -27.7 | 2790±30 | 1020–840 cal BC | Johnson and Waddington 2008 |
| Cheviot Quarry Building 5 | Carbonised residue from pot sherd from pit 306 inside Building 5 | OxA-X-2178–14 | -31.6 | 2785±75 | 1030–800 cal BC | Johnson and Waddington 2008 |

*Table 6.2. Dates for Early Bronze Age Burials.*

| Site | Material and context | Laboratory Number | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|---|
| Turf Knowe, tri-radial cairn | Cremated bone from secondary burial from Cist C | SUERC-4474 | -26.5 | 3640 ±40 | 2140–1890 cal BC | ASUD pers comm. |
| Turf Knowe, tri-radial cairn | Cremated bone from primary burial from Cist C | SUERC-4475 | -25.4 | 3605 ±35 | 2120–1880 cal BC | ASUD pers comm. |
| Turf Knowe, tri-radial cairn | Cremated bone & charred twig from primary burial from Cist C? | SUERC-4476 | -24.7 | 3560 ±40 | 2030–1770 cal BC | ASUD pers comm. |
| Turf Knowe, tri-radial cairn | Burnt bone from fill of Cist B with iron | SUERC-4477 | -27.2 | 3610 ±40 | 2130–1880 cal BC | ASUD pers comm. |
| Turf Knowe, tri-radial cairn | Indet charcoal from deposit on which food vessel was sitting | SUERC-4481 | -24.9 | 3010 ±40 | 1400–1120 cal BC | ASUD pers comm. |
| Turf Knowe, North Cairn | Cremated bone from inside urn from Area 13 cairn | AA-46486 | -24.9 | 3860 ±45 | 2470–2150 cal BC | ASUD pers comm. |
| Turf Knowe, North Cairn | Area 13 cairn, charred deposit from central cist | Beta-121731 | -22.4 | 3740 ±60 | 2480–2130 cal BC | ASUD pers comm. |
| Turf Knowe, North Cairn | Charred willow roundwood from Area 13 cairn, deposit within which food vessel was found, in stone cist in centre of cairn | AA-35522 | -26.1 | 3480 ±50 | 1940–1680 cal BC | ASUD pers comm. |
| Turf Knowe, North Cairn | Cremated bone and non-oak charred wood from unurned burial inserted into kerb | SUERC-4486 | -25.4 | 3425 ±35 | 1880–1630 cal BC | ASUD pers comm. |
| Turf Knowe, North Cairn | Cremated bone and non-oak charred wood from unurned burial | SUERC-4487 | -21.5 | 3615 ±35 | 2130–1880 cal BC | ASUD pers comm. |
| Turf Knowe, North Cairn | Cremated bone from burial towards top of cist | SUERC-4483 | -26.6 | 3355 ±35 | 1750–1520 cal BC | ASUD pers comm. |
| Turf Knowe, North Cairn | Cremated bone from deposit at base of cist | SUERC-4484 | -26.2 | 3380 ±35 | 1750–1560 cal BC | ASUD pers comm. |
| Turf Knowe, North Cairn | Cremated bone from burial in food vessel | SUERC-4485 | -26 | 3360 ±35 | 1750–1530 cal BC | ASUD pers comm. |
| Birkside Fell ring cairn | Ash charcoal, from within the urn and fill of pit in which it was situated | Beta-119667 | -25.0 | 3570 ±60 | 2130–1740 cal BC | Tolan-Smith 2005 |
| Birkside Fell ring cairn | Ash charcoal, from within the urn and fill of pit in which it was situated | Beta-119668 | -25.0 | 3510 ±60 | 2020–1680 cal BC | Tolan-Smith 2005 |

*Table 6.2. continued.*

| | | | | | | |
|---|---|---|---|---|---|---|
| Howick Heugh | Charred wood accompanying cremation 1 in rock fissure within stone ring cairn | I-6970 | | 3390 ±90 | 1930–1460 cal BC | Jobey and Newman 1975 |
| Well House Farm | Indet. charred wood from cist packing. No burial survived in the acid conditions but two | GU-1340 | | 3635+-120 | 2400–1680 cal BC | Gates 1981 |
| | food vessel urns were recovered | | | | | |
| Kirkhill | Indet. charred wood associated with inverted collared urn containing cremations in Pit A | SSR-133 | | 3242+-90 | 1740–1310 cal BC | Miket 1974 |
| Low Hauxley 'Cairn' 2 | Skeletal material from Cairn 2 associated with a flexed inhumation | OxA-5555 | | 3410 ±55 | 1890–1530 cal BC | Drury *et al*. 1995 |
| Low Hauxley 'Cairn' 2 | Skeletal material from Cairn 2 associated with a flexed inhumation | OxA-5556 | | 3430 ±55 | 1890–1610 cal BC | Drury *et al*. 1995 |

*Table 6.3. Dates for Early Bronze Age cultivation terraces.*

| **Site** | **Material and context** | **Laboratory Number** | **δ13C (‰)** | **Radiocarbon Age (BP)** | **Calibrated date range (95% confidence)** | **Reference** |
|---|---|---|---|---|---|---|
| Plantation Camp terraces | Birch charcoal from buried soil on Terrace 4 | AA-35520 (GU-8650) | -26.5 | 3245 ±50 | 1630–1410 cal BC | ASUD pers comm. |
| Plantation Camp terraces | Hazel charcoal from lens below peg 1 on Terrace 1 | AA-44596 (GU-9521) | -23.6 | 3360 ±55 | 1860–1510 cal BC | ASUD pers comm. |
| Plantation Camp terraces | Hazel charcoal from buried soil on Terrace 4 | AA-40747 (GU-9199) | -24.5 | 3405 ±60 | 1890–1520 cal BC | ASUD pers comm. |

*Table 6.4. Dates for Late Bronze Age Burials.*

| Site | Material and context | Laboratory Number | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|---|
| Bolam Lake | Charcoal twig from cremation pit | Beta-117289 | -25.0 | 2730 ±70 | 1050–790 cal BC | Waddington and Davies 2002 |
| Little Haystack Pit 1 (poss burial) | Charred hazelnuts from fill of Pit 1 | Beta-121732 | -25.4 | 2710 ±50 | 980–790 cal BC | ASUD 1999 |
| Little Haystack Pit 2 (poss burial) | Charred hazelnuts from fill of Pit 2 | Beta-121734 | -22.2 | 2850 ±60 | 1260–840 cal BC | ASUD 1999 |

*Table 6.5. Dates for Early Bronze Age burnt mounds.*

| Site | Material and context | Laboratory Number | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|
| Titlington Mount, Burnt Mound 1 | Indet. Charcoal from hearth 0.5m east of trough (Phase 1) | Beta-71942 | 3610±60 | 2140–1770 cal BC | Topping 1998 |
| Titlington Mount, Burnt Mound 1 | Indet. Charcoal from the burnt stone mound (Phase 2/3) | Beta-58164 | 3230±60 | 1640–1400 cal BC | Topping 1998 |
| Titlington Mount, Burnt Mound 1 | Indet. Charcoal from the burnt stone mound (Phase 2/3) | Beta-71943 | 3200±60 | 1620–1320 cal BC | Topping 1998 |
| Titlington Mount, Burnt Mound 1 | Indet. Charcoal from hearth | Beta-71944 | 3600±60 | 2140–1770 cal BC | Topping 1998 |
| Titlington Mount, Burnt Mound 1 | Indet. Charcoal from the burnt stone mound | Beta-58165 | 3440±70 | 1940–1530 cal BC | Topping 1998 |
| Callaly Moor possible burnt mound deposit | Charred pine | Beta-29517 | 3920±80 | 2620–2140 cal BC | Cowley 1991 |

# 7 Defending the Land 1000 BC–AD 79

*Clive Waddington and David G. Passmore*

## INTRODUCTION

The first millennium cal BC forms a convenient time bracket within which to discuss later prehistory, as it draws together the emergent trends of the Late Bronze Age with those of the Iron Age before the transformational impact of the Roman occupation. Recent years have witnessed something of a boom in new discoveries in southern Northumberland, such as the lowland Iron Age settlements at Pegswood (Proctor 2009), East Brunton, West Brunton and Belsay (Nick Hodgson pers. comm.). A further important discovery from the same region is the unenclosed Iron Age roundhouse sealed below the first Roman layers at Arbeia, the Roman fort at South Shields (Hodgson *et al*. 2001). Important studies on the hillforts of North Northumberland have recently been published (e.g. Oswald *et al*. 2006; 2008; Frodsham *et al*. 2007) whilst excavations on Iron Age enclosures at Fawdon Dene (Frodsham and Waddington 2004), the multi-phase Needles Eye palisaded enclosure at North Road Industrial Estate, Berwick (PCA 2005), and a sustained campaign of fieldwork by the Northumberland Archaeological Group at Wether Hill hillfort (Topping 2004), all in North Northumberland, await final publication. To the north, Colin Haselgrove has been undertaking a landscape-scale study of the Iron Age environs of Traprain Law in East Lothian (Haselgrove 2009) and several first-millennium cal BC sites have been excavated during the upgrading of the A1 trunk road in this same area (Lelong and MacGregor 2008).

More broadly, a comprehensive and in-depth synthesis of the Iron Age in the north of Britain has been published by Dennis Harding (2004) while Rachel Pope has included sites from the region in her doctoral research on prehistoric and Roman period roundhouses in northern and central Britain (Pope 2007). An in-depth review of the chronology of Iron Age settlement in the north, and the acquisition of new radiocarbon dates for the different types of sites, is being undertaken by Derek Hamilton for his doctoral research. Although the current dating evidence for Northumberland in the first millennium cal BC has been drawn together in this chapter, the refinement of chronologies, particularly at the wider regional scale, for different types of settlement and enclosure forms will undoubtedly be enhanced through Hamilton's new data and statistical modelling.

The Early Iron Age is perhaps the least well understood phase of the period covered by this chapter. Most dated activity from excavated Iron Age sites in the region tends to span the last two centuries cal BC and the first two centuries cal AD. The absence of earlier dates could, in part, be a product of the well known radiocarbon calibration plateau in the early–mid-first millennium cal BC (Reimer *et al.* 2004), but this does not account for the undoubtedly greater visibility of later Iron Age sites in the archaeological record of North Northumberland, particularly in the form of rectilinear settlements, as seen on aerial photographs and those known from field survey (e.g. Jobey 1964; 1965). This could suggest substantial population increase in the later Iron Age, which finds support in the environmental evidence now emerging for large-scale clearance and agricultural intensification at this time (see also Chapter 2). In any case, the availability of information dictates that much of what is said here will refer to the Late Iron Age, although with so few sites reliably dated, any attempts at synthesis rely on assumptions about the dating and contemporaneity of the various forts, enclosures and settlements. The basic chronologies currently available for these sites are described below but this framework should be considered provisional.

A note on terminology is required in order to be clear what the terms used in this chapter refer to. The term 'hillfort', as many archaeologists now agree, is inadequate to describe the variety of enclosed sites of the period, some of which can be in lowland settings, while some upland enclosures may not have served a defensive purpose. However, the term will be retained in this chapter to refer specifically to defended sites on hills, whilst defended sites generally, or those in non-hilltop settings, are referred to simply as 'forts', and this remains consistent with the terminology used by Gates in Chapter 3. The term 'palisade' or 'timber palisade' is frequently used to describe sites with construction slots for wooden stockades, but in actuality there is great variability in these features. Some 'palisade trenches' are very shallow and could only have supported a relatively low fence sufficient to keep out animals and define property. Others are of much grander proportions and in some cases, such as the site at High Knowes A at Alnham (Jobey and Tait 1966), may have formed proto-box ramparts. The timber palisades of substantial proportions in effect create a defended or fortified site, so rather than thinking of palisaded sites and hillforts as different in purpose, the view taken here is that they are both 'forts' in that they reflect a need to build defensive sites, with the main differences being the greater permanency, investment of labour and spectacle represented by hillforts, especially the developed multivallate sites. The different morphologies of enclosure are described separately in Chapter 3 but they will be considered together here as the aim in this chapter is to synthesise and interpret. In terms of period terminology, given that Northumberland lay, for all but a short time, outside the Roman empire (see Hanson 1997; Breeze and Dobson 2000) it is considered appropriate to follow the convention of using the terms 'Roman Iron Age' to refer to the period known elsewhere in England as the Romano-British or Roman period (*c.* AD 43–AD 410), and 'pre-Roman Iron Age' for the period prior to the arrival of Rome.

The tribal grouping referred to as the *Votadini* by the Greek geographer Ptolemy in the second century AD (see Armitt 2005, 69) is thought to have inhabited North Northumberland and neighbouring south-east Scotland. Where the tribal limit lay has never been established but given the dramatic cut-off in the number of known palisaded and hillfort sites south of Coquetdale it is possible that the Coquet valley, or its watershed, formed the southernmost extent of Votadinian lands on the east side of the county, though others have argued for the Tyne as the boundary (e.g. Hogg 1951, 200; see also Hartley and Fitts 1988). As is discussed below there are important differences detectable in the character of first- millennium cal BC archaeology between the north and south of the county (see also Jobey 1966), and on this basis a territorial boundary somewhere in central Northumberland seems a real possibility. The inclusion of Redesdale and North Tynedale in Votadinian lands is most probable given that Ptolemy in his *Geography* (II, 3, 5–7) refers to three towns here as being in Votadinian territory (see Chapter 8). His description supports the view of Votadinian lands extending from the Coquet-Wansbeck watershed south-westwards to Corbridge, with the lower Tyne part of Brigantian territory rather than a boundary.

The Cheviot Massif forms a natural territorial boundary to the west, the lands beyond which are thought to have been occupied by the *Selgovae*, who had their tribal centre at Eildon Hill North in the middle Tweed valley. As with preceding periods, the landscape morphology of the region appears to have exercised an important influence on the formation, organisation and maintenance of socio-political groups, and in this case no doubt tribal identity as well. How the tribal grouping of the *Votadini* was organised remains unknown but it is likely to have included many distinct kinship groups inhabiting the lands north of the river Coquet and south of the Forth, with the lower Tweed valley forming one of its main heartlands. Given that we only know of the *Votadini* from the early first millennium cal AD, it is unknown, of course, how far back in time this tribal grouping extended, and whether it had any relevance throughout much of the first millennium cal BC, when socio-political groupings may have been more fluid. This theme will be picked up in the final section of the Chapter.

## CHRONOLOGY

***Peter Marshall and Clive Waddington***

Within this section we have attempted to unravel some of the chronologies for specific types of sites that have most influence on how this period is conceived and interpreted. The dating tables we have assembled could be reconstructed in different ways to provide different sequences, such as for 'all types of defended sites' or those directly associated with 'ceramics', for example. The overriding concern, however, has been to chart the occurrence of key types of site throughout the millennium, namely unenclosed settlement sites, non-rectilinear palisaded sites and the more elaborate forts.

The dating of potential Late Bronze Age 'forts' or 'ringworks' remains a priority and the best targets in Northumberland for addressing this question are the lowland multivallate cropmark forts at Sandy House 1, Flodden, the Burrowses and Nesbit, mentioned in Chapter 3 of this volume. At the moment no dates are available for these lowland fort sites other than the single date associated with the phase 1 palisade at Fenton Hill of 820–370 cal BC (Burgess 1984; see Table 7.2). On the basis of ceramic associations, and the long sequences of roundhouse reconstruction within them, larger rectilinear enclosures, such as the outer circuits at Hartburn, Burradon and Apperley Dene, may be later pre-Roman Iron Age in date (Burgess 1984, 163). Without direct scientific dating, however, such an attribution remains speculative. The dating of rectilinear and single-ditched square enclosures is dealt with in the following chapter as they are considered to be an ostensibly Roman Iron Age phenomenon, although some sites may have origins in the final century of the first millennium cal BC (see Jobey 1973a; 1977b; 1978).

Other monument forms for which we still have no scientific dating evidence include a large rectangular fort at Manside Cross and a possibly similar site, discovered by geophysical survey, below High Rochester Roman fort (Crow 2004). With the exception of Hetha Burn (Burgess 1984), the 'Cheviot-type' stone-built settlements and scoops have still not been examined in Northumberland. These sites provide another important target for future excavations and reliable scientific dating, given that Hetha Burn has been provisionally dated to the Roman Iron Age (*ibid*) on the basis of its material culture. In addition to these sites there are a myriad of relatively small enclosures known from the Northumberland uplands that defy any kind of defensive interpretation, some of which are draped lazily down hillsides, whilst others possess banks or ditches that were clearly never substantial enough to provide protection. None of these types of enclosed sites has yet been scientifically dated.

The identification of unenclosed Iron Age settlements is a relatively recent phenomenon in Northumberland, with previous settlement models assuming unenclosed roundhouse sites to be of Bronze Age date and that Iron Age sites were enclosed (e.g. Jobey 1983; Burgess 1984). Based on the evidence available at that time this was a reasonable supposition but, largely as a consequence of large-scale open-area excavation driven by commercial developments in lowland settings, this picture is being drastically reappraised, especially in southern lowland Northumberland. The important work of Tyne and Wear Museums Service at the Newcastle Great Park sites of East Brunton and West Brunton (Nick Hodgson pers. comm.), together with that of PCA Limited at Pegswood (Proctor 2009) and the discovery of an apparently unenclosed roundhouse below South Shields Roman fort (Hodgson *et al*. 2001), have shown that not only were unenclosed settlements in use from the Middle to Late Iron Age in the south of the county, but also that they were settlements of some size, with several roundhouses occupied at any given time. Furthermore, the multiple and often complex phases of roundhouse construction and reconstruction evident on all these sites, which have only been subjected to minimal radiocarbon dating, show that these open settlements were, in the main, long-lived. Although the Pegswood settlement became enclosed in its later phases, the enclosure does not appear to have been for defensive purposes, but rather as part of a complex farming settlement where stock control amongst arable plots featured prominently (Proctor 2009). In North Northumberland the excavations at Murton High Crags revealed a sequence of unenclosed and enclosed settlement, the latter dating to the later Iron Age but with the dating of the unenclosed timber roundhouses remaining unknown (Jobey and Jobey 1987).

The model shown in Figure 7.2 for the chronology of palisaded sites shows good agreement (Amodel=102.3%) between the radiocarbon results and prior information and provides the following estimates:

- start of non-rectilinear palisaded enclosures of *1380–950 cal BC* (*95% probability; start_upland*; Fig. 6.1) and probably *1210–1020 cal BC* (*68% probability*).
- end of non-rectilinear palisaded enclosures of *cal AD 1–350* (*95% probability; end_upland*; Fig. 6.1) and probably *cal AD 30–170* (*68% probability*).

The table of dates for non-rectilinear palisaded sites (Table 7.2) includes those currently available from Northumberland, together with some of those for adjacent areas of Scotland, so that the Northumberland sites can be viewed within the wider regional picture. Otherwise the dates available for each region on their own would be few, and the resultant picture misleading. Further dates for two key sites in East Lothian, Broxmouth and Dryburn Bridge, can be found in the various publications by Hill (1982a; 1982b), Triscott (1982) and Dunwell (2007). The dates from the two Fawdon Dene enclosures have been separated since enclosure 1 is curvilinear or 'egg-shaped' and has been included in the table of non-rectilinear palisades (Table 7.2), while the overlying enclosure 2 is more rectilinear, albeit with rounded corners (see Frodsham and Waddington 2004, Fig. 11.11), and is included in the table for rectilinear enclosures in the following chapter (Table 8.1). Further dating work is being undertaken as part of Hamilton's PhD thesis and so a more precise chronology for this site can be anticipated.

Overall, the dates available for non-rectilinear palisades span the last quarter of the second millennium cal BC through to the first century AD; it is this form of settlement that may yet provide most potential evidence for Early Iron Age activity in Northumberland. This is further supported by the discovery of what is thought to be Early Iron Age pottery from evaluation at the Needles Eye palisaded enclosure at North Road Industrial Estate, near Berwick, although this site has not yet been scientifically dated (PCA 2005). In addition to the dates referred to above, the recent dating of samples from the palisaded site at Dryburn Bridge has shown that the Phase 1 palisade predates deposits that were radiocarbon-dated to *c*. 400 cal BC (Dunwell 2007, 100). It was suggested in Chapter 6 that palisaded enclosures have their genesis in the late second millennium cal BC yet they continue to be built right up to the end of the pre-Roman Iron Age. They are superseded by small rectilinear enclosures, which can be of palisaded or ditch and bank form (see Chapter 8), and in the post-Roman period by another new type of palisade, typically polygonal in shape, like those known at Doon Hill (Hope-Taylor 1966) and perhaps within the hillfort at Yeavering Bell (Hope-Taylor 1977).

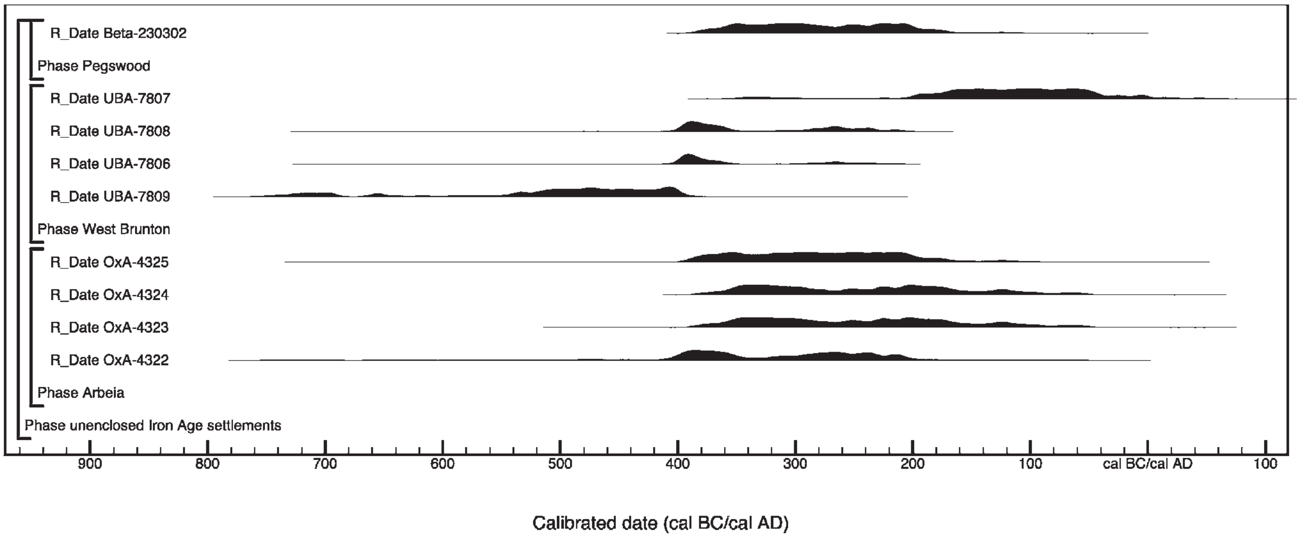



*Figure 7.1. Probability distributions of dates from unenclosed Iron Age settlements. Each distribution represents the relative probability that an event occurred at a particular time. These distributions are the result of simple radiocarbon calibration (Stuiver and Reimer 1993).*

The model for the chronology of hillforts shown in Figure 7.3 shows good agreement (Amodel=80.7%) between the radiocarbon results and prior information and provides the following estimates:

- start of Iron Age hillforts of *440–250 cal BC* (*95% probability; start_upland*; Fig. 6.1) and probably *410–310 cal BC* (*68% probability*).
- end of Iron Age hillforts of *110 cal BC–cal AD 100* (*95% probability; end_upland*; Fig. 6.1) and probably *50 cal BC–cal AD 60* (*68% probability*).

Notably few hillforts have been excavated or scientifically dated in Northumberland and this remains a key research priority. Table 7.3 contains an embarrassingly short list of sites that have produced dates, relative to the number of sites that are known: three located within a short distance of each other in the Upper Breamish valley (Wether Hill, Brough Law, Ingram Hill) and two from the Fell Sandstone escarpment overlooking the Milfield Basin (Fenton Hill and West Dod Law). Despite a second season of excavations at Harehaugh hillfort in Upper Coquetdale, no samples deemed suitable for radiocarbon dating were recovered from either the ramparts or ditch fills of this important site. A single evaluation trench, excavated in 1998 (Figs 7.5 and 7.6), had produced evidence of a substantial defence work forming part of a multivallate circuit on the more gentle western approach (Waddington *et al*. 1998), overlying what appeared to be a potentially earlier enclosure bank that had itself been constructed on a land surface that has produced a Neolithic radiocarbon date (see Chapter 4). While not entirely satisfactory, the results currently indicate that some of the smaller-sized hillforts, at least, are a phenomenon of the second half of the first millennium cal BC, although this picture will no doubt change as more sites are investigated.

In addition to hillfort sites, ditched enclosures, both curvilinear and rectilinear in shape, are known primarily from cropmark evidence. The few potentially defensive ditched enclosures that have been excavated, excluding the small rectilinear types discussed in the following chapter, have produced mid–late first-millennium cal BC dates, such as that at Eweford Cottages in East Lothian (Innes 2008).

As with hillforts, there are few dates available for non-defensive Iron Age enclosures in Northumberland relative to the number of sites known from cropmarks and aerial survey. Typically they take the form of relatively shallow-ditched enclosures presumably with low internal banks. Occasional upstanding counterparts to these enclosures can be seen in the uplands, the farming settlement at Greaves Ash in the Upper Breamish valley, with its low surrounding walls and droveway, being perhaps the best example, although the date range of this site remains to be established. Many of the multi-phase, lowland sites now being investigated show evidence for enclosed and unenclosed phases, sometimes with the former followed by the latter, as for example at East Brunton (Hodgson, pers. comm.) and Thorpe Thewles (Heslop 1987), and in other cases with unenclosed settlements followed by enclosures, as at Murton High Crags (Jobey and Jobey 1987). The results so far indicate that non-defensive enclosed sites date from the second half of the first millennium cal BC and are broadly contemporary with hillforts.

New farms and systems of land allotment appear during the first millennium cal BC and, together with the huge number of settlement sites known from this period across areas of landscape which have produced little evidence for having been farmed

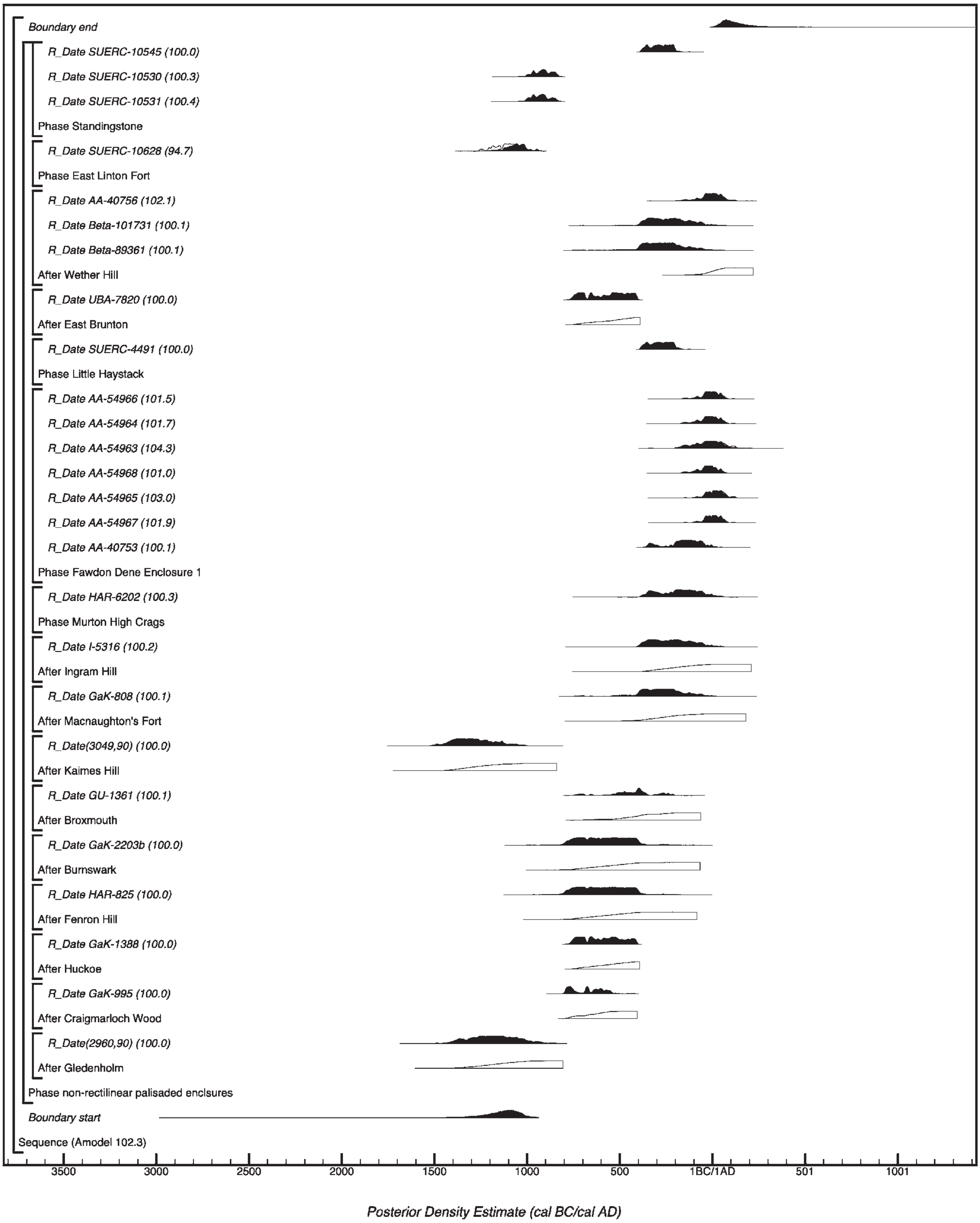



*Figure 7.2. Probability distributions of dates for non-rectilinear palisaded enclosures: each distribution represents the relative probability that an event occurs at a particular time. The format is identical to that of Figure 5.1. Distributions other than those relating to particular samples correspond to aspects of the model. For example, the distribution 'start' is the estimated date for the start of activity associated with non-rectilinear palisaded enclosures.*

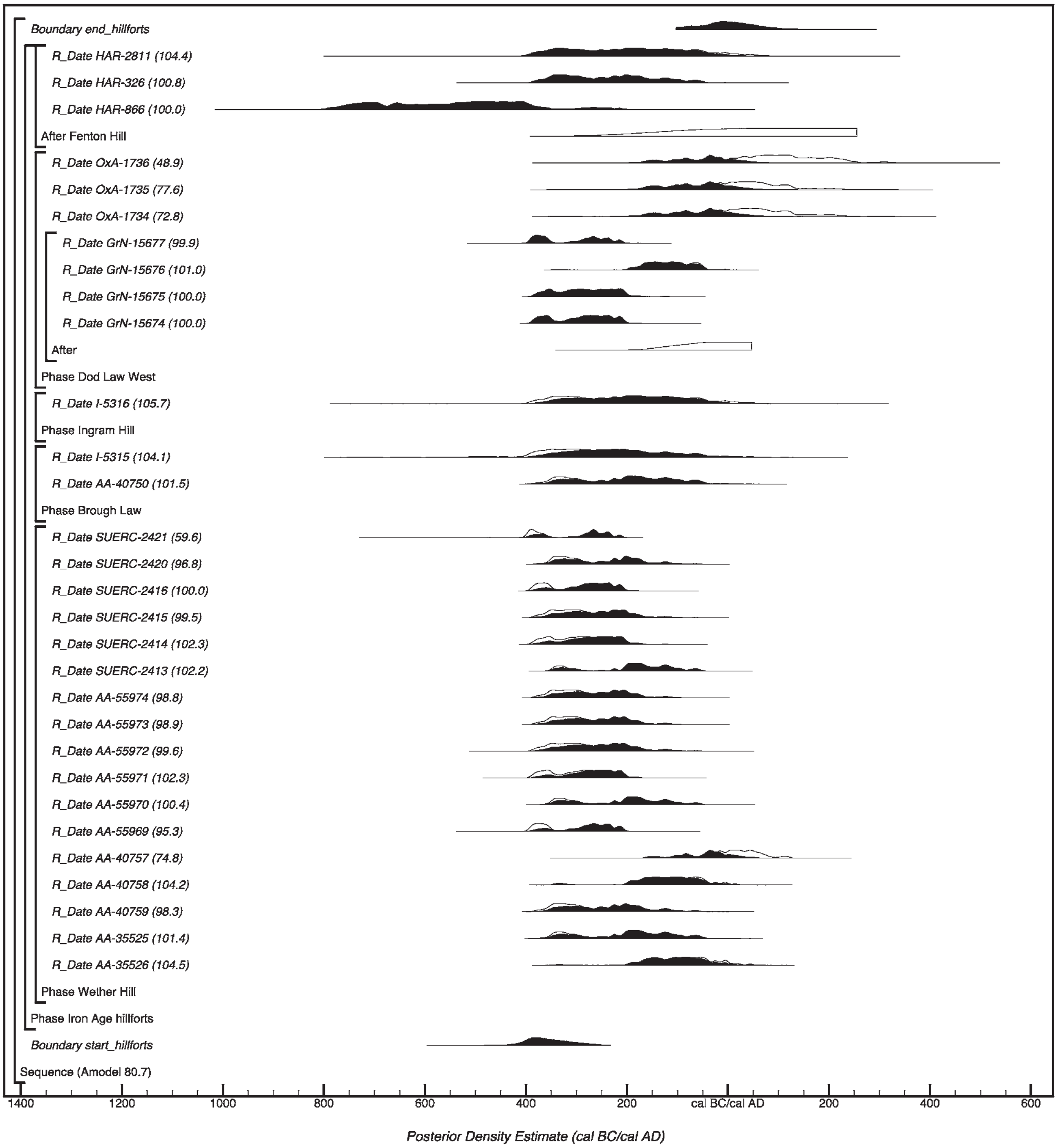



*Figure 7.3. Probability distributions of dates for Iron Age hillforts: each distribution represents the relative probability that an event occurs at a particular time. The format is identical to that of Figure 5.1.*

before, point towards a large-scale reorganisation of the landscape. So far very few boundary features have been investigated, although some preliminary work has taken place. Single 'pit alignments' can have widely varying dates (see Waddington 1997 for discussion, and recent dates in Lelong and MacGregor 2008), but many of these features in other parts of Britain have been dated to the Iron Age. It is entirely plausible that many of the Northumberland examples also date to the Iron Age, but so far the only alignment that has been radiocarbon-dated has produced consistent Roman Iron Age dates (see Volume 1, Chapter 5). With the absence of earlier dates the examples from North Northumberland will therefore be discussed in the following chapter.

The few upstanding boundary features that have been investigated and which have yielded dates are all from the block of upland on the west side of the

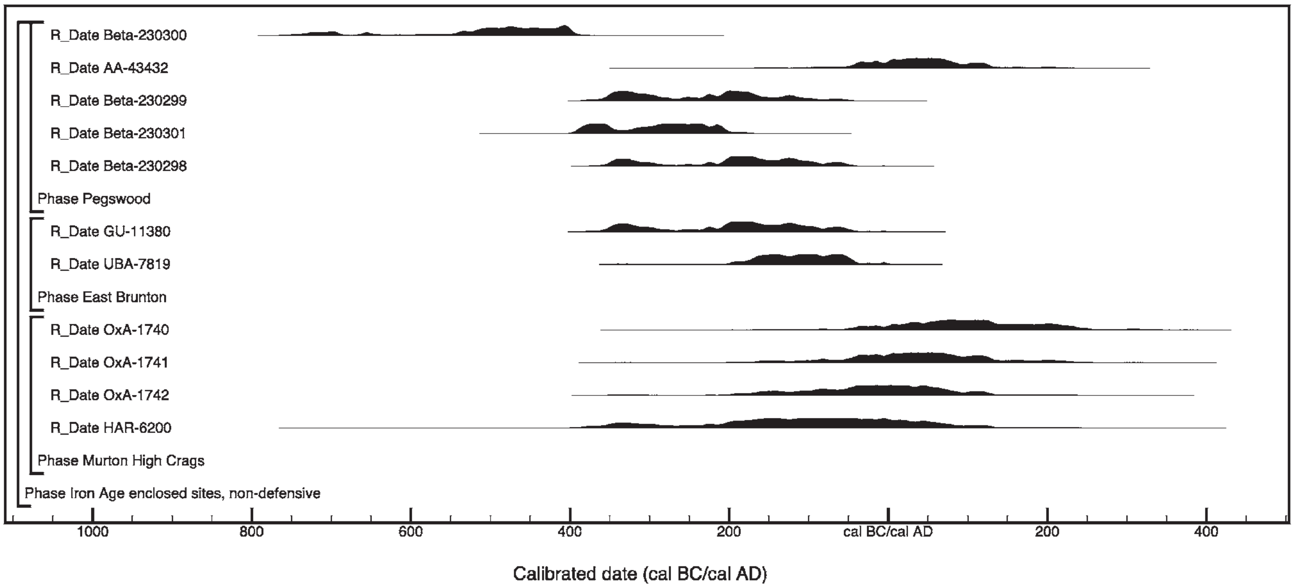



*Figure 7.4. Probability distributions of dates from Iron Age enclosed sites, non-defensive. Each distribution represents the relative probability that an event occurred at a particular time. These distributions are the result of simple radiocarbon calibration (Stuiver and Reimer 1993).*

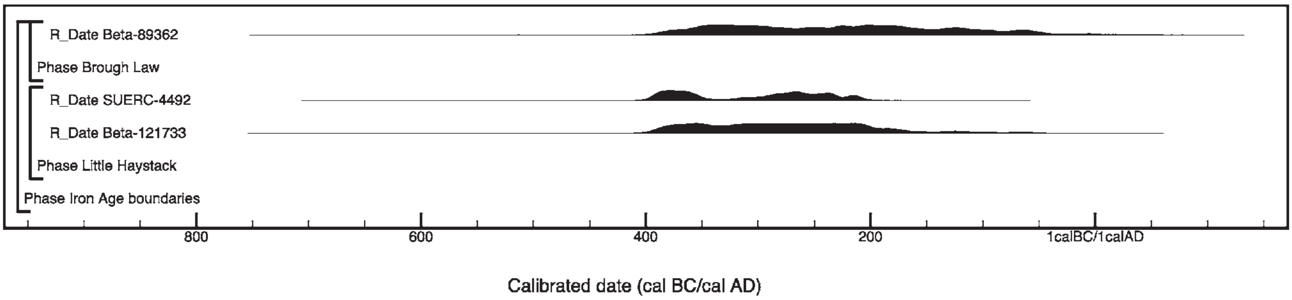



*Figure 7.5. Probability distributions of dates from Iron Age boundary features. Each distribution represents the relative probability that an event occured at a particular time. These distributions are the result of simple radiocarbon calibration (Stuiver and Reimer 1993).*

*Figure 7.6. The limited excavation of the outer ditch fill at Harehaugh hillfort demonstrated the high potential for recording stratified ditch deposits and obtaining environmental and dating samples particularly in rock-cut ditches such as this.*

Breamish valley above Ingram village. Here, three available dates for boundary features provide a *terminus post quem* for the construction of the banks of *c*. 200 cal BC.

## CLIMATE AND ENVIRONMENT

The beginning of the first millennium cal BC coincides with a particularly marked climatic downturn that started *c.* 1170 cal BC, and probably intensified from *c.* 850 cal BC. This deterioration is well recognised in proxy climate records from North-West Europe (e.g. Blaauw *et al*. 2004 and references therein), including the record of Europe-wide neoglacial phases where it dates to *c.* 950–550 cal BC (Matthews and Quentin Dresser 2008), and is also reflected in pronounced shifts to wetter bog surface conditions in northern Britain at *c.* 810 cal BC (Charman *et al*. 2006) and specifically at Walton Moss from *c.* 1170–860 cal BC (Hughes *et al*. 2000). It is also strongly evident in the chironomid record at Talkin Tarn where mean July temperatures appear to fall by *c.* 1°C over the first half of the millennium (Chapter 2; Langdon *et al*. 2004). Reconstructed temperatures at this site then recover to yield a relatively warm period between *c.* 450–50 cal BC, with mean July temperatures within 1°C of those today, before abrupt cooling to *c.* cal AD 150 (Langdon *et al*. 2004). However, some variability in climate over the second half of the millennium is suggested by evidence for a neoglacial phase between *c.* 250–50 cal BC (Matthews and Quentin Dresser 2008) and a corresponding wet shift at Walton Moss that has been dated to *c.* 320–40 cal BC (Hughes *et al*. 2000). Further, and potentially significant, palaeotemperature reconstructions may also be derived from within the study area at the Flodden Hill enclosure (Kenward, in Volume 1; Chapter 5). Here, an insect assemblage recovered from a primary ditch fill, dated to the period *c.* 170 cal BC to cal AD 80, included specimens of the nettlebug *Heterogaster urticae* (F.) that are diagnostic of mean July temperatures around 2°C above mid-20th century values in this part of Northumberland. Verification of this reconstruction for the region will be an ongoing research priority, but the current evidence would certainly seem to support the picture of variable but generally warm conditions in the later Iron Age, and possibly with periods of mean annual temperatures in excess of those at present.

### Woodland composition and land use

It is widely recognised that Early–Middle Iron Age vegetation records for much of North-East England and the adjacent Borders region reflect a continuation of localised clearance activity, grazing and generally short-lived episodes of cereal production that had been established during the Bronze Age (Innes 1999; Young 2004; Tipping 2010; see also Chapter 2). The degree of forest clearance may have been locally significant, notably in some areas developed on fertile limestone soils in County Durham (e.g. Bishop Middleham, Bartley *et al*. 1976) and parts of the coastal lowlands (e.g. Howick, Boomer *et al*. 2007b), and possibly also localised spreads of glaciodeltaic and glaciofluvial sand and gravel in valley floors (see Chapters 5 and 6), but in general much of the region continued to support a relatively high degree of forest cover.

During the Middle–Late Iron Age, however, major episodes of woodland clearance and associated agricultural activity are recorded at many sites throughout Northumberland and the Borders, including localities at higher altitudes such as Quick Moss (500m OD) in West Northumberland (Rowell and Turner 1985) and the Cheviot Hills (300m OD; Tipping 1996; 2010). A relatively early onset of this impact is evident at some sites, for example in South Northumberland at Crag Lough (*c.* 400 cal BC, Dark 2005), but in the majority of cases it occurs from the last two centuries of the millennium (Tipping 2010). This is probably the case in upland areas flanking the valley of the River Till where major semi-permanent forest clearance, with evidence for pastoralism and episodic cereal production, dates from *c.* 390–40 cal BC at Broad Moss and *c.* 200 cal BC at Ford Moss (Chapter 2). Only one pollen assemblage of Iron Age date has been identified in the valley floor of the Till-Tweed area. This derives from palaeochannel deposits in the Lower Tweed to the south of Coldstream (core TW10; Chapter 2, Fig. 2.36), where sediments dating to *c.* cal 50 BC–AD 80 contain pollen taxa indicative of extensive grassland, with some limited stands of oak- and hazel-dominated woodland. It is highly likely, however, that remaining areas of woodland on lower valley sides and valley floors throughout the area were similarly diminished by this time.

The sampling resolution and dating controls available for most pollen diagrams in the region often render it difficult to reliably narrow the timing of major deforestation to less than a few hundred years, although at some sites this estimate may be narrowed to a few decades (Tipping 1997). In some cases it may have been even quicker, as suggested in the area of Yetholm Loch in the Bowmont valley where Tipping (2010) argues that dramatic Late Iron Age forest clearance amounted to a planned, clear-felling episode of previously little-disturbed woodland around *c.* 175 cal BC. This episode was conducted in advance of the development of an agricultural landscape that included areas of pasture, hay meadows, plots of oats and possibly also wheat and rye.

### Floodplains and hill slopes

Geomorphological events dating to the first millennium cal BC in the trunk stream reaches of the River Till and its tributaries are most clearly recorded in the Breamish valley near Powburn. At Brandon Quarry, immediately upstream of Powburn, Tipping (1992; 1994b; 2010) has described two phases of gravel aggradation after *c.* 810–540 cal BC and *c.* 410–200 cal BC, and it is striking that this former episode closely matches the date for a channel abandonment event only 2km downstream at Hedgeley Quarry (*c.* 800–540 cal BC, Volume 1, Chapter 2). Tipping (2010) interprets the Brandon Quarry data as reflecting a hitherto unprecedented transformation of the local river into an aggrading, braided channel environment, but with the benefit of additional data from the Till-Tweed Project we can say that fluvial activity in the first millennium cal BC was by no means exceptional by comparison with earlier periods (Volume 1, Chapter 2; see also this volume, Chapter 2). Rather, this part of the valley appears to have been experiencing lateral channel shifts and reworking of channel and floodplain terrace deposits on at least several occasions over the greater part of the prehistoric period (Chapter 2). The timing of the *c.* 800–540 cal BC event may be significant, however, corresponding as it does with climate deterioration and major flooding episodes elsewhere in Britain (and also Spain and Poland) at *c.* 860–780 cal BC and *c.* 610–600 cal BC (Macklin *et al*. 2006).

Downvalley of the River Breamish, at Hedgeley, there are currently no palaeochannels or alluvial sequences in the River Till or River Glen, including within the Milfield Basin, that can be confidently assigned to the Iron Age, but at the very end of the first millennium BC the first dated evidence for channel abandonment, occurring shortly after *c.* 50 cal BC–cal AD 70, is recorded in the Lower Tweed valley at Coldstream (Volume 1, Chapter 2; this volume, Chapter 2). That there are relatively few landform and sedimentary sequences of Iron Age date in the middle and lower reaches of the River Till is perhaps surprising, especially as river systems are likely to have become more sensitive to flood events, with the increasing impact of human activity on catchment forest and soil cover over the course of the millennium (see also Chapter 6). Indeed, widespread evidence for enhanced rates of gravel deposition and channel adjustments during this period elsewhere in North-East England (e.g. Passmore *et al*. 1992; 1993; Passmore and Macklin 1997; 2000; Moores *et al*. 1999; Hildon 2004) and the Scottish Borders (e.g. Tipping 1995b; Tipping *et al*. 1999) have been interpreted in this light. Given that the fluvial record of the River Breamish/Till has preserved abundant examples of Bronze Age and earlier palaeochannels, the comparative rarity of Iron Age features is perhaps unlikely to be a result of later reworking by river action, but rather is considered to reflect their chance omission from the fieldwork programme.

The geomorphological response to land use changes is often more readily resolved in small catchments, where fewer opportunities exist for the intermediate trapping and storage of eroded sediment (Brown *et al*. in press), and this is certainly the case with respect to the marked deforestation event at Yetholm Loch (Tipping 2010). Here, eroded soil and sediment deposited in the loch may be linked to the clearance event, and the felling of floodplain alder carr also appears to have permitted local channel migration and coarse-sediment deposition for several hundred years thereafter. Detailed studies, such as those conducted in the Bowmont valley, are rare. However, although prehistoric lynchets and cultivation terraces have demonstrably been effective at promoting soil retention on hill slopes (see Chapter 6 and below), there have yet to be any systematic investigations of the colluvial record in the Till-Tweed landscape. The recent reporting of an episode of colluviation, optically dated to *c.* 330 cal BC, in the catchment of Linhope Burn, a small tributary of the River Breamish (Harrison *et al*. 2010) demonstrates that this may be a fruitful research avenue.

## SETTLEMENT AND LAND USE

Although in Northumberland the first millennium cal BC, and specifically the pre-Roman Iron Age, is typically characterised as a time when enclosed and defended sites were widely adopted, recent excavations have shown that open settlements were perhaps just as common and occupied at the same time. There could be a geographic pattern to this, as the unenclosed settlement phases at Thorpe Thewles (Heslop 1987), Bollihope Common (Young and Webster 2006; Young *et al*. 2008), Pegswood (Proctor 2009), Arbeia (Hodgson *et al*. 2001), West Brunton and East Brunton (Nick Hodgson pers. comm.) all lie south of the river Coquet; although unenclosed phases of occupation are also known at Murton High Crags (Jobey and Jobey 1987), but in this case the houses could be Bronze Age in date.

To the north, in East Lothian, the Early Iron Age palisaded settlement at Dryburn Bridge was replaced by an unenclosed settlement comprising 'ring ditch' houses of which House 2 produced a group of radiocarbon dates clustering in the early–mid-first millennium cal BC (Triscott 1982, 123; Dunwell 2007). Elsewhere in East Lothian, at Phantassie, an unenclosed site has recently been excavated and a sequence of sixty radiocarbon dates obtained, revealing a settlement that thrived in the last two centuries cal BC and the first two centuries cal AD (Lelong 2008a). The houses at this site, like those at Pegswood, were incorporated into small farmyard enclosures, but although 'enclosed' in this sense, it was not a settlement with any kind of defensive circuit. This suggests that insecurities were dealt with in different ways in the southern areas of Northumberland, where there are remarkably few enclosed or defended sites, from the northern part of the county, where hillforts and enclosures of varying form abound. In the final pre-Roman Iron Age and Roman Iron Age, square and rectilinear enclosures are found throughout southern and northern Northumberland, suggesting that a different impulse lay behind their construction.

## Settlement morphology

Roundhouses take a variety of forms, with timber post-built houses continuing on from the Bronze Age tradition, whilst new forms of 'ring ditch' houses appear in the Early–Middle Iron Age at sites such as High Knowes A and B, Broxmouth and Dryburn Bridge (see Jobey and Tait 1966; Hill 1982a; 1982b; Triscott 1982; Dunwell 2007). Ring groove houses are most common in the Late Iron Age, with many examples known from sites such as South Shields (Fig. 7.7), Pegswood and East and West Brunton. Given that post-built timber houses are defined by postholes they are difficult to detect without recourse to excavation, but this is not always the case for ring ditch and ring groove houses, which, in the uplands at least, can sometimes be observed on the surface.

Roundhouses of the first millennium cal BC show considerable variation in size, with typical buildings ranging from 5m in diameter at Murton High Crags (Jobey and Jobey 1987, 168) and Fawdon Dene (Frodsham and Waddington 2004, 185) to 15m at High Knowes (Jobey and Tait 1966) and 18m at Dryburn Bridge (Triscott 1982). Diameters of 5m and 18m correspond to surface areas of 20 and 254 square metres respectively. Although the smaller roundhouses correspond closely in size with those of the second millennium cal BC, the larger roundhouses of the Iron Age are of altogether different proportions and may be better regarded as circular 'halls', or at least buildings of enhanced status. These large buildings compare in size with the usable floor area of 275–300 square metres for the largest of the Anglo-Saxon halls (Building A2) at the royal residence at Yeavering (see Hope-Taylor 1977). Evidently, some of the Iron Age roundhouses may have served a variety of purposes other than domestic residences, such as halls for feasting, entertaining and holding court, as well as religious and ceremonial activities. Some of the more typical 5–12m diameter buildings may also have served other purposes, ranging from byres and stables to storage spaces and workshops.

It has traditionally been thought that prehistoric roundhouses were timber-built and only with the arrival of the Romans were they built in stone. Such a view can now be rejected as evidence has come to light for stone-built roundhouses at least as early as the Late pre-Roman Iron Age in the case of the multiple structures within the phase 1 enclosure at Fawdon Dene (Frodsham and Waddington 2004; Fig. 7.8). They have produced radiocarbon dates clustering around the first century cal BC (see Table 7.2). Stone buildings, pathways and boundaries were also being built at this time at Phantassie in East Lothian (Lelong 2008a), and it is possible that the extraordinarily well preserved remains at Greave's Ash (Tate 1863a) are of similar date. Although roundhouses have become synonymous with the Iron Age, partly on account of the impact on the public imagination of reconstructions such as those at Butser Ancient Farm, evidence is emerging to suggest that there was more variety in building form. At Phantassie the Phase 2 settlement included a subrectangular stone-founded building which supported a timber, and possibly turf, superstructure (Lelong 2008a). At Dryburn Bridge several rectangular timber structures were constructed which dated to Phase 2 within the palisaded enclosure (Dunwell 2007, 101) but the function of these structures remains unknown. Given that the Phantassie structure was considered to be a house, a simple division between houses and non-domestic buildings cannot be satisfactorily invoked to explain the difference.

Where entrances can be identified they are typically oriented between north-east and south-east, according to Pope's study of 690 houses from 253 sites in central and northern Britain (Pope 2007, 212). In Northumberland, however, there are sites, such as Murton High Crags, where all the roundhouses have their doorways between the east and south quadrants (Jobey and Jobey 1987). There is also evidence for a general shift from a southerly orientation of entrances in the Bronze Age to a more easterly one in the Iron Age. The examination of an Iron Age roundhouse below the Roman fort at South Shields has provided an unusually detailed glimpse of the use of space in such a structure (Hodgson *et al*. 2001, 147). Here, the presence of heather, bracken and culm node seeds at the rear of the roundhouse suggests that this area was where people slept (*ibid*., 141), whilst cereal processing appears to have taken place primarily in the southern half of the house and internal structural features were confined to the front north quadrant (i.e. to the right upon entry).

According to Pope (2007, 221), the light, easily accessible areas such as the centre, front and outside of the house attracted active practices, whilst the less accessible periphery, backspace and potential upper floor areas were places where more passive and private activities, such as sleeping and storage, took place. As more roundhouses are excavated in the region there is considerable potential to address the various questions relating to roundhouse form, use and potential symbolism, particularly with the application of scientific techniques that may yield greater understanding of how these structures were used (e.g. geochemistry, residue analysis on ceramic scatters, macrofossil studies of organic remains). Aside from the typical roundhouse, the buildings at Phantassie and Dryburn Bridge demonstrate that not

*Figure 7.7. The roundhouse below South Shields Roman fort constructed by employing the 'ring groove' technique (Copyright Tyne and Wear Museums Service).*

*Figure 7.8. Excavation of a stone-built roundhouse dating to the Late Iron Age within Enclosure 1 at Fawdon Dene.*

all Iron Age houses were round, and, therefore, that focusing on symbolic explanations of roundhouses at the expense of other determining influences could result in overinterpreting observed patterning in the use of space.

## Farming the land

While there is comparatively little archaeological evidence currently available to address the character and scale of farming in the first half of the first millennium cal BC in Northumberland, regional pollen diagrams present a mixed picture of pre-Roman Iron Age deforestation and agricultural activity. The climatic deterioration of the Early Iron Age has been linked to reduced levels of arable cultivation in the vicinity of Crag Lough, in the south of Northumberland (Dark 2005), but in general does not appear to have deterred the use of small forest openings for grazing and cereal plots (Innes 1999). The scale and intensity of activity was such that many landscapes will likely have appeared similar to those of the preceding Bronze Age (see above). It is not until the middle and especially the later part of the millennium that a step change in the tempo and scale of woodland clearance is recorded in many localities throughout the region, including those at elevations above 500m OD. The signature of Middle–Late Iron Age environmental impact is deforestation for farming: while demand for timber (e.g. for building, cooking fires, etc.) may have been a contributory factor in stimulating clearance, extensive clear-felling, which has been inferred for some locations, appears to have been the deliberate precursor for development of mixed agricultural systems (Tipping 2010). Identifying the range of crops being grown at this time is not always possible from regional pollen diagrams, but in the Cheviot Hills there is robust evidence for production of oats, wheat, barley and possibly rye (*ibid.*).

The archaeological record provides complementary evidence for the expansion of farming into two very different areas. The first is the move back into the high uplands, with many hillforts exploiting the land immediately around them for cultivation and stock herding. The former is amply testified at sites such as Wether Hill where cord rig cultivation marks and an extensive 'smoothed area' can be seen to the north of the fort (Topping 1989; 2004). As groups established themselves in what may have been, in some cases, long-abandoned areas in the uplands, or other marginal areas, they may have sought to secure rights to these resources by appropriating the ancient monuments already there and claiming ancestral ties for themselves. This can perhaps be seen in Iron Age interments as secondary burials in Bronze Age or earlier burial cairns, as at Turf Knowe (Frodsham and Waddington 2004) and perhaps at Spittal Hill near Rothbury (Jobey and Tait 1966, 33), and further afield in East Lothian at Eweford West and Pencraig Hill (Innes 2008). The second area of expansion is the move into the extensive areas of till-covered ground, in particular the coastal lowlands. Sites in these latter areas are being discovered in increasing numbers through aerial photography and open-area excavation in advance of commercial developments. It is on just such land that the recently excavated settlements of Pegswood, East Brunton and West Brunton have been found. In addition, the unenclosed settlement below South Shields Roman fort produced evidence for several phases of narrow rigg cultivation together with ard marks, some of which were associated with occupation of the adjacent roundhouse (Hodgson *et al*. 2001).

Cereal production is widely testified at those sites that have been excavated and greatly extends the evidence obtained thus far from off-site palaeoenvironmental sequences (see above). Spelt wheat, six-row hulled barley and occasionally oats dominate most assemblages, such as those from West Dod Law (Smith 1989) and Murton High Crags (Jobey and Jobey 1987) in North Northumberland, as well as Pegswood (Proctor 2009) and South Shields (Hodgson *et al*. 2001) in South Northumberland, where spelt predominated over barley. The ditched, and subsequently palisaded, enclosure at Needles Eye at North Road Industrial Estate, Berwick, produced evidence for barley and oats, which is of interest given that this site could potentially date to the Early Iron Age on the basis of tentatively dated ceramics (PCA 2005). A similar picture emerges for south-east Scotland from the cereal assemblages from the two sites at Port Seaton (Haselgrove and McCullagh 2000), and also for County Durham at sites such as Thorpe Thewles (van der Veen in Heslop 1987). Occasional naked varieties of barley are encountered and emmer, bread wheat and oats have also been found, though usually in small quantities (van der Veen 1992). The introduction of new cereal varieties, such as spelt wheat, is important because, as van der Veen has suggested, spelt's hardiness and tolerance for both light and heavy soils would have assisted in extending agriculture into new areas such as the heavier clay soils of the lowlands. It is perhaps no surprise that spelt wheat has been found on many of the sites in these areas, such as Pegswood in Northumberland, and Coxhoe and Thorpe Thewles in County Durham. The preference for spelt wheat and barley as the main cereals cultivated in the Iron Age conforms to the wider picture for Britain generally. In East Lothian, Lelong and MacGregor (2008) have identified the parching of cereals at various sites and they suggest that this was an important task associated with drying out grain so that it would preserve well over the winter and spring months.

Lynchets for arable production are a common occurrence around many of the hillfort sites in the Cheviot Hills (Oswald *et al*. 2008) and are frequently found underlying Roman Iron Age settlements or boundary features. The regular occurrence of querns, both saddle and later rotary types, at most of the settlement sites so far excavated, and of what has been identified as a 'knocking stone', probably for dehusking grain, set into an area of paved floor within roundhouse 1 at Fawdon Dene enclosure 1 (ASUD 2002), conjures up a picture of widespread flour-making and the production of foodstuffs such as bread, porridge and broths, on a highly localised basis. The dominance of barley should not be overlooked as it can be used for a variety of purposes and may even hint at beer production, as well as winter feed for stock.

The keeping of livestock was important during the first millennium cal BC. Even though the available faunal evidence for the period is meagre, clues are evident in the palaeoecological record (see above) and in the survival of stock control boundaries visible on aerial photographs (see also Chapter 3 for discussion of the evidence in the Milfield Basin) and the upstanding stone bank-defined 'droveways', such as that approaching the settlement at Greave's Ash from the river Breamish (Tate 1863a). Corrals have also been identified, attached to various fort sites, though these latter structures are usually attributed to the Late pre-Roman Iron Age or the Roman Iron Age (Oswald *et al*. 2008). In addition, limited faunal evidence has come to light on excavated sites. At Fawdon Dene enclosure 2, in the upper Breamish valley, the remains of cattle, pig, horse and dog were found as part of a midden deposit around the doorway of a stone roundhouse which is thought to date to sometime in the first two centuries cal AD (Frodsham and Waddington 2004). At Pegswood the few animal bones that could be positively identified were those of cattle, whilst sheep-sized bone fragments were also noted (Gidney in Proctor 2009). At Thorpe Thewles, cattle bone was the most common, followed by sheep, whilst pig, goat, horse, dog, fox, cat, fowl, goose, hedgehog and red deer were also represented (Rackham in Heslop 1987). Overall, cattle remains are most abundant with some analyses suggesting that both dairy and beef were important at different times in a settlement's history. The picture, however, is one of diverse animal keeping on any given site for the production of meat and a wide variety of secondary products. The use of beasts for traction and, in the case of horses, riding, should also be considered, particularly as the lynch pins for carts and/or chariots have been found at several sites, such as Phantassie (Hunter in Lelong 2008b, 170).

One of the keys to improving understanding of the domestic economy and land use patterns is the role of various types of boundary features in creating 'territories' around forts, though we have to be careful in assuming contemporaneity, given that many hillforts have long histories of occupation, and the land boundaries associated with them may only relate to a certain phase of their use. Consideration of the various hillfort sites above the Breamish valley at Brough Law, Middle Dean and Wether Hill, and the position of boundary features located between these centres, suggests the existence of possible 'territories' associated with each of these sites (Fig. 7.9; see also Topping 2004, 197). What is of particular interest is that each territory appears to have been organised to ensure each fort had access to similar proportions of different types of land, including a stretch of river, water meadow, permanent pasture, upland grazing and arable land. This suggests not only a significant degree of planning and apportionment for Iron Age forts, but also a focus on self-sufficient, defended farming settlements rather than specialised farms. This concern for self-reliance also finds support in the recurring discovery of ironworking evidence on most fort sites, a practice which suggests, at the very least, maintenance and repair of iron tools and weapons on a local scale. The speculative territories shown in Fig. 7.9 for the forts at Brough Law, Middle Dean and Wether Hill have areas (in plan) of 173ha, 144ha and 254ha respectively, although given the differing amount of sloping ground, which increases surface area, these figures are only approximations. Their average area is 190ha, which is an area of land far in excess of that required to sustain a single family unit, which could imply that each settlement was home to a kinship group of several families at a minimum. Populations for each of these hillfort territories could reasonably be expected to be in the order of 50–100 people.

The farms of the first millennium cal BC, whether unenclosed or defended, appear to have been typically organised around a mixed farming economy, with evidence for arable and livestock production. The emphasis appears to be on self-reliant units of production that would also, presumably, have generated a surplus in order to facilitate trade and exchange and pay any dues. By the Late Iron Age, large-scale woodland clearance for purposes of agricultural expansion appears to have been underway, and extended well into upland areas and landscapes which hitherto had been little impacted upon by earlier activities. This hints at the arrival of a new approach to the organisation and planning of agrarian landscapes (e.g. Tipping 2010), and while it may have been partly facilitated by the climatic amelioration of the later first millennium cal BC, it would also appear to signal a period of population increase and escalating demand for agricultural products (e.g. Dark 2005). Slaves may also have been a mainstay of the Late Iron Age economy, perhaps partly driven by the demands of the ever-encroaching Roman Empire. The emphasis on defended sites across the Borders region throughout much of the first millennium cal BC could point to raiding as much for people as for food and other material wealth. Bearing in mind the words of Strabo who described Britain's exports as including "grain, cattle, gold, silver, iron … along with hides, slaves and hunting dogs" (Strabo *Geography*, Book 4, Chapter 5, 2), it is conceivable that raiding for slaves was by no means unusual throughout this period.

One of the key issues that remain to be addressed is that of the timing and intensity of movement back into the high uplands for year-round settlement and farming. Hillforts are of course key to answering this question but we do not yet know enough about their chronologies. The recent surveys by English Heritage have gone a long way in helping to identify the long and complex sequences of many sites on the basis of surface observation, but it is only with excavated sequences and attendant radiocarbon chronologies

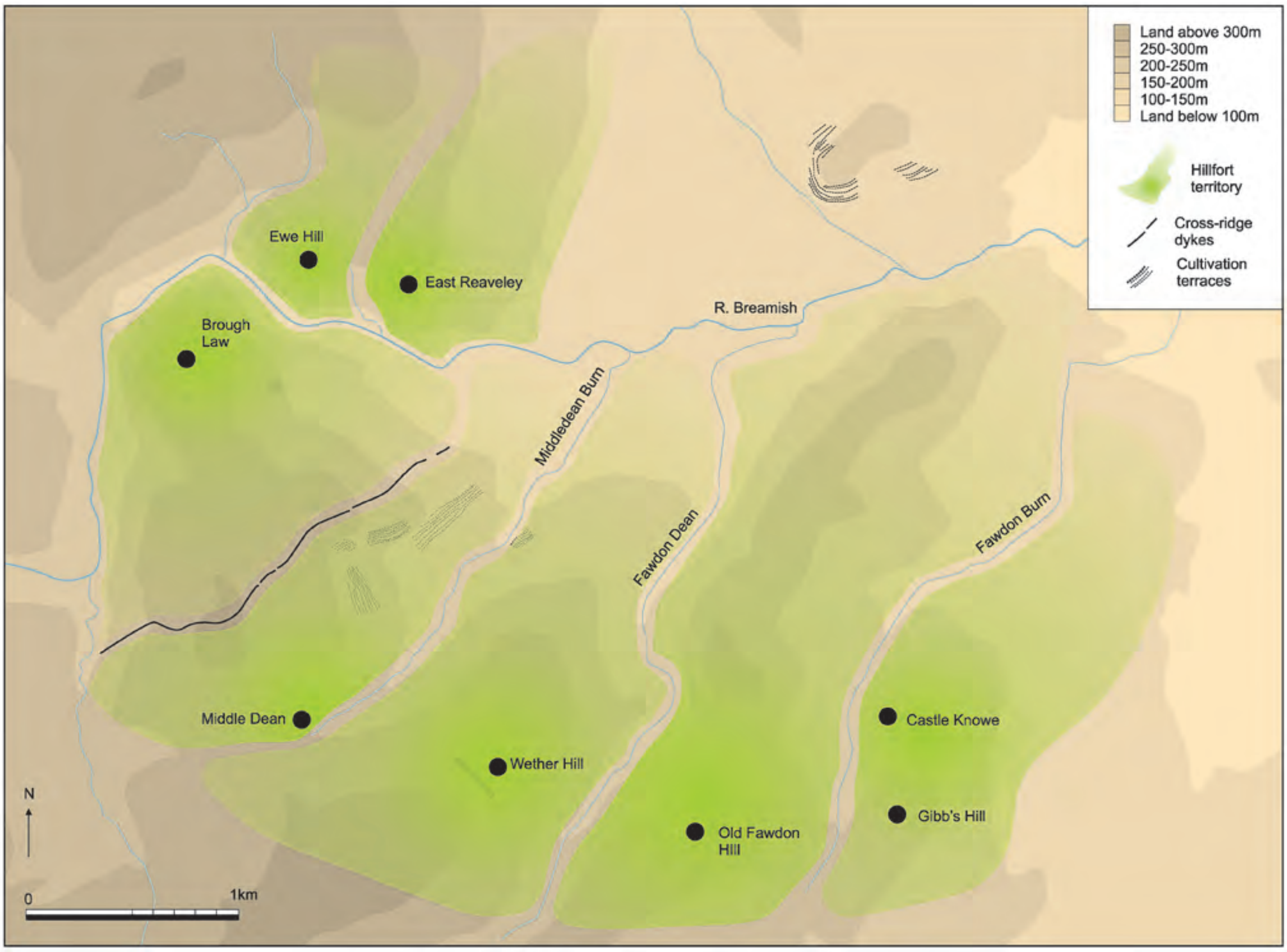



*Figure 7.9. Postulated hillforts and their territories in the Upper Breamish Valley, Northumberland.*

that the rhythm and pattern of upland expansion, and ultimately retreat, will be addressed. With only Fenton Hill, Wether Hill and West Dod Law having produced radiocarbon sequences in recent times, there is still much work to be done on what are some of North Northumberland's most visually stunning archaeological sites.

## ENCLOSURE AND DEFENCE

The trend towards nucleation of settlement and the need to enclose sites have their origins in the later Middle Bronze Age, from around 1200 cal BC (see Chapter 6), but it is during the first millennium cal BC that the floruit of defensive works occurred, with enclosed sites taking a wide variety of forms. Some of these constructional forms have a chronological bias, with timber palisades generally being earlier than earthen and stone forts, and rectilinear enclosed sites being pre-Roman and Roman Iron Age in date. But, as the chronological discussion above shows, palisaded sites were in use throughout most of the first millennium cal BC and the same could be true for forts made of earth and stone, though the floruit of small elaborate hillfort construction appears to take place in the second half of the first millennium cal BC, based on the information from the few dated sites that we have. The specific types of enclosure are discussed in some detail by Tim Gates in Chapter 3, whilst detailed phasings of key hillfort sites, based on surface survey, have recently been published by Oswald *et al*. (2006; 2008).

Palisaded sites vary in size and, on current evidence, can enclose up to 27 roundhouses. Many appear to have been no more than small farmsteads, however, enclosing one or two houses within a low stockade with little defensive potential. Others were of more substantial construction, consisting of one or more defended circuits, sometimes with accompanying ditches, and sometimes forming box ramparts or variants thereof. Therefore the term 'palisade' covers a multiplicity of sites and conflates a very heterogeneous family of timber enclosures. This is a problem that has been highlighted by others and prompted Harding (2001), for example, to question the validity of the phrase 'palisaded enclosure' as a classificatory term. The use of palisaded enclosures was clearly varied and Harding has usefully suggested, primarily on the basis of size and form, different types of site ranging from homesteads/farmsteads and small villages to ancillary enclosures and forts (*ibid*.). The area enclosed by palisades varies from 0.1 to 0.8 ha, though most cover less than 0.2 ha. Their structural form shows considerable variation, with some consisting of a single low timber stockade, others of a stockade with external ditch, and others of multiple stockades. Of particular interest are the palisades at Yeavering 1 and High Knowes A (Alnham), that comprise concentric rings of stockades which are likely to represent proto-box ramparts, as discussed by Gates in Chapter 3. These types of defensive works echo the 'ring works' of Late Bronze Age date known further south, and the Early Iron Age palisaded sites in northern England such as West Brandon (Jobey 1962), Thwing (Manby 1979), Staple Howe (Brewster 1963), and the timber-framed rampart at Grimthorpe (Stead 1968). On this evidence it follows that similar sites in Northumberland may also prove to be of Early Iron Age date, as indeed the excavator of High Knowes A speculated (Jobey and Tait 1966). Certainly the non-box rampart, but potentially defensive, palisaded sites that have been excavated in Northumberland, such as Fenton Hill, Huckoe, East Brunton and the Needles Eye enclosures, have also produced evidence for an Early Iron Age date (see Table 7.2 and respective excavation reports).

Both cropmark patterns and excavation have shown several palisaded sites to have complex phases of construction, testifying to their long-lived nature. Furthermore, those few hillforts that have been investigated in the region often reveal evidence for earlier palisaded phases which would not otherwise be recognisable from surface survey, as for example at Ingram Hill (Jobey 1971) and West Dod Law (Smith 1989). The number of palisaded sites currently known, therefore, though considerable, is but a fraction of those that once existed. Where a palisade and fort exist on the same site in Northumberland, it is always the palisade that comes first in the constructional sequence (see Oswald *et al*. 2008 for discussion), and, in this respect at least, Margaret Piggott's 'Hownam Sequence' broadly holds true. The transition from timber palisade to multivallate earthwork and stone defences is typically explained as being a chronological progression from simple to complex (Piggott 1949), or as a response to falling availability of timber due to intensive exploitation of the uplands (Burgess 1984). As the dating discussion above shows, however, palisades continued to be built throughout the first millennium cal BC with no clear evidence yet to suggest an obvious hiatus. Furthermore, in the lowlands, other than bank and ditch defence works, timber is the material of choice for all observed enclosures, whether it be the complex multivallate lowland forts, such as Sandy House 1 (see Chapter 3 this volume), or the simple defensive single palisade and ditch sites, such as Threecorner Wood (see Volume 1, Chapter 5). Given that both the cropmark and excavated evidence show multiple rebuilding and remodelling of palisade sites, they appear to have protracted periods of use.

In recent decades several commentators have drawn attention to the limited defensive capabilities of some hillfort sites and their emphasis on ostentatious display, social position and symbolism rather than functional advantage (e.g. Bowden and McOmish 1987; 1989; Frodsham *et al*. 2007; Oswald *et al*. 2008). Most recently it has been suggested that the Northumbrian hillforts were built for a specific type of warfare in which they provided an appropriate backdrop to contests between champions (Armitt 2007; Oswald *et al*. 2008) rather than massed assault. Given the heroic flavour of early British literature, such as that contained in the poem handed down to us as the *Gododdin*, which clearly stems from a much earlier and long-lived oral tradition, the feats of personal bravery envisaged by Oswald *et al*. (2008) would probably not be out of keeping with the ideology of the late first millennium cal BC. But is the 'hillfort as backdrop' really an adequate explanation for those sites that are clearly forts, and are we in danger of missing the essential defensive and military character of these sites?

A useful starting point for addressing the overlapping and contemporary use of palisades and hillforts is a consideration of the investment of labour involved in their construction. Palisades require considerable quantities of timber, though as the size of many palisade slots show, the timbers used were often small, could be handled by one person and are likely to have been rough-hewn. In light of the relatively shallow and narrow palisade slots, these structures mainly appear to have been built by inserting an upright timber stockade into a bank or slot trench and presumably securing the timbers with pegs, nails or rope, with supporting timbers angled behind (for which no archaeological trace should reasonably be expected as these would only have to be shallow-set). As mentioned above, most palisaded sites are small and the construction of defences should be seen as a relatively quick way of forming a protective barrier with minimal investment of labour; indeed it could be achieved by a single family. In this sense they should be seen as a rapid response by individual households, and in some cases extended family groups, to prevailing socioeconomic conditions. Timber palisades, of the scale evidenced by those excavated so far, are not particularly ostentatious or impressive monuments. This is in marked contrast to fort construction where considerably more labour was required to excavate ditches, mound up stone, earth and turfs, quarry and dress stone and build walls, revetments, fighting platforms and so forth, as

*Figure 7.10. Excavations by the Northumberland Archaeological Group at Wether Hill hillfort in the Upper Breamish Valley, where the rampart construction revealed a rubble core retained by dressed stone walls to front and rear (Copyright Pete Topping, Northumberland Archaeological Group).*

well as the large amounts of timber also necessary for these projects in the form of scaffolding, cross-bracing, revetments, gateway arrangements, or timber breastworks surmounting the rampart.

The investment in stone and earthen forts, in particular those that included multivallate circuits and involved the remodelling of hilltops and spurs, was clearly many times that involved in palisade construction (Fig. 7.11). This is critical to understanding the different imperatives at work because forts clearly represent significantly greater control of resources, and therefore sociopolitical power and ultimately prestige. Indeed, they may have required slave labour and this is something that requires further study in relation to hillfort construction generally. Furthermore, the more elaborate and often more complex earth and stone forts offer, in most cases, significantly improved defensive capabilities over timber palisades. Many of the palisades have no evidence for any kind of walkway behind, though if they were low anyway, as suggested by the shallow depth of many of those excavated (e.g. Hetton Hall [see Volume 1, Chapter 5] and Horsedean Plantation [Miket 1986]), the spoil produced by the palisade slot could have been mounded behind to support the timbers and provide a raised bank on which those defending the site could stand. Overall, it is difficult to reconcile palisaded sites with the ostentatious display or backdrop interpretations. Their construction appears most in keeping with a practical response to a perceived threat, and any show of power was probably little more than a welcome addition.

Hillforts, on the other hand, typically offered assailants a near-vertical face of stone, as many of the 'earthen' ramparts visible today can be seen, on excavation, to be grassed-over stone-faced ramparts. Without exception, all the hillforts that have so far been excavated in Northumberland have provided evidence for stone-faced ramparts, often with rubble cores, as at Wether Hill (Topping 2004; Fig. 7.10) and Humbleton Hill (Fig. 7.12), or earthen cores as at Harehaugh (Waddington *et al*. 1998). These battered, or vertical, faces, usually enhanced by a broad outer ditch, could not be as easily wrecked by massed assault as their palisade counterparts, and such 'walls' would have provided fighting platforms from which the inhabitants could shower missiles on assailants, whilst providing a healthy advantage in hand-to-hand fighting against those attempting to clamber up the ramparts. Further protection for those on the fighting platform will have been provided at those sites, such as Harehaugh and Phase II at West Dod Law, where the evidence points to these sites having had a timber breastwork surmounting the rampart. Notwithstanding these defensive improvements, many sites were developed further to include multiple lines of defence works and many, like a few of the palisades, were defended by external ditch systems, which provided a means of breaking up massed assaults.

Based on the above consideration it can be observed that simple palisades and developed hillforts possessed markedly different defensive capabilities. This is not to say that all hillforts were built solely for tactical purposes, but even those forts that have, according to some, defensive weaknesses, such as Glead's Cleugh, West Hill, St Gregory's Hill and Mid Hill (Frodsham *et al*. 2007; Oswald *et al*. 2008), have perhaps had too much made of this (see Armitt 2007; James 2007). The box-rampart type palisades clearly have greater defensive capabilities than the later palisades. During the earlier Iron Age, palisades appear to be the defence work of choice, with no hillforts having yet been dated to this period in Northumberland, although we should perhaps expect some to have early origins. The Early Iron Age palisades appear to represent a rapid response to the insecurities of the time and could have been thrown up by individual

*Figure 7.11. The formidable and complex multivallate defence works at Old Bewick, where limited excavations (Charlton 1934) have revealed the 'spectacle'-shaped fort to have rock-cut ditches, stone-faced ramparts and pitched dump consisting of ditch upcast exactly mirroring the constructional form encountered on the western rampart at Harehaugh hillfort (Waddington* et al. *1998).*

*Figure 7.12. The stone-faced rampart at Humbleton Hill retaining a stone rubble core behind.*

households and extended family groups. These kinds of defence work were probably intended to help stave off sudden and/or regular short-lived attacks by relatively small raiding groups. The need for such a multiplicity of defences across the region could imply a breakdown in centralised control at this time. By the mid first millennium cal BC it seems that certain groups had accumulated sufficient power to direct

*Fiure 7.13. View across the impressive banks and ditches at Fenton Hill fort where despite intensive agriculture around the site the scale of these defence works can still be seen (Courtesy of Peter Forrester).*

vastly more labour than had been available before into constructing more effective, imposing and larger defence works. In such circumstances it is possible to envisage military, political and social competition to replace palisades with forts, and such a process could account for the floruit of small forts in the middle centuries of the first millennium cal BC.

With time, however, only certain hillforts developed into the impressive multivallate sites that can be seen across North Northumberland, such as Fenton Hill (Fig. 7.13), The Ringses, Old Bewick and Harehaugh. This could suggest that influence and power were becoming more concentrated, with the more powerful groups ensuring that competing forts were abandoned, or perhaps in some cases levelled, and their control of extra resources put into enhancing and further embellishing their own power bases. The greater defensive potential of the hillfort sites, in terms of their construction, as discussed above, but also of their dramatic landscape settings, often with spectacularly precipitous sides, suggests that the type of hostilities these sites were exposed to had also changed. The defences of the hillforts were better equipped to withstand attack, not only from larger groups, but also from more sustained campaigns. This is not to imply the occurrence of siege warfare, but rather to suggest that campaigning groups from further afield may have directed more concerted aggression at specific places with supplies that could have lasted days or weeks. If in good repair, some of the hillforts would have been able to withstand this type of warfare. However, this is not a satisfactory explanation for many sites, and Armitt (2007) is probably closer to the mark in drawing our attention to the need to understand the mode of warfare in Iron Age times, as this could explain why forts, although still martial in purpose, had what we see as defensive failures built into them. Ultimately, however, many hillforts in Northumberland and the Borders region show evidence for having gone out of use at the end of the first millennium cal BC, which must surely reflect the centralising of power at just a handful of preeminent centres, such as Yeavering Bell and Traprain Law, with a handful of subsidiary sites retained as regional centres and for defence of the elite's wealth and farming surpluses. This is not to say, however, that all enclosed sites necessarily had a defensive function, because, as indicated by the lightly built palisades (e.g. Horsedean Plantation) and some of the simple embanked enclosures (e.g. the unnamed D-shaped enclosure opposite Harehaugh hillfort, see Waddington *et al*. 1998), such sites are likely to have been constructed primarily for stock control purposes.

Given the current trend for 'pacifying the past', as discussed below, and the focus of recent regional studies that have characterised the Early Iron Age in northern Britain as being 'egalitarian', this account offers a different view that is anchored in the interpretation of the archaeological remains. The scale of human labour invested in the construction of hundreds of major defensive sites in North Northumberland throughout the first millennium cal BC is seen as

*Figure 7.14. View north-east from within Humbleton Hill hillfort across the Milfield Plain.*

a quite remarkable phenomenon, and one which ultimately can only reflect the breakdown of the more settled societies of the second millennium cal BC and their replacement by a hostile situation such that even individual households had to protect themselves behind walls. The widely evidenced changes from enclosed to unenclosed and unenclosed to enclosed at different sites betray a turbulent period, when changes in settlement form to cope with the sociopolitical climate were a regular and widespread occurrence. The pattern observable in the archaeological records of Northumberland, East Lothian and elsewhere in the Border counties suggests that for much of the first millennium cal BC there was considerable instability in terms of political and military control. The establishment of centralised control may have taken place in short-lived periods during the first millennium cal BC, but for much of the period we can probably envisage federations of kinship groups, each with its own small-scale stronghold. In the final century of the millennium, centralised control is suggested by the regular spacing and layout, on a vast scale, of new enclosed settlement sites that were built with minimal defensive functionality, in the form of single-ditched or stone-walled, square and rectilinear enclosures. The changing character of defensive enclosures throughout the first millennium cal BC is suggested here as documenting the ebb and flow of different forms and scales of sociopolitical power structures, but precisely how this changed over time will only become clear once a much more detailed radiocarbon chronology becomes available, and for a much wider range and larger number of sites.

Despite recent discussion of the importance of unenclosed settlements throughout the Iron Age of Northumberland, things may not be quite as they appear at first glance. Unenclosed settlements in North Northumberland before the final century of the first millennium cal BC are rare if not absent, despite recent large-scale open-area excavations across large areas of fertile land. There are as yet no unenclosed Iron Age houses or farmsteads known from Cheviot or Lanton Quarries, for instance, and yet there are settlements of the Neolithic, Bronze Age and early medieval periods. In contrast there are well over a hundred palisade and fort sites dotting this region.

The situation in southern Northumberland is different, being characterised by low numbers of fort sites but with large open-area excavations now revealing sizeable unenclosed settlements replacing Early Iron Age palisades or non-defended settlements set within enclosed farmyards, echoing sites further south still, such as Thorpe Thewles. Many of the enclosed settlements in this part of Northumberland are no more than farmsteads enclosed by agricultural ditched boundaries, as at Pegswood (Proctor 2009), or are very late first millennium cal BC single-ditched or rectilinear sites, which, in the main, rarely show any defensive intention. Based on these differences an argument can be made that there were significant differences in social organisation and political power during much of the first millennium cal BC between

North and South Northumberland, and it is even possible that this could signal the existence of different tribal groupings as far back as the Middle Iron Age. The watershed between the Coquet and Wansbeck rivers appears to mark the transition between the northern and southern zones in terms of distributions of forts and unenclosed settlements.

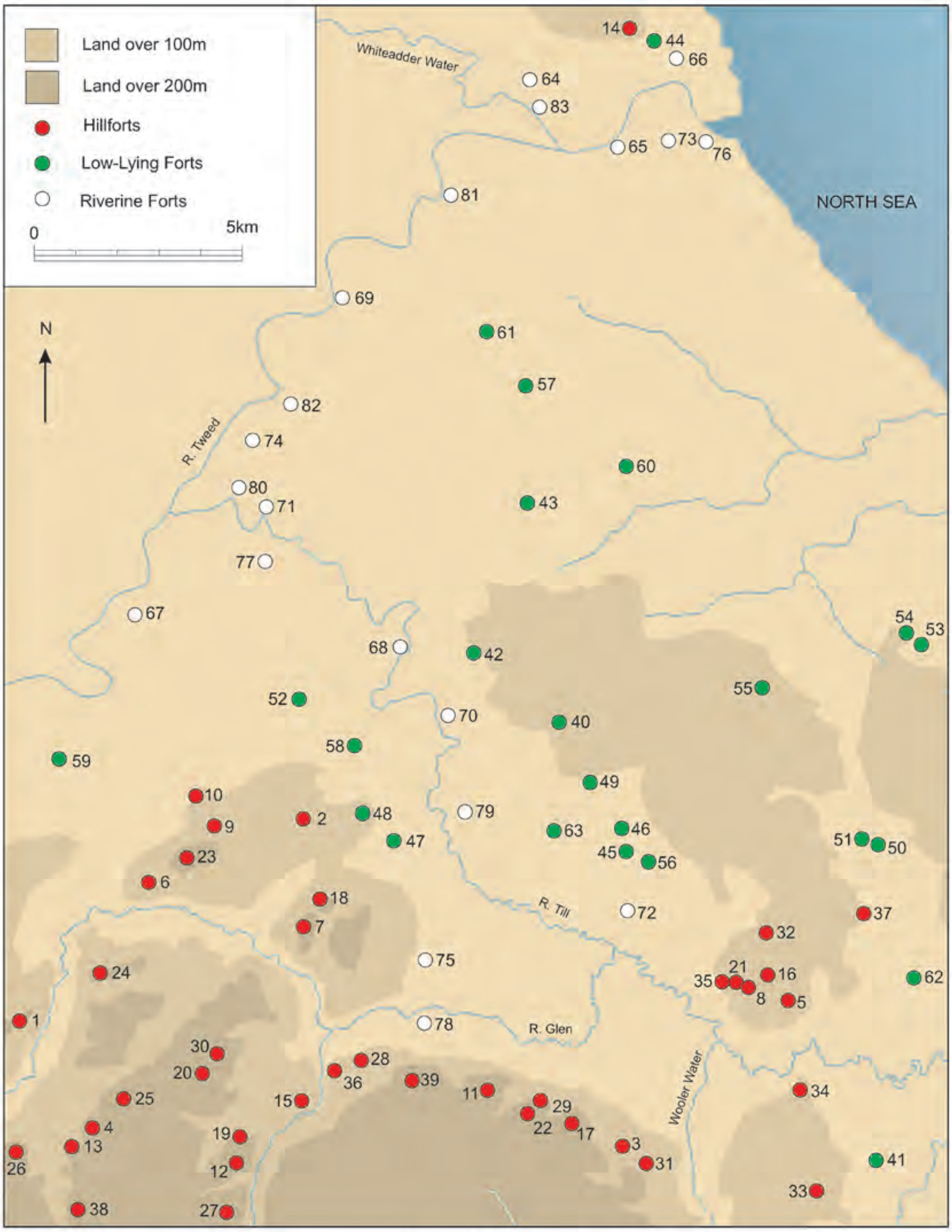
In-depth study of the immediate landscape setting of several key Northumbrian hillfort sites has provided important new insights into how these centres functioned within their immediate environs, as well as how their significance changed over time (e.g. Topping 2004; Oswald *et al*. 2006; 2008). But it is possible to stand back and consider the various defended sites of the first millennium cal BC from a broader regional perspective. Such an approach has been made possible thanks to the considerable aerial photographic transcription work that has recently been undertaken (see also Volume 1). Perhaps the most striking observation to be made when considering the distribution of forts is the previously unremarked upon number that occupy lowland settings alongside the main river courses. The lower Tweed is remarkable in having a string of forts positioned along its river cliffs on both its southern and northern banks so as to form a defended river corridor. On the southern (English) side of the river this includes the sites at Canny Shiel, Union Bridge and Groathaugh, whilst on the northern (Scottish) side further sites are known (Fig. 7.15). In the lower Tweed area the Post Glacial river is entrenched some 30–35m below steep-sided bedrock and till-mantled river cliffs which afford a natural defence from riverine access, as well as remaining free from flood risk. Beyond the confluence of the Tweed and Till there are only occasional river cliffs in the lower reaches of the Till, upon which small forts are located at Mill Hill 1 and Etal for example, but beyond this the valley floor opens out with less abrupt transitions to the valley sides. In these open areas the forts tend to be set back from the banks of the river on areas of adjacent higher ground that overlook the river valley. This can be seen throughout the Milfield Basin where forts are positioned to overlook the valley from commanding positions, whether from the Cheviot hilltops or Fell Sandstone ridge locations. Together, this patterning shows a clear concern for exerting control of the river corridor from the coast to the heart of Iron Age power at Yeavering Bell (Fig. 7.14). With views from the Milfield Basin direct to the coast, communication, by way of signalling, would have been easy and immediate. The modern concept of the Cheviot hillforts being remote places can therefore be called into question. Furthermore, the emphasis on controlling access along the lower Tweed valley implies that waterborne transport from the North Sea provided one, if not the principal, means of travel into the region. Reorienting our understanding of (what was to become) the Votadinian kingdom as a coast-with-hinterland polity, anticipating the early medieval kingdom of Bernicia, provides a very different perspective from which to think about and interpret the Iron Age archaeology of the region.

If some or all of these defended sites were occupied simultaneously, which admittedly has yet to be tested, we could see the lower Tweed and Till as a heavily fortified river corridor with a planned system of defence along its length. In this model the valley distribution of most hillforts suggests that navigation of the river corridor may form the key to understanding how the settlement pattern and military defence of the region was organised. Furthermore, far from being remote and difficult to access, Yeavering Bell would have been within one or two day's travel of the coast, especially if small craft were deployed in the more navigable reaches of the river network. Yeavering Bell should, therefore, be conceived of as a highly accessible central place at the heart of a heavily defended river corridor, with easy access to fertile lowland valleys, the coast and seaways, as well as the high Cheviot Hills and the natural defence of the upland valleys.

Although we can not be certain of the contemporaneity of the various fort sites, it is likely that quite a few were in occupation at any one time, given the long histories of occupation noted on the few sites that have so far been investigated. Bearing this in mind, the notion of a fortified river corridor leading to the centre at Yeavering Bell, and deeper still into the Cheviot uplands via the valleys of the Glen and Breamish, does seem a distinct possibility for at least a century or two during the Iron Age. Most forts in Northumberland overlook natural routeways, either by land, river or sea (Fig. 7.16), and control of these was perhaps an important consideration. With large numbers of small defended sites, progress by raiding groups could be slowed down while the mustering of defensive forces could take place. Although such interpretations remain little more than speculation it is worth bearing in mind that the boundaries demarcating hillfort territories, such as the cross-ridge dyke excavated close to Wether Hill, represent a planned layout over a considerable tract of land. Taken together with the placement of hillforts at regular intervals along the course of major navigable rivers such as the Tweed (Fig. 7.15), it suggests there could have been periods when a centralised authority prevailed during the Iron Age, something recent accounts are generally reticent to acknowledge.

## TECHNOLOGY AND MATERIAL CULTURE

It has become something of a received wisdom that Iron Age sites in Northumberland produce little in the way of artefactual evidence, small quantities of dating samples and environmental material, and that




**Hillforts**
1. Bowmont Hill
2. Branxton Moor
3. Browns Law
4. Burnt Humbleton
5. Buttony Wood
6. Camp Hill
7. Castle Hill
8. East Dod Law
9. East Moneylaws Camp
10. East Moneylaws North
11. Gleads Clough
12. Great Hetha
13. Green Humbleton
14. Halidon Hill
15. Hethpool Bell
16. Horton Moor
17. Humbleton Hill
18. Kypie Hill
19. Little Hetha
20. Mid Hill
21. Middle Dod Law
22. Monday Cleugh
23. Moneylaws Hill
24. Pawston Hill
25. Ring Chesters
26. Rings Plantation
27. Sinkside Hill
28. St. Gregory's Hill
29. Standrop Hill
30. Staw Hill
31. The Kettles
32. The Ringses
33. Trickley Hill
34. Weetwood Moor
35. West Dod Law
36. West Hill
37. White Hill
38. Whitelaw Nick
39. Yeavering Bell

**Low-lying Forts**
40. Blackchester
41. Blakelaw
42. Broomie Knowe
43. Camp Field
44. Camphill
45. Fenton
46. Fenton Hill
47. Flodden
48. Flodden Hill
49. Fordwood
50. Hetton Dene 1
51. Hetton Dene West 1
52. Kaimknowe
53. Kyloe Crags
54. Kyloe Hills
55. Lowick Low Stead
56. Nesbit Chesters
57. Old Hill
58. Pace Hill 2
59. Pressen Hill
60. Roundabouts
61. Shoreswood Loan
62. Spylaw
63. White Hill

**Riverine Forts**
64. Baldersburyhill
65. Canny Shiel
66. Conundrum South
67. Cornhill
68. Etal Ford
69. Groat Haugh
70. Hay Farm 1
71. Mill Hill 1
72. Nesbit
73. Prior House 1
74. Riffington Hill
75. Sandy House
76. Springhill
77. Stickle Heaton
78. The Burrowses
79. Threecorner Wood
80. Twizel Smithy
81. Union Bridge
82. Whidden Hill
83. Whiteadder Bridge

*Figure 7.15. Map showing the distribution of forts along the main river corridor in North Northumberland, with those of the lower Tweed located on the high bluffs of the river bank and those along the course of the river Till set back off the floodplain a short distance from the river on the raised terraces, hilltops and ridges overlooking the rivers Till and Glen.*

*Figure 7.16. Excavation of the small stone Late Bronze Age cairn near Bolam Lake (Waddington and Davies 2002).*

some areas may even have been virtually aceramic during part of the Iron Age. A brief survey of the current data shows this to be totally untrue and that there are rich pickings to be had from investigating first-millennium cal BC sites, especially now that scientific techniques are well advanced. Far from being aceramic, every first-millennium cal BC site that has been investigated in recent years has produced a healthy assemblage of pottery in accordance with the size of the investigation and the prevailing level of truncation. The sites at Murton High Crags (Jobey and Jobey 1987), West Dod Law (Smith 1989), South Shields (Hodgson *et al*. 2001), Wether Hill (Topping pers comm.), Fawdon Dene (ASUD 2001; Frodsham and Waddington 2004), Pegswood (Proctor 2009) and East and West Brunton (Nick Hodgson pers. comm.) have all produced ceramic material. Furthermore, most of these sites have also yielded environmental evidence, in the form of animal bone and botanical macrofossil assemblages, as well as frequent evidence for metalworking in a variety of alloys, together with other objects ranging from glass beads and bangles to bone tools. Excavations that have focused on hillfort defences tend to prove least productive in terms of artefacts, yet they can yield the important constructional sequences that are also required. Excavations of houses, enclosure interiors, ditch fills and midden accumulations, both inside and outside settlements, provide perhaps the optimum targets for gathering the material culture that will shed light on daily activities, technology, manufacture, trade, diet, subsistence and land use.

## Metalworking

Evidence for metalworking has been found at many sites, suggesting that at least basic smithing was widely undertaken in most farmsteads and hamlets in North-East England (e.g. Murton High Crags, Pegswood, East and West Brunton, West Brandon, Catcote, Thorpe Thewles and Foxrush Farm), as well as at the larger defended sites, such as Ell's Knowe, where ironworking debris was found in the top of a palisade slot (Burgess 1984, 160), and at Harehaugh (Frodsham 2004, 42). The smelting of metal also seems to have been fairly widespread, as suggested by the two bowl furnaces found at West Brandon (Jobey 1962), the fragments of metalworking crucibles from Thorpe Thewles (McDonell in Heslop 1987) and the pits containing high-quality charcoal associated with copper alloy fragments within enclosure 2 at Fawdon Dene (Frodsham and Waddington 2004, 187). In short, metalworking may have been a widespread activity, with most settlements and defended sites having smithing capabilities.

Iron spearheads have been found on several Iron Age settlement sites including one from an occupation deposit within House 1 at Fawdon Dene enclosure 1 (Frodsham and Waddington 2004), another from the site at Murton High Crags (Jobey and Jobey 1987, 184–5), while one of possible Hallstatt C type was recovered from the palisaded settlement at Hayhope Knowe, Roxburgh (Piggott 1949; Burgess 1984, 160). The regular presence of spearheads on settlement sites appears to signal a keenly felt need by Iron Age farming folk to keep effective weaponry close to hand, including within their homes. This observation finds further support in the discovery of sling shots on domestic sites, such as those found in ditch fills at Pegswood (Wright in Proctor 2009), though they could be accounted for by other uses, such as the keeping at bay of predators. The heavy production of weapons during the Wallington–Ewart Park phases of the Late Bronze Age and on into the Iron Age no doubt betrays a particular reliance on martial activities throughout much of the first millennium cal BC to resolve disputes and establish security, and this finds support in the need for defensive sites throughout much of this period.

Other types of metal object have come to light on first-millennium cal BC sites across the region, including a variety of brooch types (e.g. bow, strip, penannular and trumpet) that can be made from copper alloy or iron, an iron adze from a pit inside the roundhouse at South Shields (Hodgson *et al.* 2001) as well as ring-headed pins, such as those from Murton High Crags and South Shields, metal bindings, horse fastenings, studs, nails, buckles, ear rings, finger rings and iron bars and rods, such as those found at Thorpe Thewles (Allason-Jones in Heslop 1987).

## Ceramic evidence

Increasing quantities of Iron Age ceramics are now becoming available for analysis and a synthetic study of the current corpus is an important research priority. Although most Iron Age sites produce at least some ceramics, those that have yielded well stratified and sizable assemblages include West Dod Law, Fawdon Dene, South Shields, East Brunton, West Brunton, Pegswood and Murton High Crags, the latter two sites producing some 242 and 550 sherds respectively. Typically, the Iron Age vessels include situlate, or 'barrel'-shaped, vessels together with bucket-shaped and wide-mouthed vessels, the latter sometimes with slight but distinct feet that appear to have been used, in the main, as large storage or cooking jars, sometimes with upright or incurved rims. Other vessel forms can include small bowls that may have been used as cups, bowls or serving vessels. The fabrics can be coarse, with grits up to 10mm across, which frequently erupt at the surface, although some of the later Iron Age ceramics have smaller grits and more sandy fabrics (e.g. Jobey and Jobey 1987, 177–81). Most vessels are fairly coarse and are often assumed to be made from local clay, which accounts for the wide range of fabric colours. Production techniques also seem to have varied: most of the vessels from Murton High Crags were thought to be coil-built while some of those from West Dod Law were constructed from slabs. It is common for burnt organic residues to adhere to vessel rims, often on the outside surface, though detailed residue analysis is yet to be undertaken on any of the Iron Age pottery from the region.

The discovery of briquetage fragments (vessels used in salt production), contemporary with Iron Age ceramics, from the site at Pegswood (Willis in Proctor 2009), adds an important dimension to understanding Iron Age industrial activity, particularly at sites not far from the coast. Other sites that have produced evidence for briquetage include Burradon (Jobey 1970), also on the south-east Northumberland coastal plain, as well as sites in the Tees valley and Cleveland (e.g. Street House, Loftus). Such vessels are usually of cylindrical form with distinctive chaff-tempered fabrics (*ibid.*). Iron Age salt production and its distribution form an important subject area given the importance of salt production on the North-East coast in historic times (David Cranstone pers. comm.). The uses of salt are many, not least in the preserving and seasoning of food, and given the evidence for cattle rearing at Pegswood it could suggest the salting of beef at this site.

## Stone working

Quernstones are a particularly common find on first-millennium cal BC sites. Saddle querns were in use for much of the millennium, though by the Late Iron Age rotary querns, some of 'beehive' shape, became common. Quernstones have been found on most sites investigated in Northumberland, including West Dod Law, Murton High Crags, Fawdon Dene enclosures 1 and 2, Pegswood and South Shields. Given that virtually all first-millennium cal BC sites that are investigated in their interior produce quernstones and rubbers, the clear implication is that grain processing was a virtually universal process on settlement sites. In addition to querns, other types of stone object were in use, ranging from slingstones to whetstones, mortars, loom weights and spindle whorls. Quernstones are typically made from Cheviot rocks, such as andesite, although they are also made from gritstones and sandstones, implying the widespread trade of bulky and heavy materials across the region.

## Textiles and adornment

Stone and clay loom weights and spindle whorls have been found at several sites to the south of Northumberland at Catcote, Thorpe Thewles, Forcegarth Pasture and Staple Howe (Long 1988, 31; Vyner and Daniels 1989; Swain and Heslop in Heslop 1987; Fairless and Coggins 1982; Coggins 1986; Brewster 1963), indicating the keeping of sheep for the production of wool. Beads and buttons made from various materials are frequently found, as well as metal brooches that can be made from copper alloy or iron. On this basis it can be proposed that people wore a combination of woollen, leather and, perhaps, fur garments, whilst the presence of brooches suggests that some people also wore cloaks. Common adornments include bangles and arm rings that can be made from jet, shale, coal and, certainly by the beginning of the Roman Iron Age, glass. Other types of jewellery include ear rings made from gold, silver and bronze, finger rings (sometimes of spiral form), decorative pins (perhaps for hair or clothing fastenings) and buckles. Together such items suggest that personal appearance was of some importance to people and that it provided a means by which wealth and status could be displayed. Caesar recounts that the people of Britain dyed their bodies in woad, producing a blue colour, to give themselves a fearsome appearance in war, and he describes people as being clean-shaven but with long hair and moustaches (*Conquest of Gaul*, chapter 5, 2). To what extent this applied to the different tribal groupings throughout Britain, however, remains unknown.

## DEATH AND RITUAL

### Treatment of the dead

Little is known of funerary practices during the first millennium cal BC in North Northumberland although occasional secondary interments that may be of Iron Age date have been noted in Bronze Age cairns, such as the hybrid pot inserted into a Bronze Age cairn at Spittal Hill, Rothbury (Tait and Jobey 1971). Other than such chance discoveries, the evidence for first-millennium cal BC burials comes from just a few sites in Northumberland. These are the Late Bronze Age cremations below a low cairn near Bolam Lake (Waddington and Davies 2002), a pre-Roman Iron Age inhumation burial within a cist, recently discovered at Lanton Quarry in the Milfield Basin (Waddington 2009), and a cist burial at Beadnell that contained the partial inhumed remains of up to 15 individuals (Tait and Jobey 1971). So far there have not been any examples of bodies, or body parts, found in cemeteries, boundary ditches, buildings or as part of manuring deposits, as occurs variously at other Iron Age sites, such as Catcote to the south (Long 1988) or Broxmouth, Phantassie and Port Seaton to the north (Haselgrove 2009).

The Late Bronze Age cairn at Bolam Lake consisted of a low, roughly constructed, circular stone mound measuring 4m in diameter and up to 0.3m high at its centre, with little evidence that it had ever been much higher (Fig. 7.16). Below the cairn, three small pits had been dug and cremated remains of separate individuals placed in each. This included the remains of three adults of indeterminate age, one of them female. The evidence for warping and cracking of the long bones indicates that the bodies were cremated 'fleshed'. No grave goods were found but some green staining of the bones suggests that copper alloy dress fastenings may have accompanied the bodies during burning, indicating they were probably clothed. When the cairn was raised over the pits the remains of cremated animals appear to have been thrown on to it. A radiocarbon determination of 1040–790 cal BC (Beta-117289) was obtained from a charred twig within one of the cremation deposits, dating this monument to the Late Bronze Age (Waddington and Davies 2002). Whether the people under this cairn were related remains unknown but it has the feel of a family burial. The preference for placing cremation burials below small cairns, as in the Early and Middle Bronze Age (see Chapter 6), suggests that conservative attitudes to death and burial prevailed in some parts of Northumberland even into the first quarter of the first millennium cal BC.

Around the latter centuries of the first millennium cal BC, the practice of burying crouched inhumations in cists can be observed, extending the 'long cist' tradition of south-east Scotland into North Northumberland. In addition to the cist burial from Beadnell (Tait and Jobey 1971), two such burials have been found adjacent to one another at Lanton Quarry. One was very heavily truncated, with only the basal remains of the cist surviving and no corpse. The other cist was relatively well preserved, showing that the grave had been constructed by the digging of an oval pit followed by the construction of a carefully made, rectangular corbelled chamber measuring up to 1m by 0.5m internally. The cist comprised roughly shaped blocks and cobbles of volcanic material that had clearly come from the Cheviot Hills less than 2km away. Within the grave a flat stone pad had been laid at its north end and the body parts of an elderly woman (Fig. 7.18) were placed to mimic a crouched position with her head resting on the stone pad (Fig. 7.19). The chamber was then finished off with further corbelling and capped with a few larger stones, but whether it was marked in some way, or had a mound raised over it, remains unknown. Further graves could be found as excavation continues at this site. A radiocarbon date of 2045±35 (SUERC-22817), which calibrates to 170 cal BC–cal AD 50, was obtained from the femur fragment of the burial, indicating that the woman was probably buried during the first century cal BC (89% probability). Her longevity and the remarkable lack of pathologies, except for a little arthritis, implies she lived a relatively healthy and physically stress-free life (Alex Thornton pers. comm.), which could be taken to suggest she was a person of some status. The woman had not been buried complete as there was no evidence for ribs or vertebrae, no arm bones and no lower legs or feet. Whether the bones had been buried defleshed or as body parts with the flesh still


*Figure 7.17. The top of the skull of the Iron Age woman from the Lanton Quarry cist showing the well-fused sutures that indicate her old age at death (Courtesy Alex Thornton).*


*Figure 7.18. Excavation of one of the Lanton Quarry cist burials revealed the placement of a skull on a stone pad at the north end of the cist, and some other body parts placed so as to suggest an articulated position for the individual. However, the rest of the bones were missing suggesting that this woman had not been buried intact.*

on remains unknown. The burial of body parts rather than a full body is by no means unique for the Iron Age. Quite how this should be interpreted remains problematic, but that there is a symbolic dimension to such practices cannot be doubted.

Beyond Northumberland, excavations further north at Broxmouth, East Lothian, unearthed several inhumations in a variety of cists and pits aligned on a roughly north–south axis, while a human jaw bone was also found beneath one of the roundhouse walls and other human remains were found in pits and ditches (Hill 1982b, 179–80). Elsewhere in East Lothian, at Dryburn Bridge, a series of crouched inhumations was discovered in pits capped with stone. Most were aligned north-south and five out of eight lay with their head to the north. The radiocarbon dates for these burials, with one exception, lie in the period 800–400 cal BC (Dunwell 2007, 67), although this wide range is largely a product of the calibration curve plateau. At Eweford West, also in East Lothian, an Early Iron Age cist burial containing cremated bone was inserted into an earlier prehistoric burial mound, whilst at Pencraig Hill a secondary interment, deposited into a pre-existing mortuary site, was dated to around the final century of the first millennium cal BC (Innes 2008, 122–5). This recalls the cremation, accompanied by a bronze ring-headed pin of Late Iron Age type, found below Cairn 1 at High Knowes, Northumberland (Jobey and Tait 1966).

Given that the Broxmouth cemetery has also produced Iron Age radiocarbon dates, there is good evidence now for an Iron Age burial tradition within pits and cists extending from East Lothian into North Northumberland. The burials are unaccompanied by grave goods, and most inhumations are aligned on a broadly north-south axis and face east towards the rising sun. There are also occasional cremations. The burial from Lanton Quarry, although dating to the Late Iron Age, is in keeping with the earlier evidence from East Lothian of what may have become, by then, an established tradition, though probably only for a small minority of people. The occurrence of cremations, however, indicates that burial rites were varied, which is emphasised by the informal disposal of unburnt and cremated corpses within midden deposits.

Elsewhere in East Lothian unburnt human remains have been found mixed with midden material and other deposits across the pre-Roman and Roman Iron Age farming settlement at Phantassie. This was interpreted as the result of deliberate deposition (Lelong 2008a). At Fishers Road East, Port Seaton, human bone was found mixed with animal bone in one of the ditch fills and a probable juvenile burial was found with an animal in a pit (Haselgrove and McCullagh 2000, 145–6). The practice of burying some of the dead amongst pits, rubbish deposits, foundations, boundaries and settlements is known from early in the first millennium cal BC throughout much of Britain. Dismemberment was evidently the fate of some people, but others qualified for more formalised burial in pits, cists and within previously existing burial mounds, perhaps echoing ancestral practices of the Bronze Age. Typically these formal burials are of single individuals, although as the Beadnell cist has shown sometimes multiple burials can occur. The lack of full skeletal remains in several cists, such as those at Lanton and Beadnell, indicates that in some cases only selected body parts were interred, perhaps defleshed before they were buried. The lack of lower mandibles and spines is evidenced at both those sites.

## Votive deposits

The Bronze Age practice of making votive deposits, particularly in wet places, continues during the first millennium cal BC, although the quantity of iron objects recovered is exceptionally meagre. This is, no doubt, attributable in large part to the preservation conditions prevalent across much of the county and the poor preservational properties of iron. Objects made from other metals survive better, so bronze and other alloyed artefacts are occasionally found. Iron swords have, however, been found at Carham, to the north-west of the Milfield Basin, as well as from Sadberge (MacGregor 1976, 156) and Brough in County Durham, whilst a hilt guard has been found at Dunstanburgh (Piggott 1950) and other metalwork is known from the Tyne (Miket 1984).

A new practice emerged during the first millennium cal BC, comprising the placement of a variety of objects in ditch terminals, and sometimes in pits. These included cup-marked stones in the ditch terminals of enclosures A and B at West Brunton (Nick Hodgson pers. comm.), and quernstone deposits in pits and similar settings at Doubstead (Jobey 1982a), Coxhoe (Haselgrove and Allon 1982) and Burradon (Jobey 1970). Querns were frequently built into floors and structural features in houses, as at Fawdon Dene enclosure 2 (ASUD 2001), as well as in paved surfaces and ramparts, as at West Dod Law (Smith 1989). This is a practice widely attested at other sites in neighbouring East Lothian (Lelong 2008b, 263–4). In addition to formally placed objects, midden material was also used to infill enclosure ditches, palisade trenches and ring-ditch houses at Port Seaton and Phantassie (Haselgrove and McCullagh 2000, 173; Lelong and MacGregor 2008, 264), and probably also in Northumberland at the North Road Industrial Estate enclosure near Berwick (PCA 2005) and Pegswood (Proctor 2009).

The reuse of quernstones, often broken and heavily worn, in house walls and boundaries is a common observation on Late Bronze Age and Iron Age sites. Lelong has recently argued that the reuse of these artefacts symbolises community regeneration and the sustenance of social and physical life. She goes on to say that such querns remained "a potent symbol of the life of the community, the family's history and its memory about itself. In putting querns into the buildings that framed their lives, people were finding new, pragmatic uses for stones that no longer worked as mills, but they were also expressing those powerful symbolic links" (Lelong 2008b, 264). Although such assertions are appealing, the evidence could equally be read as simple reuse of convenient stone; however, the deposition of querns and other objects in ditch terminals is suggestive of a more structured pattern of behaviour, given that they could be deposited anywhere along the length of the ditch. In such cases where specific places, such as ditch terminals, are chosen time and again to dispose of certain types of artefacts and human remains, these deposits can, perhaps, be better interpreted in symbolic and ideological terms.

## SOCIAL NARRATIVES

One of the most frequently discussed questions in social narratives of the first millennium cal BC is that of settlement hierarchies. In Northumberland we have described how, for much of the millennium, there was a clear distinction between the number of enclosed and defended sites in the northern and southern parts of the county. This difference not only betrays different military and political exigencies, but also different systems of social organisation and, therefore, settlement systems. There has been a trend for viewing the Early Iron Age as having a more 'egalitarian' social structure with more centralised control in the Later Iron Age. If there was a collapse of power structures in the Late Bronze Age, as some authors have argued (e.g. Burgess 1980), then, in some areas, the Early Iron Age may have been characterised by something of a power vacuum, giving scope for the rise of petty chiefs. In areas of broken terrain and naturally defendable hills, centralised control would have been more difficult to establish, and this may explain the type of settlement record (i.e. the scores of defended sites) and the social structure it embodies across the Borders region and other upland areas of Britain at this time. This does not mean, however, that these Early Iron Age groups were necessarily 'egalitarian' as some have suggested. Rather, we can observe social organisation coalescing around relatively small settlements, with each having access to a range of landscape types allowing for self-sufficient subsistence farming, and probably governed along kinship lines. How such groups related to each other is by no means clear, however, and it has recently been suggested that neighbouring groups were in direct competition with each other (Frodsham *et al*. 2007), based on a consideration of hillfort architecture and their positioning within the landscape and in relation to each other. At the site-based scale this is, at first sight, an attractive interpretation. However, when we expand our perspective to consider the striking regularity observable in the siting of hillfort sites across the region, it is difficult to avoid recognising the hand of an organising or sanctioning authority behind this pattern. But it need not follow that this was a centralised authoritarian regime. Instead we might be able to glimpse a federation of small but powerful kinship groups who, together, recognised a common leading dynasty and each of whom may have contributed individuals to any ruling councils. In such a scenario we do not need to invoke the idea of an egalitarian society, and neither do we require an all-powerful centralised, authoritarian regime. In more homogeneous lowland landscapes, where power could be more easily and speedily enforced, such as in southern Northumberland, the exercise of centralised control may have been more quickly established and maintained after the Late Bronze Age. This could account for the low number of defended sites in this area compared to the north. Notwithstanding how social organisation is interpreted, what is implicit within the settlement pattern is a clear differentiation of the social organisation in North Northumberland compared to that in the south.

Given the multiplicity of defended sites in North Northumberland it seems reasonable to infer that the petty chiefs and attendant warriors who commanded authority within these places held positions of status. Outside the military realm the religious and learned officiates, who preempted the class of people known to us as Druids, must have also held positions of considerable rank, and which may even have held sway over secular leaders in some situations. For most, however, the toil of daily agriculture would have featured prominently throughout their lives, although the widespread evidence for metalworking, as well as other specialist craft activities, suggests that specialist craftspeople and tradesmen may have also acquired importance. We remain far from understanding how political authority and social organisation was wielded in the region, but how social groups functioned and organised themselves might come into focus as more is learnt about burial traditions and more defended sites are examined.

Building monumental defences must, in part, have served an important sociopolitical purpose in binding groups together, with some forts undoubtedly requiring the labour of more people to construct than could have lived within them (see also Haselgrove and MacCullagh 2000). Organising group labour would have required some degree of control and the evidence for regularly sited defended sites, each with access to diverse tracts of land (see above; Topping 2004), supports this. To keep defences in good order would have required regular maintenance, which in turn may have required some system of obligation on behalf of the residents and/or kinship group that lived around each fortified site. In North Northumberland the multiplicity of small defended sites suggests that each resident group looked after its own defences, and this could also be so with the palisaded sites that required a more limited investment of labour. However, the small but often heavily defended hillfort sites would have required the joint efforts of people of different social rank to build these localised strongholds. At the other end of the scale we should consider the very real possibility, and mentioned earlier, that slaves may have been involved in working the land and building forts.

On the other hand, Lelong and MacGregor (2008) have suggested that the construction and renewal of enclosures may have been a mechanism by which loose-knit groups sought to establish and reinforce group identities. They also argue that the levelling of enclosures and filling in of ditches seen at the end of the first millennium cal BC imply that communities possessed a strong sense of identity, so the maintenance of enclosures was no longer as important. This is possible, but another way in which the levelling of enclosures could be interpreted is that a more dominant, centralised control had come into existence which removed the need for local defences and the maintenance of power bases by a myriad of petty chiefs. This could explain why many hillforts appear to have gone out of use by this time, with only a few defendable sites, notably the two largest proto-urban centres, Yeavering Bell and Traprain Law, continuing in use into the Roman Iron Age, perhaps as the physical power bases of a centralised authority.

Can the essentially egalitarian non-combative farming societies envisioned by some authors for the Iron Age (e.g. Hill 1995) be justified? Are the hillforts not forts at all but rather symbols of social display and a backdrop against which low-level skirmishes between champions took place (see Armitt 2007; Oswald *et al*. 2008)? In a recent paper, James (2007) argues that the Iron Age and Roman period have been subjected to an undeserved 'pacification' by some academics who have obscured the violent reality of these times. Although some hillforts achieved their final, developed form through processes of incremental growth to produce defences that defy a basic defensive functionality, as Oswald *et al*. (2008) have suggested for sites such as Glead's Cleugh, and some provide indications of a deliberate concern for display and cosmological concerns, the underlying martial character of most fort types in the region should neither be denied nor played down. This issue has come into sharper focus in recent years as a result of the excavations at Fin Cop, in the Derbyshire Peak District (see Waddington 2010), where nine individuals (mostly women and children) have been found in just 10m of excavated ditch fill. All these bodies had been thrown in amongst the destruction debris resulting from the taking apart of the stone rampart. It is inconceivable that these are the only bodies in the ditch and so it seems entirely reasonable to assume that dozens, and perhaps hundreds, of bodies remain to be discovered in the rest of the ditch circuit. With a benign geochemical environment for the survival of human bone, we have been able to catch a glimpse of the violence that took place at some hillfort sites, in this case in the Middle Iron Age, from *c*. 400 to 200 cal BC. The Fin Cop discoveries provide a direct and gruesome reminder of violence at hillfort sites during the Middle Iron Age. However, as James correctly points out, the martial, communal, symbolic, religious and ritual dimensions are not mutually exclusive and group identity could be maintained by framing it within martial values (James 2007, 164).

In purely functional terms, forts are primarily a deterrent and a means of safeguarding what lies within. The variety of fort types in Northumberland shows that different sites may have had an emphasis on safeguarding different things. Some forts, for example those with annexes or corrals, may have provided a means of protecting livestock herds against cattle raiders. Those with densely packed houses may have been more concerned with the protection of people, whilst other sites may have simply protected farmsteads. Some may have provided refugia for surrounding populations whilst others may have protected plunder, wealth or agricultural surpluses in the form of grain or other commodities. As regularly evolving constructional projects, fort-building and maintenance may have also served as a way of forging, nurturing and symbolising group cohesion through the corporate effort required to build them. At the same time the mere existence of these sites would have provided a powerful symbol of group identity and authority over surrounding resources, as previous authors have suggested (e.g. Hill 1995; Lelong and MacGregor 2008; Oswald *et al*. 2008), without denying their martial character.

Regions such as Northumberland and the Borders, which host some of the greatest concentrations of forts anywhere in the British Isles, imply societies where the threat of inter-group violence was a common, perhaps routine mechanism for dealing with crises, whether grounded in food shortages, wealth acquisition, extending power and influence, blood feuds, social slights or the challenging of power relations. Indeed, the widespread fortification of extended family farmsteads, a category into which most of the Borders forts fit, sees its nearest parallel 2000 or so years later with the widespread defended sites built in response to the Border Reivers of the 14th–17th centuries AD. These farming and raiding households defended their livestock and land from raiding groups through the construction of pele towers and bastles which, like the forts of the first millennium cal BC, stud the Northumberland and Borders landscape in large numbers. Documentary evidence shows that during this time, raiding and feuding was endemic in some areas, with annual raids a common pastime for many reiver families. Although we should be very cautious about making direct parallels between different types of defensive structures, divorced by significant gaps in time, the similarities between these different phenomena are worthy of note, not least because the landscapes in which both of these phenomena developed are ones where social groups have formed around valley-based communities, perhaps even as far back as the Neolithic (see Chapter 4). Because of the highly demarcated topography of the region, social groupings have emerged over time that are to some extent insular and clannish, and it is easy to see how such a landscape, with highly variable agricultural productivity and access to resources, could become aggressively contested. If regular aggression, raiding, shows of strength and intimidation were a regular part of life for many groups in North Northumberland during the first millennium cal BC, such actions may not necessarily have been seen as morally reprehensible or unusual, but rather recurring solutions that, though no doubt unwelcome, provided a means of achieving some kind of balance and a sense of security.

*Table 7.1. Dates for unenclosed Iron Age settlements.*

| Site | Material and context | Laboratory Number | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|---|
| Arbeia | House destruction deposit, spelt wheat grain | OxA-4322 | -21.4 | 2280±60 | 410–190 cal BC | Hodgson *et al*. 2001 |
| Arbeia | House destruction deposit, spelt wheat grain | OxA-4323 | -21.4 | 2175±55 | 390–50 cal BC | Hodgson *et al*. 2001 |
| Arbeia | Area of burnt crop processing residue north-west of house, spelt glume bases | OxA-4324 | -24.9 | 2170±50 | 390–50 cal BC | Hodgson *et al*. 2001 |
| Arbeia | Area of burnt crop processing residue north-west of house, spelt glume bases | OxA-4325 | -24.6 | 2215±55 | 400–110 cal BC | Hodgson *et al*. 2001 |
| Pegswood | Charred residue on ceramic from central pit within building 4 | Beta-230302 | -24.7 | 2200±40 | | Proctor 2009 |
| West Brunton | Burnt bone prob. sheep, from gully of structure 4 | UBA-7809 | | 2390±42 | 750–390 cal BC | Hodgson pers. comm. |
| West Brunton | Hazel charcoal from slot of structure 1A | UBA-7806 | | 2303±32 | 410–250 cal BC | Hodgson pers. comm. |
| West Brunton | Barley grain from gully of structure 6 | UBA-7808 | | 2289±36 | 410–210 cal BC | Hodgson pers. comm. |
| West Brunton | Barley grain from gully of structure 6 | UBA-7807 | | 2088±44 | 350 cal BC–cal AD 10 | Hodgson pers. comm. |

*Table 7.2. Dates for non-rectilinear palisaded enclosures.*

| Site | Material and context | Laboratory Number | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|---|
| Gledenholm | Indet. charcoal from palisade trench | unknown | | 2960±90 | 1430–910 cal BC | Scott Elliot 1977 |
| Craigmarloch Wood | Charcoal from palisaded enclosure | GaK-995 | | 2540±40 | 810–530 cal BC | Hill 1982a |
| Huckoe | Trunkwood oak charcoal from burnt palisade timber | GaK-1388 | | 2460±40 | 780–400 cal BC | Jobey 1968b |
| Fenton Hill | Charcoal from palisade trench | HAR-825 | | 2640±100 | 820–370 cal BC | Burgess 1984 |
| Burnswark | Charcoal from ground surface sealed by rampart & adjacent to palisade | GaK-2203b | | 2450±100 | 810–360 cal BC | Hill 1982a |
| Broxmouth | Animal bone from fill of stockade construction trench | GU-1361 | | 2335±65 | 740–200 cal BC | Hill 1982a |
| Kaimes Hill | Wood from the wall of hut circle 3 in the fort | GaK-1970 | | 3049±90 | 1500–1010 cal BC | Simpson 1969 |
| Macnaughton's Fort | Charcoal from 'palisade' bedding at back of stone-built rampart | GaK-808 | | 2230±100 | 520–40 cal BC | Hill 1982a |
| Ingram Hill | Charcoal from base of rampart possibly post-dating a palisade | I-5316 | | 2170±90 | 410 cal BC–cal AD 20 | Jobey 1971 |
| Murton High Crags | Inner palisade trench post slot from earliest palisade, area b, oak charcoal from post-slot | HAR-6202 | | 2130±80 | 390 cal BC–cal AD 50 | Jobey and Jobey 1987 |
| Fawdon Dene Enclosure 1 | Willow/poplar charcoal from soil deposit sealed below primary build of roundhouse within enclosure | AA-40753 (GU-9205) | -27.3 | 2110±60 | 360 cal BC–cal AD 30 | ASUD 2001 |
| Fawdon Dene Enclosure 1 | Cereal grain from circular structure 1 phase 2, fill of pit sealed by roundhouse wall | AA-54967 (GU-10984) | -25.7 | 1995±40 | 100 cal BC–cal AD 90 | ASUD 2002 |
| Fawdon Dene Enclosure 1 | Cereal grain from circular structure 1 phase 3, upper fill of clay-lined pit | AA-54965 (GU-109882) | -22.9 | 1980±45 | 90 cal BC–cal AD 130 | ASUD 2002 |
| Fawdon Dene Enclosure 1 | Cereal grain from circular structure 2 fill of pit in roundhouse platform | AA-54968 (GU-10985) | -25.7 | 2020±40 | 170 cal BC–cal AD 70 | ASUD 2002 |
| Fawdon Dene Enclosure 1 | Grain, seeds and hazelnut submitted from circular structure 3 phase 1, from stone wall | AA-54963 (GU-10979) | -25.3 | 2005±70 | 200 cal BC–cal AD 140 | ASUD 2002 |
| Fawdon Dene Enclosure 1 | Wheat grain from circular structure 3 phase 2, from stone wall | AA-54964 (GU-10981) | -24.4 | 2010±45 | 170 cal BC–cal AD 80 | ASUD 2002 |
| Fawdon Dene Enclosure 1 | Cereal grain from circular structure 3 phase 2, clay lining of pit | AA-54966 (GU-10983) | -26.4 | 2005 ±40 | 110 cal BC–cal AD 80 | ASUD 2002 |

*Table 7.2. continued.*

| Site | Material and context | Laboratory Number | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|---|
| Little Haystack | Indet. charred wood, but not oak, from palisade slot fill | SUERC-4491 (GU-12461) | -26.4 | 2215±40 | 400–170 cal BC | ASUD pers comm. |
| East Brunton | Oak charcoal from palisade slot | UBA-7820 | | 2445±39 | 770–400 cal BC | Hodgson pers comm. |
| Wether Hill | Palisade construction trench | Beta-89361 | | 2220±90 | 420–40 cal BC | ASUD 2000 |
| Wether Hill | Palisade construction trench | Beta-101731 | | 2180±80 | 400–10 cal BC | ASUD 2000 |
| Wether Hill | Oak charcoal from upper fill of early palisade trench – date on oak could have old-wood effect here | AA-40756 (GU-9208) | -27.1 | 2000±45 | 110 cal BC– cal AD 90 | ASUD 2001 |
| East Linton Fort | Birch charcoal from palisade trench | SUERC-10628 | -24.5 | 2910±35 | 1260–1000 cal BC | Haselgrove 2009 |
| Standingstone | Birch charcoal from palisade trench F13 | SUERC-10531 | -25.5 | 2780±35 | 1020–830 cal BC | Haselgrove 2009 |
| Standingstone | Charred grain, *triticum*, from palisade | SUERC-10530 | -22.9 | 2770±35 | 1010–820 cal BC | Haselgrove 2009 |
| Standingstone | Charred hazelnut shell from palisade F103 | SUERC-10545 | -23.6 | 2215±35 | 390–170 cal BC | Haselgrove 2009 |

*Table 7.3. Dates for Iron Age hillforts.*

| Site | Material and context | Laboratory Number | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|---|
| Wether Hill | Hazel charcoal from rubble core of inner rampart | AA- 35526 (GU-8644) | -26.2 | 2070±45 | 210 cal BC-cal AD 50 | ASUD 2000 |
| Wether Hill | Birch charcoal from rubble core of outer rampart | AA-35525 (GU-8645) | -26.1 | 2145±45 | 370–40 cal BC | ASUD 2000 |
| Wether Hill | Alder charcoal from sealed land surface beneath late stone roundhouse | AA-40759 (GU-9211) | -23.8 | 2175±45 | 390–90 cal BC | ASUD 2001 |
| Wether Hill | Birch charcoal from wall core of late stone roundhouse | AA-40758 (GU-9210) | -26.6 | 2090±45 | 350 cal BC–cal AD 10 | ASUD 2001 |
| Wether Hill | Alder charcoal from wall core of late stone roundhouse | AA-40757 (GU-9209) | -23.6 | 1985±45 | 100 cal BC–cal AD 130 | ASUD 2001 |
| Wether Hill | Hazel roundwood (7–8 yrs old) from primary fill of early ditch truncated by later hillfort defences | AA-54969 (GU-10986) | -23.7 | 2260±40 | 400–200 cal BC | Pete Topping pers. comm. |
| Wether Hill | Willow/poplar roundwood from primary fill of early ditch truncated by later hillfort defences (from East side) | AA-54970 (GU-10987) | -27.3 | 2150±40 | 360–50 cal BC | Pete Topping pers. comm. |
| Wether Hill | Hazel roundwood from truncated gully at rear of face of inner hillfort rampart (from SE quadrant) | AA-54971 (GU-10988) | -26.1 | 2230±40 | 400–190 cal BC | Pete Topping pers. comm. |
| Wether Hill | Hazel charcoal from early posthole sealed beneath late stone-built roundhouse | AA-54972 (GU-10989) | -25.3 | 2195±50 | 400–100 cal BC | Pete Topping pers. comm. |
| Wether Hill | Hazel charcoal from interface between late stone-built roundhouse wall and inner rampart of hillfort | AA-54973 (GU-10990) | -24.7 | 2190±40 | 390–110 cal BC | Pete Topping pers. comm. |
| Wether Hill | Hazel charcoal from fill of early ring-groove house construction trench | AA-54974 (GU-10991) | -26.0 | 2190±40 | 390–110 cal BC | Pete Topping pers. comm. |
| Wether Hill | Alder charcoal from fill of construction trench of ring-groove house XIII | SUERC-2413 (GU-11736) | -24.8 | 2140±35 | 360–50 cal BC | Pete Topping pers. comm. |
| Wether Hill | Alder/hazel charcoal from fill of construction trench of ring-groove house VI | SUERC-2414 (GU-11737) | -25.5 | 2220±40 | 400–170 cal BC | Pete Topping pers. comm. |
| Wether Hill | Alder/hazel charcoal from fill of palisade trench which cuts through ring-groove house XIII | SUERC-2415 (GU-11738) | -24.4 | 2195±40 | 390–120 cal BC | Pete Topping pers comm. |
| Wether Hill | Alder/hazel charcoal from fill of palisade trench which cuts through ring-groove house XIII | SUERC-2416 (GU-11739) | -26.0 | 2245±35 | 400–200 cal BC | Pete Topping pers comm. |

*Table 7.3. continued.*

| Site | Material and context | Laboratory Number | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|---|
| Wether Hill | Alder/hazel charcoal from central hearth of ring-groove house XIII | SUERC-2420 (GU-11740) | -26.4 | 2170±35 | 370–110 cal BC | Pete Topping pers. comm. |
| Wether Hill | Oak charcoal from fill of construction trench of ring-groove house XIII | SUERC-2421 (GU-11741) | -25.9 | 2295±35 | 410–230 cal BC | Pete Topping pers. comm. |
| Brough Law Outwork | Indet. charred twig | AA-40750 (GU-9202) | -26.0 | 2150±55 | 380–40 cal BC | ASUD 2001 |
| Brough Law | From surface below rampart, charred shortlived birch twigs <15mm diameter and 1 alder fragment | I-5315 | | 2195±90 | 410–10 cal BC | Jobey 1971 |
| Ingram Hill | Fragments of charred wood from mixed earth from base of bank | I-5316 | | 2150±90 | 400 cal BC–cal AD 50 | Jobey 1971 |
| Dod Law West | Ground surface below inner rampart providing tpq for its construction, charcoal | GrN-15674 | | 2235±35 | 400–190 cal BC | Smith 1989 |
| Dod Law West | Ground surface below inner rampart providing tpq for its construction, charcoal | GrN-15675 | | 2215±35 | 390–170 cal BC | Smith 1989 |
| Dod Law West | Deposit accumulated against latest of 3 stages of retaining wall of outer rampart, charcoal | GrN-15676 | | 2095±30 | 200–40 cal BC | Smith 1989 |
| Dod Law West | Deposit built up against outer rampart providing *taq* for outer rampart construction, charcoal | GrN-15677 | | 2265±35 | 400–200 cal BC | Smith 1989 |
| Dod Law West | Deposit accumulated against latest of 3 stages of retaining wall of outer rampart, wheat chaff | OxA-1734 | -26.0 | 1960±70 | 170 cal BC–cal AD 230 | Smith 1989 |
| Dod Law West | Layer of silt rich in charcoal accumulated behind outer rampart, wheat chaff | OxA-1735 | -26.0 | 1970±70 | 170 cal BC–cal AD 220 | Smith 1989 |
| Dod Law West | Wheat chaff from deposit built up against outer rampart providing a terminus ante quem for outer rampart construction | OxA-1736 | -26.0 | 1910±80 | 90 cal BC–cal AD 320 | Smith 1989 |
| Fenton Hill | Sample and context unspecified | HAR-866 | | 2400±100 | 800–200 cal BC | Burgess 1984 |
| Fenton Hill | Sample and context unspecified | HAR-326 | | 2170±60 | 390–40 cal BC | Burgess 1984 |
| Fenton Hill | Sample unspecified from uniaxial ardmarks beneath second box rampart (Phase IV) | HAR-2811 | | 2150±100 | 410 cal BC–cal AD 60 | Burgess 1984 |

*Table 7.4. Dates for Iron Age enclosed sites, non-defensive.*

| Site | Material and context | Laboratory Number | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|---|
| Murton High Crags | Charred material from enclosed timber built house T10 | HAR-6200 | | 2060±100 | 380 cal BC–cal AD 140 | Jobey and Jobey 1987 |
| Murton High Crags | Emmer wheat chaff from earth beneath enclosure wall and over filled inner ditch | OxA-1742 | -26.0 | 2000±70 | 200 cal BC–cal AD 140 | Van der Veen 1992 |
| Murton High Crags | Spelt chaff from earth beneath enclosure wall and over filled inner ditch | OxA-1741 | -26.0 | 1960±70 | 170 cal BC–cal AD 230 | Van der Veen 1992 |
| Murton High Crags | Emmer wheat grain from floor area of timber-built house T9 sealed by paved floor of stone built house | OxA-1740 | -26.0 | 1910±70 | 50 cal BC–cal AD 250 | Van der Veen 1992 |
| East Brunton | Wheat grains from fill of 3rd recut of late Iron Age enclosure ditch representing the latest phase on the site | UBA-7819 | | 2088±31 | 200–10 cal BC | Hodgson pers. com |
| East Brunton | Indet. charcoal from pit within roundhouse (structure G) associated with the latest enclosure on the site | GU-11380 | | 2140±45 | 360–40 cal BC | Hodgson pers. com |
| Pegswood | Charred residue from ceramic from ditch (182) | Beta-230298 | -27.5 | 2140±40 | 360–40 cal BC | Proctor 2009 |
| Pegswood | Charred residue from ceramic from deliberate backfill in latest ditch of enclosure 6 | Beta-230301 | -26.6 | 2240±40 | 400–190 cal BC | Proctor 2009 |
| Pegswood | Charred residue from ceramic from backfilling deposit of phase 4 ditch (614) | Beta-230299 | -26.5 | 2160±40 | 370–50 cal BC | Proctor 2009 |
| Pegswood | Charred wood from uppermost fill of enclosure 7 ditch | AA-43432 (GU-9433) | -27.6 | 1960±50 | 60 cal BC–cal AD 140 | Proctor 2009 |
| Pegswood | Charred residue from ceramic from linear feature (660) subdividing enclosure 8 | Beta-230300 | -26.3 | 2390±40 | 740–390 cal BC | Proctor 2009 |

*Table 7.5. Dates for Iron Age boundaries.*

| Site | Material and context | Laboratory Number | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|---|
| Little Haystack Boundary | Indet. charcoal sealed below boundary | Beta-121733 | -25.5 | 2220±60 | 400–110 cal BC | ASUD 1998 |
| Little Haystack Timber slot | Indet. charcoal, but not oak, from fill of timber slot north of boundary | SUERC-4492 (GU-12462) | -25.6 | 2265±40 | 400–200 cal BC | ASUD 1998 |
| Brough Law cross-ridge dyke | Indet. charcoal from below northern bank | Beta-89362 | | 2170±70 | 400–40 cal BC | ASUD 2000 |

# 8 On the Edge of Empire AD 79–AD 410

*Clive Waddington and David G. Passmore*

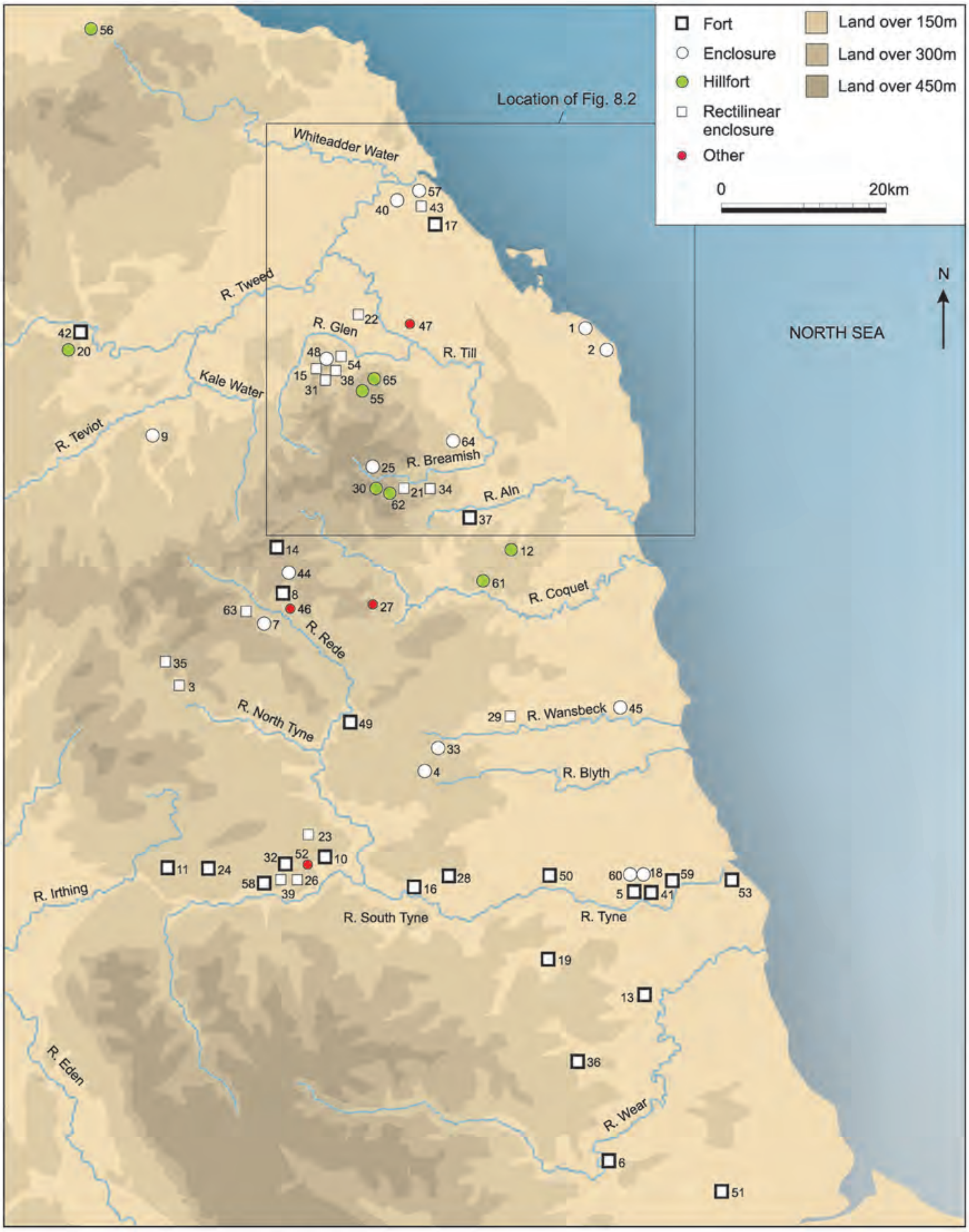
## INTRODUCTION

This chapter covers the period during which North Northumberland became a frontier territory of the Roman Empire, and for brief spells an area within it. Chronologically this chapter extends from *c*. AD 60 to AD 410, although Roman influence in this area had clearly broken down several decades prior to the final Roman withdrawal in AD 410. In the preceding chapter we briefly discussed the British tribal group known as the *Votadini*, who occupied much of modern-day Northumberland and East Lothian, and the possible extent of their territory in the former region. In this chapter, as the veil of prehistory is partially lifted, we will start by briefly sketching the historical context of the period and then move on to discuss chronological, environmental and archaeological aspects. The term 'British' is generally preferred to that of 'native', and is used interchangeably with *Votadini* in the following discussion to refer to the indigenous Roman Iron Age inhabitants of the region.

Since the prodigious work of the late George Jobey and his contemporaries there has been only limited work on Roman Iron Age British sites in North Northumberland, chief amongst these being the rectilinear enclosure at Ingram South (ASUD 2005). Other recently excavated sites in the region that have produced Roman Iron Age remains include the Flodden Hill rectilinear enclosure (Volume 1, Chapter 5), Fawdon Dene enclosure 2 (Frodsham and Waddington 2004), Wether Hill hillfort (Topping 2004), the Needles Eye settlement at North Road Industrial Estate (PCA 2005) and the single pit alignment at Redscar Bridge (Volume 1, Chapter 5). In southern Northumberland the situation is different, there having been major excavations at the settlement sites at Pegswood (Proctor 2009), East and West Brunton and Belsay (Nick Hogson pers. comm.; Tyne and Wear Museums forthcoming), and these have all produced clear evidence for Roman Iron Age occupation.

Excavation of Roman military sites in North Northumberland, in recent years, is limited to the programme of excavations undertaken at High Rochester (Crow 2004), the discovery of structural remains and a group of pits containing a large volume of Early Roman pottery at Wooperton Quarry close to the Devil's Causeway (Carter 1998; 1999), together with excavations on Dere Street and temporary camps in the Otterburn Army Range (Waddington 1995; Hale 2007), metric survey of the temporary camps of the frontier region (Welfare and Swan 1995), and detailed geophysical surveys of several Roman forts including Halton Chesters, Housesteads and High Rochester (e.g. Berry and Taylor 1997; Biggins and Taylor 2004; Hancke *et al*. 2004). Other than this, the work on Roman military sites in Northumberland is confined to investigation of forts along the Hadrian's Wall corridor to the south of our region, such as South Shields (*Arbeia*) (Bidwell and Speak 1994), Wallsend (*Segedunum*) (Hodgson 2003), Newcastle (*Pons Aelius*) (Bidwell and Snape 2002), Benwell (*Condercum*) (Holbrook 1991), Rudchester (*Vindovala*) (Bowden and Blood 1991), Halton Chesters (*Onnum*) (Taylor *et al*. 2000), Carrawburgh (*Brocolitia*) (Charlesworth 1967; Breeze 1972), Housesteads (*Vercovicium*) (Crow 1995; Rushworth 2009), Great Chesters (*Aesica*) (Allason-Jones 1996), Carvoran (*Magnis*) and Chesterholm (*Vindolanda*) (Birley *et al*. 1999). Work has also been carried out on several milecastles and turrets, and small-scale excavations resulting from commercial development have also taken place, particularly within Newcastle. Further south, in County Durham, geophysical survey and excavation at the Roman settlement at East Park, Sedgefield, and Binchester Roman fort is currently underway (David Mason pers. comm.).

With so few permanent Roman military sites known in the Votadinian lands, the Roman fort at Low Learchild (*Alauna*) in the Aln valley, which may have a Flavian origin, has particular potential to address many of the outstanding research questions relating to the initial impact of the Roman presence in this area. The only work undertaken on this site was limited excavation by Richmond in the 1940s (Crawford and Richmond 1949) and a more recent geophysical survey (Anderson *et al*. 1992) which suggested that the fort is larger than Richmond originally thought. Other than these investigations, the only archaeological work




1. Bamburgh
2. Beadnell
3. Belling Law
4. Belsay
5. Benwell
6. Binchester
7. Blakehope
8. Bremenium
9. Cappuk
10. Carrawburgh
11. Carvoran
12. Castle Hill
13. Chester le Street
14. Chew Green
15. Coldsmouth Hill
16. Corbridge
17. Doubstead
18. East Brunton
19. Ebchester
20. Eildon Hill North
21. Fawdon Dene
22. Flodden Hill
23. Fold Hill
24. Great Chesters
25. Greaves Ash
26. Green Brea (Grindle Dikes)
27. Grotto of Cocidius (Yardhope)
28. Halton Chesters
29. Hartburn
30. Haystack Hill
31. Hetha Burn
32. Housesteads
33. Huckhoe
34. Ingram South
35. Kennel Hall Knowe
36. Lanchester
37. Low Learchild
38. Mid Hill
39. Milking Gap
40. Murton High Crags
41. Newcastle
42. Newstead
43. North Way Industrial Estate
44. Otterburn temporary camps
45. Pegswood
46. Petty Knowes
47. Redscar Wood Pit Alignment
48. Ring Chesters
49. Risingham
50. Rudchester
51. Sedgefield
52. Sewing Shields
53. South Shields
54. Staw Hill
55. St. Gregory's Hill
56. Traprain Law
57. Tweedmouth
58. Vindolanda
59. Wallsend
60. West Brunton
61. West Hills
62. Wether Hill
63. Woolaw
64. Wooperton Quarry
65. Yeavering

*Figure 8.1. Map showing the location of key excavated sites dating to the Roman Iron Age.*

undertaken over the last two decades on sites of this period has been aerial photographic survey, which has assisted in the discovery of new sites and enhanced understanding of some existing military sites, both British and Roman (Gates and Hewitt 2007 and this volume).

## THE HISTORICAL BACKGROUND

The following section draws particularly on the works by Higham (1986), Breeze and Dobson (2000) and various academic papers. Direct Roman impact in North Northumberland was short and intermittent with three documented advances into, and beyond, Votadinian territory. The evidence for permanent or semi-permanent Roman military bases within this area is limited to Low Learchild (*Alauna*), located towards the southern margin of Votadinian lands, and Chew Green (a fortlet), High Rochester (*Bremenium*), Blakehope, Risingham (*Habitancum*) and Corbridge (*Coria*), all located on Dere Street along the western margin of the territory (Fig. 8.2). This disposition is supported by Ptolemy's second-century AD *Geography*, which refers to three forts in Votadinian territory: *Bremenium*, *Alauna* and *Coria*. It is known from inscriptions that High Rochester is in fact *Bremenium*, Low Learchild is *Alauna* and Corbridge is *Coria*, the latter site being a Stanegate fort that developed into a major town. This could suggest that the *Votadini* were, for most of the period, on peaceable terms with Rome and exercised their own internal governance. Indeed, some commentators have suggested that the *Votadini* may have been among the eleven tribes that submitted to Claudius in AD 43 (e.g. Higham 1986, 148).The relative absence of Roman forts north of the Tyne-Solway isthmus on the east coast of the British frontier, compared to the situation further west, must indicate that different relationships between the respective British tribes and Rome prevailed during some of this period. During the Flavian advance the Roman army was present north of the Tyne from around AD 79 to AD 105, whilst the Antonine occupation lasted from AD 139 to some time after AD 160, punctuated by a short-lived retreat to the line of Hadrian's Wall in the mid-150s. The Severan incursion lasted only from AD 208–12 (see Hanson 1997). Throughout these northern advances, much of Northumberland may have experienced much less impact than areas to its north and west, as the *Votadini* are usually thought to have remained either a client state of Rome or, at least, to have followed a pro-Roman policy. This said, the large number of temporary camps known from the county shows that passage of the campaigning Roman armies through *Votadini* lands probably took place during all of the northern campaigns, since the north-east coastal corridor provided a rapid route of access to the north, and the route across North Tynedale and Redesdale provided a direct route north-west into the heart of *Selgovae* territory. Relations with the neighbouring *Selgovae* tribe, to the west of the Cheviots, were perhaps less stable since the line of heavily defended forts along Dere Street, north of Corbridge, at Risingham, Blakehope and High Rochester, remained garrisoned throughout much of the Roman Iron Age. So far, however, the small-scale excavations at Blakehope have only testified to occupation in the Flavian period. North of these forts, Roman military installations were only ever occupied sporadically, as part of the various incursions into what is now Scotland. Amongst these sites are the significant clusters of marching camps in Redesdale and at Chew Green, high up in the Cheviot Hills, the fort at Cappuck and the legionary fort at Newstead (*Trimontium*), the latter located in the heart of *Selgovan* territory, in the lee of their tribal centre on Eildon Hill North.

After the invasion of AD 43, although other northern British tribes appear to have retained peaceable relations with Rome, this does not seem to have lasted long. Rome caused discontent by disarming allied tribes and an attempt to drive a wedge between the unconquered northern Welsh tribes and *Brigantes* in AD 48. After Cartimandua, queen of the *Brigantes*, was deposed in civil war by her consort Venutius, on account of her pro-Roman stance, her betrayal of Caractacus to Rome, and her open affair with Venutius' shield bearer, the *Brigantes* adopted a hostile stance to Rome. The extent to which Cartimandua had allowed Roman military forces into Brigantian territory remains unknown, but the classical sources (Tacitus' *Annals* and *Histories*) indicates her rescue by Roman military intervention was considered a daring and dangerous undertaking.

With the appointment of Cerealis as Governor of Britain in AD 71 the annexation of *Brigantia* got underway. Rather than any decisive action, Tacitus tells us that a series of battles was fought, "some of them by no means bloodless" (Tacitus, *Agricola*, 17), and he makes a point of praising Venutius' military ability (Tacitus, *Histories*, 3). It is unknown what happened to him, although Higham has drawn attention to a possible connection with the place-name *Venutio* recorded in the Ravenna Cosmography, compiled around AD 700 (Higham 1986, 152), which may have lain in today's Borders region. After several years of campaigning in *Brigantia*, without subjugating the entire territory, Cerealis was replaced as governor in AD 74 and his successors turned their attention to completing the conquest of Wales.

Agricola, who was appointed Governor in AD 78, spent his first campaign season brutally subjugating the *Ordovices* and conquering the centre of British Druidical power on Anglesey. He was able to use the harsh treatment handed out in this early campaign to help pacify tribes as he campaigned northwards in the following year, offering them devastation or

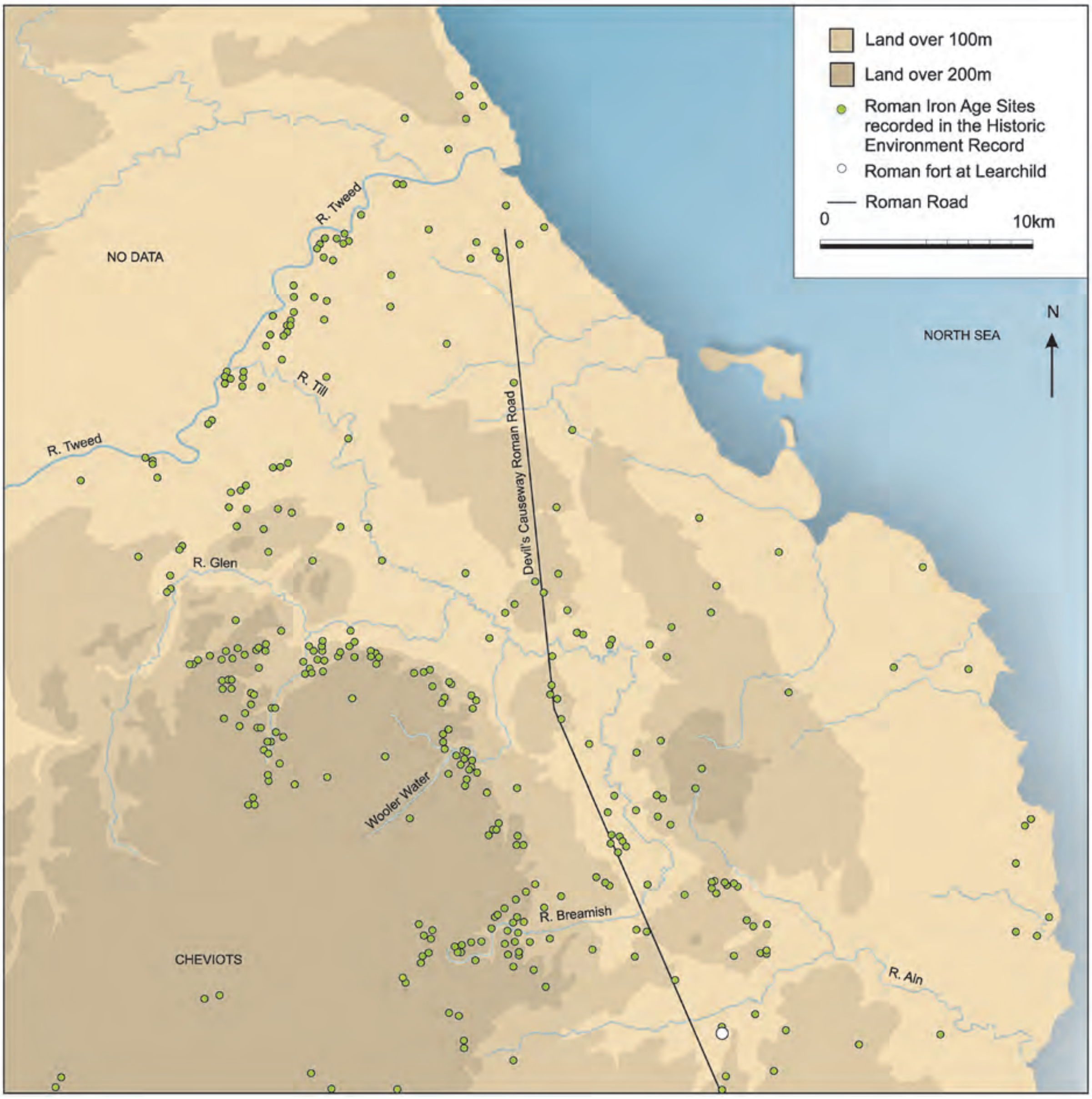



*Figure 8.2. The known Roman forts and road system in North Northumberland together with Roman Iron Age sites recorded in the Historic Environment Record.*

surrender and the installation of garrisons (Tacitus, *Agricola*, 20). Organised resistance south of the Tyne-Solway gap, and possibly as far north as the Forth-Clyde corridor, appears to have collapsed as a result of Cerealis' campaigns and the real threat of destruction by Agricola's forces. But this did not mean that the conquered northern tribes were content with Roman rule. Rather, both literary and archaeological evidence suggest that uprisings took place for many generations afterwards and that, ultimately, the Roman Empire was pulled (and pushed) back to the Tyne-Solway corridor until this defended line fell for the last time in the late fourth century. As Harding has recently noted in relation to the tribes north of the Tyne-Solway (Harding 2004, 180): "The fact that the Roman occupation made so little impact on Scotland really should occasion little surprise, for the simple reason, though seldom acknowledged overtly, that it was both politically and militarily a failure". However, the apparent ease with which Agricola took the areas up to the Forth-Clyde line suggests that the northern aristocracy had not recovered from Cerealis' campaigns, and that faced with economic devastation and military force, the northern tribes thought it expedient to accept Roman control, at least in the short term.

Tacitus recounts that the tribes were issued with terms which included the submission of hostages, and a ring of garrisoned forts was placed around them (Tacitus, *Agricola*, 20). This description of previously independent tribes being ringed by forts aptly describes the circumstances of the *Votadini* whose territory, as has been noted above, was flanked on its western side by Dere Street and the string of forts along its course, Inveresk to the north-west and Low Learchild to the south. Several forts along these north-eastern routes have produced archaeological evidence for an Agricolan phase including York, Binchester, Red House (Corbridge), High Rochester and Low Learchild. It is unlikely that the Pennines, the Cumbrian uplands, North Northumberland or the southern Scottish uplands were properly incorporated into the Roman province at this stage.

In AD 81, Agricola campaigned beyond the Tyne-Solway gap as far north as the Tay, probably using Corbridge as his main supply base. In AD 82 the campaigning Roman forces operated along the north-west coast of Scotland so that, by AD 83, Agricola was able to defeat the Caledonian tribes at Mons Graupius, the site of which is generally thought to lie somewhere in the vicinity of Inverness. However, the Roman army abandoned all military positions beyond the Forth by AD 88. They held southern Scotland and Northumberland for the next ten or so years, but by the beginning of the second century AD they had pulled back to the Tyne-Solway corridor. Whether this was a result of troop withdrawals, successes by the northern tribes, or a combination, remains to be established, but fire damage has been noted at many of the forts that lay beyond the Tyne-Solway corridor (cf. Higham 1986; e.g. Corbridge, High Rochester, Cappuck, Oakwood, Newstead, Glenlochar and Dalswinton), although it is possible that timberwork of demolished buildings was deliberately burnt by Roman garrisons before departure (Hanson 1978). The east-west road across the Tyne-Solway gap, linking Carlisle and Corbridge and known as the Stanegate, served as a focus for a series of forts and fortlets that provided a line of defence across the shortest isthmus, south of the Forth-Clyde line. As this frontier evolved, military forces were concentrated in forts along its route, but defensively it remained wanting since its original purpose had been as a communication and supply route.

In the early decades of the second century, a rebellion, attested by inscriptions, letters and coin evidence, was ultimately put down by Governor Falco. When Hadrian became Emperor in AD 117, "the Britons could not be kept under Roman control" (*Historia Augusta*, *Hadrian* 5, 2); according to Cornelius Fronto, writing to Marcus Aurelius in AD 162, large numbers of Roman soldiers were lost in action under Hadrian to the Jews and Britons (Cornelius Fronto *2, 22*). With the arrival of Hadrian in Britain in AD 122, the limits of the Empire were formally established by commissioning the 'Wall' to the north of the Stanegate line, taking the best route available over the crags of the Whin Sill in the central sector of the Tyne-Solway isthmus. The Wall evolved over time as its physical characteristics were altered to better serve the changing military and political climate — as can be seen, for example, by the blocking of milecastle gateways and the movement of forts on to the Wall line. There still remains considerable debate, however, as to the function of the Vallum, the ditched boundary protecting and demarcating the Wall corridor on its south side. Outlying forts were constructed in the west but in Votadinian lands there is, as yet, no evidence for Hadrianic activity.

With the accession of Antoninus Pius in AD 139 the Hadrianic policy was reversed and the Roman military readvanced to the Forth-Clyde isthmus, where a turf-and-timber wall was built, together with garrison forts. It was during this time that the fort at High Rochester was recommissioned and the Votadinian lands were once again encompassed within the Empire, although as Higham has observantly remarked, the "absence of military works might imply that client status was retained, under the watchful eye of the Dere Street garrisons and the fleet off shore" (Higham 1986, 169). The Tyne-Forth region appears to have been abandoned in the mid-AD 150s, perhaps around AD 158, when rebuilding work on the Hadrianic frontier is attested by an inscription. Whether this was due to instability in this region and the Pennines, however, remains unproven (Hartley 1972; Breeze and Dobson 2000). It was at this time that the road behind Hadrian's Wall, known as the 'Military Way', was added to the defence system. A system of outpost forts was retained on both the east and west sides of the frontier, with that on the east including the Dere Street forts as far north as Newstead. This suggests that Votadinian and Selgovan lands remained under Roman control, even though they lay outside the limits of the Empire (Breeze and Dobson 2000).

The dominion of Rome was challenged again in the 170s–180s, culminating in the record by Cassius Dio of an attack by the northern tribes who crossed the wall that separated them from the Roman garrisons, killed a Roman general and did great damage (Dio, 63, 8). This could account for the destruction levels at Halton Chesters, Rudchester and perhaps Corbridge (e.g. Hodgson 2008). Rome responded with a punitive campaign in the Tyne-Forth region, although the northerly outpost forts at Newstead and Cappuck were abandoned, leaving Roman control of the forward areas less secure and the Votadinian lands open to attack from the north and west. Around AD 196/7 the north was again under pressure from British tribes who may have acted in concert with a Brigantian revolt that has been inferred from destruction deposits at Ilkley, Bainbridge and Bowes (Hartley 1980, 6). Cassius Dio (75, 5) records that Governor Lupus bought peace from the *Maetae* tribe at this time, a tribe thought to reside in south-west Scotland to the west of the *Selgovae*.

By AD 208, however, circumstances on the northern frontier of Britain were sufficiently serious that the Romans undertook an expedition led by Emperor Severus, with the aim of incorporating all of Britain into the Empire. The supply bases at South Shields and Corbridge were remodelled (Bidwell and Speak 1994; Dore and Gillam 1979) and the army marched north once again, along the western margin of Votadinian lands, to engage with the tribes beyond the Forth. With the death of Severus at York, in AD 211, the initiative was lost and his son, Caracalla, returned to Rome, no doubt with much of the expeditionary force.The advance forts were abandoned once again as the Romans pulled back to the Hadrianic frontier, leaving in the east only the outpost forts at High Rochester and Risingham on Dere Street. These were repaired and improved with the provision of a *ballistarium*, a platform for hurling large stone blocks, at High Rochester (Crow 2004), and reconstruction of the south gateway at Risingham to include projecting polygonal towers (Richmond 1936). For much of the rest of the third century AD the northern frontier appears to have been relatively stable. Regular patrols throughout the Tyne-Forth region by Roman units are known from inscriptions (Higham 1986), whilst the size of fort garrisons appears, in some cases, to have been larger than the available accommodation. This further suggests that regular patrols were a feature of northern British military postings.

In the late third century AD, further repair and remodelling of the defences at High Rochester and Risingham took place, as well as at several of the Wall forts, although there is evidence that the garrisons were thinned at various times, perhaps on account of troop withdrawals to support the imperial claims of Carausius and Allectus (Salway 1993). A brief campaign was undertaken by Constantius Chlorus, north of the Wall, in AD 306 but there is no evidence for the recommissioning of any forts. In any case, the contraction of Roman forces appears to have continued, with the abandonment of outpost forts such as High Rochester, probably during the reign of Constantine around AD 312. The Tyne-Forth region appears, however, to have remained in Roman control until at least the middle of the fourth century AD. Around this time the main threat seems to have switched to the coastline, prompting the construction of the Saxon Shore forts, and the deployment of specialist waterborne units at South Shields and Lancaster. These measures signal a new type of threat from Saxon, Pictish and Irish fleets capable of inflicting rapid strikes behind frontiers.

In the late fourth century the Roman frontier came under increasingly serious assault, with an incursion by the Picts and Scots into what is thought to be the Tyne-Forth area, recorded in AD 360 (Ammianus Marcellinus, 21, 1). By AD 367 the Picts, Saxons, Scots and *Atacotti* conspired together and overwhelmed Roman Britain. It took campaigns by Theodosius in AD 367 and 368 to remove the invading forces from the province, but no counter-offensives were launched and Theodosius returned with his field army to the European mainland. From this time onwards the Wall forts took on a more defensive character, with the blocking of gateways, whilst the *vici* declined or were abandoned altogether. Based on Gildas' account, Higham (1986) observes three episodes of raiding by the Picts and Scots. The first is estimated to have taken place around AD 389–90. This resulted in a Roman success, with control, once again, extended to the Forth-Clyde isthmus. Further wars took place after this and the British province was left to its own defences until AD 398, when an expeditionary force under Stilicho pushed the invading forces out. This time Gildas observes that the Tyne-Forth region was not wrested back and once again Hadrian's Wall served as the new frontier. However, Gildas' sources were in some cases vague and fragmentary, something he admits at the beginning of his work, *De Excidio Britanniae* (On the Ruin of Britain), written in the mid-sixth century AD. The work was written largely as a sermon condemning the vices of his contemporaries and is, therefore, a partial perspective that has to be dealt with critically. Several details in this work are clearly incorrect, although the broad sequence of events does appear to stand up to scrutiny. Troop evacuations continued, stripping much of Britain of effective defence, so that during the absence of Constantine III, when he was leading his British forces against a Vandal invasion in Gaul, the Saxons raided southern Britain in AD 408. Here the rural Britons revolted against Rome and the local aristocracy (Thompson 1977) so that after AD 410, with the withdrawal of the remaining Roman garrisons, Britain was ruled by what Gildas termed cruel 'tyrants', though this term probably means what we would describe today as 'usurpers'.

## CHRONOLOGY

***Peter Marshall and Clive Waddington***

Compared to the prehistoric periods there are relatively few dates available for the Roman Iron Age in Northumberland. In the following section we have grouped the dates to provide dating sequences for particular types of site. The first group of dates comprises those associated with rectilinear enclosures. The model shown in Figure 8.3 shows good agreement (Amodel=83.2%) between the radiocarbon results and prior information. It provides the following estimates for the construction of rectilinear enclosures of *80 cal BC–cal AD 50* (*95% probability; start_rectilinear enclosures*; Fig. 8.3) and probably *50 cal BC–cal AD 30* (*68% probability*). There are problems, however, with

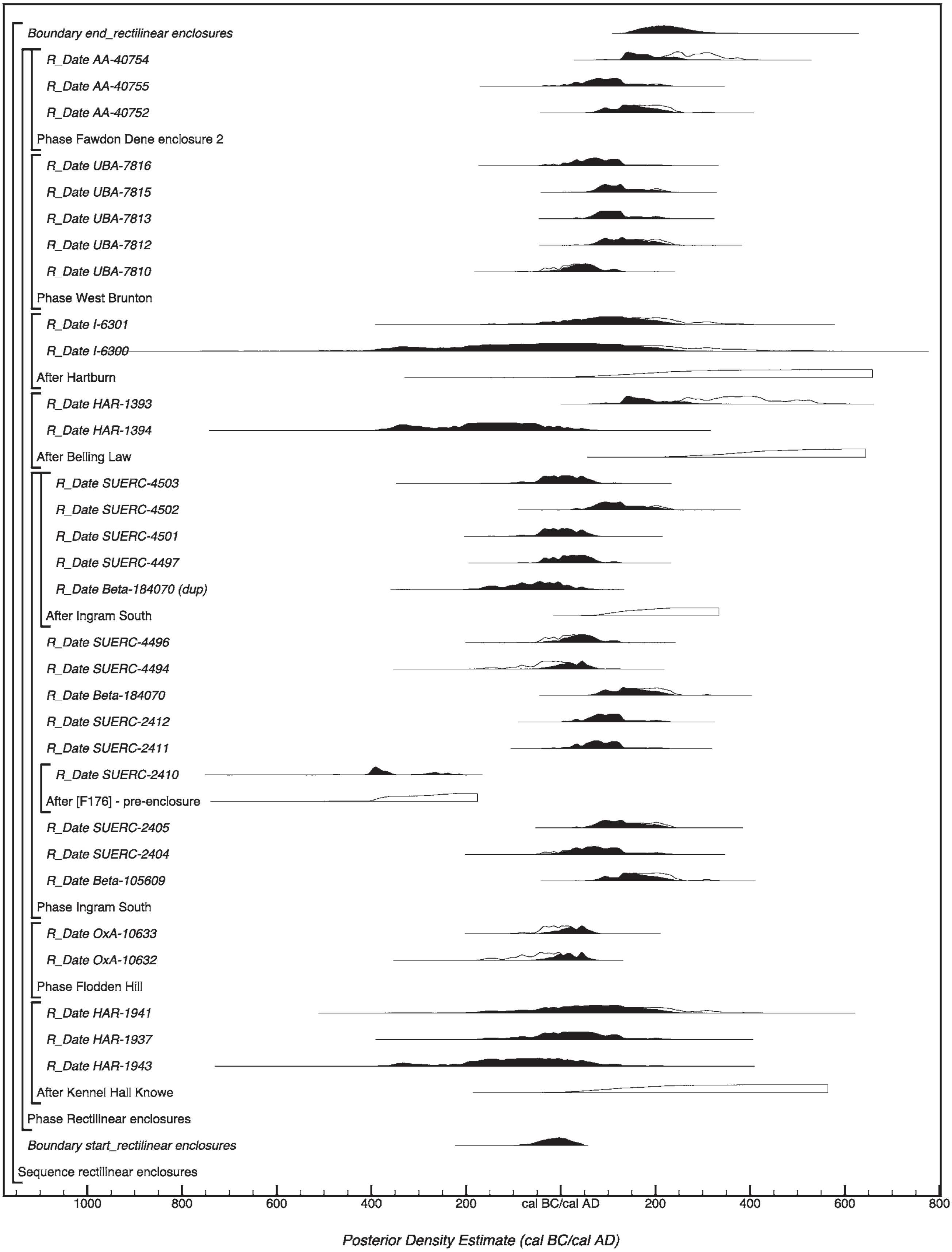



*Figure 8.3. Probability distributions of dates for rectilinear enclosures: each distribution represents the relative probability that an event occurs at a particular time. The format is identical to that of Figure 5.1.*

some of these dates (see below) and therefore these estimates may be a little too old.

When the dates for rectilinear and square enclosures are taken together with those of the material culture associations that are routinely found on these sites, they cluster in the first two centuries AD. One or two sites, such as Kennel Hall Knowe and Belling Law, have traditionally been accepted as pre-Roman Iron Age in date (Jobey 1977b; 1978), but if we look more closely this need not necessarily be the case. Kennel Hall Knowe had three phases of rectangular-shaped 'palisaded' enclosure prior to the final ditch-and-bank enclosure of the Roman Iron Age, with the earliest of the timber enclosures having a *terminus ante quem* of 360 cal BC–130 cal AD (HAR-1943, see Table 8.2) (Jobey 1978). Not only does this date span the Early Roman Iron Age but it undoubtedly includes an old-wood offset as the sample comprised bulk alder and oak charcoal. Given the unknown extent of the old-wood offset at work here, this date is of minimal use for the dating of these enclosures. At Belling Law, where the stratigraphic relationships were not as clear-cut, the site had two phases of rectangular timber fences prior to the final ditch and bank enclosure. Here, it was assumed that the timber-built roundhouses within the enclosure related to the timber phases of the enclosure. The earliest house on the site produced a date, which provides a *terminus post quem*, of 390 cal BC–cal AD 60 (Jobey 1977b) but again, this sample must include an old-wood offset as it comprised bulk alder and oak charcoal. Therefore a Roman Iron Age date for the earliest house, which may not even relate to the enclosed phases, is entirely possible.

Similarly, the dates from the Flodden Hill enclosure (see Volume 1 Chapter 5) could be consistent with an early Flavian construction, given that a small sherd of Samian Ware was the only material culture found on the site, and if the dated alder twig was a few years old when incorporated into the primary ditch fill, the age offset is sufficient to produce a Roman Iron Age date for the enclosure, given the steepness of the calibration curve at this time.

At Ingram South all the relevant dates fall into the Roman Iron Age, with the only possible pre-Roman Iron Age date of 180 cal BC–cal AD 60 (Beta-184070) being from a sample of indeterminate material which may well have an old-wood offset. In any case, this sample came from a clay floor from which another, more reliable, date was obtained from a single-entity, short-lived species (hazelnut shell) of cal AD 60–260 (Beta-182413).

At Hartburn the small inner rectilinear enclosure produced convincing evidence for a Roman Iron Age date (Jobey 1973a; Table 2 I-6301), whilst the sample from the larger, outer, rectilinear enclosure taken on bulked twig charcoal (I-6300), had a wide standard deviation, resulting in a calibrated date of 400 cal BC–cal AD 420 (see Table 8.2). Although there was clear evidence for a protracted history of roundhouse replacement on the site, no doubt suggesting an unenclosed precursor to the enclosed settlements, there is currently insufficient evidence to posit a pre-Roman Iron Age date for either of the enclosed phases. A final point to make is that all the rectilinear enclosed sites investigated in recent years for which modern dating samples have been obtained, such as Pegswood and East and West Brunton, have been revealed to be Roman Iron Age in date, although earlier pre-Roman Iron Age settlements that predate the enclosures have also been found.

On the basis of this review, the widely held view that small rectilinear enclosures in Northumberland have their origins in the Late pre-Roman Iron Age is not yet proven. It remains possible that these sites could be a phenomenon specifically related to the arrival of the Roman legions. Few of the enclosed farmsteads show evidence for use much beyond the second century cal AD, when Roman troops were withdrawn to the Hadrianic frontier (see Jobey 1966), implying that they have a connection with Roman policy. But until individual site sequences are examined, with more dates from single-entity short-lived species, the origin of these enclosures will remain uncertain.

Table 8.2 and Figure 8.4 bring together a group of other Roman Iron Age dates obtained in recent years from a variety of site types and settings, some of which have been fully published and others not. Given the diversity of site types represented, there is no opportunity to draw chronological patterns out of the data, other than the work already undertaken for the Redscar pit alignment, which has been presented in the accompanying volume (Chapter 5).

## CLIMATE AND ENVIRONMENT

The Roman arrival in North-East England coincided with a period of relatively warm climate and drier bog surfaces that had characterised the later stages of the Iron Age (Hughes *et al*. 2000; Langdon *et al*. 2004). Indeed, if the temperature reconstructions derived from the insect assemblage at the Flodden Hill enclosure are reliable, then the early first millennium AD may have been exceptionally warm, even by modern standards (Chapter 7; see also Kenward, in Volume 1, Chapter 5). But these conditions were not to last – reconstructions of mean July temperatures at Talkin Tarn suggest that a cooling of some 1°C had occurred by *c.* cal AD 150, to be followed by a slow recovery in temperatures by the end of the millennium (Langdon *et al*. 2004).The cooling trend over the early Roman period was probably associated with a short neoglacial event around cal AD 250–350 (Matthews and Quentin Dresser 2008) and appears to have been accompanied by wet shifts at Walton Moss

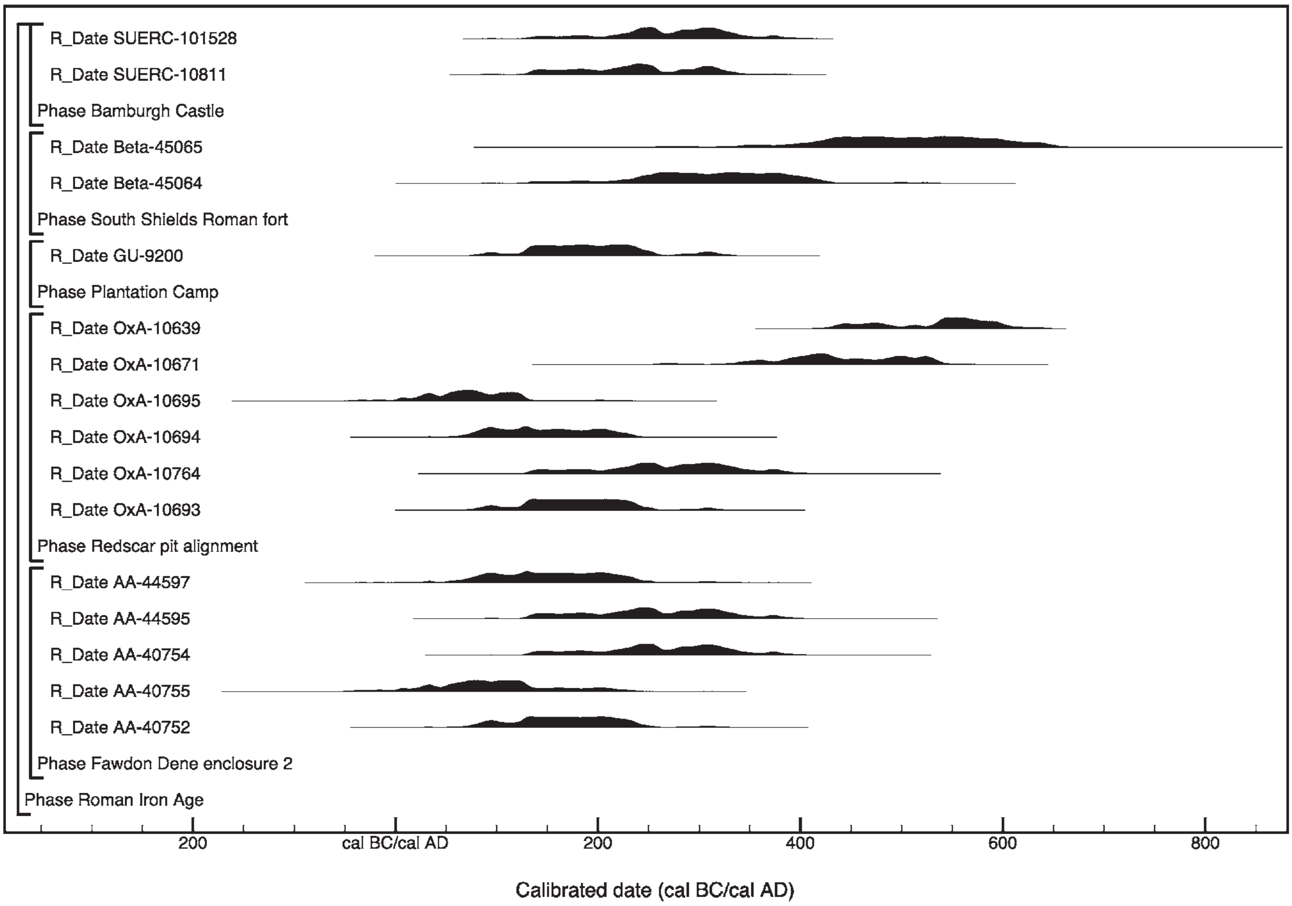



*Figure 8.4. Probability distributions of dates for Roman Iron Age activity.Each distribution represents the relative probability that an event occurred at a particular time.These distributions are the result of simple radiocarbon calibration (Stuiver and Reimer 1993).*

in Cumbria from *c.* cal AD 200 (Hughes *et al*. 2000), and more generally on northern British mires at *c.* cal AD 350 (Charman *et al*. 2006).

More effective precipitation at this time is consistent with evidence of enhanced geomorphological activity in north-eastern rivers between *c.* cal AD 250 and cal AD 500 (Macklin *et al*. 2010), notably in the form of channel shifts and/or gravel aggradation in several reaches in the catchments of the South Tyne (Macklin *et al*. 1992; Passmore and Macklin 1997; 2000) and North Tyne (Moores *et al*. 1999; Hildon 2004), and we can now locate no fewer than four episodes of channel abandonment in the Rivers Breamish/Till either within or very close to this relatively short timeframe. These have been identified in the River Breamish at Brandon Quarry (*c.* cal AD 60–240; Tipping 1992; 2010) and Bewick Bridge (BT5; *c.* cal AD 390–570), and in the Milfield Basin at Bridge End (M108–2: *c.* cal AD 80–320) and Doddington (MSH2–22; *c.* cal AD 240–420) (Volume 1, Chapter 2). Given that the wider landscape of the Till catchment had already experienced substantial disturbance of the vegetation and soil cover by this time (Chapter 2 and below), it is likely that channel and floodplain environments could adjust more readily to changes in flood frequency and magnitude (Foulds and Macklin 2006). This is, however, most securely inferred with respect to the propensity for channels to shift laterally across their valley floors. Since we currently lack detailed – and well-dated – information on rates of fine-sediment alluviation on floodplain surfaces in the Till-Tweed area, it remains difficult to make robust links between catchment soil erosion and the geomorphological response. There is, however, no reason to suppose that soil erosion during the Roman period was any more significant than in the later Iron Age (e.g. Tipping 2010).

## Agrarian landscapes

It is perhaps not surprising that palaeoenvironmental investigations of the impact of Roman occupation on the Northumberland landscape have been much influenced by a focus on the Hadrian's Wall corridor (e.g. Davies and Turner 1979; Dumayne and Barber 1994; Manning *et al*. 1997; Tipping 1997; Wiltshire 1997; Dumayne-Peaty and Barber 1998; Moores 1998;

Dark 2005; Yeloff *et al*. 2007). Collectively, these studies have shown the pattern and rate of landscape change in the immediate vicinity of the Wall to have been highly variable, and this has prompted considerable debate about the influence exerted by the militarised frontier zone on local land use activities (see Chapter 2 for summary).

To the north of the frontier zone, North Northumberland has seen fewer pollen studies, especially in lowland contexts, but sufficient numbers of dated pollen diagrams are available from upland locations to suggest a continuation, and in some cases an extension, of land use practices inherited from the pre-Roman Iron Age (Chapter 2). Indeed, and excepting some aspects of settlement structure and road construction (see below), in these areas the arrival of Roman influence does not appear to have had a significant impact on the landscape. Extensive, locally near-complete deforestation was already well advanced in the uplands and in some localities, notably in the Cheviot interior, cereal cultivation appears to have persisted as a significant component of the agricultural economy throughout the Roman period (Mercer and Tipping 1994; Tipping 2010). Further south, the previously wooded limestone uplands in central Northumberland around Steng Moss were subject to major clearance from *c.* 160 cal BC to cal AD 210 in preparation for cultivation of wheat, barley and rye (Davies and Turner 1979). In general, however, the upland areas fringing the eastern and southern Cheviots were predominantly utilised for livestock grazing, perhaps with some limited cereal cultivation, amidst scattered areas of woodland and heathland (e.g. Davies and Turner 1979; Moores 1998; see also Chapter 2).

## SETTLEMENT AND LAND USE

The settlement pattern within North Northumberland was undoubtedly affected by the various phases of Roman advance and retreat within the Tyne-Forth region, but documenting the effects on British settlements during any given phase is hampered by the poor chronological precision currently available for them (see also Harding 2004, 180). Although radiocarbon dates are available for several sites (see Tables 8.1 and 8.2), few have sufficient dates from stratified contexts that would allow statistical modelling to produce more precise estimates for phases of construction, abandonment, reoccupation and so forth. Obtaining such data remains an important priority if the period is ever to be effectively narrated from a native British perspective.

Notwithstanding the difficulties surrounding the chronological status of the many Roman Iron Age sites that are now known, which number in their hundreds in the Northumberland and Borders region, we need to make sense of the various settlement forms that are known to date to this period. Far from there being no evidence of a settlement hierarchy, we suggest that a hierarchy of sorts did in fact exist. From a political perspective we can observe the Roman forts, from where garrisons mediated the relationship between Rome and the *Votadini,* for at least some of the period, at the top of the hierarchy. These sites were no doubt pivotal in the day-to-day shaping of Votadinian and Roman relationships and we could perhaps anticipate a further fort (as has long been thought: see Jobey 1973; Gates and Hewitt 2007 for the most recent discussion), or trading station, deeper into Votadinian territory, on the south side of the Tweed estuary, at the terminus of the Devil's Causeway. It is worth noting, however, that the limited earlier excavations at Low Learchild have so far only provided evidence for two phases of turf and timber forts that date to the Flavian period, suggesting there was never an intention to occupy this site for a sustained period, so it is possible that any installation in the vicinity of Tweedmouth may have been similarly short-lived (see also Gates and Hewitt 2007). This would make the outpost fort at High Rochester and the fort and town at Corbridge the only ones in Votadinian territory that were occupied for much of the Roman Iron Age, and these were positioned on the margins of Votadinian lands. Although evidence for workshops and smithing activity has been found immediately outside the walls at High Rochester, there is no proven evidence for a *vicus* having developed there (Crow 2004). At Corbridge, in contrast, set back behind the Wall on the old Stanegate frontier, one of the most important *vici* of the frontier zone developed. In the relative safety of the Wall, Corbridge must have been a key place for trade and exchange between the *Votadini* and the Roman administration, especially as it was on the route of Dere Street, the main road north to the Devil's Causeway, which passed through *Votadini* lands. A monetary economy can be documented at Corbridge and other *vici* around the Hadrianic frontier forts, but few coins have been found on the Votadinian farm sites to the north. This implies that coinage did not support a cash economy in Votadinian lands, but provided a source of wealth similar to other valuable artefacts.

In addition to the Roman road network (see Fig. 8.2 and Chapter 3), maritime transport must have featured significantly during the Roman Iron Age and would undoubtedly have formed a principal means of supporting and supplying campaigning Roman forces, as well as providing a route for British and Pictish campaigns against, and beyond, the Roman frontier. The role of South Shields fort as a supply base is now clear and, being on an eminence on the south side of the Tyne estuary, it was clearly positioned to participate in a supply network with a maritime dimension. The terminus of the Devil's Causeway remains to be established, but aerial photography has shown that it heads in the direction of Tweedmouth, which again suggests a supply base, even if only temporarily occupied, on the south side of a major estuary. Evidence for possible Roman shipwrecks has come from South Shields (Bidwell 2001) and Hartlepool Bay (Swain 1986), but as yet no certain Roman Iron Age seagoing craft have been discovered. The lack of Roman signal stations on the Northumberland coast is, no doubt, related to the fact that this area lies to the north of Hadrian's Wall, where the relationship between Rome and the *Votadini* may have meant that different arrangements for sighting hostile vessels were in place. The Durham coastline has experienced considerable erosion and this could account for the lack of known signal stations, in contrast to the North Yorkshire coast.

Below the military sites in the settlement hierarchy – although this relationship may have been reversed on some occasions – are the tribal centres which are traditionally thought to have been the hillforts of Traprain Law (*Dunpender Law* – hill of the fort of spears) and Yeavering Bell (*Ad Gefrin* – hill of the goats) (Fig. 8.5), in East Lothian and North Northumberland respectively. Several different episodes of excavation at Traprain Law have identified occupation from the Late Bronze Age to the end of the Roman Iron Age, and perhaps beyond (Armitt *et al*. 2002). At Yeavering Bell only minimal excavations have yet taken place, but evidence for Roman Iron Age activity has been found (Tate 1863b; Hope-Taylor 1977). These two sites sit comfortably at the top of the British settlement hierarchy for the region if size, number of hut stances and setting are anything to go by. This contrasts with most of the other fort sites that have been investigated in the Votadinian region, which so far show little or no evidence for occupation during this period. Rather, these small hillforts seem, on the whole, to have gone out of use by the Late pre-Roman Iron Age. A third contender as a tribal centre is the eminence upon which Bamburgh Castle sits, and whose Brittonic name is *Din Guoaroy* (Nennius, *Historia Brittonum*).The prefix 'Din' suggests a fortified site. Recent excavations by the Bamburgh Castle Research Project (Young 2007) have included investigation of a rectangular timber building and a midden that have produced samples of charred wheat grains and cattle bone, which have been radiocarbon dated to the Roman Iron Age (see Table 8.2 and Fig. 8.4). This site, later to become the principal royal seat of the Anglo-Saxon kingdom of Bernicia, may yet shed some light on the Votadinian tribal elite, their settlements and economy, and their relationship with Rome.

The next group of settlements is formed by the large enclosed sites, or possible estate centres, that contain substantial clusters of roundhouses, stone-built in the uplands and ditched, perhaps with timbers, in the foothills and lower-lying lands. Their elevated status is indicated by their size and the nature of their enclosure, although it should be noted that, on current evidence, these enclosures did not provide substantive defence. Examples could include such settlements as Greaves Ash, with over 40 stone houses situated within three low stone-walled enclosures (Tate 1863a; Fig. 8.6), the similar stone-wall enclosed site at Huckhoe, containing at least eight roundhouses (Jobey 1959), and the stone-walled phase of settlement at Murton High Crags. This enclosed at least nine stone roundhouses in the one eighth of the site interior that was excavated (Jobey and Jobey 1987). The enclosure walls in these cases show no evidence for having been very high, and typically are no more than 2m thick, with roughly dressed facing stones to the front and rear and a stone rubble fill. The ditched equivalents that may or may not have had some upstanding timberwork associated with them are the two enclosures recently excavated at Ingram South (ASUD 2005) and Fawdon Dene enclosure 2 (Frodsham and Waddington 2004).The latter site was very heavily truncated but revealed the fragmentary evidence of a roundhouse in the form of a short arc of stone wall (Fig. 8.7) in the best preserved part of the site, implying that other buildings may have been lost within this much denuded enclosure. The Ingram South enclosure lies just 700m to the north-east of Fawdon Dene enclosure 2 and, like this site, also has a rectilinear form and some kind of annexe, or secondary enclosure, tacked on to it. This enclosure has revealed a complex sequence, including an expansion of the site to the east during the Roman Iron Age, whilst the first ditched enclosure was still in use. The enclosure complex at Ingram South encompasses a substantial area and could, like Fawdon Dene, have accommodated a substantial number of roundhouses.

The next discernible type of settlement within the Votadinian Roman Iron Age is the enclosed farmstead, typically taking the form of a small enclosure, and containing one or just a handful of houses. These farmsteads include the curvilinear 'scooped' or 'Cheviot type' settlements (Fig. 8.8) in the north of the county, which Burgess quite reasonably views as being the same kind of site (Burgess 1984) as the square and rectangular enclosures. These can be found throughout the county, whether on the coastal plain, river terraces, bluffs, areas of plateau or draped across hillsides, or in some cases overlying, or butting up to, earlier hillforts. Both types of site are known to exist in their hundreds, and new examples are coming to light all the time, either through aerial survey, geophysical survey or surface stripping of topsoil in advance of development. The Cheviot settlements, about which we know the least, can have round timber-built houses, as at Coldsmouth Hill (Jobey 1966), or stone-built houses, as at Hetha Burn (Burgess 1984), although this latter site awaits full publication. These sites evidently post-date hillfort construction, as can be seen by the relationship with hillfort ramparts at sites such as West Hill, where

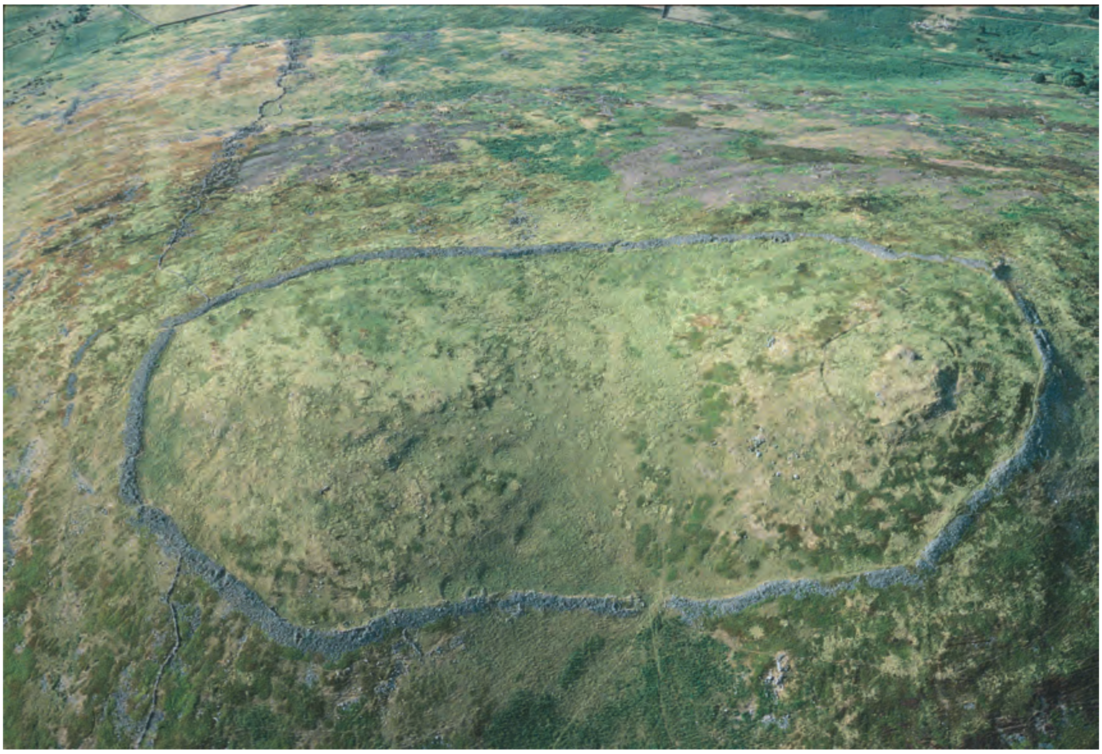


*Figure 8.5. The hillfort at Yeavering Bell (Copyright Tim Gates, 2 August 1994).*

*Figure 8.6. The large enclosed settlement at Greaves Ash that forms a small village and which could possibly have served as some form of estate centre (Copyright Tim Gates, 15 April 1997).*

the rectilinear site overlies the earlier hillfort rampart (Fig. 8.9; Oswald *et al*. 2008). The Cheviot settlement at Hetha Burn may also be considered to be of Roman Iron Age date on account of the Roman artefacts recovered (Burgess 1984). Unlike the rectilinear settlements, this site showed evidence for having grown organically

*Figure 8.7. A short arc of stone wall that formed part of a roundhouse dating to the second century AD surviving within Fawdon Dene Enclosure 2.*

*Figure 8.8. An example of a 'scooped' or 'Cheviot-type' settlement at Haystack Hill (Copyright Pete Topping, Northumberland Archaeological Group).*

over time, from its beginnings as a possible unenclosed timber ring groove house to a rectilinear enclosure around two stone-built roundhouses, and then to an enlarged, irregular enclosure around ten stone-built round buildings scooped into the hillside. Evidently this settlement expanded over time, but it should be noted that the various buildings need not all have been houses. This is in stark contrast to the small, square and rectilinear enclosures of the same period that show all the hallmarks of short-lived occupation (see below). However, it is important to note that the various finds from the site, including the Roman glass, do not extend occupation into the third century AD, and so the duration of occupation remains uncertain.

It is the small, rectilinear type of settlement, however, that has received most attention from archaeologists, with many having been excavated by Jobey (1973a; 1973b; 1977b; 1978; 1982a) and others (e.g. Charlton and Day 1978; Tyne and Wear Museums forthcoming). These sites usually survive as ditched enclosures in the lowlands, visible as cropmarks, whilst in upland areas they can survive as upstanding sites defined by grass-covered or denuded stone walls. Although Jobey thought he recognised pre-Roman Iron Age occupation at a few of these enclosures (e.g. Belling Law and Kennel Hall Knowe), the radiocarbon dates currently available for these sites are equally consistent with a Roman date in their rectilinear enclosed form (see above). The rectilinear sites are typically located so as to be within sight of the existing road system, including the Roman roads, raising the possibility that some were deliberately sited to service Roman supply routes. Indeed, the consistency of many of these sites in form, size, topographical position and spacing (typically *c.* 400m from each other) is highly suggestive of a planned layout of farms on an extensive scale. Presumably this was to maximise farming yields, including in marginal parts of the landscape such as Upper Redesdale and North Tynedale, and this concurs with palaeoenvironmental evidence for widespread agricultural activity in the Northumberland uplands (see above and Chapter 2).

The agricultural role of rectilinear settlements was an observation not missed by Jobey, who also noted that most dated to the Antonine period (Jobey 1966). Indeed, prior to the excavation of those rectilinear settlements with what were thought to be pre-Roman Iron Age antecedents, he went further to suggest that the stimulus for their construction may have been the Antonine advance of *c.* AD 140 (*ibid.*). Another important observation made by Jobey that requires rehearsing here is the fact that there is virtually no evidence for the organic growth of any of the rectilinear settlements.They were abandoned in much the same form as when they were built.Moreover, recent excavation confirms the view that occupation appears to have been short-lived in some instances, as for example at Flodden Hill (see Volume 1, Chapter 5). Although Jobey raised the possibility, he stopped short of postulating the abandonment of these settlements in the third century, despite acknowledging the lack of third-century material on these sites, on account of the success of the northern tribes in overrunning the Wall at the end of the second century. Despite the fact that there have been only a few excavations on these sites since Jobey's pioneering work, they have consistently produced late first- and second-century AD material, which supports the proposition that many were constructed as part of a Roman 'settlement' with the Britons in the Flavian and Antonine periods. After this time the policy may have been abandoned, and many of these sites appear to have been levelled, as was the case at Flodden Hill, or abandoned, as occurred at Woolaw (Charlton and Day 1978). However, if this was the case, we have not yet been able to detect a commensurate reduction in agricultural activity at this time in the available pollen records. Instead, it seems that agricultural output was sustained but via an alternative mode of settlement.

Lastly, we have the unenclosed sites that comprise one or a small group of roundhouses, typically stone-built, which can be seen overlying or built against longsince abandoned hillforts. Hillfort after hillfort has produced evidence for abandonment by the Roman Iron Age, with defences collapsed, slumped or deliberately reduced. During the Roman Iron Age, however, these places frequently provide evidence for reoccupation, but not as forts. Instead they take the form of unenclosed farming settlements with stone-built roundhouses set within, abutting, or sometimes straddling collapsed rubble ramparts. This has been demonstrated by excavation at Wether Hill (Topping 2004), and observed from detailed surface survey at sites such as West Hill, Mid Hill, Ring Chesters, Castle Hill, Staw Hill and St Gregory's Hill, all in North Northumberland (Oswald *et al*. 2008) or Warden Law (Fig. 8.10), above Waters Meet, in the valley of the North Tyne. Some of these reoccupations represent nothing more than the farming settlement of one or two households, as at Wether Hill and Staw Hill, while others consist of more substantial settlements that can include half a dozen or more houses, as at Ring Chesters or West Hill, although this assumes some degree of contemporaneity amongst the houses present (Oswald *et al*. 2008). So far the dating and duration of occupation at these unenclosed sites is barely known and it remains possible that these settlements may allow the third- and fourth-century AD settlement gap to be closed, given that the rectilinear and Cheviot-type settlements, on current evidence at least, appear to have been abandoned after the second century. If this is the case, then fitting the unenclosed sites into a settlement hierarchy alongside the enclosed sites would be misleading. What is needed is a concerted programme aimed at accurately dating the unenclosed Roman Iron Age settlements so that greater clarity can be brought to bear on the question of what happened to Votadinian settlement after the Severan incursion.

The quantity of exotic Roman goods found on Northumbrian sites is always small, though high-status tribal centres, such as Traprain Law, are remarkable exceptions, suggesting that, although trade took place, the British population was not in any sense Romanised. They still lived in roundhouses, farmed the land in the same way, and there is no reason to suspect that they did not continue to dress the same way and speak the native tongue. This can only mean that Romanisation failed at all levels in the Tyne-Forth province, as Higham has previously argued (Higham 1986, 178). Unlike areas further south, there is little evidence for the Romanisation of the British aristocracy, or the population at large, in Northumberland. There are no

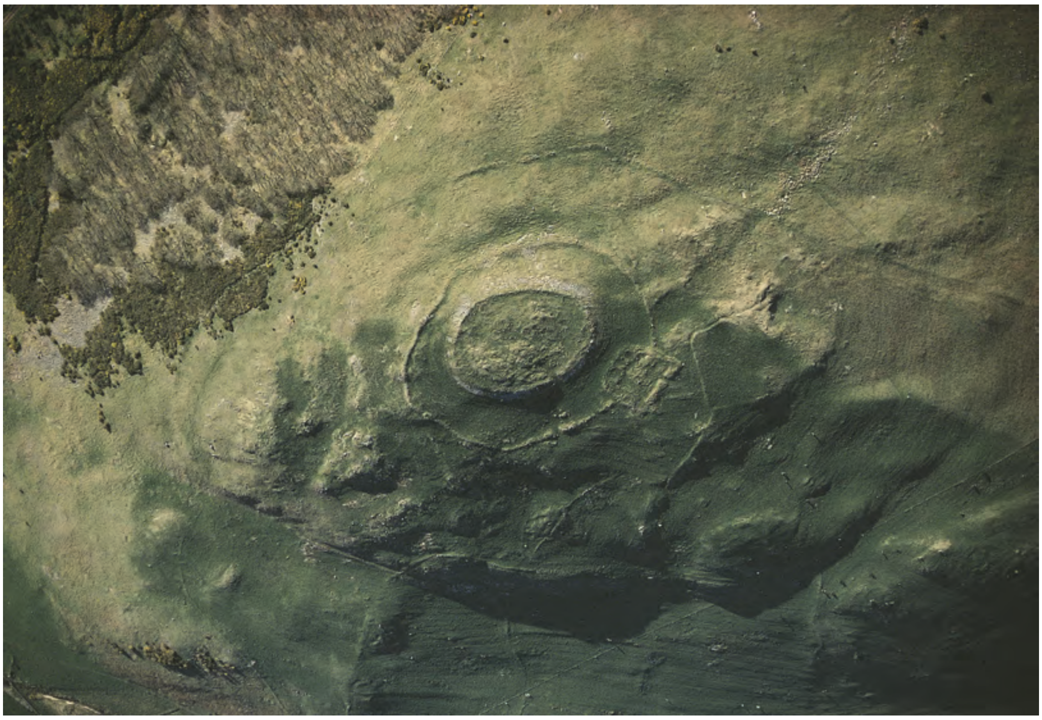


*Figure 8.9. A Cheviot-type settlement overlying part of the hillfort at West Hill (Copyright Tim Gates, 15 April 1997).*

*Figure 8.10. A Roman Iron Age settlement overlying the reduced ramparts of the hillfort at Warden Law which overlooks the confluence of the rivers North and South Tyne (Copyright Great North Museum).*

villa sites known in Northumberland, the nearest being a handful in the Durham lowlands around roads, forts and *vici* (Branigan 1980), in the Vale of York and further south in *Brigantia*, most of which are post-Severan in date. However, the Votadinian elite may not be quite as invisible to us as has been assumed. Although not necessarily high-status from a Roman perspective, the enclosed villages, usually stone-built, such as Huckhoe, Murton High Crags and Greaves Ash, where up to 40 stone houses set within walled enclosures with extensive paved areas and (in the case of the latter) droveways, appear to have served as estate centres for their surrounding catchments. Elsewhere, timber and/or ditched enclosures may have served the same purpose, as could be argued for the large ditched rectilinear enclosures at Ingram South and Fawdon Dene 2. Such settlements are clearly of a different scale, and no doubt higher-status, than the small enclosed farmsteads that dot the Northumberland landscape in their hundreds and which can only ever have housed one or two households. Limited excavations on these larger sites has meant that understanding their precise chronological span, the relative wealth and status of their residents, and the extent to which they were in direct contact with the Roman military have yet to be addressed.

There is little or no evidence to show Roman damage or aggression on any Northumbrian British sites, suggesting again that the relationship between Rome and the *Votadini* was a relatively peaceable affair, but also that any early intimidation must have been muted in its extent. In this sense it appears that the direct political impact of Roman control was felt much less in Votadinian lands than elsewhere in Britain. This is not to say that some farming settlements were not relocated or abandoned, as has been argued for sites in the Hadrian's Wall corridor, including that at Milking Gap (Kilbride-Jones 1938) and in the area of Butterburn Flow (Yeloff *et al*. 2007 – see Chapter 2), or that substantial numbers of young males were not conscripted into the Roman army as the *Numeri Brittonum*. Rather, it would seem that direct military aggression against the *Votadini* is all but impossible to detect.

There is certainly no evidence in the palaeo-environmental record to suggest a reduction in the vigour and scale of Roman Iron Age land use activities to the north of the frontier zone (see above and Chapter 2). Tentative evidence for the presence of hay meadows, pasture and arable plots has been forthcoming in the Milfield Basin, most probably located on the free-draining and fertile glaciodeltaic and glaciofluvial terraces which are likely to have presented some of the most favourable locations for farming. Agrarian landscapes in the Cheviot valleys and uplands, established during later Iron Age times and including a significant cereal component, were sustained throughout the Roman period (Tipping 2010). The pollen sequence from Steng Moss demonstrates local acceleration of woodland clearance for agricultural purposes in the central Northumberland uplands (Davies and Turner 1979). In most other documented upland settings, including those flanking the Till valley at Broad Moss and Ford Moss, contemporary land use was characterised by a commitment to pastoralism with some traces of cereal production (see above and Chapter 2). Climatic conditions appear to have been sufficiently amenable to facilitate agriculture at relatively high elevations (evidenced also by the extensive survival of cord rig), perhaps especially so before and after the Middle Roman cooling event (see above), although farmers would also have had to contend with shifts to wetter conditions around *c.* cal AD 200 and *c.* cal AD 350 (see Chapter 2). That they did so would suggest that demand for foodstuffs and other agricultural products was sustained, not only by the needs of the indigenous population, but possibly also by increasing military demand.

Archaeological evidence would appear to generally support the palaeoenvironmental record for farming activity, emphasising in particular a picture of small households practising a mixed farming regime inherited from pre-Roman Iron Age practice.This comes in the form of botanical macrofossil evidence for cereal cultivation, particularly barley and spelt wheat, from sites such as Ingram South and Pegswood, as well as indirect evidence for stock-keeping, in the form of pounds and enclosures, around the settlements. There is evidence for cord rig cultivation plots associated with rectilinear settlements, such as those at Fold Hill near Sewingshields and Green Brae, Crindledykes, both in the Tyne valley (Gates 2004, 238–9), whilst stock keeping is attested by the finds of animal bone, particularly cattle, on settlement sites. Some of the linear boundary systems that are known as cropmarks (see Chapter 3), and the upstanding remains of funnelled entrances, as at Greaves Ash, and the stock pounds associated with the various rectilinear and Cheviot-type settlements, indicate that stock rearing was a vital component of the farming regime for most settlements. Indeed, stock control may explain why so many settlements of this period are ditched or embanked.

## MATERIAL CULTURE

Never before had the *Votadini* experienced such exposure to an international world as was made possible by contact with the Roman military on their southern and western boundaries, and they would not experience it again for another *c.* 300 years. During this time new materials were introduced, such as glass, whilst locally available resources, such as coal, were also exploited. However, it was the Roman military that created the heavy demand for imported goods; on the average Votadinian farm only small amounts of such exotic items ever seem to have trickled through. That may, of course, be different for the Votadinian aristocracy, as some of the finds from Traprain Law suggest (Curle 1923), but it seems that a distinct division between the Roman military and the Votadinian Britons lasted for the entire Roman Iron Age. Although such items as glass beads, pendants, armlets and bangles, Samian Ware, Black Burnished Ware and coins are frequently found on Votadinian farming sites, they occur in very low numbers, and most often on the higher-status 'estate centre' sites, suggesting that such items were relatively highly valued commodities. This pattern has become well established, in large part as a result of the prolific excavations by Jobey on Roman

Iron Age settlements, which include those at Huckhoe (1959), Tower Knowe (1973b), Hartburn (1973a), Belling Law (1977), Kennel Hall Knowe (1978), Doubstead (1982) and Murton High Crags (Jobey and Jobey 1987), as well as more recent excavations at sites such as Pegswood (Proctor 2009) and West Brunton (Tyne and Wear Museums forthcoming). On the Roman military sites however, such items abound.

That a cash economy developed during the Roman occupation in more southerly areas of Britain can not be denied, but north of the Hadrianic frontier there is little evidence that coins were used as currency. Certainly Roman coins found their way on to the higher-status farming sites, such as the silver *denarius* of Vespasian of AD 72 or 73 found at Ingram South (ASUD 2005), the copper alloy *as* of Domitian, minted sometime between AD 81 and 96, that was found 700m away within the second of the Fawdon Dene enclosures (Frodsham and Waddington 2004, 187), or the *sestertius* of Hadrian, minted in AD 119, found in the stone-walled enclosure at Huckhoe (Jobey 1959). Their presence as single finds indicates that they were unlikely to have been used for regular transactions but perhaps came into the hands of the farming occupants by way of contact with the Roman military. The method of daily trade and exchange between Votadinian people no doubt continued to be some kind of bartering system, and perhaps through the use of currency bars. It is remarkable, however, that no Roman coins have been found on the small square and rectilinear farmsteads containing just a couple of roundhouses. These farms may have been obliged in some way to the inhabitants of the larger enclosed farmsteads who undertook dealings directly with the Roman military. The implication of a difference in access to wealth between farmsteads of different size and status could suggest different relationships with the Roman military, supporting the notion of a settlement hierarchy throughout the Roman Iron Age in this region.

Other than occasional exotic items, the material culture of the native Britons does not appear to have changed much from the pre-Roman Iron Age. Coarse ceramic coil-built vessels, made from local clays, are still found on the farmstead sites, together with items such as bun-shaped rotary querns, spindle whorls and occasional metalwork such as iron rings, nails, lead fragments and iron smithing slag, consistent with the use of small bowl furnaces, as at Kennel Hall Knowe (Jobey 1978).

The Roman military sites could not be more different. Their presence stimulated a huge trade in goods from more southerly areas of Britain and the Continent to the northern frontier. Over the long term this demand was unlikely to be sustained, given the huge resources required to maintain a large military presence in the region. Large numbers of ceramics were imported, together with fine glass vessels, bangles, beads and gaming counters. Large quantities of metalwork have also been found, ranging from silver and bronze vessels to armour, weapons, jewellery and building and plumbing artefacts made from lead. Large numbers of small finds have been found on the various fort excavations, including artefacts made from bone and antler, as well as more perishable materials including leather and papyrus. Perhaps the most amazing finds of recent years are the writing tablets from Vindolanda, which provide a unique insight into the more humdrum aspects of daily life for the Roman military stationed on the northern frontier (e.g. Bowman and Thomas 2003).

## DEATH, BURIAL AND RELIGION

The religious preoccupations of the Roman military are relatively well known and those of the northern military frontier have been studied primarily through epigraphic evidence (e.g. Zoll 1995; Irby-Massie 1999). Several Roman Iron Age temples are known, including those dedicated to Antenociticus at Benwell (Fig. 8.11), the shrine to Coventina at Carrawburgh (which included over 13,000 coins dropped in the stone-lined well as votive offerings), and a concentric temple with ambulatory at Vindolanda. Religious sites beyond the confines of the fort areas continued to be used for the propitiation of local gods, as evidenced by the discovery of a small grotto amongst the Fell Sandstone cragline at Yardope, where a carving of a naked horned god, probably Cocidius, had been positioned next to the entrance (Charlton and Mitcheson 1983), together with evidence for what appears to be a small hearth with chimney at the rear (authors' personal observation). The dedications to local gods and goddesses may reflect the desire of immigrant soldiers to garner their protection. The Druidic belief that the head was where the human soul resided is perhaps reflected by the carving in stone of heads of local deities by the Roman military, such as the head of Antenociticus from Benwell (Fig. 8.12).

The Roman military zone attracted a cosmopolitan population, with troops from all parts of the Roman Empire stationed there. This melting pot of cultures and religious observance is nowhere better witnessed than in the myriad of cults and dedications known from the various military sites. These ranged from the official religions of the Empire to cults from other provincial areas and the veneration of unnamed *genii loci* (a spirit associated with a specific place). Particularly popular in the later Roman period was the mystery cult of Mithras, widely followed in Britain by the Roman military (Daniels 1962; 1971), which is known from the discovery of *Mithraea* at Rudchester, Housesteads and the well-preserved example at Carrawburgh (Richmond and Gillam 1955).

The practice of votive deposition appears to continue, however, as suggested by the discovery of several metal hoards from wet contexts, such as the bronze vessels from Prestwick Carr (Wright 1969), the

*Figure 8.11. The temple of Antenocitícus at Benwell.*

*Figure 8.12. The carved stone head of the native British god Antenocitícus from Benwell (Copyright Great North Museum).*

silver plate and related objects from the river Tyne near Corbridge (Nicholson 1995; Petts 2003) and the *patera* at Capheaton (Hunter 1997). A jewellery hoard from the Roman Wall fort at Great Chesters included the very fine '*Aesica* brooch' of British manufacture made from gilt bronze, together with several *intaglios* (Charlesworth 1973). There are further hints of votive practice at several sites of this period which reflect the more widespread British practice of placing objects in ditches, ditch terminals and around entrances. This includes two stones with possible cup marks in the ditch terminals at the West Brunton enclosures A and B (Nick Hodgson pers. comm.), which recalls the cup-marked boulder found in the hillfort ditch at Ball Cross Farm, Bakewell, in the Peak District (Stanley 1954; see also Chapter 7, Death and Ritual section).

With the accession of Constantine in AD 306 the spread of Christianity across the Roman Empire received a boost, although the extent to which it permeated the Roman military remains to be established. Excavations at South Shields (Bidwell and Speak 1994), Housesteads (Crow 1988) and Vindolanda (Birley *et al*. 1999) have revealed the remains of possible churches, although the dates of these structures have yet to be firmly established. Elsewhere, the evidence consists of a few tombstones from military sites, such as that from Risingham, and some silver vessels from the Tyne with the *chi-rho* symbol (Petts 2003, 122). The extent to which Christianity permeated the Votadinian British population, if at all, is difficult to assess as no evidence for Christian symbolism or religious structures has yet been found on any of the Votadinian sites in Northumberland. It is unlikely, however, that the population of this region was unaware of it, and it remains possible that evidence for early Christian worship may yet be found in a native British context north of the Wall.

There are few Roman Iron Age burials known from Northumberland outside Roman military contexts. The Iron Age practice of making secondary interments into, by-then, ancient burial mounds continued, as indicated by the burial placed into a mound at Chatton Sandyford associated with a glass shard and part of a flagon of the third century AD (Jobey 1968a). Roman burials typically occur in cemeteries outside the forts and *vici*, more often than not flanking the roads into these sites, as is the case with the Roman cemetery at Petty Knowes adjacent to Dere Street as it passes by the fort at High Rochester (Charlton and Mitcheson 1984; Wilson 2004). The cemeteries sometimes have tombstones carrying inscriptions and occasionally monumental tombs are known, as at Shoreden Brae near Corbridge (Gillam and Daniels 1961) and Petty Knowes (Charlton and Mitcheson 1984). Cremation seems the most commonly practised rite, although occasional inhumations in lead caskets or wooden boxes are known. Elsewhere along the line of the Wall the practice of interring individuals in structures located on or near to Hadrian's Wall has been reported by Crow and Jackson (1997) while discussing the specific find of a long cist burial at Sewingshields. Most of these burials seem to be of Roman Iron Age date, as Crow and Jackson argue, and in the case of the Sewingshields cist, and the later one from Beadnell (Tait and Jobey 1971), we can perhaps see some continuity from the pre-Roman Iron Age.

## A SOCIAL PERSPECTIVE

As much of the above overview has shown, there are two very distinct suites of archaeological remains relating to this period in Northumberland: on the one hand the settlements and fields of the indigenous Votadinian community and on the other those of the Roman military. The differences between these two communities show no evidence of having broken down over time, with the two communities in the late fourth century AD as culturally far apart as they were at the end of the first century AD. The cultural gap remained huge and there is no evidence to suggest that any degree of Romanisation occurred amongst the *Votadini*. If anything, the slight cultural mixing appears to have flowed the other way, as witnessed by the propitiation of local deities by immigrant troop units. Some local Britons can be glimpsed through inscriptions at military sites, but it seems that only a fraction of the Votadinian population lived in *vici* or visited them, and the Britons recorded in these inscriptions need not have been of local stock. Most of the *Votadini* probably rarely saw Roman soldiers, except for occasional units on patrol or during one of the campaigns north of the Hadrianic frontier, and it is unlikely they would have understood their languages.

It is probable that some of the young Votadinian men were conscripted into the Roman army as the *Numeri Brittonum* (Gillam 1984). Indeed, this may have been a condition of the Votadinian peace with Rome, and for these few, a life of discipline, war, and travel to the Rhineland and elsewhere ensued. Whether slaves were required from the *Votadini* remains unknown, but it seems likely that other forms of tribute were required by the Roman military. This would have kept the majority of the British population hard at work in the fields so that sufficient surplus could be found to feed the Roman military, whilst reducing time available to pursue martial training or to turn their attention to throwing off the Roman yoke. The presence of the Roman military was evidently tolerated, as the political reality left very little alternative, particularly in the Flavian and Antonine periods. When Roman troops were withdrawn in the fourth century, exposing Britain to waves of hostile raids with very little means of defence, the troops may have been missed. However this may have caused unrest, given that in all likelihood, Rome had disarmed the *Votadini* for as long as they were able. Be this as it may, it is possible that the *Votadini* were better placed than most to hold out against the threat of the Picts, Scots and Saxons and they may have been instrumental in the British revival of the mid–late fifth century, as the exploits of Cunedda suggest (see Chapter 9).

The slender evidence for post-Roman settlement that has emerged from Northumberland points, if anything, towards continuity of settlement from Roman Iron Age times. This could suggest that the Roman withdrawal, although potentially catastrophic for some areas from a purely military perspective, did little to change the daily life of the Votadinian farmer, and in this sense Romanisation beyond the Hadrianic frontier, and for that matter much of northern England south of the frontier, failed, leaving British tribes culturally much the same as they had been during the Late pre-Roman Iron Age. The exposure to exotic goods, a wide range of foreign peoples and alien ideas and concepts must have had an influence, at least on those who came into contact with the Roman military. But these impacts were absorbed into a society that was deeply rooted in its British traditions and lore, and one that no doubt accommodated such influences within a wider view of the world than had been available prior to the Roman presence. In fact the most enduring legacy that the Romans may have left in these northern areas was perhaps that which remains most invisible to us now: the exposure to Christianity.

*Table 8.1. Radiocarbon dates for rectilinear enclosures.*

| Site | Material and context | Laboratory Number | δ$^{13}$C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|---|
| Kennel Hall Knowe | Alder and oak charcoal from base of wall trench of earliest timber built house post-dating phase 1 palisade | HAR-1943 | | 2050±90 | 360 cal BC–130 cal AD | Jobey 1978 |
| Kennel Hall Knowe | Indet charcoal from Pit C that is associated with timber built house 1 or 2 | HAR-1937 | | 1970±70 | 170 cal BC–220 cal AD | Jobey 1978 |
| Kennel Hall Knowe | Indet charcoal from base of wall trench for timber built house 3 | HAR-1941 | | 1920±110 | 200 cal BC–380 cal AD | Jobey 1978 |
| Flodden Hill | Basal ditch silt of enclosure, waterlogged alder twig | OxA-10632 | -26.2 | 2032±36 | 170 cal BC–60 cal AD | Passmore and Waddington 2009 |
| Flodden Hill | Basal ditch silt of enclosure, waterlogged alder twig | OxA-10633 | -26.3 | 1999±34 | 90 cal BC–80 cal AD | Passmore and Waddington 2009 |
| Ingram South | Barley seed from ditch fill [22] | Beta-105609 | | 1840±40 | cal AD 70–320 | ASUD 2004 |
| Ingram South | Barley grains from posthole fill [F275] containing daub | SUERC-2404 (GU-11730) | -22.9 | 1930±50 | 50 cal BC–220 cal AD | ASUD 2004 |
| Ingram South | Barley grains from lower fill of inner ditch [F96] | SUERC-2405 (GU-11731) | -24.1 | 1875±40 | cal AD 30–240 | ASUD 2004 |
| Ingram South | Cereal grains from posthole [F258] | SUERC-2406 (GU-11732) | -22.4 | 310±35 | cal AD 1460–1660 | ASUD 2004 |
| Ingram South | Alder charcoal from fill of gully [F176] below inner ditch | SUERC-2410 (GU-11733) | -26.3 | 2305±40 | 410 cal BC–240 cal AD | ASUD 2004 |
| Ingram South | Alder charcoal from fill of postpipe [F166] in wall line | SUERC-2411 (GU-11734) | -27.3 | 1920±35 | cal AD 1–140 | ASUD 2004 |
| Ingram South | Barley grains from posthole [F27] | SUERC-2412 (GU-11735) | -23.5 | 1905±35 | cal AD 20–220 | ASUD 2004 |
| Ingram South | Indet material from below clay floor [F19] | Beta-184070 | -24.5 | 2040±40 | 180 cal BC–cal AD 60 | ASUD 2004 |
| Ingram South | Nut shell from northern edge of clay floor [F19] | Beta-182413 | -24.6 | 1850±40 | cal AD 60–260 | ASUD 2004 |
| Ingram South | Small oak roundwood charcoal from primary silt from gully [F592] | SUERC-4494 (GU-12463) | -26.9 | 2015±40 | 160 cal BC–80 cal AD | ASUD 2004 |
| Ingram South | Cereal grains from early cobbled surface [537] | SUERC-4495 (GU-12464) | -24.9 | 2825±40 | 1120–890 cal BC | ASUD 2004 |
| Ingram South | Barley grains from fill of daub wall line [520] | SUERC-4496 (GU-12465) | -25.6 | 1970±40 | 50 cal BC–cal AD 130 | ASUD 2004 |
| Ingram South | Charred seeds and roundwood from fill of gully under floor [544] | SUERC-4497 (GU-12466) | -23.9 | 1975±35 | 50 cal BC–cal AD 120 | ASUD 2004 |
| Ingram South | Charred seeds and twigs from fill of outer gully [F561] | SUERC-4501 (GU-12467) | -22.0 | 2000±35 | 90 cal BC–cal AD 80 | ASUD 2004 |
| Ingram South | Indet. Charcoal from deposit in end of ditch/recut [721] | SUERC-4502 (GU-12468) | -25.5 | 1885±40 | cal AD 20–240 | ASUD 2004 |

*Table 8.1. continued.*

| **Site** | **Material and context** | **Laboratory Number** | **δ13C (‰)** | **Radiocarbon Age (BP)** | **Calibrated date range (95% confidence)** | **Reference** |
|---|---|---|---|---|---|---|
| Ingram South | Indet. Charcoal from fill of ditch of second enclosure | SUERC-4503 (GU-12469) | -27.5 | 1955±40 | 100 cal BC–cal AD 90 | ASUD 2004 |
| Belling Law | Charcoal: mainly *Quercus* sp. with a few fragments of ?*Alnus* sp.; all from large timbers, from wall timbers of house 1 which excavator thought to be contemporary with phase 1 enclosure | HAR-1394 | -26.3 | 2110±80 | 390 cal BC–cal AD 60 | Jobey 1977 |
| Belling Law | Charcoal: approximately equal amounts of *Fraxinus* sp. (fairly large timbers) and *Corylus* sp. (small branch or post). from a posthole belonging to timber structure within enclosure | HAR-1393 | -25.6 | 1670±70 | cal AD 220–550 | Jobey 1977 |
| Hartburn a | Indet. charred twigs <10mm diameter, from basal silt of outer enclosure ditch | I-6300 | | 1985±175 | 400 cal BC–cal AD 420 | Jobey 1973a |
| Hartburn b | Indet. small twigs from sunken hearth in inner enclosure | I-6301 | | 1885±90 | 90 cal BC–cal AD 350 | Jobey 1973a |
| West Brunton | Gully of structure 1, wheat grain | UBA-7810 | | 1962±37 | 50 cal BC–cal AD 130 | Hodgson pers. comm. |
| West Brunton | Enclosure A terminal, cherry wood | UBA-7812 | | 1865±36 | cal AD 60–240 | Hodgson pers. comm. |
| West Brunton | Enclosure A terminal, hazel | UBA-7813 | | 1892±31 | cal AD 30–220 | Hodgson pers. comm. |
| West Brunton | Ditch C, final fill, wheat grain | UBA-7815 | | 1880±30 | cal AD 60–230 | Hodgson pers. comm. |
| West Brunton | Ditch C, final fill, wheat grain | UBA-7816 | | 1926±43 | 40 cal BC–cal AD 210 | Hodgson pers. comm. |
| Fawdon Dene Enclosure 2 | Alder twig from basal fill of entrance post pit of enclosure 2 | AA-40752 (GU-9204) | -26.9 | 1845±40 | cal AD 70–260 | ASUD 2000 |
| Fawdon Dene Enclosure 2 | Hazel charcoal from soil deposit sealed below primary build of a roundhouse within enclosure | AA-40755 (GU-9207) | -26.4 | 1910±45 | cal AD 210–410 | ASUD 2000 |
| Fawdon Dene Enclosure 2 | Willow charcoal from final occupation layer in roundhouse sealed by wall tumble | AA-40754 (GU-9206) | -26.5 | 1770±40 | cal AD 1–230 | ASUD 2000 |

*Table 8.2. Dates for other sites with Roman Iron Age activity.*

| Site | Material and context | Laboratory Number | δ$^{13}$C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|---|
| Fawdon Dene Enclosure 2 | Alder charcoal from basal fill of pit cut through ditch terminus | AA-40752 (GU-9204) | -26.9 | 1845±40 | cal AD 70–260 | ASUD pers. comm. |
| Fawdon Dene Enclosure 2 | Hazel charcoal from soil lens immediately below roundhouse wall | AA-40755 (GU-9207) | -26.4 | 1910±45 | cal AD 1–390 | ASUD pers. comm. |
| Fawdon Dene Enclosure 2 | Willow charcoal from occupation debris sealed by roundhouse tumble | AA-40754 (GU-9206) | -26.5 | 1770±40 | cal AD 130–390 | ASUD pers. comm. |
| Fawdon Dene Enclosure 2 | Hazel charcoal from fill of small post socket containing packing stones | AA-44595 (GU-9520) | -25.4 | 1755±45 | cal AD 120–390 | ASUD pers. comm. |
| Fawdon Dene Enclosure 2 | Willow/hazel charcoal from upper fill of pit F46 inside roundhouse | AA-44597 (GU-9522) | -26.6 | 1860±45 | cal AD 50–260 | ASUD pers. comm. |
| Redscar Pit Alignment | Pit fill (8a) *Ericaceae* charcoal | OxA-10693 | -25.0 | 1833±36 | cal AD 80–320 | Passmore and Waddington 2009 |
| Redscar Pit Alignment | Pit fill (8b) *Ericaceae* charcoal | OxA-10764 | -25.1 | 1765±45 | cal AD 130–400 | Passmore and Waddington 2009 |
| Redscar Pit Alignment | Pit fill (10a) *Ericaceae* charcoal | Oxa-10694 | -27.4 | 1867±35 | cal AD 60–240 | Passmore and Waddington 2009 |
| Redscar Pit Alignment | Pit fill (10b) *Ericaceae* charcoal | OxA-10695 | -24.7 | 1927±36 | cal AD 10–140 | Passmore and Waddington 2009 |
| Redscar Pit Alignment | Pit fill (6) *Prunus* charcoal | OxA-10671 | -24.4 | 1625±45 | cal AD 260–540 | Passmore and Waddington 2009 |
| Redscar Pit Alignment | Pit fill (9/10) *Rhamnus cathartica* charcoal | OxA-10639 | -24.6 | 1519±35 | cal AD 430–640 | Passmore and Waddington 2009 |
| Pit cut into cultivation terrace at Plantation Camp | Barley and legume from pit fill on terrace 3 | GU-9200 | -23.5 | 1820±40 | cal AD 80–330 | ASUD 2000 |
| South Shields Roman fort | Human burial in commanding officers house inside fort representing an episode of violent assault | Beta-45064 | | 1720±60 | cal AD 130–440 | Bidwell and Speak 1994 |
| South Shields Roman fort | A second human burial in commanding officers house inside fort representing an episode of violent assault | Beta-45065 | | 1540±80 | cal AD 340–660 | Bidwell and Speak 1994 |
| Bamburgh Castle | Cattle bone, context BC05 1161, fill of construction trench of rectangular timber building west ward | SUERC-10811 | -21.7 | 1785±35 | cal AD 130–350 | Sarah Groves and Graeme Young pers. comm. |
| Bamburgh Castle | Grain, barley, context BC04 710, midden layer chapel | SUERC-11528 | -23.6 | 1765±35 | cal AD 130–390 | Sarah Groves and Graeme Young pers. comm. |

# 9 A Kingdom Born and Lost AD 410–1066

## *Clive Waddington and David G. Passmore*

## INTRODUCTION

After Emperor Honorius' letter of AD 410, abandoning Britain to her fate following several decades of Roman troop withdrawals, Britain was left to organise its own defence against invasions of Picts, Scots and Germanic groups. Although the limited textual evidence can be frustratingly ambiguous, politicised and error-ridden, it is clear that the following century witnessed widespread hostilities between Romanised Britons, non- Romanised Britons, Picts, Irish (Scots) and Germanic groups, including Anglo-Saxons, amongst others. A period of British hegemony appears to have been achieved in the late fifth–early sixth centuries, if Gildas' remark that "No sooner were the ravages of the enemy checked, than the island was deluged with a most extraordinary plenty of all things, greater than was before known …" (*De Excidio Brittaniae*, 21) is accepted. By the mid-sixth century, however, British fortune was in reverse, so that by the end of the century a very different land had emerged, with Anglo-Saxon polities established throughout much of the lands that now comprise 'England'. The remaining British kingdoms, such as Rheged and Elmet, were also soon to be absorbed into the kingdom of their powerful neighbour: Northumbria. The kingdom of Northumbria achieved political preeminence during the seventh century, with Edwin, Oswy and Ecgfrith recognised by Bede as *Bretwaldas* (overlord of the English People).

Indeed, so pervasive was Northumbrian influence during the seventh and early eighth centuries that southern Scotland, the Isle of Man, Anglesey, Gwynedd, Ulster, and Lindsey were brought into the direct ambit of Northumbria from time to time, and the kingdoms of Mercia and Wessex made tributary. Northumbrian kings and clerics also had influence abroad and this brought the areas of modern Northumberland, East Lothian and Yorkshire into direct contact with the Mediterranean, Germanic and Scandinavian worlds, as well as that of the Carolingians. The politics of Northumbria were forever characterised, however, by internal power struggles, which provided a prime target in later centuries for Scandinavian raiders to exploit, particularly as the heartland of Northumbrian power, centred on York, was quickly and directly accessed by way of a navigable river system. With such easy access to rich pickings, it was not long until Scandinavian ambitions were raised. By the mid-ninth century the Vikings had become settlers and carved out an Anglo-Scandinavian kingdom based around York, which encompassed the southern part of what had been Northumbria. But even their unbridled ambition could not dislodge the old Bernician heartland of the Anglo-Saxon kingdom in the north. This remained, to a greater or lesser degree, independent until the arrival of William the Bastard in 1066. Indeed, it is the Bernician heartland, centred on the formidable rock fortress at Bamburgh in North Northumberland, that survived as the rump kingdom of Northumbria, and which bears the name of 'Northumberland' to this day. The name 'Northumbria' derives from the Anglo-Saxon term for the English people north of the Humber. The Humber appears to have been conceived as less of a river than as an extension of the northern ocean, separating the northern English from the rest of the English kingdoms. The use of 'Northumbria' is first attested in Bede's Ecclesiastical History of the English Church and People, written in the early eighth century AD, in which he mentions the Northumbrians in the Latinised form '*northern hymbrensis*'.

With such a complex history of hostilities, and the wresting of military and political control from different peoples, the first millennium AD provides a rich historical canvas for exploring cultural imposition, culture change, processes of assimilation, cultural hybridisation and syncretism that few other periods of British history can offer. From an archaeological and landscape perspective, North Northumberland provides a fertile area for considering such issues. With iconic archaeological sites at Yeavering, Bamburgh and Lindisfarne, as well as nearby Doon Hill, Dunbar and Sprouston, in modern East Lothian, there is a wealth of archaeological sites to be considered. This has been amplified in recent years by the excavations at Thirlings (O'Brien and Miket 1991; Fig. 9.1), Green Shiel on Lindisfarne (O'Sullivan and Young 1995),

*Figure 9.1. Excavation of an Anglo-Saxon post-in-trench building (B), at Thirlings (Copyright Roger Miket).*

Cheviot Quarry (Johnson and Waddington 2008), Lanton Quarry (Waddington 2009) and Shotton (McKelvey 2010), as well as at the burial ground known as the 'Bowl Hole', outside Bamburgh Castle (Groves *et al*. 2009), and a small excavation on the edge of Maelmin (see Volume 1, Chapter 5).

The volume of archaeological and historical research into the early medieval period of North Northumberland is enjoying something of a renaissance. This is thanks, in part, to the work at Bamburgh Castle and Lanton Quarry. In addition, the subject is enjoying the renewed attentions of both established and new researchers, as evidenced in the recent edited volume dedicated to Brian Hope-Taylor (Frodsham and O'Brien 2005), as well as recent journal articles that range from a reconstruction of the early medieval shires of North Northumberland (O'Brien 2002), to a study of the Bamburgh coin hoard (Pirie 2004), the excavation of an Anglo-Saxon watermill at Corbridge (Snape 2003), consideration of place names (e.g. Breeze 2001), a study of the land between the lower reaches of the Tyne and Wear (Roberts 2008), Tipping's (2010) review of the environmental history of the Bowmont valley in the Cheviots and, in relation to study of textual sources, Higham's recent treatise on Bede's Ecclesiastical History (Higham 2006).

The geographical extent of this discussion follows that of the preceding chapters, with its focus directed towards what is modern North Northumberland. Given the pivotal role of this heartland region within the wider polity that constituted the Anglo-Saxon kingdom of Northumbria, it is, however, necessary to refer to, and discuss, events and places across the kingdom in order to understand our study area in its broader context. Figure 9.2 depicts Northumbria and key sites and battles mentioned in the text, whilst Figure 9.3 shows the general spread of early medieval sites in modern-day North Northumberland.

## HISTORICAL NARRATIVE

The following section seeks to synthesise the politico-military background of the period from a North Northumbrian perspective. The history of the Church is not discussed in any detail as this forms a huge subject in its own right that is beyond the scope of this volume. Sketching the historical background to the period requires recourse to a small number of texts of varying historical accuracy and reliability, at least for the early centuries of this period. These include Gildas' apocalyptic *De Excidio Britanniae* (On the Ruin of Britain), the *Historia Brittonum* (History of the Britons) attributed to Nennius, the *Welsh Annals*, Bede's *Ecclesiastical History* and the Anglo-Saxon Chronicle. Other texts include the heroic poem *Y Gododdin*, attributed to Aneirin, which records the defeat of the Britons at the battle of Catraeth (Catterick), thought to have taken place around AD 600. For later periods, other texts are available that shed sufficient light on the later centuries of the first millennium AD to allow a more reliable historical framework for this period to be constructed. In addition to the primary sources, the works of Alcock (2003), Harding (2004), and for the Anglo-Scandinavian period, particularly Higham (1993), have been used to inform this account.

In the period after AD 410 the southern British, under king Vortigern, are thought to have invited Germanic warriors to Britain to defend it from attacks from the north. In the words of Gildas (*De Excidio Brittaniae*, 23):

> Then all the councillors, together with that proud tyrant Vortigern, the British king, were so blinded, that, as a protection to their country, they sealed its doom by inviting among them like wolves into the sheepfold, the fierce and impious Saxons, a race hateful both to God and men, to repel the invasions of the northern nations.

This practice of paying mercenaries from the Continent should not be seen as anything new, as Germanic units in the Roman army are known to have been stationed in Britain, as can be seen with the Frisians documented at Housesteads (Breeze and Dobson 2000). What this desperate measure appears to reflect is the inability of the Romanised areas of Britain, primarily in the south, to deal with hostile raids after the removal of Roman forces. In contrast, the militarised areas in the north, including the Wall corridor and lands immediately beyond the Roman Empire, would have been better adapted to deal with hostile neighbours, as they had been doing this in one way or another for many centuries. Taking into account the military context of the north, several scholars have made the case for Arthur, known to us from the *Historia Brittonum* and the *Welsh Annals*, having been a northern war leader. This is a possibility that finds some support in the statement made by Nennius that "The first battle in which he (Arthur) was engaged was at the mouth of the river Glein", which, if he was referring to the river Glen in Northumberland, is an apt description for the location of Yeavering, as Hope-Taylor (1977) has noted before. Without digressing into a study of the veracity of Arthur as a true historical figure, and whether he is one and the same Ambrosius Aurelianus, the latter being referred to by Gildas (*De Excidio Britanniae*, 25), the sources point towards a robust and effective British response from the mid-fifth century onwards. This resulted in the re-establishment of British control until around the mid-sixth century, when Anglo-Saxon invaders gained the ascendancy and began the establishment, and enlargement of military and political control over most of what was to become England.

During this hazy period of British hegemony, albeit one punctuated by foreign aggression and internal strife, some kind of division occurred within the lands that had, in Roman Iron Age times, been those of the *Votadini*. It is widely acknowledged that the kingdom of the *Gododdin* is the successor state of the *Votadini*, with the former name believed to be derived from the latter (Hope-Taylor 1977; Alcock 2003). It is clear from various sources, however, that the kingdom of the *Gododdin*, or *Manau Gododdin* to give it its full name, was centred upon Edinburgh and encompassed the lands immediately north, east and south, placing its northern limit further than that usually ascribed to the *Votadini*. Such a limit is nonetheless possible for the *Votadini*, and this later geographical polity could yet provide a more accurate description of the northern margin of Votadinian territory. In the lands of what is modern-day Northumberland, and perhaps the lower Tweed valley as well, however, a new British kingdom, that of *Brynaich* (approximate pronunciation 'Brin ike'), is known to us from the *Historia Brittonum* and Welsh poetry. Assuming that the name *Brynaich* was not simply the Britonic name for Anglo-Saxon Bernicia, this new polity appears to have sprung out of what was previously the southern Votadinian lands, and its formation appears to have pushed Votadinian territory further northwards, giving rise to the polity of the *Gododdin*. There are occasional references to *Gododdin* in early medieval texts, suggesting that it came into being within a short time of the Roman withdrawal. We are told in the *Historia Brittonum* (62), for example, that Cunedda of *Gododdin* and his eight sons led his warriors throughout northern and western Britain, driving out Irish invaders with great slaughter and resettling these areas. This would accord with a mid-fifth-century date, although caution must be urged in using this text. The strong Welsh tradition associated with Cunedda and his descendants, however, and the evidence from stone inscriptions (e.g. Eliseg's Pillar), means that we can be fairly sure that this individual existed and that he made a significant contribution to reasserting British power in the north and in Wales. If this is the case, then the partition of the Votadinian kingdom must have taken place early after the Roman withdrawal. Gildas tells us that "having heard of the departure of our friends (Romans), and their resolution never to return, they (Picts and Scots) seized with greater boldness than before on all the country towards the extreme north as far as the wall" (*De Excidio Brittaniae*, 19). Gildas goes on to remark that:

> the discomfited people, wandering the woods, began to feel the effects of a severe famine, which compelled many of them without delay to yield themselves up to their cruel persecutors, to obtain sustenance: others of them, however, lying hid in mountains, caves and woods, continually sallied out from thence to renew the war. And then it was, for the first time, that they overthrew their enemies, who had for so many years been living in their country (*De Excidio Brittaniae*, 20).

It is in this resurgence of British power, after what appears to have been a short-lived collapse, during what was probably the first quarter of the fifth century AD, that we should look for the ending of the Votadinian polity and the creation of its successor


**Battle Sites**
1. Carham 1016/18
2. Catterick c.600
3. Chester c.615-6
4. Degastan c.603
5. Edinburgh Siege 638
6. Hatfield Chase 633
7. Heavenfield 634/5
8. Masterfelth 642
9. Nechtansmere 685
10. River Idle c.616
11. Trent c.679
12. Winwaed 655

**Christian Centres**
13. Bywell
14. Coldingham
15. Escomb
16. Hartlepool
17. Hexham
18. Jarrow
19. Lindisfarne
20. Monkwearmouth
21. Norham
22. Ripon
23. Tynemouth
24. Warden
25. Whitby
26. Whithorn

**Other Sites**
27. Bamburgh
28. Barrasford
29. Benwell
30. Berwick upon Tweed
31. Birdoswald
32. Burradon
33. Capheaton
34. Carlisle
35. Castle Eden
36. Cheviot Quarry
37. Corbridge Water Mill
38. Dilston
39. Doon Hill
40. Dunbar
41. Dunstanburgh
42. Hepple
43. Housesteads
44. Howick
45. Ilderton
46. Lanton Quarry
47. Lindisfarne - Green Shiel
48. Lowick
49. Maelmin
50. Milfield North Henge
51. Milfield South Henge
52. New Bewick
53. Phantassie
54. Ratho
55. Sacriston
56. Shotton
57. South Shields
58. Sprouston
59. Thirlings
60. Vindolanda
61. Yeavering
62. York

*Figure 9.2. The kingdom of Northumbria at the time of Edwin and key places mentioned in the text.*

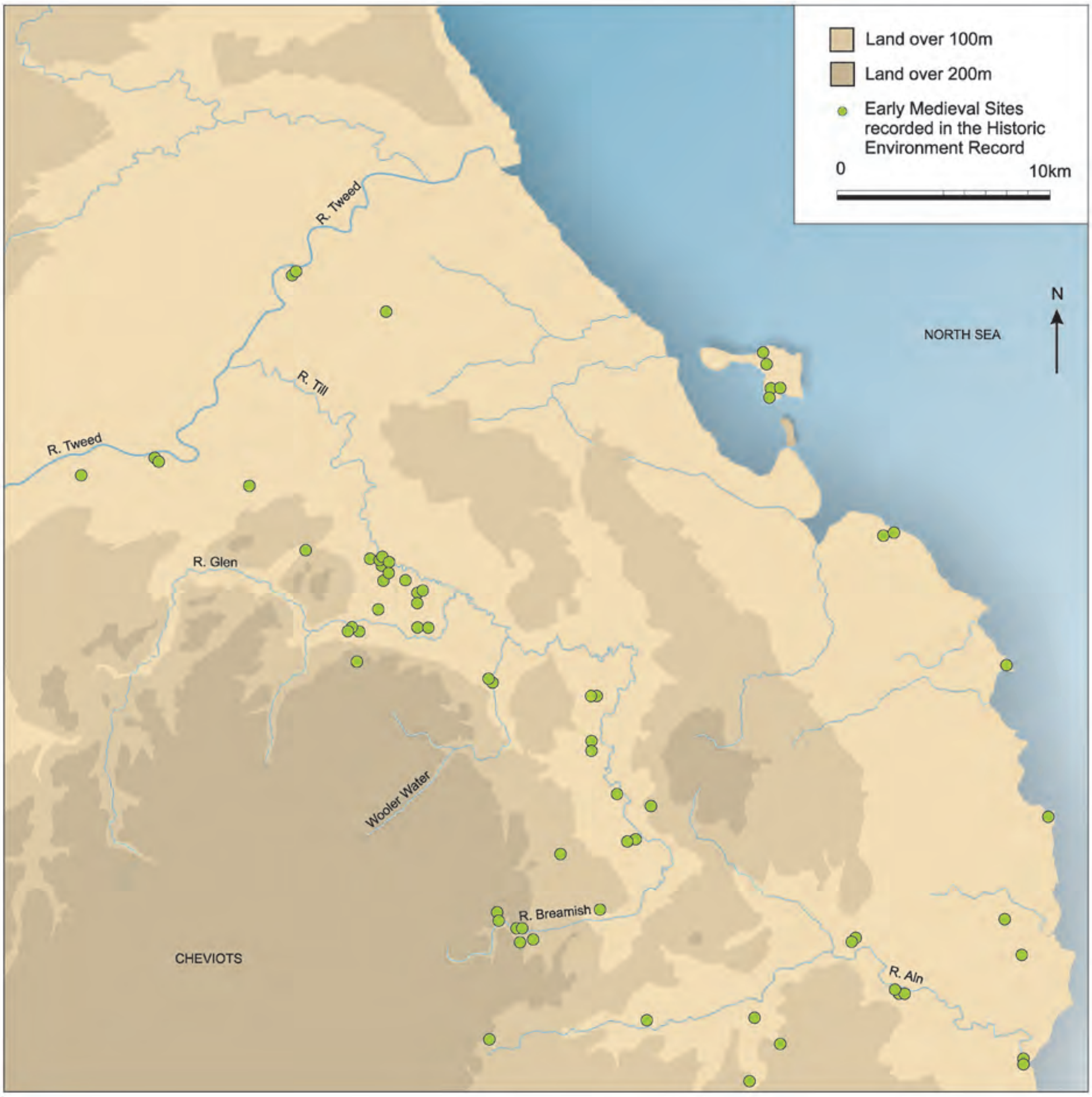



*Figure 9.3. Early Medieval sites in North Northumberland.*

kingdoms *Brynaich* and *Gododdin*. The emergence of such petty kingdoms, which also included successor states such as Elmet, in what is now South and West Yorkshire, Craven to its north-west, Rheged in what is now Cumbria and Dumfriesshire, as well as the many Welsh kingdoms, were ruled by what Gildas and others termed 'tyrants', although as mentioned earlier we must not confuse the intended meaning of this phrase, which was probably intended in the sense of an usurper or local strongman (see Snyder 1998).

The Votadinian kingdom appears to have split into a southern and northern kingdom, probably along old tribal lines, as each area looked to its own defence and cultivation of strategic allies, who may have been different for the northern and southern areas. Indeed, there is some evidence to suggest that the *Gododdin* aligned themselves with the Picts, as suggested by Hope-Taylor (1977), based on the construction of brochs, as well as the use of 'pit' names in Lothian. However, whatever the processes and politics involved, it resulted in *Brynaich* and *Gododdin* becoming separate kingdoms. Hope-Taylor (1977) brought attention to the diverging archaeological records of these areas during the fifth and sixth centuries. These include the use of long cist burials and Latin-inscribed memorial stones, the presence of massive silver chains and the construction of a few brochs in the lands of the *Gododdin*, while they remain stubbornly absent in the lands of *Brynaich*. The only possible exceptions to this are some possible long cist burials from Bamburgh, although these could be of prehistoric date (Lucy 2005), and a crude grave box built up against Hadrian's Wall at Sewingshields that forms an unusual contender for a long cist grave (Crow and Jackson 1997). A further and perhaps pivotal difference is that the poem *Y Gododdin*, which as said records an attack by *Gododdin* and her allies on the Anglo-Saxons at Catraeth (modern Catterick), represents the *Gododdin*'s 'Men of the North' as Christians, a religious persuasion for which there is no evidence in *Brynaich*. What is more, there is no mention of any men from the area of *Brynaich* joining Mynyddog Mwynfawr's warband that rallied together at Edinburgh (*Din Eidyn*), although by the generally accepted dating of these events, *Brynaich* had already been forged into the Anglo-Saxon kingdom of Bernicia. Therefore, religious disagreement could have been one of the factors that contributed to the break-up of Votadinian lands into those of *Gododdin* and *Brynaich*.

Hope-Taylor (1977) argued for a non-aggressive takeover of *Brynaich* by a small Anglian elite on the basis that there was little evidence in the archaeological record of Anglo-Saxon settlements having been defended, and that there was much in their character that recalled British traditions, rather than those associated with early Anglo-Saxon settlement further south. There is probably some truth in this interpretation as Gildas tells us that Vortigern enlisted the help of Saxon mercenaries to "repel the invasions of the northern nations" (*De Excidio Brittaniae,* 23), and so the earliest phase of Saxon settlement in *Brynaich* may have been more by design than force. This finds some support in Bede's statement that the Saxons

> received from the Britons grants of land where they could settle among them on condition that they maintained peace and security of the island against all enemies in return for regular pay (*Ecclesiastical History* 1, 15).

It is only after this initial phase of agreed settlement, however, that the Anglo-Saxons, having struck an alliance with the Picts after driving them back, are testified as having provoked a quarrel with the Britons and, thenceforth, ravaged the country. According to Gildas, and following him, Bede, it was not until the victories of Ambrosius Aurelianus that the Anglo-Saxon threat was eventually quashed, some time around AD 490–500. For the next 50 years there seems to have been relative peace, save for the civil wars between British kings, until once again the Anglo-Saxon threat returned; this time for good.

We are told by Bede that Ida founded the Anglo-Saxon kingdom of Bernicia, based around the rock at Bamburgh (Fig. 9.4), in AD 547. The name Bernicia is clearly an Anglicisation of *Brynaich,* whilst the British name for Bamburgh was *Din Guoaroy*, which, like *Ad Gefrin,* was originally retained by the Anglo-Saxons. It was only with the gift of *Din Guoaroy* by Aethelfrith to his wife Bebba, as indicated in the *Historia Brittonum* (63), in the years around AD 600, that *Din Guoaroy* became known as 'Bebba's Burgh', or Bamburgh as we now know it. The merging of Anglo-Saxon places and traditions with existing British ones is a theme to which we will return, as it is a debate to which archaeology has much to contribute.

In contrast to Hope-Taylor's non-aggressive assimilation argument, the *Historia Brittonum* (63) recounts that Urien, the British leader of Rheged, and his other British allies, besieged the Anglo-Saxon king Hussa on Lindisfarne, where he was shut up for three days. While on an 'expedition', however, Urien was murdered out of jealousy by the British king Morcant. After Hussa came the remarkably long kingship of Aethelfrith, described by Bede in his Ecclesiastical History as:

> a very powerful and ambitious king, (who) ruled the kingdom of the Northumbrians. He ravaged the Britons more cruelly than all other English leaders ... He overran a greater area than any other king or ealdorman, exterminating or enslaving the inhabitants, making their lands either tributary to the English or ready for English settlement (*Ecclesiastical History* 1, 34).

Given the astonishing wealth of Anglo-Saxon place names that even today characterise Northumberland, the imposition of Anglian power must have included a significant element of military force and coercion, although such martial success does not necessarily negate the coalescence of cultural habits, as many believe can be witnessed in the archaeological record (see below and Hope-Taylor 1997; Lucy 2005). There can be no doubt that Aethelfrith followed an unrelenting expansionist policy, but it is one that was backed up by a remarkable string of military successes. Not only did he achieve the union of Bernicia and Deira to create 'Northumbria', and a considerable victory against the Britons at Chester, but when the Scots "came against him with a large and strong army", Aidan, king of the Scots, "was defeated and fled with very few, having lost almost his entire army at a famous place known as Degastan" (*Ecclesiastical History* 1, 34).

Over the course of the following century, Northumbria achieved its greatest geographical extent and influence, first under the kingship of Edwin, who had overcome Aethelfrith with Raedwald's help, probably in the vicinity of the river Idle in AD 616, and then by Aethelfrith's sons Oswald and Oswy and his grandson Ecgfrith. It was under Edwin that Northumbria appears to have achieved its greatest power and prosperity, with the subjugation of Mercia, North Wales, Ulster, Wessex, and the direct annexation of Lindsey (Lincolnshire), the Isle of Man, Anglesey and, ultimately, Elmet. According to Bede:

> King Edwin received wide additions to his earthly realm, and brought under his sway all the territories inhabited either by English or by Britons, an achievement unmatched by any previous English king (*Ecclesiastical History* 2, 9).

*Figure 9.4. The great fortress of Bamburgh as seen today perched on the natural eminence formed by an outcrop of the Whin Sill.*

In military terms, however, the power and extent of Northumbria was checked on several occasions by Britons, Anglo-Saxons or Picts, or a combination of these. Edwin was caught by the forces of the British king Cadwallon, and the forces of the Mercian king Penda, at Hatfield Chase near Doncaster, where he and his sons lost their lives and his army was defeated in AD 633. Although Oswald defeated Cadwallon and his British army the following year at Heavenfield, near Hexham, it was in battle with Penda at Masterfelth that he in turn lost his life in AD 642. Penda continued to raid Northumbria but Oswy, Oswald's brother, defeated and killed him at the battle of Winwaed in AD 655. Ultimately, Ecgfrith became king of Northumbria and after fighting the Mercians, which resulted in a truce between the kingdoms, Ecgfrith attacked Ireland and "brutally harassed an inoffensive people who had always been friendly to the English", against the counsel of his advisors (*Ecclesiastical History* 4, 26). Bede goes on to recount that in the following year, AD 685, Ecgfrith launched another unprovoked attack, this time against the Picts, where he was lured into narrow mountain passes and killed with the greater part of his army (*ibid.*). He was succeeded by Aldfrith, another son of Oswy, who "ably restored the shattered fortunes of the kingdom, though within smaller boundaries". Therefore, although the great intellectual, religious and artistic flowering of Northumbrian culture took place in the late seventh and eighth centuries, this was a time when the military and political power of Northumbria had become consolidated and focused upon what is today northern England.

From *c.* 685–793, Northumbria enjoyed a period of relative peace in relation to external threats. An alliance seems to have been struck with the Picts, whilst the Mercian border appears to have become more settled. The instability that emerged was primarily geared to dynastic disputes and the vying for kingship between different dynastic groups, until Viking interference began at the end of the eighth century. The sack of Lindisfarne in AD 793 heralded the Viking Age, and was followed by raids on Monkwearmouth and Jarrow in AD 794, and Tynemouth in AD 800. Despite the early attack and subsequent raids, the menace seems to have been kept at bay for several generations, with attacks limited primarily to the undefended coastal religious sites. The monastic community of Lindisfarne relocated to Norham, on the River Tweed, to reduce exposure to Viking aggression, but this was only a temporary respite. Although there has been something of a revisionist move in recent years to portray the Vikings more positively, as settlers, traders, craftsmen and seafarers, and to play down their violence (e.g. Sawyer 1978), from the Anglo-British perspective their savage raids resulted in death, enslavement, theft and destruction. Indeed, Higham forcefully points out that "to argue that the skills shown by Scandinavians in trading, manufacturing and colonisation in any respect compensated for their aggression, terrorism and looting is little short of offensive, irrespective of the scale on which that occurred" (Higham 1993, 177).

At the end of the eighth century, and episodically thereafter, Northumbria also became embroiled in civil wars. Simeon of Durham, in his *History of the Kings of England*, records in the entry for AD 798:

> Duke Wada, entering into a conspiracy formed by the murderers of king Ethelred, fought a battle against king Eardwulf, in a place called by the Angles Billingahoth, near Walalege; and many on both sides were slain, Duke Wada, with his men, was put to flight, and king Eardwulf royally gained the victory over his enemies.

It was such internal disputes that were to prove Anglian Northumbria's undoing. Further military actions that can be documented include a Northumbrian attack on Mercia in AD 801 by Eardwulf, in retaliation for interference in Northumbrian affairs, but which ended inconclusively. For the year AD 829 the West Saxon compilers of the Anglo-Saxon Chronicle retrospectively wrote of an agreement between the West Saxon king Ecgbert, who briefly ruled Mercia, with the Northumbrian king Eanred, at Dore, South Yorkshire, on what was the southern frontier of Northumbria at this time. Whether this really was a one-sided peace agreement in favour of the West Saxon king, as the propagandist West Saxon chroniclers of the ninth century made out, remains unclear, but at any rate Ecgbert's influence outside Wessex was only a brief affair.

The Northumbrian king Raedwulf was killed by Vikings in AD 844, presumably responding to incursions on Northumbria's west coast. A Saxon victory over Norsemen is recorded in the Irish Annals for the year AD 851, and this seems likely to have been fought in Northumbria, given that the battles fought by West Saxons and Mercians in that year were against Danish forces (Higham 1993, 178). When the Danish Great Army crossed over to England in AD 866 from the Low Countries, it overwintered in East Anglia, but, on hearing of a civil war underway in Northumbria, planned the seizure of York in a typical example of Viking opportunism. The Great Army marched on York in AD 867 and took the city with ease. The Anglo-Saxon Chronicle records that it was only later that year that the rivals for the Northumbrian throne united sufficiently to fight the Danes, but this was to end in the greatest disaster to befall Northumbria. The Anglian forces laid siege to York and succeeded in breaking into the city, but found themselves ensnared and a great slaughter of the Northumbrians took place, including both kings, with the survivors having no choice but to make peace with the Danes. After imposing a client king on Northumbria, the Danes went on to conquer the East Angles in AD 870 and the Mercians in AD 874.

Although the Northumbrians removed the puppet king Ecgberht in AD 872, the Danish army split; one part of it under Healfdene imposed authority over Bernicia and he signalled his power by raiding amongst the Picts and Britons. Healfdene based himself at Tynemouth, where he could assemble both his fleet and land army, and his presence in the region is likely to have been the cause for the ex-Lindisfarne monastic community at Norham to flee into western Northumbria with their holy relics. Healfdene's reign was, however, only short-lived as he was defeated in battle and killed, either in Ireland or raiding against South Wales and Devon in AD 877, leaving his successors unable to maintain the unity of Northumbria that Healfdene had imposed by force (see Higham 1993).

Within a few years an Anglian kingship, based around Bamburgh and extending over an area broadly similar to the earlier kingdom of Bernicia, was re-established, firstly under Ecgbert II and then Eadwulf. The kingdom of Strathclyde extended its control over Cumberland as far south as the river Eamont, whilst it can be reasonably assumed that the 'Lords of Bamburgh' controlled the area that conforms to modern-day Northumberland. Whether the extension of Strathclyde power into what had been north-west Northumbria was resisted or encouraged by the Bernicians is not known, but it would certainly have benefited them.

In AD 883 an unusual arrangement was reached between Ecgbert of English Northumbria (old Bernicia) and the king of York, allowing the settlement of the Lindisfarne community at Chester-le-Street, County Durham, with considerable landholdings. These ecclesiastical 'princes' exercised control over the lands north of the Tees and south of the Tyne in what was a unique arrangement for a frontier problem in the British Isles (Higham 1993). This created a buffer between the two Northumbrian kingdoms. It had fractured along the lines of the ancient kingdoms of Bernicia and Deira but with Bernicia maintaining its Anglo-Saxon identity and Deira becoming subsumed into the Anglo-Scandinavian kingdom of York.

After the expulsion of the Irish Norse from Dublin in AD 901 and from North Wales, they were allowed to settle near Chester, probably on the Wirral. After the death of king Eadwulf in AD 913, a joint Irish Norse and Danish force invaded English Northumbria in AD 914. In the following years the Irish Norse, supported by reinforcements from Brittany, attacked and defeated the English Northumbrians after battles at Corbridge, and temporarily established Ragnald as king of Bernicia. He was less conciliatory than the Danes and confiscated large areas of lowland County Durham from the community of St Cuthbert, but with the sudden collapse of the southern Danelaw in the face of a concerted reconquest by Mercia and Wessex, Ragnald ultimately had to recognise Edward the Elder's supremacy. It was presumably at this time that Ealdred recovered English Northumbria.

With the deaths of first Ragnald and then Sihtric, Athelstan of Wessex usurped Northumbria in AD 927. This caused outrage across all factions within Northumbria and he was opposed by both the English Northumbrians and the kingdom of York. Their opposition was swept aside, however, and Athelstan acceded to the throne of York. Furthermore, at a meeting on the boundary between the kingdoms of York and Strathclyde, Ealdred of Bamburgh, Constantine of the Scots and Owain of Strathclyde were compelled to accept Athelstan's superiority. Athelstan ravaged Scotland in AD 934 on account of the Scots aligning themselves with Dublin Norse. The response was a joint invasion of Northumbria in AD 937 by the kingdoms of the Scots, Strathclyde and the

Dublin Norse, but it ended in their decisive defeat at Brunanburgh. After Athelstan's death, Olaf of Dublin was able to make himself king of York and overran the areas of the old Mercian Danelaw. Edmund of Wessex quickly brought the Mercian Danelaw back under West Saxon control and Olaf was forced to convert and recognise Edmund's superiority. Subsequently the Norse kingship of York was suppressed and Edmund ravaged Strathclyde, which he detached from the Norse alliance, and conferred on Malcolm, King of Scotland, of whose support Wessex could be more confident. In the following decades, southern Northumbria attempted to reassert its own rule, but the temporary reign of Eric Bloodaxe was to end after his death at Stainmore in AD 954, and southern Northumbria was left with little choice but to accept the Wessex monarch as their king, so leading to the creation of 'England'.

## CHRONOLOGY

*Peter Marshall and Clive Waddington*

The scientific dating for the early medieval period in Northumberland and its environs is currently patchy, with some key sites like Yeavering and Sprouston having no dates, whereas sites such as the settlements at Cheviot Quarry (Johnson and Waddington 2008), Lanton Quarry (Waddington 2009) and the burial ground at the Bowl Hole, Bamburgh (Groves *et al*. 2009), have produced more detailed radiocarbon chronologies. Other sites have produced just a few radiocarbon dates, such as Thirlings (O'Brien and Miket 1991) and the single date from a fence line on the edge of Maelmin (see Volume 1, Chapter 5). Occasional early medieval radiocarbon dates have also been obtained from a range of other deposits, including a cultivation terrace at Ritto Hill in the upper Breamish valley. Although more dates are required to be certain of the terrace's use in this period, given the taphonomic uncertainties associated with dating such features, the date suggests that cereal cultivation once again extended into many parts of the uplands during this period. Single dates from two upland boundary features, a 'cross-ridge dyke' near Brough Law and a low-walled boundary at Little Haystack in the Breamish valley, indicate their use in the early medieval period, supporting the argument for the re-establishment of farming activity in the uplands. The only site, other than the Bowl Hole, that has provided radiocarbon dates for early medieval burials is *Arbeia* Roman fort at South Shields, where two skeletons, found in the outer ditches near the south-west gateway, provided dates spanning the Anglo-British period. It appears these individuals died as part of a violent attack (Bidwell and Speak 1994).

Although the dating evidence so far available is relatively meagre, Figure 9.5 shows that the classic 'Dark Age' period of the fifth–sixth centuries AD is in fact well represented in the spread of dates, and it is the later part of the early medieval period that is lacking. This is reassuring, as it indicates that there are sites we can investigate to address questions relating to the period of the Anglo-Saxon take-over. Although only one date from the Lanton Quarry settlement is available as this volume goes to press, AD 530–640 at 95% probability and AD 540–600 at 68% probability (1500±30, SUERC-31573), this date is from a single-entity barley grain from within sunken featured building 2. This would appear, at first sight, to be a very reliable determination, and if this proves to be the case, we are dealing with a 'pioneer' settlement that can be associated with the very early years of the Anglian conquest. The detailed dating of the post-built buildings at Cheviot Quarry has shown that, even where only the basal portions of heavily truncated post-built timber structures survive, with careful flotation of the posthole fills, followed by a targeted programme of dating, the dates of such structures can still be teased out. The dating of these buildings is discussed in detail in a separate publication (Johnson and Waddington 2008).

The part of the Bowl Hole cemetery that has so far been investigated has produced dates spanning the seventh and eighth centuries AD (Fig. 9.6). As only a small portion of this site has been excavated, there is a good possibility that other parts of the cemetery may date to earlier and later periods. In order to push forward our understanding of the chronology of the early medieval period there is a need to obtain more dates from a variety of sites including settlements, burials, agricultural features and especially ecclesiastical sites.

## CLIMATE AND ENVIRONMENT

While Matthews and Quentin Dresser (2008) could not identify any correlated Europe-wide neoglacial phases over the second half of the first millennium AD, short-lived periods of glacier advance were reconstructed in Alpine areas at *c*. cal AD 650–725, and in southern Norway at *c*. cal AD 500–600 and 750–1000. These do not appear to have registered significantly in the warming trend revealed by Langdon *et al*.'s (2004) chironomid stratigraphy at Talkin Tarn, but they do find some correspondence with wet shifts at *c*. cal 500 AD at Walton Moss (Hughes *et al*. 2000) and across many regional bog surfaces at *c*. cal AD 690 (Charman *et al*. 2006). A wetter surface and lateral spread of peat deposits in the Cheviots at Cocklawhead have also been identified by Tipping (2010) for the period between *c*. cal AD 300 and 650. Thus, although the climate change scenario for northern England over the post-Roman and Anglian periods is relatively complex,

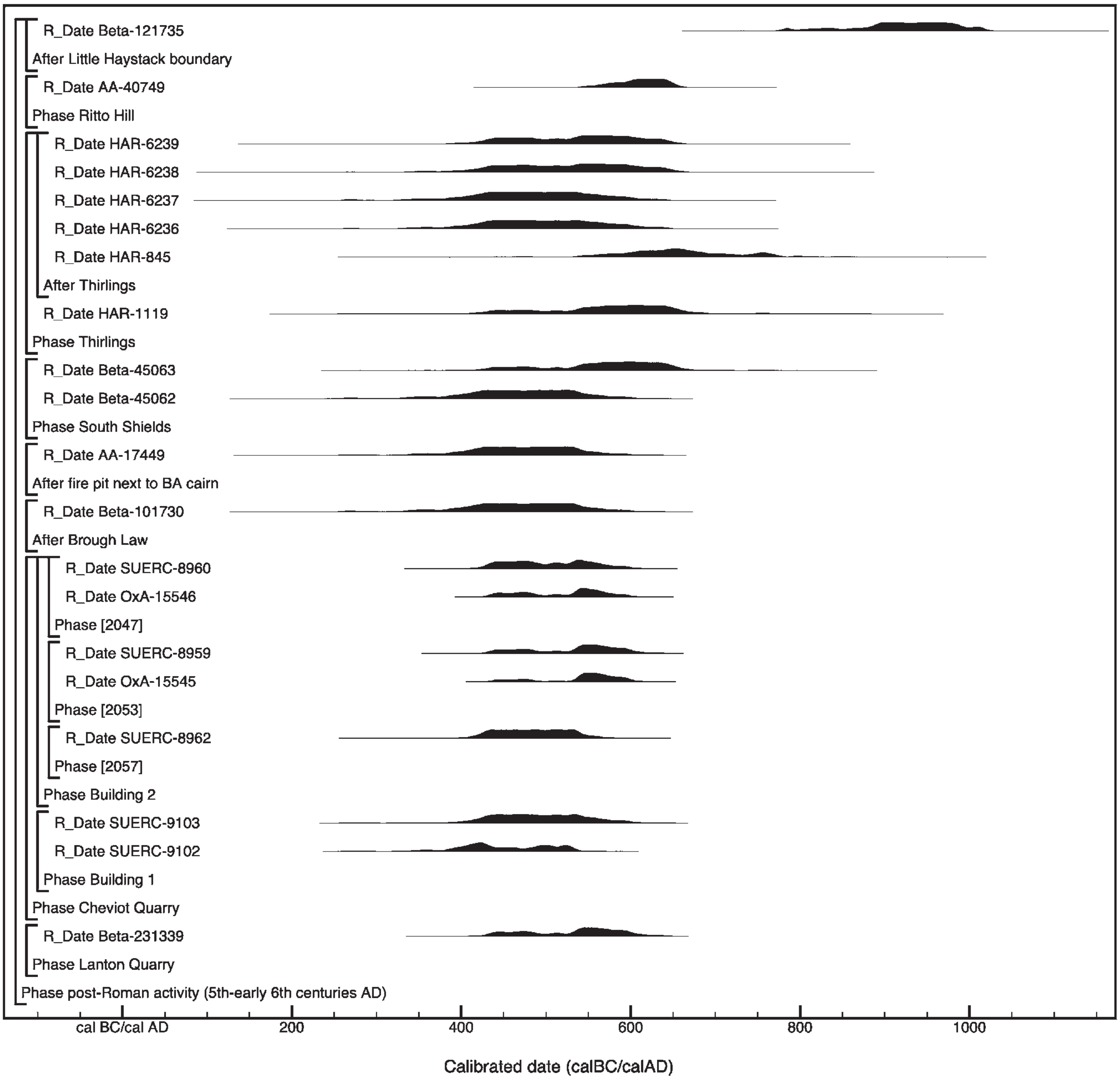



*Figure 9.5. Probability distributions of dates for early medieval activity. Each distribution represents the relative probability that an event occurred at a particular time. These distributions are the result of simple radiocarbon calibration (Stuiver and Reimer 1993).*

there is at least sufficient evidence to infer a tendency to increased effective precipitation over the wider region prior to the Norman Conquest (see also Tipping 1995a; Chiverrell 2001 and Barber *et al*. 2003).

Wetter conditions, manifested in an increase in the frequency and/or magnitude of floods, have also been held responsible for controlling the timing of widespread changes in river channel and floodplain environments at this time. In their reviews of the British fluvial record, Macklin and Lewin (2008) and Macklin *et al*. (2010) identified a distinct peak in flooding at *c*. cal 640–660 AD that heralded a phase of enhanced fluvial activity through to the tenth century, and was then followed by a further peak of flooding at *c*. cal AD 970–1090. This period of geomorphological activity is widely documented in upland valleys in northern England (e.g. Harvey *et al*. 1981; Harvey and Renwick 1987; Passmore and Macklin 2000; Chiverrell *et al*. 2007) and southern Scotland (e.g. Tipping and Halliday 1994; Tipping 1995b), but until recently had not been identified in the catchment of the River Till and lower reaches of the River Tweed. Indeed, Tipping (1992; 1996; 2010) found no geomorphological evidence of mid–late first-millennium AD slope and channel instability in the Cheviot Hills. Work undertaken in connection with the Till-Tweed Project,

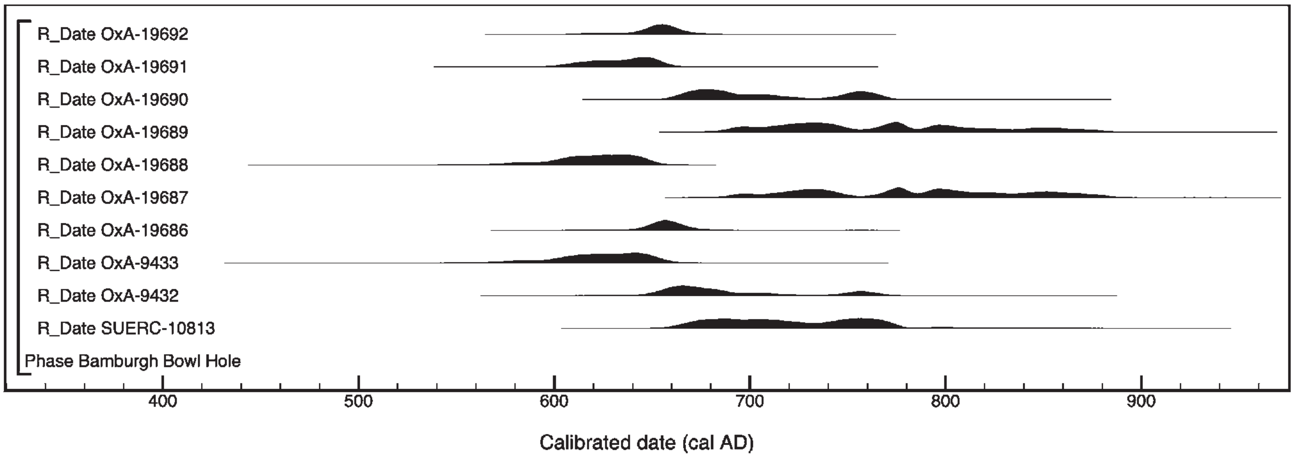



*Figure 9.6. Probability distributions of dates from Bamburgh. Each distribution represents the relative probability that an event occurred at a particular time. These distributions are the result of simple radiocarbon calibration (Stuiver and Reimer 1993).*

however, has now identified three localities which exhibit episodes of channel abandonment dating to the post-Roman and Anglian periods in the Rivers Breamish/Till at New Bewick and Newtown Bridge (Passmore *et al*. in press), the River Till below the Milfield Basin (Passmore *et al*. 2002) and the Lower Tweed at Coldstream (Passmore *et al*. 2006) (see also Volume 1, Chapter 2). At New Bewick, three consecutive phases of channel abandonment are evident within a 0.5km reach of the River Breamish/Till, respectively dated to shortly before *c*. cal AD 390–600 (BT5), *c*. cal AD 680–940 (BT10) and *c*. cal AD 900–1160 (BT2). A further example of channel abandonment at Newtown Bridge, 3km downstream of Bewick Bridge, has been dated to shortly before *c*. cal AD 770–1160. A meander cut-off in the River Till at Redscar Bridge, near Milfield, has been dated to *c*. cal AD 1030–1280 and hence occurred at the very end of, or more probably shortly after, the Anglian period. In the Lower Tweed at Coldstream, a large (*c*. 2.5km) meander-bend was also abandoned shortly before *c*. cal 990–1170 AD.

## Land use change in the palaeoenvironmental record

The palaeoenvironmental record for the post-Roman and Anglo-Saxon periods in Northumberland presents a variable picture of land use continuity in some areas, and abandonment of agricultural landscapes in others (Chapter 2). Some areas experienced near-immediate abandonment of farmland and regeneration of woodland and scrub following the Roman withdrawal, including sites very close to Hadrian's Wall, such as Fozy Moss (Dumayne and Barber 1994) and Crag Lough (Dark 2005). Other sites reflect some degree of stability and continuity of farming activity before a reduction in the intensity of land use during the mid – late first millennium AD, as at Fellend Moss and Steng Moss (Davies and Turner 1979). We should note, however, that some palynologists are now arguing for a degree of caution in making uncritical links between woodland regeneration and abandonment of farmland (e.g. Tipping 2010). This arises because of the potential for deliberate cultivation of woodland resources, especially on soil types considered too poor for other agricultural uses, and has been brought into focus by historical accounts of woodland management (e.g. Vera 2000).

What is perhaps less contentious is the pollen evidence for a degree of continuity in land use through the mid–late first millennium AD. This has been effectively demonstrated by Tipping (2010), for both upland and lowland settings in the Bowmont valley, and encompassed not only livestock grazing and cereal cultivation, but possibly also stands of birch on a peat surface at Sourhope that had previously supported *Calluna* heath. Elsewhere in North-East England there are many sites that yield evidence of only low-intensity land use, with large areas left unexploited (Innes 1999) and only minor fluctuations in what little tree cover remained (Chapter 2). This is the case for some areas on the Carboniferous escarpments to the east and south of the Cheviot Massif, including the sites at Drowning Flow and Bloody Moss (Moores 1998), and this appears to be true also of the Till-Tweed area. The first-millennium AD pollen sequences at both Broad Moss and Ford Moss are, notwithstanding the limited temporal resolution available for these sequences, provisionally interpreted as showing only minor fluctuations in the largely deforested landscapes, with a sustained presence of grassland, ruderal pollen and some traces of cereals amidst extensive areas of *Calluna* heath (Chapter 2).

A focus on valley floor pollen records, as part of the Till-Tweed Project, has also identified several localities in the Breamish, Till and lower Tweed valleys that provide snapshots of the vegetation record of floodplain and drier terrace environments that lie close to the settlement foci of the post-Roman and Anglo-Saxon periods (Chapter 2). The potential of this approach for illuminating early historic land use in river valley settings has already been demonstrated at Brownchesters, near Otterburn in the Rede valley, where Moores (1998) recorded evidence for cultivation of oats and wheat through to *c*. cal AD 685. Most of the Till-Tweed alluvial sites exhibit similar evidence for extensive grassland and cereal cultivation around *c*. cal AD 680–940 (in the Breamish valley at Bewick Bridge), and especially around *c*. cal AD 900–1300 (in the Breamish valley at Hedgeley and Bewick Bridge, the Till at Redscar Bridge and the Tweed at Coldstream). The alluvial pollen sequence from Redscar Bridge is of particular interest since it lies only 500m north-east of the Anglo-Saxon settlement of Maelmin. Here, there is evidence for extensive pasture and cereal production around *c*. cal AD 1030–1280 which could relate to the abandonment of Maelmin and subsequent use of the site for agriculture.

## LAND USE AND SUBSISTENCE

Dark (2005) has argued that reduced intensity of land use in the post-Roman period reflects abandonment of land that may have been brought into crop in response to the military demand for supplies during the Roman occupation. She also notes that variations in the timing and degree of abandonment may be explained, at least in part, by the preferential release of areas with the least favourable soil conditions (*ibid*.), though in this respect we need to be mindful of Tipping's (2010) observations with regard to woodland management in the Bowmont valley (see above). A further influence on patterns of land use may have been exerted by climatic deterioration from around the sixth century AD (see above and Chapter 2). Neither this nor a slackening of demand, however, appears to have deflected communities in the Bowmont valley from pursuing a mixed farming regime throughout the remainder of the first millennium AD.

Attempts to supplement the palaeoenvironmental record of land use and subsistence patterns in post-Roman and Anglian North Northumberland are hindered by the general lack of sites that have yielded good environmental remains. Recent discoveries from Lanton Quarry, however, go some way towards providing a basic picture. Here, seven sunken-featured buildings, or *Grubenhäuser*, have provided clear indications of craft specialisation, although most of the worksheds also contained small quantities of grain in their fills (Fig. 9.7). These included wheat, oats, six-row and hulled barley, as well as some hazelnuts. A grain of barley from sunken-featured building 2 has yielded a date of *c*. AD 530–640 (1500±30, SUERC-31573). The importance of an agrarian economy was also suggested by the presence of two similar post-built buildings, closer to squares than rectangles in plan form, with wide entrances at one end for what appear to have been double-leaf doors (Fig. 9.8), perhaps to facilitate access by wheeled vehicles. Such buildings could have been used to store hay or grain in their lofts or upper storeys, whilst doubling up as cart sheds. If that was the case, it provides an insight into how food was moved from working settlements such as this to the royal estate centre at Yeavering, which, being only 3km to the west, is visible from the site.

A fragment from a smooth circular quernstone, with central perforation, was discovered during fieldwalking over the site of Maelmin (Waddington 1999a), testifying to grain processing at this site. One grain of bread wheat amongst a seed assemblage from Maelmin West (see Volume 1 Chapter 5) that also included oats and barley, was dated to cal AD 680–890 (1220±30; Beta-139716). Found in a posthole fill from a fence line immediately outside the Maelmin cropmark complex, it reveals the production and use of cereals around high-status estate centres, as well as at working settlements such as Lanton Quarry. The waterlogged seeds recovered from one of the postholes at Maelmin West included clover, knotweed and goosefoot. Along with pollen remains of dandelion, ferns and bracken, they indicate grassland with nearby cereal cultivation and disturbed ground.

At Corbridge, the recording of an Anglo-Saxon horizontal watermill demonstrates the milling of grain on an industrial scale for the first time in Northumberland (Snape 2003). The location of this watermill, on the edge of a settlement with its origin in Late Iron Age times, and at a fording point of the Tyne on the Roman road of Dere Street, suggests that farming communities from the surrounding area brought grain to the mill for grinding into flour. The structure is dated to the Late Anglo-Saxon period by two radiocarbon determinations, from separate timbers, of cal AD 720–960 (1190±70; Beta-37206) and cal AD 900–1030 (1040±60; Beta-44425) at 68% probability (Snape 2003, 47). This discovery supports the testimony of the Domesday Book, which records 5624 watermills in pre-Norman England (see Snape 2003, 38), even though it does not cover the areas of modern County Durham and Northumberland in its assessments.

In addition to crop production, the rearing of animals was also a mainstay of early medieval farming and, on the basis of palaeoenvironmental evidence, appears to have been widely conducted across both upland and lowland settings (see above). Although an oblique way of addressing the scale of stock-rearing, the three complete bibles written at

*Figure 9.7. View over several of the Grubenhäuser excavated at Lanton Quarry, Northumberland.*

Ceolfrith's monasteries of Wearmouth and Jarrow in the early eighth century AD required vellum from around 1550 calves (Bruce-Mitford 1969, 2), which implies the existence of substantial herds of cattle to supply the various monastic foundations alone. The stone-built farmstead, or 'proto-grange', that included what can only be interpreted as a cattle byre, on account of the buried carcasses within the stalls, at Green Shiel on Lindisfarne (O'Sullivan and Young 1995), demonstrates with stark clarity the presence of livestock rearing. It should be noted, however, that the site at Green Shiel has been dated to the ninth century, on the basis of coin evidence – a time when the monastic community was absent from the island (O'Sullivan and Young 1995). Other indirect evidence for stock keeping includes the loom weights found in *Grubenhäuser* at Lanton Quarry (Waddington 2009), New Bewick (Gates and O'Brien 1988), Yeavering (Hope-Taylor 1977), and Ratho (Smith 1995). Another indication of meat farming is the name *Ad Gefrin* with its well-known translation as 'hill of the goats'. Direct evidence of stock-keeping was also recovered from Yeavering, where Hope-Taylor believed that systematic cattle-breeding was an important activity, although the bones of pig, sheep, goat and horse were also present (Hope-Taylor 1977). Some small bone fragments were recovered from the fill of a *Grubenhaus* at Lanton Quarry, but these were unattributable to species. Other than this, we have little archaeological

*Figure 9.8. One of the square-shaped post-built buildings at Lanton with wide opening at one side for double doors suggesting that it may have housed a wheeled vehicle, perhaps functioning as a cart shed.*

*Figure 9.9. Excavations underway at Bamburgh Castle as part of the Bamburgh Research Project (Copyright Bamburgh Research Project).*

evidence for the character and scale of livestock-rearing, but given the demands of vellum production and also feasting, we should envisage the widespread keeping of stock and fowl, as well as the taking of various types of fish and birds.

## SETTLEMENT

Identifying and confirming British settlements is notoriously difficult and there are few sites that can be positively ascribed to this period. The Anglo-Saxon period is better served, with an increasing number of sites known from aerial photography (see Volume 1 Chapter 4; Chapter 3 this volume) and from open-area soil stripping, as in the case of Lanton Quarry. The nature of the available evidence for reconstructing the British and Anglo-Saxon settlement pattern has been discussed by Cramp (1983), who identified direct archaeological evidence for settlement sites, as well as other monuments suggestive of settlement close by, such as burials, crosses and churches, place name evidence and text sources. Each comes with its own biases and limitations; nonetheless, this eclectic spread of data sources does allow for a preliminary understanding of early medieval settlement to be reached. Currently, it is North Northumberland that provides most of the evidence for early medieval settlement in terms of both archaeological discoveries and early texts.

The evidence for British sites is undoubtedly one of the outstanding conundrums in the archaeological sequence for the region. The *Historia Brittonum* (63) implies that there was a fortified British site on the rock at Bamburgh by the reference to Aethelfrith giving "his wife Bebba, the town of *Din Guoaroy*, which from her is called Bebbanburg" (Fig. 9.9). The prefix *Din* implies a fortified site in the British tongue and the fact that this naturally defensive site was chosen by Ida for his initial incursion around AD 547 suggests it was, or had been, a high-status military, political and administrative centre of the British. The use of the *Din* prefix to imply the existence of an earlier British defended site has been called into question by Breeze (2009) who views it as a later concocted term for the site, resulting from the use of a quaint and learned term for what scholars of the time thought the site would have been called. This is possible, but given the naturally defensive setting of the Bamburgh rock, and the fact that Iron Age remains have already been found there, it must remain more than likely that a British defensive site was located there. By appropriating this place as the seat for Anglo-Saxon Bernician power, however, Ida and his followers began a strategic approach that was to be repeated elsewhere, as they sought to take over the administrative systems and governance that the British had in place (see also Alcock 2003). Although a British phase at Yeavering is yet to be demonstrated with any degree of certainty, despite Scull's (1991) reinterpretation of the phasing of the site, there is still good reason to suppose that some parts of the site have a British origin, as O'Brien (2005) has most recently suggested for the Great Enclosure.

On Yeavering Bell, overlooking the site of *Ad Gefrin*, a polygonal palisade can be seen encompassing the eastern knoll and, by analogy with other polygonal palisades, such as that at Doon Hill, it is generally thought that this structure denotes a British site. At Sprouston, British features have been postulated on the basis of the aerial photographic evidence (Smith 1991), which includes a timber hall that could be of Neolithic or British date, together with an early palisaded site and what is probably a later, larger, double palisade that has affinities with the Great Enclosure at Yeavering (Hope-Taylor 1977; O'Brien 2005) and that at Maelmin (Gates and O'Brien 1988).

Another class of British site that can be glimpsed occasionally is the reuse of Roman forts. This is most starkly seen at Birdoswald (*Banna*), where a large timber hall (Building 200), and other timber buildings, resting on stone sills or pads, were built across the interior of the fort (Wilmott 1997) during phase 6. This phase has a *terminus post quem* of around AD 420, on the basis of floor deposits in phase 5 and the unbroken stratigraphic sequence. Moreover, the structural form and similarities with other sites argue for a post-Roman fifth–sixth-century AD date. In any case, it must predate the mid-seventh century when large-scale Anglian penetration westwards took place (see Newman 1984) and the use of Birdoswald was long over (Wilmott 1997, 222). Based on assumptions about the length of each phase, Wilmott suggests that the post-Roman occupation ended around *c*. AD 520 (*ibid*., 224). The excavator also compares the similarities of the building dimensions of Birdoswald Building 200 with other British timber halls:

| | |
|---|---|
| Birdoswald, Building 200: | 23m × 8.6m |
| South Cadbury: | 19m × 10m |
| Kirkconnel: | 16m × 6m |

There are similarities, however, with later Anglo-Saxon structures which comprise a timber-frame structure with opposed doorways in the long sides. There are many rectangular buildings of timber and stone known from other parts of Britain that date to the Roman and post-Roman periods, and the Birdoswald timber buildings are best seen as part of this wider constructional pattern. The issue of the existence of rectangular buildings in the British period in Northumberland is one that still courts controversy. Miket (in press) argues that there is still very little evidence to suppose that rectangular buildings were employed until the arrival of Anglian groups, but given the existence of rectangular buildings elsewhere in northern and western Britain there is little reason for them not to be present in Northumbria. The large timber buildings at Birdoswald, though not directly dated, are more likely to be be British than Anglian in date. At present, there is insufficient evidence for an Anglian rather than British attribution for either the post-built buildings at Cheviot Quarry or the specifically post-built buildings at Thirlings (see below). The jury must remain out until better dating and more reliable material culture associations are found.

The Roman forts in southern Northumberland must provide an important key to understanding post-Roman settlement and civil organisation in these areas, although only limited attention has been given, in many cases, to the post-Roman phases, given the tendency of past archaeologists to ignore the deposits overlying the Roman layers. Notwithstanding the loss of much of this 'Dark Age' evidence, the refurbishment of the defences at Vindolanda in the late fourth or early fifth centuries AD has been demonstrated by Bidwell (1985, 46). Here, a glacis mound was dumped against the wall which may have been surmounted by a palisade or wall (Casey 1992, 70). Other fifth-century occupation has been attested at South Shields (Bidwell and Speak 1994), and to the west at Carlisle, whilst at Housesteads the north curtain wall was replaced by an earthen rampart in the late fourth or early fifth century (Crow 1988, 72).

North of the Wall zone we must look at existing Roman Iron Age sites for evidence of continuity of occupation, as well as at Anglian sites for earlier British phases. Taking Iron Age sites first, the Yeavering Bell palisade provides one example, although this has not been adequately tested by excavation. In East Lothian, the pre-Roman and Roman Iron Age farmstead at Phantassie, dated on the basis of a sequence of 60 radiocarbon determinations, included a subrectangular stone-founded building constructed during Phase 2 of the settlement (Lelong 2008a). An important possible revision that should, however, be taken into account is Miket's (in press) rejection of the post-Roman phase at Huckhoe, on account of a reassessment of the 'British' ceramics which he views as being native Roman Iron Age. He therefore calls into question the date of the rectangular buildings which, on the basis of a single sherd of medieval pottery, he views as being of later date. However, other evidence for lower-status British-period buildings has recently been obtained, with the least contentious being the post-built timber roundhouse (building 3) excavated at Lanton Quarry (Fig. 9.10), which was partially cut by a later *Grubenhaus*, and has so far produced a radiocarbon determination on a charred hazelnut from one of the posthole fills of cal AD 420–640 at 95% probability (see above Table 9.1). As we are dealing with a circular, timber-built roundhouse there is no difficulty in accommodating it into pre-existing British, or Votadinian, building traditions, as evidenced on many native sites during the Roman Iron Age. Most Roman Iron Age roundhouses in the lowlands are, however, of ring-groove construction rather than of post-built form, and typically have much larger diameters.

On the basis of radiocarbon determinations, the

*Figure 9.10. The postholes of the circular post-built building at Lanton Quarry radiocarbon dated to the British period and cut into on its far side by one of the Anglo-Saxon* Grubenhäuser.

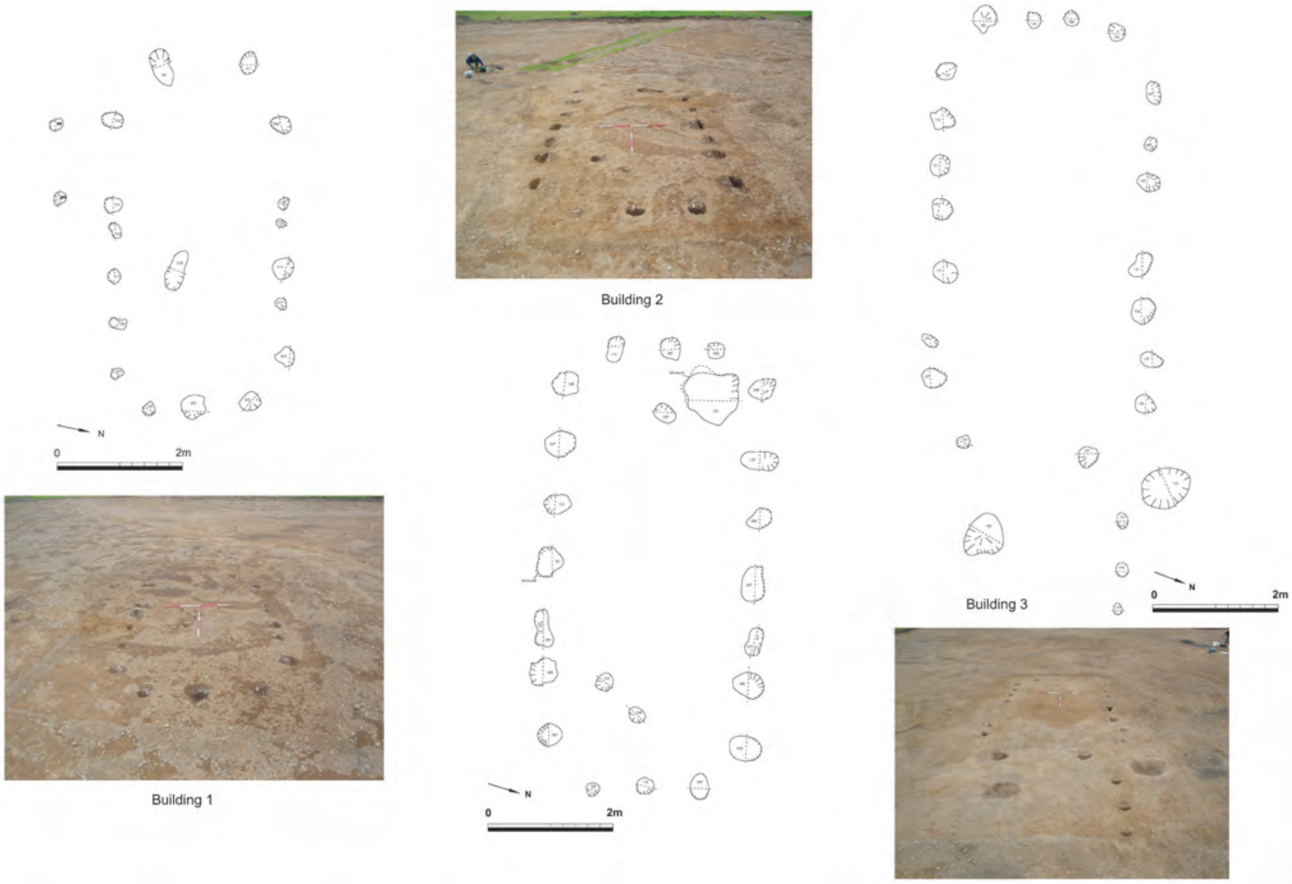



*Figure 9.11. Plans and photographs of the post-built rectangular buildings at Cheviot Quarry, two of which have been radiocarbon dated to the British period, being likely to pre-date AD 547.*

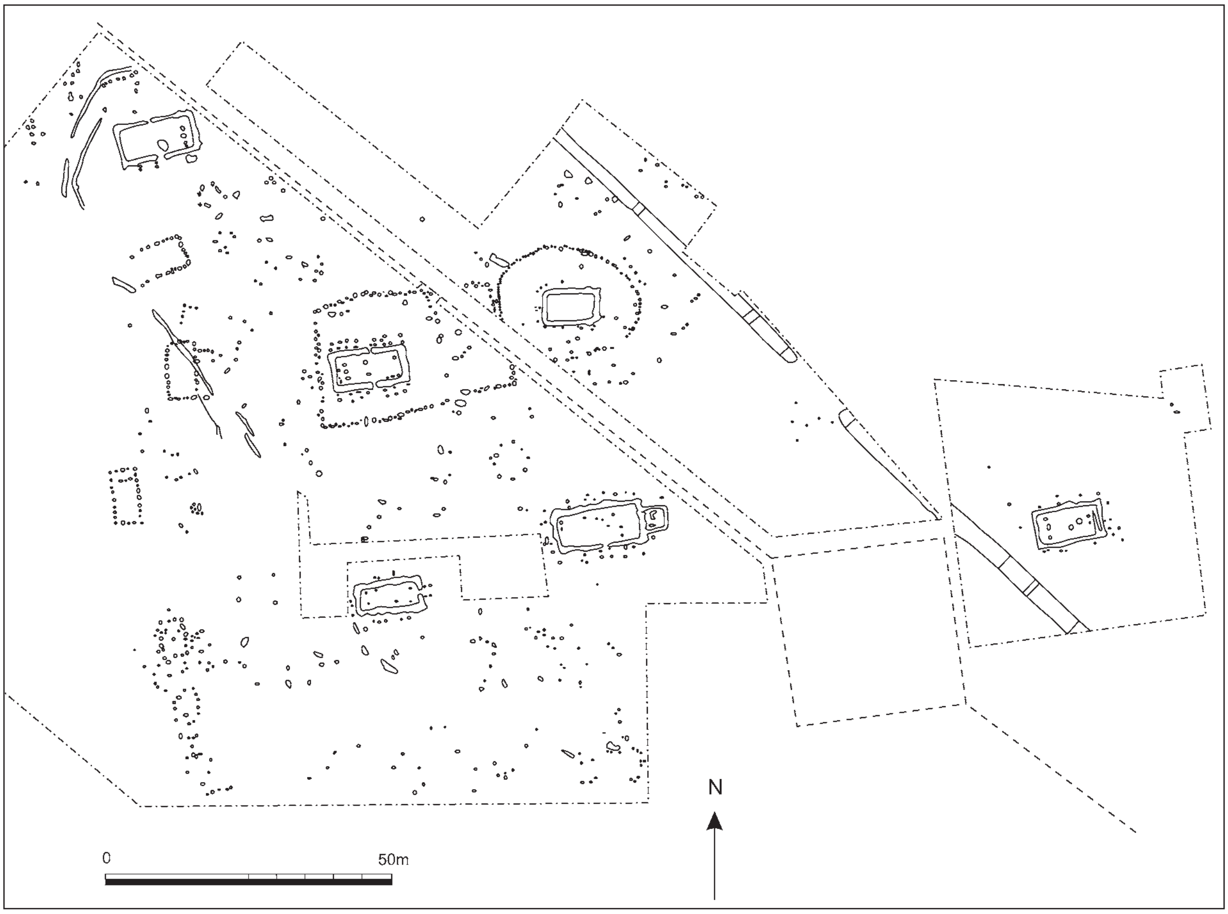



*Figure 9.12. Plan of the Thirlings 'Anglo-Saxon' settlement redrawn from O'Brien and Miket (1991) showing the continuous trench buildings forming a separate group from the post-built buildings and positioned on a different alignment.*

three post-built, rectangular buildings excavated at Cheviot Quarry (Fig. 9.11) could be of British or just possibly Anglian construction. The radiocarbon dates presented in Table 9.1 have been modelled to provide a dating envelope, by way of posterior density estimates, for the start of Building 2 of *cal. AD 330–570* at 95% probability (see Johnson and Waddington 2008). While only two produced enough material to allow radiocarbon dating, all three buildings, given their shared form, alignment and proximity, are considered to be contemporary. The dating has shown that two of the buildings are fifth or early sixth century cal AD in date and, based on Bayesian modelling, they were probably in use for between 1 and 140 years (68% probability) (see Johnson and Waddington 2008). This suggests that the houses were probably used by at least two generations of people and possibly more. As the formal beginning of the Anglo-Saxon kingdom of Bernicia is usually associated with the documented acquisition of Bamburgh around AD 547 (see *Historia Brittonum*), the radiocarbon dating of the rectangular timber buildings at Cheviot Quarry shows they are likely to predate this invasion, thereby raising the possibility that they may have been the homes of a pre-existing British population. This need not be the case, however, if incipient Anglian settlement took place before Ida's capture of Bamburgh. Given the absence of material culture associations with these buildings, their cultural attribution remains uncertain. It is worth noting, however, that the structural form does have something in common with Germanic post-built buildings, such as those at Peelo and Flögeln (see Hamerow 2002, 49), but the Cheviot buildings are not exactly the same and one, Building 1, appears to have had an external porch protruding on one of its long sides (Johnson and Waddington 2008). There is, therefore, no reason to prefer an Anglian attribution to a British one, and if the dates are anything to go by, the latter is probably the more likely.

At the nearby Anglian settlement at Thirlings (see O'Brien and Miket 1991), some of the buildings were of continuous trench construction, on an east-west alignment, with radiocarbon dates that suggest the settlement was occupied into the early–mid-sixth century cal AD. In contrast, the post-built, rectangular buildings are all on a north-south alignment (Fig. 9.12), with one exception; Building H (O'Brien and Miket 1991). It is instructive to note that the few radiocarbon dates from Thirlings are nearly all associated with the continuous-trench structures. There is just one date associated with a post-built building (I) and this has a wide error range that spans the Iron Age to Roman Iron Age from cal 400 BC to AD 260 at 95% probability (2060 ±150; HAR-6240). This date, however, is likely to be residual, as the excavators suggested. The post-built buildings could very well represent a different phase of the settlement to the continuous-trench buildings, the latter of which can be directly related to Anglian building forms at Yeavering (see Hope-Taylor 1977). The post-built buildings could, therefore, be of British date, as Alcock (2003) has observed. The excavators' conclusion that in the absence of close dating of any individual building, "Thirlings may be regarded as a single phase settlement with all the buildings in use during the same time" (O'Brien and Miket 1991, 88), can be called into question, not only on account of the lack of dates for the post-built structures, but also because the contrast in alignments for different forms of building is in itself sufficient to suggest different phases of construction and occupation (see also Alcock 2003, 259–60). If the post-built buildings have a British genesis, they could provide direct parallels to the Cheviot Quarry buildings and the simple rectangular post-built structures assigned to post-Roman phase I at Yeavering (see Hope-Taylor 1977). Further work at Lanton Quarry may yet provide further post-built structures with material suitable for dating.

With the arrival of the Anglian invaders there is considerably more archaeological and textual evidence available to discuss the settlement pattern, although this dataset is still expanding as further aerial photography and excavation take place. What has been long recognised, however, is that the places chosen as Anglian strongholds and centres had, in most cases, British origins (e.g. Hope-Taylor 1977; Alcock 1988; 2003). This is something that can be attested by consideration of site names, as well as the textual sources and the archaeological evidence. Based on the *Din* elements of the place names, Alcock cites both Dunbar and *Din Guoaroy*/Bamburgh as pre-existing British forts, whilst he also cites Yeavering and Maelmin as British names for sites that have clear archaeological evidence for timber forts, which could be of British construction, as O'Brien has restated in relation to the 'Great Enclosure' at Yeavering (O'Brien 2005). It is worth noting, however, the concerns over the interpretation of the *Din* element in *Din Guoaroy* noted by Breeze (2009 and above).

Given the relatively limited, although expanding, evidence for early medieval settlement, is it possible to identify a settlement hierarchy for the period, assuming that the Anglian settlement pattern broadly reflects that of the preceding British period? Alcock (1988) addressed this question during his Jarrow Lecture. Based on the references in Bede and Stephen (the latter being the biographer of Wilfrid), and his correlation of these descriptions with the archaeological evidence from a range of differently termed sites, he identified a three-fold hierarchy for royal sites of *civitas*, *urbs* and *villa* or *vicus*, with hamlets and farmsteads below these (Alcock 1988). This provides a starting point, although it neglects ecclesiastical sites, many of which went on to become major settlements, as in the case of Durham and Lindisfarne. Furthermore, not only are the day-to-day farming sites not mentioned by early chroniclers and writers, they are also hard to find archaeologically, even though they must have hosted the majority of the population. It is these settlements that the roundhouse at Lanton Quarry, the early rectangular post-built houses at Cheviot Quarry, the stone-founded longhouses and byre at Green Shiel on Lindisfarne, and the Anglo-Saxon farming hamlets at Lanton Quarry and New Bewick may represent. Although only a preliminary model, it is suggested that at the top of the hierarchy we can identify the regional power centre of *Din Guoaroy* as the *civitas*, although Bede also refers to its *urbs,* which must have been an additional sizeable settlement that no doubt lies under much of the modern village of Bamburgh. The palisaded sites, such as Doon Hill and Yeavering Bell, are likely to have been relatively high-status sites, which Alcock (1988) suggests were the residences of a *praefectus*, or in Anglo-Saxon terms, a thane, and which could have functioned as local strongholds. The estate centres may or may not have ranked below the small palisaded sites, given the investment in the range of large buildings evident on many of these sites. Royal estate centres, Bede's "*villa regia*", include Yeavering (Fig. 9.13) and Maelmin (Fig. 9.14), as well as perhaps Sprouston (see Fig. 9.15 and Smith 1991), whilst other estate centres, probably not of royal standing, can be postulated for sites such as Thirlings, which comprised some substantial timber buildings. Only part of this extensive settlement was excavated, as the aerial photographs show. The regional strongholds in the south of modern Northumberland can perhaps be identified with some of the Roman fort sites, at least for the British period. How the ecclesiastical sites fit into the settlement pattern is not yet clear, but that they were substantial monastic foundations, supporting populous communities in many cases, can not be in doubt.

Consideration of the Anglo-Saxon settlement pattern shows that, at least in the early stages of settlement, there was a preference for locating sites not just on pre-existing British centres of power, but also for farming settlements on the raised Late Glacial sand and gravel terraces of valley floors in close proximity to rivers, such as those in the Milfield and Hedgeley Basins (Fig. 9.2; see also Volume 1, Chapter 4;). All these sites are positioned on flat, raised, free-draining terraces, amidst fertile easily tilled land. The sites of Yeavering, Maelmin and Sprouston are similarly located and are very close to water courses, no doubt

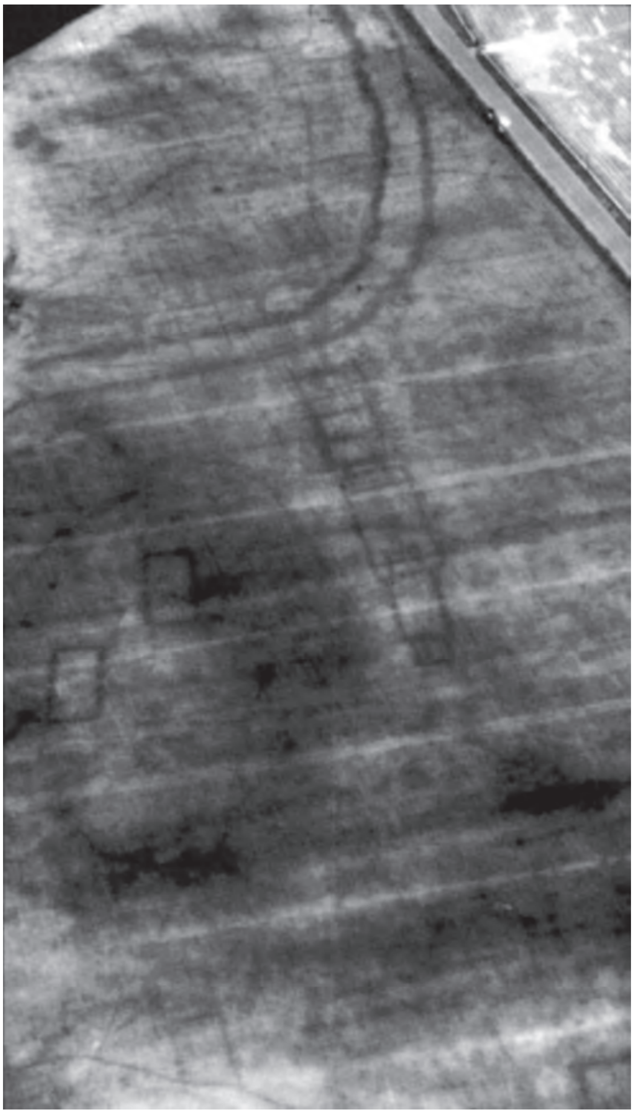


*Figure 9.13. An aerial view of the multiperiod cropmark complex at Yeavering (Copyright Great North Museum).*

*Figure 9.14. An aerial view of the multiperiod cropmark complex at Maelmin (BJV13) (Reproduced by courtesy of Cambridge University Collection).*

to control crossing points and perhaps to utilise them for the provision of watermills, in a similar way to that identified outside the old Roman town at Corbridge (see above). The other favoured area for early Anglian settlement is the coastal littoral (Fig. 9.2) where the attractions were defendable outcrops, good farmland and immediate access to the seaways and river travel. The royal sites at Bamburgh and Dunbar are obvious examples, but smaller farming settlements are also evidenced, as in the case of the stone houses, byre and yards at Green Shiel, Lindisfarne (O'Sullivan and Young 1995). Moreover, the place-name evidence at several coastal locales provides a further giveaway, as in Ber-wick, How-wick and Dunstan-burgh. The early ecclesiastical foundations also cluster around the coast and rivers, as indicated by the sites at Lindisfarne, Coquet Island, Coldingham, Tynemouth, Jarrow, Monkwearmouth and, further south, at Hartlepool and Whitby. Inland, early foundations are known on major rivers at Norham on the Tweed, Warden at the confluence of the North and South Tynes (Fig. 9.16), Hexham and Bywell, both above the lower Tyne, and Escomb above the river Wear.

Overall, the early phase of Anglian settlement appears to shadow the existing British settlement centres and certainly aimed to take control of the most readily occupied and agriculturally productive lands. Furthermore, by taking over the British centres of power, the Anglian elite no doubt sought to control places of assembly, the receipt of food renders and other dues from surrounding settlements, as well as control of the military infrastructure and communications network. As the period progressed it is evident that infilling of the landscape took place, with settlement spreading along the river valleys into upland locales, as indicated by the spread of Anglian place names across the Northumbrian landscape.

## TECHNOLOGY AND MATERIAL CULTURE

The corpus of material culture for the British period is very small, with virtually no notable markers other than the occasional penannular brooch, such as the examples from Vindolanda (Miket 1978) South Shields and Birdoswald (Snape 2002). Little is known of British ceramics, primarily because so few certain British-period sites have been excavated, and the few that have did not possess the level of preservation, and types of features, from which ceramic assemblages

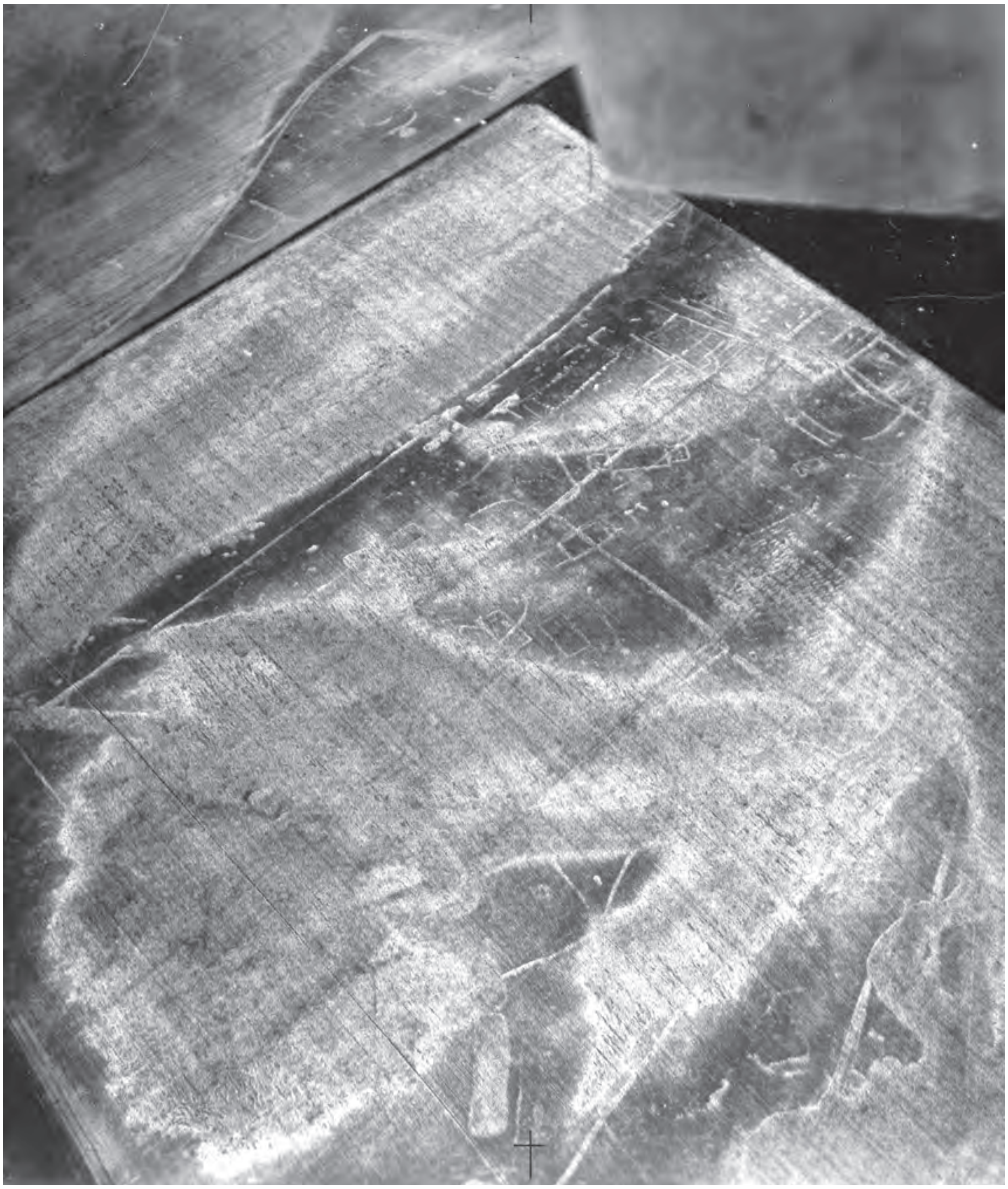


*Figure 9.15. An aerial view of the multiperiod cropmark complex at Sprouston (BEE36) (Reproduced by courtesy of Cambridge University Collection).*

could be expected. The ceramics from Hope-Taylor's excavations at Yeavering came from floor deposits and the fills of substantial construction slots associated with such buildings as halls, the grandstand and the Great Enclosure, which allowed an unusually large corpus of material to be recovered. Of this he interpreted his Classes 1A, 1B and 2, which made up the bulk of the material on the site, as "unquestionably native", whilst he attributed Classes 3 and 4 to a Germanic context (Hope-Taylor 1977, 197–8). This material needs to be reassessed in the light of more recent studies of assemblages from Roman Iron Age (e.g. Murton High Crags, Pegswood, Ingram South, East and West Brunton) and Anglo-Saxon contexts (e.g. Lanton Quarry). The British ceramics postulated by Jobey (1959) at the settlement at Huckhoe, and thought to be associated with the late stone-built rectangular buildings on the site, have been reassessed by Miket who views them as being Roman Iron Age, and the buildings to be of medieval date (Roger Miket pers. comm.). The ongoing excavations at Bamburgh Castle provide perhaps the best prospect for identifying such material.

The only other British material that can be mentioned are occasional inscribed memorial stones, such as that dedicated to Brigomaglos from Vindolanda, which hint at a Christian context of production, given their occurrence in British Christian communities in Wales and South-West England.

The Anglo-Saxon period is far better served in terms of the volume and variety of material culture available for study. An important caveat to bear in mind, however, is that on excavated sites where timber-built buildings occur, the volume of finds is rarely high because in most cases floor deposits no longer survive, and the remains of the buildings comprise little more than the basal portions of postholes and construction trenches. However, significant assemblages can survive in sunken-floored *Grubenhäuser*. In fact, if it was not for the preservational circumstances provided by such sunken-featured buildings, the material culture assemblages of the Anglo-Saxon period would not be much different to those of the British period in either quantity or quality, and this period lasts five times as long.

The potential of *Grubenhäuser* has been most recently demonstrated at Lanton Quarry where seven such buildings have so far been excavated, although it is clear that the settlement extends further, and more such features should come to light as the quarry is extended (Fig. 9.17). Clusters of *Grubenhäuser* are now a well-attested phenomenon in North Northumberland, being visible on aerial photographs at sites such as Yeavering, Maelmin, New Bewick and Sprouston (see also Chapter 4). In the case of the Lanton Quarry group, which was only discovered as a result of topsoil stripping, there are marked artefactual associations with each hut. For example, sunken-featured building 4 (SFB 4) contained a line of clay loom weights between two clay pads, interpreted as the supports for a warp-weighted loom, suggesting its use as a weaving shed (Figs 9.18 and 9.19), much like the *Grubenhäuser* excavated at Yeavering (Building C1; Hope-Taylor 1977), New Bewick (Gates and O'Brien 1988) and Ratho (Smith 1995). In addition to the loom weights, a beautifully made polychrome glass bead was recovered from the fill of this structure (Fig. 9.20), as well as some burnt leather fragments and a small iron hook (Fig. 9.21). A further polychrome glass bead, made from soda lime glass, was found in the very shallow deposit that survived in the basal portion of SFB 7 (Fig. 9.22). The beads have revealed traces of iron, manganese and lead as colourants, as well as lead and tin as opacifiers (Jones 2007). Clay loom weight fragments, although fewer in number, were found in SFBs 1, 3, 6 and 7 while SFB 5 produced two iron knives, one of which was complete (Fig. 9.2). They both consisted of a blade with tang, and both had mineralised wood surviving on one side of the tang, which in one case indicated a hardwood handle (Jones 2007). The complete knife also had some leather around the blade, indicating that it had been sheathed. Elsewhere, SFB 3 contained half the Anglo-Saxon ceramic material from the site, suggesting it may have served as a storage shed or perhaps even a potter's workshop.

*Figure 9.16. The tower at Warden church, Tynedale, probably constructed during the seventh century in stone, of which some has evidently come from Hadrian's Wall which lies just 4km distant. Note the Anglo-Saxon cross-shaft in the foreground.*

Although occasional cereal grains were found in most of the *Grubenhäuser* fills, the highest counts were from SFBs 2 and 3, which were situated next to each other. In SFB 2 the lower stone of a rotary quern, made from fine-grained micaceous sandstone, was found, implying this was where the grinding of grain took place. Two of the buildings, SFBs 1 and 6, produced fragments of animal bone and teeth, suggesting that


*Figure 9.17.Plan of the Anglo-Saxon 'village' at Lanton Quarry.*

the butchery of animals took place in and around these structures. SFB 6 was located 170m away from the rest of the settlement on its downwind side, suggesting this building was the site of unpleasant and odorous work, such as tanning and hide working perhaps. The inescapable theme to emerge is that of craft specialisation within what were still ostensibly farming settlements, including an efficient system of workshop production. Whether most farming settlements supported such a range of specialist workshops, allowing them to be largely self-sufficient, or whether only certain settlements included such a diversity of craftsmen, is not yet clear. However, even if only some settlements supported specialist crafts it is clear that many aspects of craft working were not confined to high-status sites, such as Bamburgh, which must have been an important aspect of the long-term success of the Anglo-Saxon kingdom and its ability to quickly recover after the devastations that followed military incursions. In contrast, during the British period it was after the demise of the last generation of people that had known Roman governance, and that had been supported by imported crafts through the Roman military and its administration, that many skills appear to have been lost, at least to the south of the Wall. The most visible example of this is the

*Figure 9.18.The* Grubenhäuser *(SFB 4) at Lanton Quarry that produced the line of loom weights along its north side together with what appeared to be the base for a loom.*

reversion to timber-built structures at the expense of buildings constructed from stone and mortar.

Although we can perceive a strong emphasis on local production during Anglo-Saxon times, in terms of agricultural wealth, crafts such as jewellery production and pattern-welded swords (see below), as well as intellectual and artistic endeavour, Northumbria was also an important locus in a web of international trade. Various early medieval texts discuss the travels, particularly of the clergy, to Frankia, Germany and Rome, amongst other places, and the influences, particularly from the Mediterranean and Roman worlds, can be seen in the religious thought, symbolism, art, sculpture and building traditions that became blended into the Anglo-British cultural milieu. One of the most obvious impacts on the Northumbrian landscape was the early stone Anglo-Saxon churches, built in the 'Roman style', by masons brought from the continent, and no doubt some local trainees. Although several of these used dressed stone robbed from earlier Roman buildings, as can be seen in the Anglo-Saxon tower at Warden church (Fig. 9.16), the crypt at Hexham and the fabric of Escomb, these buildings represented something new and impressive; their stone construction no doubt imparted a much-needed sense of permanence and stability during a time of extreme military and political instability, and one marked by an incredible cultural mixing. The role of Christianity in glueing together such disparate influences and peoples is a theme to which we will return below. Other evidence for long-distance trade includes a fragment of walrus ivory found at Bamburgh, whilst at Yeavering a gold Merovingian coin was discovered, and the liturgical comb of St Cuthbert was made from elephant ivory.

## Ceramics

The largest assemblages of Anglo-Saxon ceramics so far available for North Northumberland come from Yeavering and Lanton Quarry. At Lanton Quarry, 63 sherds representing no more than 40 vessels were recovered (Vince and Steane 2007a). The Lanton material differs from Yeavering, which has stone-tempered fabrics. At the latter site the shape and method of manufacture suggest they were made in a continuation of the pre-Roman Iron Age tradition of northern England (*ibid.*). Thin-section analysis of two sherds from different vessels has been undertaken on the Lanton material, showing them to have been made from different fabrics: one consistent with a local origin, the other with occasional coarse-grained

*Figure 9.19.Locally made annular loom weights from the Lanton Quarry site (Courtesy Alan Vince).*

quartz sandstone, which could suggest use of the local Fell Sandstone or, given its similarity with inclusions in ceramics from the Vale of York, may have been imported. Most of the sherds from Lanton were too small to allow vessel forms to be assigned, but at least nine were crude round-based bowls with straight vertical sides and rounded rims (Fig. 9.24). Although these vessels vary considerably in size, they were all used in food preparation, and some had external organic residues. In a similar number of vessels, rim and neck were narrower than the belly; these vessels have been classed as jars and also come in a wide range of sizes (Fig. 9.24). A single decorated jar was present, represented by two stamped sherds and one with horizontal grooves (Fig. 9.24). Overall, there was no evidence for a British element in the ceramic assemblage from Lanton Quarry; bowls and jars of these types are found in early Anglo-Saxon contexts further south, on both sides of the Humber. Although the plain bowl and jar forms have a wide date range, the stamped jar suggests a sixth or early seventh century date (*ibid.*).

Other sites in North Northumberland that have produced pottery include Yeavering, as mentioned above, and there is some material from Bamburgh which has yet to be assessed. Further to the south some rare northern examples of Tating Ware have been found at Monkwearmouth and Jarrow (Cramp 1969; Petts and Gerrard 2006, 69).

Three of the loom weights from Lanton Quarry were assessed by thin-section analysis. The assemblage could be divided into two fabric groups, both of which are considered to have been locally produced (Vince and Steane 2007b). All the loom weights were annular with wide central holes (Fig. 9.19), whereas the bun-shaped weights which replaced them in the seventh century have narrower holes and are less symmetrical. Similar loom weights have been recovered from Yeavering, New Bewick and Ratho, and in all cases indicate an intrusive Anglian material culture and manufacturing tradition indicative of new people settling across the region.

### Glass

Glass is regularly found on early medieval sites, although the overall corpus of material from North Northumberland is still small. Glass beads are probably the most common artefact; they include plain beads of annular form and finely produced polychrome beads, such as those found at Lanton Quarry (Figs 9.20 and 9.22). Beads have also been recovered from Yeavering (Hope-Taylor 1977), Ilderton (anon. 1951), Dilston (Smith 1966), Hepple (Greenwell and Rolleston 1877,


*Figure 9.20. A perforated polychrome glass bead from* Grubenhäuser *(SFB 4) at Lanton Quarry made with a core of clear or green glass with strips of patterned glass in opaque red, yellow and clear/green rolled around it and with patterned discs affixed to both ends (Courtesy Jenny Jones Archaeological Services Durham University).*


*Figure 9.21. X-ray of an iron hook discovered in the* Grubenhäuser *(SFB 4) at Lanton Quarry which produced the evidence for a loom and loom weights (Courtesy Jenny Jones Archaeological Services Durham University).*


*Figure 9.22. A perforated polychrome glass bead from* Grubenhäuser *(SFB 7) at Lanton Quarry made from a dark green translucent glass with trailed white decorative lines. Analysis has shown that it was made from soda lime glass, with iron and manganese as green colourants (Courtesy Jenny Jones Archaeological Services Durham University).*

432) and the burials at Howick Heugh (Keeney 1939). Occasional glass vessels are known, such as the fragment of a claw beaker from Thirlings (O'Brien and Miket 1991, 87), although another example to compare with the complete specimen from Castle Eden, County Durham (now in the British Museum), has yet to be discovered. Of considerable interest has been the discovery of window glass, usually at ecclesiastical sites, such as Monkwearmouth, Jarrow and Escomb, which conforms to the texts that describe Benedict Biscop bringing masons and glaziers from the Continent to build churches in the 'Roman style'


*Figure 9.23. A complete iron knife with blade and tang measuring 82mm long with the remains of a hardwood handle surviving together with some mineralised leather on one side of the blade suggesting a sheath (Courtesy Jenny Jones, Archaeological Services Durham University).*

in Northumbria. However, window glass has also been discovered at Bamburgh (Graeme Young pers. comm.), suggesting that glazed buildings were also constructed on high-status secular sites.

## Metalwork

Metalwork can be found on a range of sites, both settlement and ecclesiastical. Although most of the fine material has come from burials, the North Northumbrian or 'Bernician' burials have tended to produce less in the way of grave goods and finery than burials further south in the Tees valley and Yorkshire (Cramp 1983). The widespread production of iron objects, particularly knives, is evidenced throughout North Northumberland, with recent finds at Lanton Quarry (Fig. 9.23), as well as those recorded at Yeavering (Hope-Taylor 1977, 186–7), the Howick cemetery (Keeney 1939), Monkwearmouth and Jarrow (Cramp 1969). Other common iron objects include buckles, brooches, hooks and assorted nail types, including clinch nails. An iron spearhead came from the Anglian grave at Howick (Keeney 1939) and perhaps one accompanied a secondary burial at Turf Knowe in the Breamish Valley (Frodsham and Waddington 2004, 174–5). Weaponry has also been found at settlement sites, such as the two swords and several spears found by Hope-Taylor at Bamburgh (Graeme Young pers. comm.). One of the swords is a remarkable pattern-welded example made with six strands of iron twisted to form an interrupted herringbone pattern (Fig. 9.25). Other pieces of weaponry include a probable *seax* from Lowick and a decorated spearhead from Burradon (Spain 1923).

Fine jewellery occasionally survives, with the most spectacular example being St Cuthbert's gold cloisonné pectoral cross, now in Durham Cathedral. Other examples of high-quality craftsmanship include the gold pendant from Daisy Hill, Sacriston (Petts and Gerrard 2006, 69), also in County Durham, a chalice from Hexham, a gold mount from Bamburgh (Wood 2004), a cruciform brooch from Benwell and the beautifully made hanging bowl from Capheaton (Fig. 9.26; Cowen 1931). A further example of fine metalwork is the mysterious gold plaque hosting an image that has come to be known as the 'Bamburgh Beast'. Although it has been remarked that the quality of middle and later Anglo-Saxon metalwork in North Northumbria is low compared to other parts of Anglo-Saxon England at this time (Petts and Gerrard 2006, 70), the impression given by the archaeological record could be misleading given that much North Northumbrian metalwork of this period was undoubtedly stolen, sold and melted down by Viking raiders. Furthermore, some of it would have no doubt been paid in tribute, or 'Danegeld', during the oscillating power struggles with the Anglo-Scandinavian kingdom of York.

A further class of metal object that requires comment is coinage. Although few sites have yet to produce substantial hoards, attention can be drawn to the assemblage of over 300 coins recovered by Hope-Taylor during his excavations at Bamburgh Castle and a further hoard of around 70 *stycas* recovered by the Bamburgh Research Project (Young 2010), together with a hoard of over 300 *stycas*, recovered during 1999 and 2002 from fields close to Bamburgh Castle, dating to the period *c*. AD 830–855 (Pirie 2004). The only other coin hoard known from Bernicia is that discovered at Hexham in 1832 (Adamson 1834; 1835), whilst a single gold Merovingian coin was discovered at Yeavering (Hope-Taylor 1977) and other coin assemblages have been found at Lindisfarne, Newcastle Black Gate, Wearmouth and Jarrow (Pirie 1996). Pirie has recently argued that the small copper *stycas* of low value were a practical medium of exchange, perhaps more so than the earlier silver coins, which are of higher intrinsic worth but which may have been used by only a small part of the community. On this basis she argues that, in the second quarter of the ninth century, Northumbria had a robust monetary economy (Pirie 2004, 75). A further and important observation that Pirie makes is the influence of British names on Anglian coins, such as the *Wernuth* die from the Bamburgh hoard, which suggests the presence of a British community in ninth-century Northumbria. Moreover, taking into account other names potentially derived from British sources, and stylistic traits such as lettering on the irregular issues and their choice of motifs, Pirie suggests that "Northumbria should be properly regarded as an Anglo-British realm, and its coinage as Anglo-British in character" (Pirie 2004, 75).

The presence of a circular ring of gold wire from the

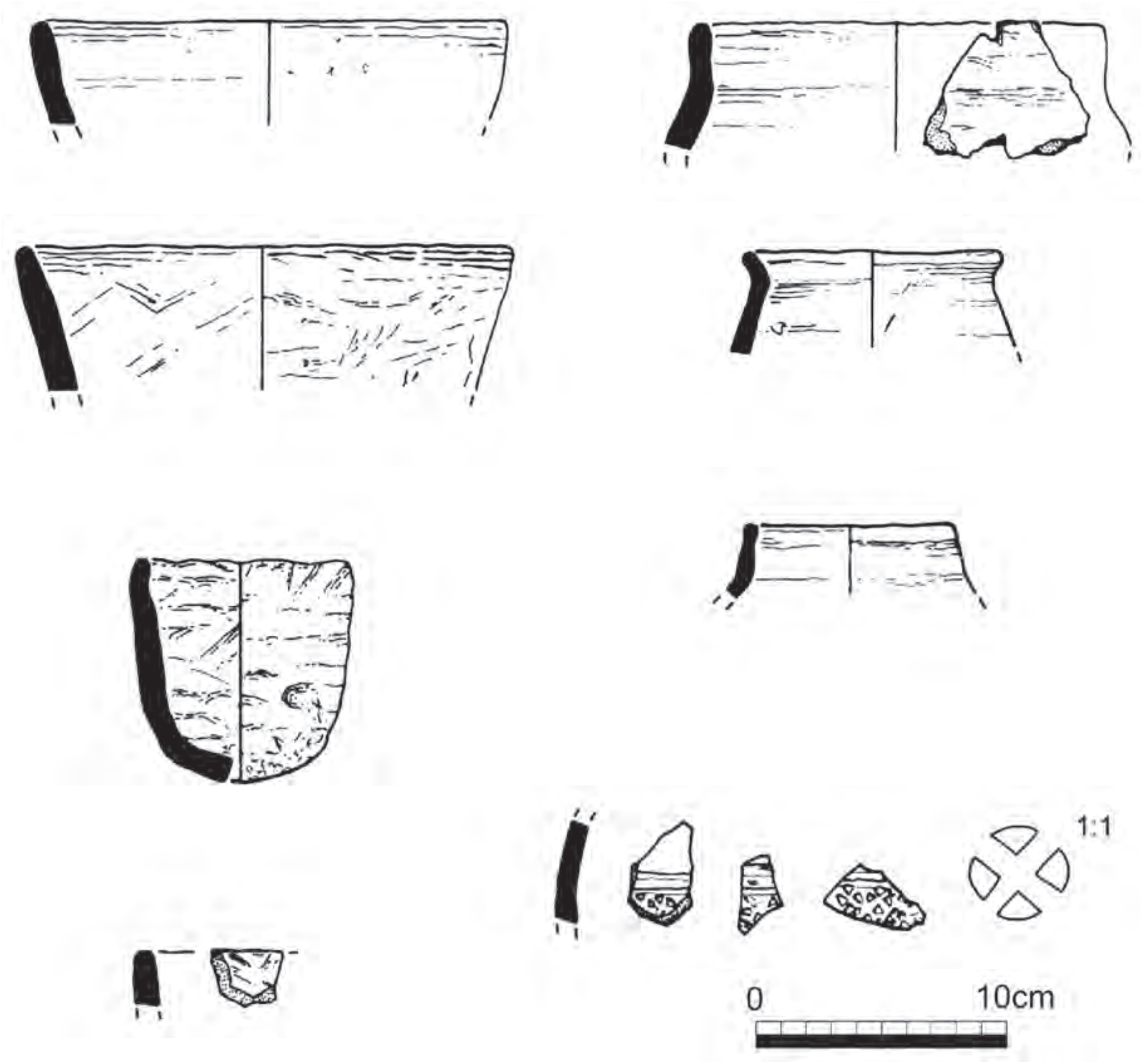



*Figure 9.24. Examples of the Anglo-Saxon ceramic profiles from Lanton Quarry (Courtesy Alan Vince).*

*Figure 9.25.The 6-strand pattern welded sword found at Bamburgh Castle (Copyright Bamburgh Research Project).*


*Figure 9.26.The exquisitely made hanging bowl from a barrow at Capheaton, Northumberland (Copyright Great North Museum).*

upper posthole fill of Building A4 at Yeavering, which is likely to have been used either in filigree work or to secure a garnet (see Hope-Taylor 1977), suggests that jewellery production may have taken place at the site. Whether the working of prestige metals was highly restricted, for example to royal sites such as Yeavering and Bamburgh, is not known for certain, but based on the slender evidence currently available this would not seem an unreasonable proposition. The working of metal, and particularly iron, for day-to-day tools seems to have been more widespread, given the presence of a wide variety of iron objects at sites such as Lanton Quarry. Evidence for metalworking has also been identified within the henge at Yeavering, where a number of crucible fragments with traces of copper and tin were recovered, implying the production of bronze (Tinniswood and Harding 1991). At Bamburgh, the discovery of several pins made from the same mould suggest metal production on the site (Graeme Young pers. comm.), whilst at Bollihope Common, County Durham, excavations have revealed a probable early medieval iron-working furnace, as well as slag with a high lead content (Robert Young pers. comm.).

Although this brief discussion of the material culture of the period could be extended to cover stone sculpture and the production of illuminated texts, these each form specialist areas of study in their own right. In-depth studies of this material can be found in the publications by, amongst others, Taylor and Taylor (1965), Bruce-Mitford (1969), Fernie (1983), Cramp (1984), Wilson (1984) and Webster and Backhouse (1991).

## RELIGION, DEATH AND BURIAL

Prior to the Anglian invasion, at least some of the British undoubtedly kept the flame of Christianity burning, albeit perhaps only as a small flicker. Possible British-period churches have been identified at South Shields (Bidwell and Speak 1994), Vindolanda (Birley *et al*. 1999) and Housesteads (Crow 1995), although these could reflect buildings used only at the very end of the Roman period. An inscribed memorial stone to Brigomaglos from Vindolanda is, however, related to a wider post-Roman British, Christian, epigraphic tradition that is more common in Wales and South-West England, but which also extended into Northumbria and southern Scotland (Thomas 1992).

With the invasion and settlement by pagan Anglian peoples, the fire of Christianity appears to have been largely extinguished in later sixth-century Bernicia. Evidence for pagan religious activity is elusive too, although Building D2 at Yeavering, with its associated pit containing a large number of cattle skulls, provides the most likely candidate yet for a pagan temple (Hope-Taylor 1977). Other than this limited evidence, it is burials that provide the best evidence for the religious practices of the Anglian community.

The reintroduction of Christianity during Anglo-Saxon times can be seen in the many surviving foundations that still stand, to varying degrees, throughout North Northumberland, although Building B at Yeavering was interpreted by Hope-Taylor (1977) as a possible early church whose fenced cemetery overlay graves. Although many of the early churches were built of timber, stone churches, some with evidence for glazed windows, were constructed in the seventh and eighth centuries. Benedict Biscop not only acquired Christian relics from Rome and elsewhere, but also brought stone masons and glaziers from the Continent to construct and embellish his foundations at Monkwearmouth and Jarrow. Indeed Nechtan, king of the Picts, is recorded as having approached Benedict, asking for him to send masons so that he could have a church built in the 'Roman style' (*Ecclesiastical History* 5, 21).

The great flowering of Christian learning and art throughout Northumbria owes no small debt to the energy, vitality and far-sightedness of impressive individuals such as Aidan, Hild, Cuthbert, Benedict Biscop, Bede, Wilfrid, Alcuin and others, who themselves promoted and extolled a uniquely Northumbrian celebration of Christianity, and one which merged the influences of the British and Roman church. This could be seen both in the flowering of Anglo-British art, visible in the stone sculpture of the region, as well as in the world-renowned illuminated texts, and in the emphasis placed on monasticism throughout the Northumbrian kingdom, especially at Lindisfarne, Tynemouth, Wearmouth, Jarrow, Coldingham, Hartlepool and Whitby.

Although the pagan burial evidence for Bernicia has been summarised before (e.g. Cramp 1983; 1988), it is suggested that contrary to the received view, a considerable number of burials are known, but grave goods are generally few, which marks the Bernician burial tradition as different from that of Deira and other regions to the south. The lack of grave goods and cremations has generally been taken to suggest local British influence on Bernician burial practices. This has been taken as support for Hope-Taylor's view of Bernicia as a largely Anglo-British kingdom, with only a small Anglian elite governing a British population, with little evidence for a hostile takeover (Hope-Taylor 1977).

At Yeavering, two inhumation cemeteries were discovered and several hundred graves excavated, although there are clearly more on the site. Only four produced grave goods; two from the western cemetery had knives whilst in the eastern cemetery one contained a knife and iron object thought to be a *groma* (surveying instrument), and another contained a purse mount, iron belt fittings and a knife. To these substantial cemeteries can be added 100 or more individuals buried in and around the Milfield South henge, although only 14 graves have been excavated and only two of these contained grave goods, in the form of iron knives, an iron buckle, a tag or strap end and a perforated iron object (Scull and Harding 1990). At Milfield North, further burials were found but in lower numbers (*ibid.*), although more no doubt surround the site, whilst at the Bowl Hole, Bamburgh, a single 5m by 5m trench exposed 11 graves (e.g. Fig. 9.27) from what is evidently a much larger cemetery (Groves *et al*. 2009). One burial was accompanied by an iron knife and buckle whilst three further iron objects were found in the grave fills: a blade fragment, a pin and a possible fragment of an iron buckle. In addition, the individual barrow burial at Barrasford deserves mention (Meaney 1964, 198) as this was accompanied by a shield boss, a sword, a knife and six silver studs. Secondary burials inserted into prehistoric barrows are also known, such as that at Capheaton, where a well crafted hanging bowl was recovered (Fig. 9.26), together with a ring and some copper fragments (Cowen 1931), and the secondary inhumation with an iron spear at Sweethope Farm, Bavington (Hodgson 1897). In addition to these isolated burials, pagan cemeteries have also been recorded on the highest point of the Whinstone crag at Howick Heugh, now quarried away, where 15 inhumations were discovered (Keeney 1939; Cramp and Miket 1982) with iron knives, an iron horse bit, glass beads and an iron spearhead (Keeney 1939). Two Anglian burials are also known from Galewood (Keeney 1935), which, like Thirlings, Cheviot Quarry, Lanton Quarry and Yeavering, is situated upon the sand and gravel terraces of the Milfield Basin.

The key question that surrounds the study of burial practice in Bernicia is, as Lucy has recently pointed out, the cultural affiliation of graves; that is, whether they are British or Anglian (Lucy 2005, 143). But such debate not only clouds the possibility of a hybridised Anglo-British culture that recast influences from various cultural backgrounds into a new and distinctive one (*ibid.*), but also shifts focus away from other important questions, such as why burials were placed where they were in the landscape, why some have richer grave good assemblages than others, why in some locations there are large cemeteries and in others single burials, what sort of mortuary rites were being practised, and what can be deduced about the religious beliefs and motivations of pagan communities. The cultural origin of 'Bernician' burials will undoubtedly come into sharper focus as high-precision radiocarbon dating and stable isotope analysis are applied to skeletal assemblages, but there is still more work that can be done in terms of contextualising the burial record in relation to landscape setting, patterning within cemeteries and detailed study of grave good assemblages.

*Figure 9.27. Burials under excavation at the Bowl Hole, Bamburgh (Copyright Bamburgh Research Project).*

## CULTURAL TRANSFORMATIONS

The main thesis underpinning Hope-Taylor's (1977) seminal report on Yeavering was that Anglo-Saxon power was not wrested from the Britons by force of arms, nor did it necessarily require the rapid and widespread settlement of large numbers of Anglo-Saxon people. This argument rested on his observations that the royal estate centre at Yeavering was not defended and therefore its residents did not feel threatened, and that there was much in the way of British continuity and cultural influence in the building traditions, the presence of a 'grandstand', and the style of the graves present on the site. By linking his building sequence into the historical narrative provided by Bede, he was able to provide a sense of continuity from the Roman Iron Age into the Anglian period. But more recent studies have called the continuity argument into question by reassessing the phasing of the site (Scull 1991) and rejecting the Roman Iron Age field system, which has been shown to be patterned ground resulting from the process of deglaciation (Gates 2005). Many have, nevertheless, followed Hope-Taylor's view that the Anglian takeover was largely a peaceful affair. Although there are individual elements of the archaeological record that, on their own, could be interpreted in such a light, and text sources indicate that the initial settlement of Anglian mercenaries was peaceable (see Historical Narrative section above), this is contradicted by other sources that recount the subsequent behaviour of the Anglians and the fact that some graves contain weapons of what was clearly a military elite.

The Anglian takeover of *Brynaich* clearly involved the fortification of key centres, the fort at Bamburgh being the most obvious case, but also the Great Enclosure at Yeavering, which may yet turn out to be British in origin, and the potential timber box rampart surrounding much of the Maelmin complex (Gates and O'Brien 1988). However, it should also be noted that the Anglo-Saxons were known to fight in the open, whilst the construction of fortifications was very much a British tactic that went back to the pre-Roman Iron Age, as well as being a Roman tactic copied by the Britons, who refortified several Roman forts such as Vindolanda and Housesteads. On the other hand, the lack of defences around sixth–seventh-century Anglian sites, such as Thirlings and Lanton Quarry, does not necessarily imply the absence of a martial society, but perhaps that they had been sufficiently successful in their military enterprises not to need fortified sites. A lack of expectation of raiding, or internal warfare, suggests the presence of a powerful centralised control, which we know was centred on Bamburgh. We are told in the *Historia Brittonum* (63) that Hussa, Ida's son, was besieged on Lindisfarne by the British kings Urien and Morcant, together with two others, around the third quarter of the sixth century, whilst Bede (1, 34) states that Aethelfrith, who was Hussa's son, "ravaged the Britons more cruelly than all other English leaders". In any case, the hostile context of the time makes it highly unlikely that any of the emerging kingdoms within the British Isles could have avoided warfare for long, and certainly not if an alien people intended taking over.

This is not to say, however, that the Anglians did not make a deliberate attempt to blend their own culture into the British cultural milieu in which they found themselves. In fact, the evidence points to a deliberate attempt to not only appropriate the British power centres of Bamburgh, Yeavering, Dunbar and perhaps Sprouston and Corbridge for their own centres of governance, as Alcock (2003) has regularly argued, but also, to begin with at least, to retain the British names for these places and arguably for the kingdom itself, albeit in an Anglicised form, that is 'Bernicia' instead of 'Brynaich'. A further attempt by the Anglians to establish themselves as the rightful rulers of Bernicia is marked by the deliberate placing of graves in the upstanding ancient monuments of the time: the henges and barrows of prehistory. The ring ditch and putative stone circle at Yeavering formed a focus around which cemeteries were laid out, whilst a hundred or so graves are clustered around the Milfield South henge, and barrows and cairns around the county have produced evidence for secondary Anglian insertions (see above). The arguments of Richard Bradley (1987; 1993) that this was an attempt by the Anglian elite to legitimise their position through reference to the past has been widely acknowledged, and it forms part of a wider phenomenon that can be traced at various times in many different places. The burying of what is assumed to be the Anglian dead at these Bernician sites, as Hope-Taylor (1977) and more recently Lucy (2005) have pointed out, recalls British traditions rather than the Anglo-Saxon traditions of Deira and the southern kingdoms. In this case we may be witnessing an attempt at the appropriation of selected cultural norms into the Anglian way of life, presumably to advance themselves as the rightful leaders of the British people. Building on Hope-Taylor's far-sighted view that Yeavering testified to a "vigorous hybrid culture" (Hope-Taylor 1977, 267) and Lucy's exploration of the idea of syncretism in early Anglo-Saxon kingdoms (Lucy 2000; 2005), we can perhaps glimpse a deliberate effort by the early Anglian kings of Bernicia to establish their own new and hybridised culture which, being Anglian in name but Anglo-British in character, was intended to ultimately bind their fledgling kingdom together.

A second strand to this topic of cultural transformation, and ultimately integration, is the role of Christianity throughout the early medieval period. The loyalties of post-Roman and early medieval Britain were complex and fluid and could fracture along personal, ethnic and even religious lines. There was clearly a racial division between Britons, Roman Britons, Picts, Scots and Germanic groups, but the warfare and politics of the time did not always mean that kingdoms always fought on the side of their own ethnic group. For example, it was the combined forces of a British king, Cadwallon, and an Anglo-Saxon king, Penda, that unseated the Anglo-Saxon *Bretwalda* of the time, Edwin. Furthermore, this alliance brought together a Christian British king with a pagan Anglo-Saxon king. The motives of these two kings appear to have been very different, with Cadwallon perhaps intent on re-establishing a British Christian kingdom in the north and west, as Higham has argued (Higham 1993), whilst Penda was intent on securing Mercian borders, terminating tribute payments and the overlordship of Northumbria, whilst also plundering what he could from his wealthy northern neighbour. Another example of how ethnic relationships could fracture is the well attested warfare between British kingdoms, something not only lamented by Gildas in his statement that:

> it has always been a custom of our nation, as it is at present, to be … bold and invincible in raising civil war (*De Excidio Brittaniae*, 21),

but is also indicated by the reference in the *Historia Brittonum* (63) to the king of Rheged, Urien, who when on an expedition,

> was murdered, at the instance of Morcant (another British king), out of envy, because he possessed so much superiority over all the kings in military science

But such bitter rivalry was not confined to the British. One of the most enduring issues of the early medieval period in the north, and one that rippled through the entire politics of the Anglo-Saxon hegemony, and in part brought about its demise, was the rivalry between the Anglian kingdoms of Bernicia and Deira. The annexation of Deira into Bernicia is generally acknowledged as having come about during the reign of the "ferocious" king Aethelfrith of Bernicia, who formed what came to be known as 'Northumbria'. But it was the exiled Deiran Edwin, who with the assistance of the Anglo-Saxon *Bretwalda* of the time, Raedwald of East Anglia, overcame Aethelfrith in battle at the river Idle. After Edwin's death and the return from exile of first Oswald and then Oswy, both sons of Aethelfrith brought up in the British Christian tradition rather than the Roman tradition embraced by Edwin, the fractures once again surfaced when Oswy murdered the Deiran king Oswin and re-established the hegemony of the Bernician kings over Northumbria. However, even Oswy could not quell the infighting, because, as Bede tells us, he was

> attacked by the pagan Mercians, who had already killed his brother, and also by his own son Alchfrith and his nephew Ethelwold, son of his brother (*Ecclesiastical History* 3, 14).

Such internecine struggle certainly blights the early history of Northumbria, and arguably it is only with the shared cultural values and stability provided by the establishment of Roman Christianity across the kingdom following the Synod of Whitby in AD 664, that open hostility between the Bernician and Deiran elite was brought under some kind of control. Therefore, in a paradoxical turn of events, the rivalries of the early British and Roman churches, which had caused serious divisions between and within the various kingdoms, ultimately, once the Roman church had established authority, provided a unifying influence of sorts, at least across the Anglo-British kingdom of Northumbria. By providing a common set of rules, social norms and expectations of kingship, as well as the ceremonies and behavioural practice associated with kingship and governance, the church from the late seventh century onwards can be viewed as a force for unity across what was still, deep down, a divided kingdom. After the Scandinavian takeover of York in AD 867, Northumbria was effectively split once again into a Bernician kingdom to the north, ruled from Bamburgh, which retained the name of Northumbria, and the southern kingdom of Anglo-Scandinavian York, which controlled the lands of what had been Deira, as well as areas further west. The loyalties of the people of the kingdom of York were notably skewed towards their Scandinavian cousins rather than the Northumbrians to the north, where the old enmity with Bernicia appears to have lived on.

Over the next two centuries the nation of 'England' was born, and although it was to suffer perhaps its greatest military catastrophe with the conquest of 1066, it could be argued that it was ultimately the unity provided by the church to the wider populace that allowed a successful nation to be forged from the heady mix of so many different warlike peoples. Although ravaged by a millennium of virtually constant warfare and ethnic blending, during which countless atrocities and slaughter took place, the country that emerged appears to have rapidly settled its internal ethnic divisions under the combined effects of a powerful church and common resentment of the Norman aristocracy. Returning to Bernicia it is possible to see the wisdom of Ida and the early Anglian kings who sought, quite overtly, to embed their leadership within existing native power structures, burial customs and ancient ceremonial monuments, as well as the continued use of British names for important places. Perhaps it was this success in forging an Anglo-British kingdom that facilitated the rise to pre-eminence of first Bernicia, and then Northumbria, over all the kingdoms of the British Isles in the ensuing century and a half. 'Aethelfrith the ferocious' married an Anglo-Saxon Deiran woman to cement his claims in the south, and also had a wife in his native Bernician lands with a name – 'Bebba' – that may be British (moreover, her son, thought to be Eanfrith, was able to seek sanctuary with the Picts: see Marsden 1992). If this was a political move, as Marsden has suggested (*ibid.*, 60), how fitting it is that the royal Anglian home of the Bernician kings became known as Bebba's Burgh or Bamburgh, after a Briton, the crowning glory of what had become an Anglo-British kingdom.

*Table 9.1. Radiocarbon dates for early medieval activity.*

| Site | Material and context | Laboratory Number | $\delta^{13}C$ (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|---|
| Lanton Quarry | Charred hazelnut from posthole in circular building 3 | Beta-231339 | -25.3 | 1520±40 | cal AD 420–640 | Waddington 2009 |
| Cheviot Quarry | Hazel charcoal from posthole from Building 1 | SUERC-9102 | -26.9 | 1620±35 | cal AD 340–540 | Johnson and Waddington 2008 |
| Cheviot Quarry | Hazel charcoal from posthole from Building 1 | SUERC-9103 | -27.0* | 1565±50 | cal AD 390–610 | Johnson and Waddington 2008 |
| Cheviot Quarry | Charred hulled barley seed from posthole from Building 2 | SUERC-8959 | -23.8 | 1520±35 | cal AD 430–620 | Johnson and Waddington 2008 |
| Cheviot Quarry | Charred barley seed from same posthole in Building 2 as SUERC-8959 | OxA-15545 | -24.4 | 1517±26 | cal AD 430–610 | Johnson and Waddington 2008 |
| Cheviot Quarry | Hazel charcoal from posthole in Building 2 | SUERC-8960 | -29.0 | 1545±35 | cal AD 420–610 | Johnson and Waddington 2008 |
| Cheviot Quarry | Willow/poplar charcoal from same posthole in Building 2 as SUERC-8960 | OxA-15546 | -25.4 | 1531±27 | cal AD 430–610 | Johnson and Waddington 2008 |
| Cheviot Quarry | Charred hulled barley seed from posthole from Building 2 | SUERC-8962 | -22.7 | 1575±35 | cal AD 400–570 | Johnson and Waddington 2008 |
| Brough Law cross-ridge dyke | Indet. charcoal from basal peat in ditch of cross-ridge dyke | Beta-101730 | | 1590±60 | cal AD 330–610 | ASUD pers. comm. |
| Fire pit next to Bronze Age cairn | Indet. charcoal from fire pit fill | AA-17449 | -26.9 | 1590±55 | cal AD 340–600 | ASUD pers. comm. |
| South Shields Roman fort | Skeleton outside the SW gate of the fort | Beta-45062 | | 1590±60 | cal AD 330–610 | Bidwell and Speak 1994 |
| South Shields Roman fort | Skeleton outside the SW gate of the fort | Beta-45063 | | 1470±70 | cal AD 420–670 | Bidwell and Speak 1994 |
| Thirlings | Charcoal: Doorpost timber, building B | HAR-845 | -24.5 | 1380±80 | cal AD 540–780 | O'Brien and Miket 1991 |
| Thirlings | Charcoal: one fragment probably *Betula* sp. Doorpost timber, building A | HAR-1119 | -25.9 | 1460±80 | cal AD 420–690 | O'Brien and Miket 1991 |
| Thirlings | Charcoal, remaining very friable subsample identified; *Quercus* sp., heartwood, 2.40g (100%); unidentified 8.70g from foundation trench of rectilinear building | HAR-6236 | -26.9 | 1560±70 | cal AD 340–650 | O'Brien and Miket 1991 |

*Table 9.1. continued.*

| Site | Material and context | Laboratory Number | δ13C (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|---|
| Thirlings | charcoal, remaining comminuted subsample identified; *Quercus* sp., some fast-grown but mostly slow-grown, heartwood plus unknown maturity, 3.62g (59.15%); sapwood, 2.50g (40.85%); unidentified 38.85g; from foundation trench of rectilinear building | HAR-6237 | -25.8 | 1570±70 | cal AD 330–640 | O'Brien and Miket 1991 |
| Thirlings | Charcoal, remaining very friable subsample identified; *Quercus* sp., sapwood, 2.71g (69.7%); heartwood plus unknown maturity, 1.18g (30.3%); unidentified 11.92g; from foundation trench of rectilinear building | HAR-6238 | -26.8 | 1520±80 | cal AD 380–660 | O'Brien and Miket 1991 |
| Thirlings | Charcoal, remaining subsample identified; *Quercus* sp., heartwood, 2.03g (100%); no unidentified material; from foundation trench of rectilinear building | HAR-6239 | -26.3 | 1510±70 | cal AD 400–660 | O'Brien and Miket 1991 |
| Ritto Hill Cultivation Terrace | Hazel charcoal from base of stone revetment | AA-40749 (GU-9201) | -24.7 | 1440±40 | cal AD 540–660 | ASUD pers comm. |
| Little Haystack Boundary | Indet. Charred material sealed below boundary | Beta-121735 | -23.0 | 1110±50 | cal AD 770–1030 | ASUD pers comm. |

*Table 9.2. Radiocarbon results from the Bowl Hole, Bamburgh.*

| Site | Material & context | Laboratory number | $\delta^{13}C$ (‰) | Radiocarbon Age (BP) | Calibrated date range (95% confidence) | Reference |
|---|---|---|---|---|---|---|
| Bamburgh Bowl Hole | Human bone, BH 99 134 | SUERC-10813 | -19.8 | 1290±35 | cal AD 650–780 | Groves, S. *et al*. 2009 |
| Bamburgh Bowl Hole | Human bone, BH 99 129 | OxA-9432 | | 1337±35 | cal AD 640–770 | Groves, S. *et al*. 2009 |
| Bamburgh Bowl Hole | Human bone, context BH 99 130 (Skel) | OxA-9433 | | 1424±33 | cal AD 570–670 | Groves, S. *et al*. 2009 |
| Bamburgh Bowl Hole | Human bone, 02/09 | OxA-19686 | -19.5 | 1369±25 | cal AD 640–680 | Groves, S. pers. comm. |
| Bamburgh Bowl Hole | Human bone, 02/37 | OxA-19687 | -19.9 | 1231±26 | cal AD 680–890 | Groves, S. pers. comm. |
| Bamburgh Bowl Hole | Human bone, 03/176 | OxA-19688 | -19.9 | 1435±26 | cal AD 570–660 | Groves, S. pers. comm. |
| Bamburgh Bowl Hole | Human bone, 04/238 | OxA-19689 | -20.3 | 1239±27 | cal AD 680–890 | Groves, S. pers. comm. |
| Bamburgh Bowl Hole | Human bone, 04/250 | OxA-19690 | -19.6 | 1308±26 | cal AD 650–780 | Groves, S. pers. comm. |
| Bamburgh Bowl Hole | Human bone, 06/416 | OxA-19691 | -20.1 | 1410±26 | cal AD 600–670 | Groves, S. pers. comm. |
| Bamburgh Bowl Hole | Human bone, 06/416 | OxA-19692 | -20.1 | 1376±25 | cal AD 630–680 | Groves, S. pers. comm. |

# 10 Perspectives Through Time

*Clive Waddington and David G. Passmore*

## INTRODUCTION

In the preceding chapters we have come a long way: from Mesolithic hunters and fisherman forced from the lands below what is now the North Sea, to an early medieval kingdom forged by invaders from across the North Sea. The influence of this Anglo-British kingdom still resonates through the ages, having formed an independent-leaning jurisdiction through Viking, Norman and even high medieval times so that the name of the kingdom of 'Northumbria' endures to this day in the county name of 'Northumberland'. The only other areas that can claim a similar ancestry of enduring independence dating back to the first millennium AD and beyond are the more remote areas of Cornwall (*Dumnonia*) and Cumbria (*Rheged*). But of these it is Northumbria, albeit in a greater form than that of the modern county, that has had the greatest impact on the British story, from the limits of the Roman Empire to the spread of early Christianity and the flowering of high culture, through its role in deciding medieval power relations and as the theatre in which Anglo-Scottish relations were played out. It is an extraordinary story; turbulent yet consistent in absorbing influences and on occasion, peoples from far off lands, and ultimately moulding an independent spirit in its people, but one that is also open and welcoming. Although the values of its people have in part been mediated through cultural interaction we can perhaps glimpse in this persistent disposition yet again the subtle but profound effect that the distinctive landscape of the region has had on shaping the personality of the region; a personality which echoes through the ages. Reading such a character into the archaeology of the region may seem spurious, but there are hints to be found. The desire by so many of the individual farming households of the Iron Age to guard themselves behind elaborate defence works speaks of an independence of spirit, and the same impulse can be seen at work in the special arrangement enjoyed by the *Votadini* with Rome, as well as the special governance required in later periods to guard against the Border Reivers. This sense of independence is a quality that has allowed the region to produce a large number of influential and creative individuals throughout its history, but at the same time the failure to unite has been its undoing on more than one occasion.

In this final chapter we focus on a handful of themes that can be discussed from a diachronic perspective. Quite what impulses lie behind long-term patterns in human behaviour are difficult to apprehend but, in line with the approach of this study, we contend that landscape and environment are key factors in shaping human thought, words and actions. Although in part borne out by social interactions and personal ideology, it is through their attachment to landscape that people are given the constancy which allows them to engage in the repetitious behaviour that produces people of a certain 'character'. It is with such thoughts in mind that the following discussion has been committed to the written word.

## SETTLEMENT

Consideration of the settlement history of North Northumberland reveals that it is intimately tied to the geography of the region, in particular the coastline and river valleys. The earliest Mesolithic settlement, as seen through the lens of stone tool finds, shows that the coast formed a particularly attractive setting for hunter-gatherer-fishers, whilst river valleys and inland ponds, lakes and wetlands were also much used. During the Neolithic the first farmers favoured the sand and gravel terraces above the floodplains of the main rivers, whilst the coastline, although utilised, was perhaps not of quite the same importance. Both Mesolithic hunters and early farmers made their way into the uplands, although clearance and agricultural activity there do not seem to have been particularly widespread or extensive until the Chalcolithic (Beaker) period. Neolithic settlement seems to have spread along the valleys that penetrate deep into the Cheviot uplands, as can be seen by the distribution of stone axe heads (Burgess 1984) and the Neolithic flint tools found in the area around Threestoneburn by 'Fritz' Berthele (Hewitt 1995), but also by the distribution of Neolithic long cairns in Redesdale and North Tynedale. The extent to which Neolithic activity spread upwards from these valleys on to the hilltops and upland plateau is a different story and in such true upland landscapes we have only limited hints of Neolithic activity. By *c*. 2400 cal BC, archaeological and environmental evidence indicate that the Cheviot uplands started to be opened up for farming activities, and other areas which have produced little evidence for Mesolithic and Neolithic activity, such as the areas of glacial till deposits fringing valley floors, also appear to have been exploited. From perhaps as early as *c*. 1800 cal BC, and extending into the Middle Bronze Age, settlement in the uplands intensified, ultimately giving rise to the cleared and barren hills that we see today. There is emerging evidence to indicate that settlement was no less intensive in the lowlands, as the recent discoveries of timber post-built roundhouses at the Cheviot and Lanton Quarries indicate. Some degree of settlement contraction appears to have taken place towards the end of the Middle Bronze Age and it is not until some time in the Iron Age that resettlement of the higher uplands took place.

This remarkable extension of settlement during later prehistory, into the Cheviot uplands in particular, was never undertaken before, or has been since, on such a scale and to such high altitudes. It can only be deduced that these periods experienced considerable increases in population. One implication is that if population numbers equated in some way to wealth, status and power, then it is in such a milieu that we can perhaps observe the origin of the slave-based economies of late prehistory, the Roman period and after. Late Bronze Age and Early Iron Age settlement has generally been difficult to identify, however, which could be taken to suggest some form of socio-political and even economic collapse, but such views remain tentative until we obtain more information from both the archaeological and environmental records. On the other hand, the late pre-Roman Iron Age and Roman Iron Age are now coming into much sharper relief, with many new sites being discovered as a result of large-scale open-area topsoil stripping in advance of developments in and around the conurbations in the south of the county. Combined with the well known late prehistoric landscapes preserved in the uplands, this wealth of new information will transform our understanding of later pre-Roman and Roman Iron Age settlement in the region.

This said, the third, fourth and fifth centuries AD pose what is still the main challenge for identifying settlement sites. Recent discoveries have been mentioned in earlier chapters but there is still much work to be done, particularly in terms of assessing whether Roman Iron Age sites continued to be used into the post-Roman period, or whether a new pattern of settlement emerged once Roman influence lapsed from the late fourth century onwards. With the arrival of the Anglo-Saxons we can see a similar pattern established as that for the Neolithic, with early settlement focused upon the sand and gravel terraces of the river valleys and at strategic points on the coast. It cannot be simply coincidence that in virtually every case that early medieval archaeology is excavated in the region, such sites also produce evidence for Early Neolithic settlement. The early medieval sites at Yeavering, Thirlings, Cheviot Quarry, Lanton Quarry, Marygate (Lindisfarne), The Hirsel, Doon Hill, Milfield North henge, Milfield South henge and even Bamburgh Castle are all cases in point. One explanation for this may be that in both cases we are observing incoming farming groups who, in the first instance, followed the coastline and river valleys and located their farming settlements on free-draining, flat and fertile ground, close to rivers and in easy and close contact with neighbouring groups. It was only after the initial phase of colonisation that settlement extended into the uplands and more remote locales.

Despite such similarities, the nature of residency varies considerably during the time period covered by this synthesis. The Early Mesolithic hunters must have ranged over considerable distances, following herds of reindeer and taking advantage of seasonal availability of food in different places. In this case, residency must have been generally of short duration, with the whole group moving together for the most part. As Britain became cloaked in woodland their descendants would have reduced their travel as far greater resources became available within a shorter distance. Although we know very little about how these early hunter-gatherer groups lived, they appear to have been forest and lake dwellers, with only a few examples of possible coastal activity. By the late ninth millennium cal BC new groups arrived on the coastline of North-East Britain, no doubt displaced from the drowning lands of the North Sea plain, and they brought a new mode of settlement with them. Not only are the earliest of these narrow-blade using groups focused around coastal locations (see Chapter 4), but they also brought with them a new kind of residency: circular huts with substantial timbers set within their sunken-floored perimeter (Fig. 10.1). So far these sites have produced evidence for long-term occupation over several generations, although whether it was continuous or seasonal remains unclear. An important gap in our knowledge, however, is the settlement habits of hunter-gatherer-fishers in the Late and terminal Mesolithic, so it remains problematic to assess the impact of Neolithisation on the indigenous population.

The evidence for Neolithic settlement, although now more widespread and better dated, is still somewhat opaque because buildings tend to be small and varied in shape, including triangular, trapezoidal, circular and irregular plan forms (Fig. 10.1). It is likely that

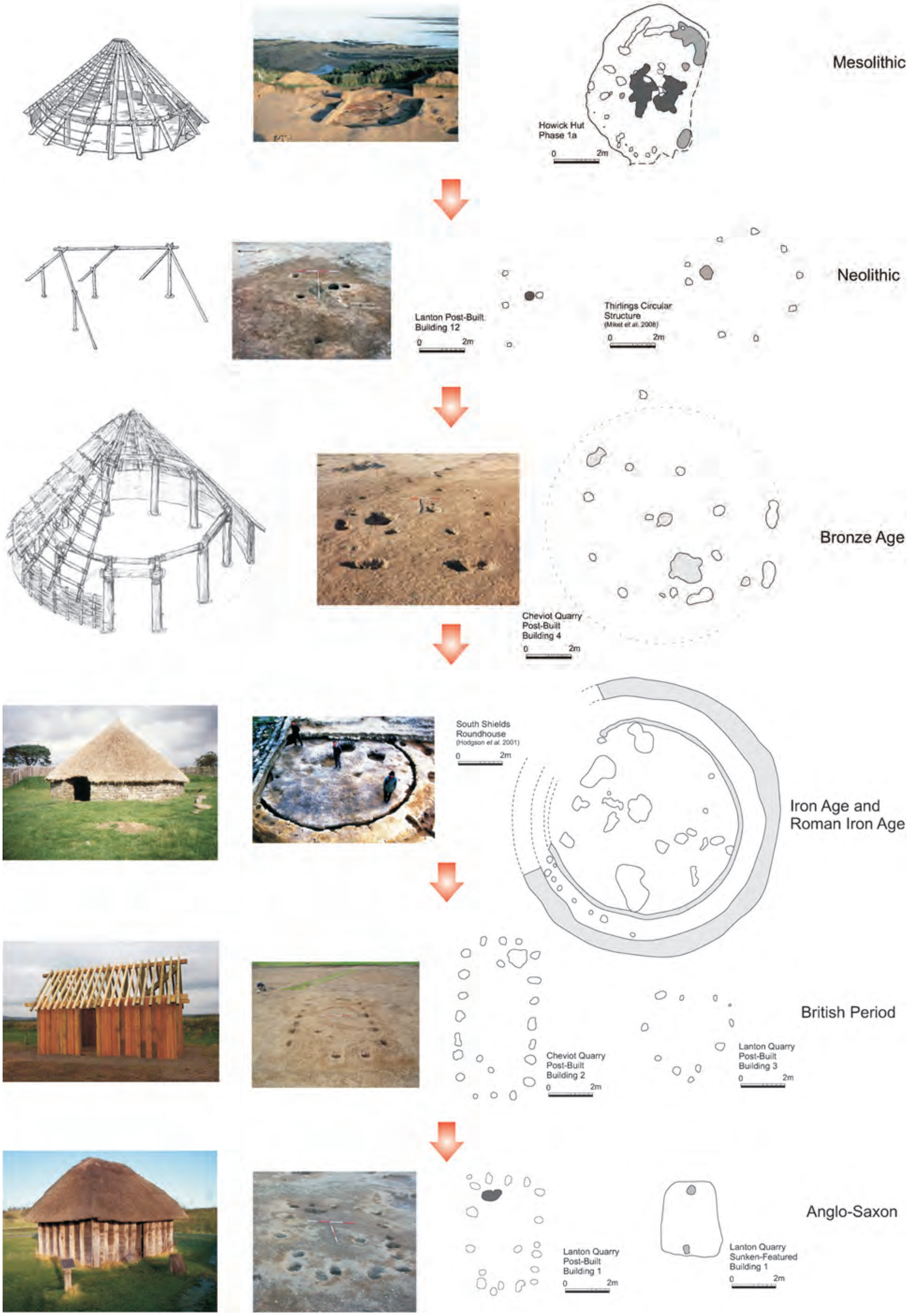



*Figure 10.1. Summary of settlement forms from the Mesolithic to medieval periods in Northumberland.*

rectangular 'halls' await discovery in the region, with the building next to the steading ring ditch at Sprouston probably the most likely contender (Smith 1991, 266–8), but these are evidently special buildings and did not accommodate the whole Early Neolithic population. It therefore seems reasonable to propose that Neolithic settlement reflected the diverse subsistence base of farming groups, with some engaged in cereal agriculture living in permanent well-built timber structures and others, perhaps engaged in stock herding and even hunting, living in more transient structures. The regular meeting of dispersed farming groups must have been an important part of the annual cycle and such large-scale gatherings may have left their trace in the archaeological record as some of the extensive 'midden pit' sites that can cover considerable areas but rarely produce evidence for formal structures. These types of settlement structures appear to continue into the Beaker period if the evidence from the Whitton Park site proves to be representative.

During the Early Bronze Age we are able to document the arrival of the 'roundhouse' (Fig. 10.1) as part of permanent and formalised farming settlements, represented by the myriad remains of hut circles and associated paddocks and fields that can be seen in the uplands today. From this time onwards formal farmsteads never disappear from the archaeological record, although it is clear that the form, size and duration of occupation at these sites varied greatly over ensuing millennia. The demise of roundhouse architecture appears to occur in the British period of the fifth–sixth centuries cal AD, although very occasional examples of later roundhouses can be observed, such as the circular posthole-defined building at Yeavering that overlay rectangular building D2 (Hope-Taylor 1977) to which Miket has recently drawn attention (Miket pers. comm.). The roundhouse has, for many, become an iconic building of prehistoric Britain, thanks in no small part to the many attractive reconstructions that can be seen at sites such as Butser Ancient Farm, Castell Henllys and Brigantium (Fig. 10.2). But this homely and inviting structural form is really a quite ingenious architectural construction, given the building materials and technology available to its builders. Being circular with a conical roof, such buildings are ideally suited to deflecting strong winds, no matter from which direction they come. Furthermore, the available floor space enlarges exponentially in relation to an increase in diameter. This allows very large floor spaces to be covered without having to use particularly thick or long timbers. They can be built in any part of Britain using whatever materials were available. Walls could be made of timber, wattle and daub or stone, whilst the thatch could be of straw, reed, heather or turf. The suitability of this kind of structure for accommodating the household unit is demonstrated by the unbroken use of this structural form for 2000 years.

It was only with the departure of Rome and the arrival of Anglo-Saxon groups that the roundhouse came to be widely replaced with timber-built rectangular houses and halls. The workshops with sunken floors known as *Grubenhäuser* were built in conjunction with the earliest Anglo-Saxon settlements. This type of vernacular architecture was also fairly long-lived and continued into the Middle Ages in various forms. Being beyond the limits of the Roman Empire for much of the time, the Britons of Northumberland did not adopt the practice of building their structures in the Roman style and so did not learn the skills of for instance ashlar blockwork or stone and mortar construction. It was only with the invitation of stone masons and glaziers from the Mediterranean lands in the seventh century AD that this innovation was brought to Northumberland. During the hey-day of the Anglian kingdom of Northumbria, ecclesiastical buildings were built in stone, and glass windows inserted. This architecture became quite sophisticated, as can be seen by the crypt which survives below Hexham Abbey or in the tower of Warden church (Fig. 9.16), although some of the stone used in these constructions was *spolia* taken from Hadrian's Wall. The skills of quarrying and carving stone gave rise to a flowering of stone sculpture, typically seen on stone crosses, and a unique 'Northumbrian' tradition emerged. This Northumbrian style fused the artistic traditions of the native British, Irish, Anglo-Saxons and the Mediterranean world into a wealth of imagery that became admired throughout Christendom. It was not until Norman times, however, that the construction of stone buildings, other than ecclesiastical ones, became widespread.

## ENVIRONMENT, SUBSISTENCE AND LAND USE

In the Till-Tweed region, as elsewhere in Britain, the subsistence activities of past communities have had a profound and enduring impact on the landscape, both directly in terms of the forging of agricultural landscapes, but also in terms of the indirect impact on hill top and hill slope habitats and the character and form of hill slopes and river valley floors. Unravelling the palaeoenvironmental and archaeological record of these activities has and continues to pose many problems. The importance of transhumance and hunting should not be underestimated throughout prehistoric and later times, as historical records indicate, but other than occasional shielings of the medieval period, and the stone armatures of hunting weapons, such activities leave scant traces in the archaeological record. It is also the case that palaeoenvironmental records are fragmented and have yet to be fully resolved in terms of the sampling resolution and dating controls. Nor are they necessarily located in areas which may be considered

*Figure 10.2. The 'reconstructed' roundhouse at Brigantium, Redesdale, based on a Roman Iron Age site excavated nearby at Woolaw.*

optimal for reflecting, or sensing, land use activities. Yet there have been some important successes in illuminating the record of environmental change and land use, notably in the vicinity of Hadrian's Wall but also, and especially in the context of this project, in the Cheviot uplands and flanking valley floors.

The spectacular survival of field boundaries, ridge-and-furrow field systems, cultivation terraces and lynchets demonstrates that prehistoric communities were moved to pioneer the cultivation of crops in some of the most marginal of Northumberland's landscapes, and this is also borne out in the pollen record from several sites in the Cheviot and Fell Sandstone uplands. Palaeoenvironmental records from lowland settings have been considerably augmented over the course of the Till-Tweed Project, but in many cases are requiring of more analysis and especially independent dating. This must await future programmes of research. Currently, however, they offer a tantalising impression of land use activities in some of the most favourable environmental settings in the north of the county, and the indications of early experimentation with arable cultivation finds support in the record emerging from analysis of botanical plant remains recovered from excavations on the glaciodeltaic and glaciofluvial terraces, most notably at Lanton Quarry, Cheviot Quarry, Thirlings and Coupland Henge.

In extending agricultural practices across a wide range of environmental settings, prehistoric and early historic communities were obliged to accommodate, and at times were perhaps influenced by, the relatively frequent, centennial-scale climate change episodes that are now understood to have punctuated the longer-term climatic trends over the course of the Holocene. Long-term palaeoclimate records specific to North Northumberland are currently lacking and, given the degree of regional variation that is evident in Holocene proxy climate records, we must continue to rely on somewhat speculative links to established climate records derived from elsewhere in northern England and the Borders, as well as the wider North-West European mainland. We can be more confident, however, in identifying several other aspects of environmental change that can be considered as influencing, and certainly providing the backdrop for, human activities in prehistoric and early historic Northumberland. Mesolithic coastal communities, in particular, will have been no strangers to large-scale and perceptible environmental change, living as they did with rising Post Glacial sea levels and drowning of the coastal lowlands. Inland, we can expect prehistoric communities to have had an intimate appreciation of the character and dynamics of river channel and floodplain habitats, but also to have been occasionally surprised by the propensity of valley floors to experience rare, high-magnitude floods. The migratory spread of differing tree species will have been familiar to early prehistoric folk memory, if not to long-lived individuals, while later prehistoric inhabitants will have participated

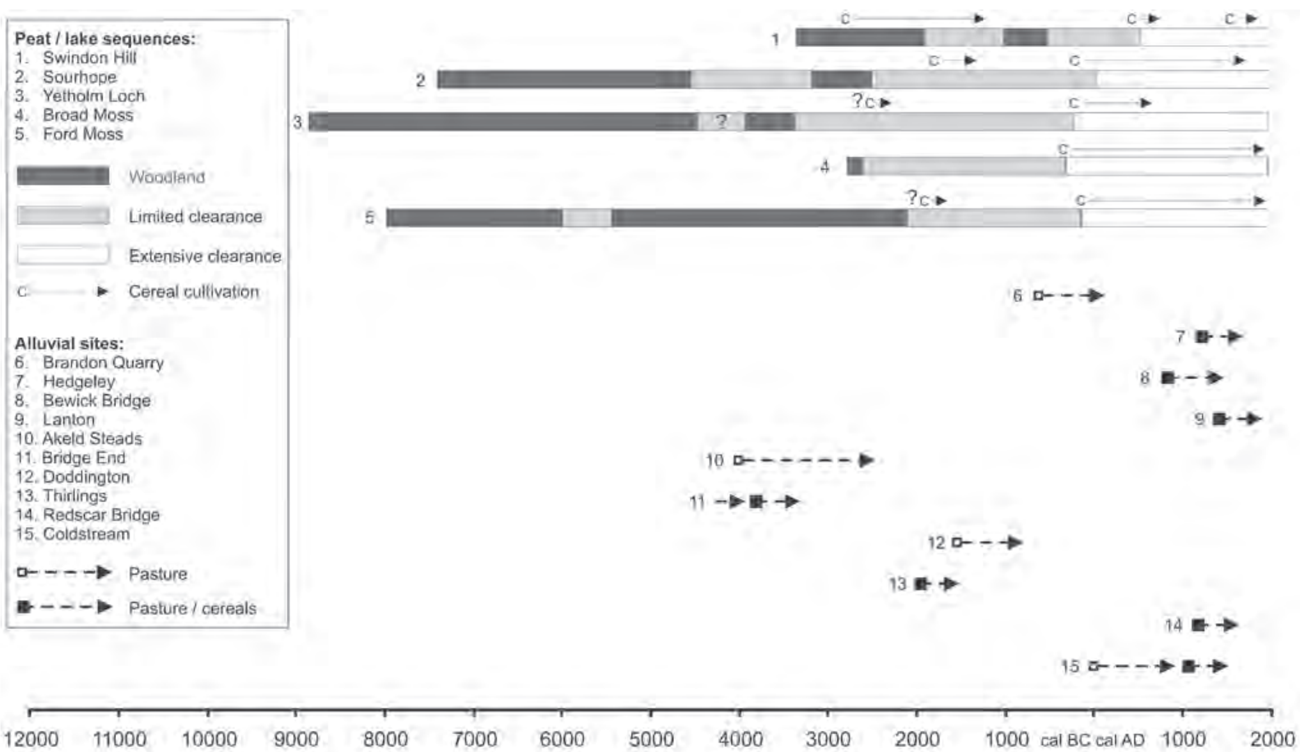



*Figure 10.3. Summary of vegetation histories at upland and valley floor sites in the Till-Tweed area (after Tipping 1996; 1998; 2010; Passmore and Stevenson 2004; Volume 1)*

in massive deforestation episodes that are likely to have constituted the most dramatic of landscape transformations witnessed by pre-industrial societies in Northumberland.

Much of the analysis in the preceding chapters has focused on the chronology, scale and pattern of subsistence activities, and these are summarised in Figures 10.3 and 10.4. Figure 10.3 presents a summary of vegetation histories at selected upland and valley floor sites in the Till-Tweed area, with a particular focus on the timing and scale of woodland clearance and the occurrence of pastoral and arable agriculture. Figure 10.4 plots dated episodes of cereal cultivation for selected sites, shown relative to their elevation (m OD) in the landscape and evidenced by pollen and macrofossil analysis of sediment cores, analysis of botanical remains recovered in the course of archaeological excavation, or dated examples of archaeological features associated with agriculture.

Analyses of early prehistoric subsistence must contend with only a fleeting record of subsistence activities that are perhaps best resolved at excavations such as Howick, where there is abundant evidence for the processing of a wide range of animal and plant foodstuffs. Elsewhere, we can be confident that hunter-gatherer communities will have exploited woodland clearings, and possibly manipulated them, even if it cannot be securely demonstrated that they created them in the first instance. Indeed, it seems likely that natural clearings or canopy thinning, arising through mechanisms such as wildfires, treefall, storms and climate change, will have offered ample opportunities for hunting and foraging activities, perhaps lessening the need to instigate felling of undisturbed forest. With the transition to the Neolithic period comes the first unequivocal evidence for organised agricultural practices. From this time, livestock grazing becomes a widespread and persistent element of land use activities, if not always intensively practised, and from the start of the fourth millennium cal BC, cereal production and processing appears to have been occurring on and near the glaciodeltaic and glaciofluvial terrace surfaces in the Milfield Basin (Fig. 10.4). Thereafter, lowland valley floors and hill slopes below *c*. 200m OD appear to have hosted localised cereal cultivation throughout much of the later prehistoric and early historic periods, although no single site can demonstrate a continuous record of farming (Fig. 10.4). Well drained localities on the valley floors are likely to have been the earliest settings in the Till-Tweed region to have experienced marked deforestation, although it is not yet possible to test this assumption by palaeoenvironmental analysis. In the Cheviot Hills, by contrast, the combination of archaeological excavation and extended, well dated pollen sequences, permit a more nuanced assessment of the chronology and rhythm of upland farming practices. Here, evidence for cereal cultivation may

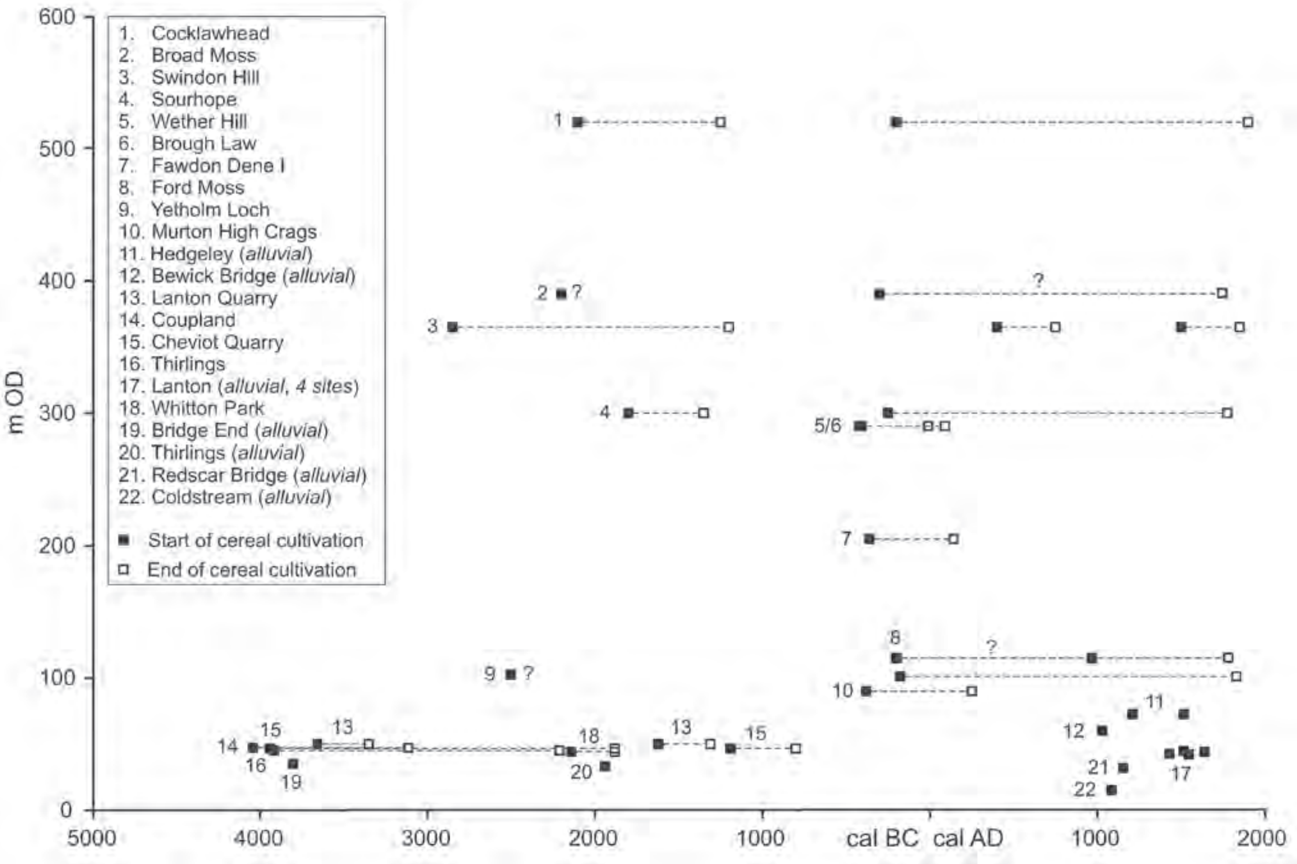



*Figure 10.4. Age-elevation plot for episodes of cereal cultivation at selected sites in the Till-Tweed region (see Volume 1; Jobey and Jobey 1987; Tipping 1996; 1998; 2010; ASUD 2001; Passmore and Stevenson 2004; Frodsham and Waddington 2004; Topping 2004; Miket* et al. *2008; Johnson and Waddington 2008; Waddington 2006; 2009).*

have been delayed until *c.* 2850 cal BC, as evidenced by the small-scale trace of barley at Swindon Hill (365m OD), and by *c.* 2100 cal BC barley was also being grown at elevations above 500m OD (Tipping 2010; Fig. 10.4). However, other evidence for earlier Neolithic activity, in the form of long cairns, stone axe heads and flint tools, implies that Neolithic agriculture in the valley floors that penetrate deep into the Cheviot Hills may yet prove to have been practised earlier than the current dates associated with cereal pollen suggest.

The Neolithic, and especially Chalcolithic, exploitation of higher-elevation terrain for agriculture presaged a marked expansion in upland settlement that remains extant in the modern landscape (see above). That it occurred despite a trend towards climatic deterioration lends support to the theory that it was prompted, at least in part, by the need to support increasing population numbers at this time. By the end of the Bronze Age, however, land use practices above *c.* 300m no longer featured cereal cultivation (Fig. 10.4). Restructuring of agricultural landscapes at this time coincided with a marked climatic downturn and some degree of retraction in upland settlement, and it was not until the Middle–Late Iron Age (between *c.* 400 and 200 cal BC) that cereal production recommenced at elevations above 200m OD. This later phase of agricultural expansion in the Cheviots, and across hill slopes and summits throughout the wider region, was preceded by extensive and in some cases very rapid deforestation that represented the most dramatic of landscape transformations in the Post Glacial period (Figs 10.3 and 10.4). Indeed, the first Roman arrivals in the region would have been confronted with a largely agricultural landscape, near-treeless and with significant cereal cropping in the Cheviot Hills and higher terraces of the valley floors, while upland areas fringing the eastern and southern Cheviots were predominantly utilised for livestock grazing amidst scattered areas of woodland and heathland.

Human disturbance of catchment vegetation and soil cover has long been implicated as having an influential effect on river channel and floodplain environments, especially in terms of enhancing fine-sediment delivery to river systems through soil erosion. However, resolving the geomorphological links between catchment soil erosion and fluvial system responses remains problematic (Foulds and Macklin 2006). Therefore, although the site at Yetholm

Loch in the Cheviots presents a compelling example of local, clearance-induced, soil erosion in the later Iron Age (Tipping 2010), at larger catchment scales we cannot yet clearly identify the chronology and scale of anthropogenically induced floodplain alluviation. To some extent this is because Holocene channel and floodplain history has been, and continues to be, strongly influenced by the legacy of Late Devensian glaciation and especially deglaciation. In particular, fine-grained sediment delivery to Holocene floodplains in the Till-Tweed valleys will likely have included some proportion of material derived from deposits emplaced during the preceding glacial and deglaciation period. This is consistent with the concept of an extended paraglacial cycle operating on a sub-catchment scale (e.g. Ballantyne 2002). Glaciolacustrine sediments, for example, may be locally observed in eroding banks of the present Glen and Till. From Middle Holocene times, however, the impact of human activity on catchment soil and vegetation cover (see Chapters 5–9) will have been exercising an influence on water and sediment yields to the region's river channels, while channel and floodplain development would have increasingly been associated with reworking of previously emplaced Holocene alluvium. Accordingly, as has been concluded in country-wide analyses of Holocene fluvial records (e.g. Macklin *et al*. 2010), the legacy of Bronze Age and later deforestation and agricultural activities in the Till-Tweed region can be said to be primarily one of rendering its river channel and floodplain environments more sensitive and responsive to changes in the frequency and magnitude of flood events.

## WARFARE AND DEFENCE: CONTESTING THE LAND

The number of known military engagements, many of them critical to the course of British and Northumbrian history, is extraordinary. This record includes the battles of Heavenfield (AD 634), Carham (AD 1016 or 1018), Alnwick (AD 1174), Hallidon Hill (AD 1333), Otterburn (AD 1388), Humbleton Hill (AD 1402), Yeavering (AD 1415), Hedgeley Moor (AD 1464) and Flodden Field (AD 1513), to name the most obvious, as well as sieges of medieval castles in North Northumberland such as those at Norham, Wark on Tweed, Berwick upon Tweed, Etal, Ford, Chillingham, Bamburgh, Dunstanburgh, Warkworth and Alnwick. This pattern of military engagements finds support in the archaeological record with the plethora of fortifications that extend back to the Bronze Age and perhaps even earlier. We can only assume, based on the need for so many defensive sites, that there are many battles, skirmishes and raids which have escaped record. Why has this small and tightly bounded geographical region been a theatre for so much military aggression from at least later prehistory to the Middle Ages?

Such a question is of course complex and multi-faceted and has as much to do with the social, cultural and political nature of groups residing in and adjacent to the region as with its broader geographical location and the physical qualities of its landscape. One of the most important influences we would like to focus upon, and which could account for the long history of contesting this land, is the configuration and character of the landscape (Fig. 10.5). North Northumberland occupies a narrow area bounded to the west by the Cheviot Hills, which hinder movement both north-south and east-west. The most easily navigated route from the Edinburgh area around the Firth of Forth southwards is through the lower lying land east of the Cheviot Hills. The 'Great North Road' (the modern A1) and the London to Edinburgh railway line pass through the region, emphasising the importance of this 'pinch point'. The east-west routes are also important, particularly as the southern part of the region lies on the shortest route between the east and west coasts of England. North Northumberland encompasses the lower Tweed, which forms the easternmost end of the main corridor into the southern Scottish uplands. Control of this region, particularly where it meets the coast, was of key strategic importance at many times in the past, which explains why Berwick was for some time the most important Scottish port and one of its richest towns, and why ownership of the town has been contested on many occasions. Another important east-west routeway is that formed by Glendale across the northern flank of the Cheviot Massif and into the Milfield plain. The site of Yeavering is located at the mouth of Glendale, where it opens out into the plain, overlooking a fording point of the river. This combination of circumstances must have ensured the long-term strategic significance of what in landscape terms is undoubtedly a 'persistent place'.

Another consideration is the easy access into the Northumberland hinterland from the coastline, with its many beaching points and small natural harbours. This has allowed colonisers and invaders, whether Mesolithic groups, Neolithic agriculturalists, Beaker-bearing metal producers, Roman supply ships, Anglian invaders or Viking raiders, to gain direct access into these rich lands. Furthermore, the regularly spaced west-east-flowing rivers between the Tweed and Tyne provide easy access from the coast into the interior of the region. This riverine geography, combined with the large sandy bays at Budle, Bamburgh, Beadnell and Druridge, provided an inviting and accessible land for seaborne settlers and raiders. Once the geography and natural wealth of this land is appreciated, it becomes comprehensible why it has been contested throughout so much of its history, as it would not just have brought control over


*Figure 10.5. Map of North Northumberland showing selected historic battle and siege sites, together with the geography of its rivers, valleys and beaching places.*

rich agricultural resources, but also strategic control over communications and the movement of goods and people.

The nature of recorded warfare in the region shows that pitched battles were almost as common as sieges, testifying to its importance for moving armies. This said, the huge number of defended sites during the Iron Age, medieval and Border Reiver periods indicates also that when there was no overt centralised power structure the region easily fragmented, with local groups all constructing their own defences. This can even be observed at the scale of the household in later prehistory and the time of the Border Reivers. Again, the politico-military fragmentation of the region must be linked to its geography, which gave rise to a myriad of valley-based communities which found it easy and expedient to go their own way. It was only with the centralised military control brought about by the Romans, and later the Anglian kings of Northumbria, that the number of fortified sites reduced. Based on the historical periods alone, it is evident that during uncertain and unstable periods the number of defended sites rose, and therefore it is not unreasonable to view the Late Bronze Age and

Iron Ages as being similarly unstable, as implied by the construction of palisades and forts.

Siege warfare appears to have taken two basic forms. On the one hand there is evidence from both the archaeological remains and historical sources for raiding, which can be considered as brief, aggressive actions which if met by stiff resistance would probably mean the raiding group moving on quickly to richer pickings. The second type is the traditional 'siege' in the medieval sense of a protracted attack on a defended site, which could last weeks or months. This type of siege warfare is certainly attested in medieval times, although it is possible that such sieges occasionally took place in later prehistory and the early medieval period.

The bloody history of the Borders, and especially Northumberland, is an essential part of the historical story of the region, although it is one that has perhaps been underplayed by some archaeologists but dwelt on, at the expense of other topics, by some historians. Conflict is not easy to write about from an archaeological perspective, but the pacification of the past in much recent archaeological narrative has almost taken us to the point whereby denial of conflict is the default position. Subject areas such as conflict and war should not remain taboo and we must remind ourselves that to arrive at satisfactory social, economic or ideological archaeological narratives we have to accommodate the realities of conflict and its influence on past societies.

## RITUAL AND RELIGION

Perhaps the most common 'glue' that binds human communities together, and which can be observed across most cultures and times, is religion and cult practice. By providing a common set of perceptions, beliefs, mores and practices, shared religious observance and ideology provides a mechanism for binding people within a common world view. This allows not only the world and its various challenges to be understood, but also provides a mechanism for resolving disputes and, if necessary, controlling social groups.

Evidence for ritual observance is virtually absent for the Mesolithic in the region, although this does not mean that the hunter-gatherer-fishers of prehistory were any less concerned with ritual and religion than people of later times. Rather, their physical and ideological proximity to 'nature' may account for why any remains of such observance have not survived in the archaeological record. Perhaps the earliest widespread sign of religious activity is the corpus of rock art, known from the carved outcrop rocks of the region (Fig. 10.6), which must imply a shared belief system that encompassed many parts of northern and western Britain. Just how these inscribed natural places fitted into the religious routines of early farming groups is not clear, but their position in the landscape, context of encounter and shape of designs suggest it was related to maintaining the fecundity of the land (see for example Waddington 1998; 2007a).

It is with the construction of megalithic monuments during the Neolithic, such as the Threestoneburn stone circle (Waddington and Williams 2002), as well as other stone alignments and tombs, that we can first note an interest in the veneration of heavenly bodies, whether these be solar, lunar or stellar. It is also during the Neolithic that we can observe an interest in water and wet places, as evidenced by the unused stone axe heads, such as that from Doddington, that have come from wetland settings. This interest in the power of water, perhaps as a transformative setting, certainly continues through the Bronze and Iron Ages. Likewise, the earth itself may have been venerated, as witnessed by the deliberate deposition of midden material into the ground, usually in domestic settings, in both the Neolithic and Bronze Ages, and the deposition of metalwork, such as the bronze swords thrust into the ground at Ewart, during the Late Bronze Age. The propitiation of the *genii loci* must surely have been a very ancient custom, although little evidence of such activities survives. Rock art could be one case in point, but another example is the Roman Iron Age grotto at Yardhope (Charlton and Mitcheson 1983). It is clear that by the pre-Roman Iron Age the tribes of Britain had personified deities, with such gods and goddesses as Brigantia, Cocidius and Antenociticus venerated within the Northumberland region.

Although we know from both textual and epigraphic sources that early Christianity took root in Britain during the Roman period there is precious little evidence for it in Northumberland, save for the possible church structures identified at a couple of Roman forts in the south of the county (see Chapters 8 and 9). With the Anglian invasion and settlement of the sixth century AD, paganism was reintroduced and we observe the reuse of a wide variety of ancient monuments such as henges, cairns and barrows. However, this pagan interlude was only short-lived as Christianity was reintroduced within a century, bringing with it, ultimately, the centralised control of Rome. Hope-Taylor (1977) recounts the reuse of existing places of pagan worship by early Christian communities, as well as the incorporation of pagan customs into Christian practice and the Christian calendar, and this syncretism is something that others have discussed (e.g. Lucy 2005).

Overall it is possible to recognise a strong religious impulse across the region, which manifests itself in a distinctive way at certain times, in particular the cup and ring markings on outcrop rock, henge construction during the Beaker period, and the flowering of early Christian Northumbria during its 'Golden Age'. The flowering of religious art at these times is fascinating

*Figure 10.6. A cup- and ring-marked outcrop rock at New Bewick, Northumberland, looking east.*

because the cup-and-ring rock art has been considered by one of the authors (Waddington 1998; 2007a) to have its origin in the Mesolithic-Neolithic transition, at a time when there must have been the coming together of two very different cultural groups with very different world views. The same is also true for the Beaker period, whilst the flowering of early Christian religion in Northumbria also took place after the coming together of Anglian and British peoples, and religious influences from Ireland and the Mediterranean, in what was to become, in effect, an Anglo-British kingdom (see Chapter 9). It is conceivable, therefore, that in all three instances we may be observing an effect of culture contact, and ultimately assimilation, whereby diverse groups were able to become reconciled through a shared religious outlook and its attendant artistic, symbolic and architectural representations.

## WIDER CONTACTS

Although in some respects Northumberland today can be perceived as a sleepy agricultural backwater, geographically remote from much of Britain, this modern perception is at odds with the sometimes pivotal role that history and archaeology record. The recent work at Howick, coupled with the study of the displacement of North Sea Plain populations (Waddington 2007a; Chapter 4 this volume) and the reconstruction of part of 'Doggerland' (Gaffney *et al*. 2009), show that the Northumberland coast played a crucial role in the spread of Mesolithic populations displaced through the drowning of the North Sea. This has been suggested as being the mechanism by which colonisation of northern Britain and Ireland by 'narrow-blade' groups, geared around a coastal economy, took place. The model of secondary Mesolithic colonisation presented here (see Chapter 4), although provisional, recognises how pivotal the area is to understanding this process.

Although Neolithic colonising groups are thought to have inhabited much of Northumberland by following the river valleys from their entry points on the coast, little is known of Neolithic maritime interests or the use of the sea. Once these groups became settled the emphasis appears to be on production of food from terrestrial environments, although the common occurrence of Neolithic flints in coastal locations indicates that the coast was not ignored during this period. This is also implied by the discovery of a Neolithic hurdle, thought to have been part of a fish weir, recovered from the intertidal zone at Hartlepool (Waughman *et al*. 2005). Be this as it may, there does seem to be a shift towards terrestrial resources as the stable isotope analysis of Neolithic skeletons routinely reveals people who obtained most of their protein from terrestrial meat with little evidence for a marine component in the diet (e.g. Richards and Hedges 1999; Richards and Schulting 2006). The Neolithisation of Britain required the transportation of domesticated animals and cereal grain from the Continent and we must therefore accept that sea-going craft and knowledge of sailing must have been available to many Neolithic groups. Within such a context, we are left with the perplexing problem of why Neolithic people seem, for the most part, to have shunned fish and other coastal and marine resources. The national study of residues in Neolithic ceramics, as biomarker proxies, should go some way to addressing this question (Richard Evershed and Lucy Cramp pers. comm.), and samples from Neolithic vessels from Northumberland have been submitted for this study.

As with most other areas of Britain, Northumberland featured highly in the spread of Beaker activity in the second half of the third millennium cal BC and it is likely that this was facilitated by sea travel, given that the Beaker 'cult' spread to Britain from the Continent. It is also at this time that considerable numbers of cemeteries were constructed on the coast, with excavated sites at Beadnell, Howick, Longhoughton, Amble and Low Hauxley, amongst many others, testifying to a renewed interest in settlement by the coast.

We can observe, albeit indirectly, the importance of sea and river travel in the Iron Age on account of the large number of fort sites, known from both cropmarks and upstanding remains, that line the north and south banks of the lower reach of the Tweed and its main tributaries, signifying the importance of the river as a corridor of travel, albeit one necessary to defend. This previously unrecognised and in some ways startling discovery requires an acceptance of river and presumably coastal travel, as a principal form of movement and communication during this period. It is apposite to note the recent study by Cunliffe of 'Pytheas the Greek' (Cunliffe 2002) whose voyage, in the late fourth century cal BC, indicates the importance of sea travel and commerce between Britain and the Continent at this time. However, it is with the arrival of Anglian invaders during the fifth and sixth centuries AD that the importance of sea travel is once again evidenced, as Ida and his followers established themselves at Bamburgh and then spread out to take control of the surrounding territory. During the ensuing centuries Northumbria established and maintained regular contact with the Mediterranean, Frankish, Germanic and ultimately Scandinavian worlds to the east, whilst also maintaining contacts with the Western Isles of Scotland and the Irish Sea Basin. This made Northumbria a meeting ground of the Celtic and Roman Christian traditions which bestowed upon the region a rich cultural and intellectual mix that helped maintain its pre-eminence during much of the Anglo-Saxon period. On the basis of this brief sketch of seaborne contacts it is evident that the character of the region, its historical trajectory and its role within Britain and on the Continent, can not be understood without viewing the North Sea as an arena for contact and communication, with Northumberland an important hub within it.

From as early as the Neolithic, when Arran Pitchstone was imported from western Scotland, Langdale stone axe heads from the southern Lake District, and mined flint probably from East Anglia, North Northumberland was part of a web of communication networks that spanned much of Britain by way of landward contacts. Consideration of the monuments and material culture of this same period reveals influence and contact with lands to the north as well as to the south, but it would be a mistake simply to view this region as a zone of transition between Yorkshire and Scotland. Rather, Northumberland and the Borders have their own distinct Neolithic, even though it inevitably draws on influences from surrounding areas.

Throughout prehistory the importance of overland communication routes is evident. Blaise Vyner has recently argued for a north-south route during the Neolithic and Bronze Age of the Yorkshire and Cleveland region (Vyner 2007), and there is no reason to think that such routes did not extend further north. Indeed the linearity of the Beaker period henge monuments in the Milfield plain, which are largely followed by the modern A697 trunk road, suggests that such routes are of very ancient origin. The Roman roads of the Devil's Causeway, Dere Street, and that linking Bremenium with Learchild, no doubt overlie previously existing routes, at least for parts of their course, and these routes are still followed today by the modern road system. All this implies that many of the arterial overland routes that are in use today have very ancient origins, which may go back into prehistory in some cases. These routes, while taking account of natural relief and drainage, would have also been configured around the vegetation, especially in earlier periods when woodland cover was more extensive.

Although an area of undulating terrain, North Northumberland has always been, and remains to this day, a highly accessible part of Britain. Indeed it is this very accessibility which can be posited as the cause of its turbulent history, situated as it is on the cusp between many different regions. It can come as no surprise that the Allies, during World War II, saw the Northumbrian coastline as one of the possible entry points for a German invasion, and therefore constructed substantial defence works along the entire length of beaching areas such as Druridge Bay. Lacking a motorway, Northumberland can seem difficult to access by today's standards, but this is very much a product of modern infrastructure and does not reflect the direct access that, in the past, was provided by the Great North Road, and before that, Dere Street and its precursors. North Northumberland and the Tweed valley remain charming landscapes which have not been cluttered or blighted by modern development, and the lack of industrialisation in this area has allowed the survival of one of the richest archaeological landscapes in the country. It will be no bad thing if North Northumberland can stay much the way it has been since prehistory, wrapped by its moody skies and buffeted by the crisp windy air, the froth and flow of its rivers and the lapping of the tide.

# Appendices

# Appendix A

## Supplementary details of sedimentary sequences recorded on Holocene Alluvial landform elements

*David G Passmore*

### A HOLOCENE PALAEOCHANNEL FILL SEQUENCE AT ETAL (SANDYFORD), RIVER TILL

The Holocene valley floor between Etal and Crookham is located immediately above the Etal-Tweedmill gorge and features a small, low-relief alluvial basin *c*. 1km$^2$ in extent that is associated with a large meander of the River Till (Fig. A1). On the southern margin of the basin, near Sandyford Farm and the confluence with a small tributary stream (Pallin's Burn), a palaeochannel is evident on the alluvial surface that parallels the present course of the River Till (Fig. A1). Exploratory coring of this palaeochannel using gouge augers (Brough and Passmore, unpublished data) revealed channel fill deposits to reach a maximum depth of 250cm, and to locally feature organic-rich sediments that were most well-preserved at core site KB2 (NT 92125 38192; Fig. A1). The sedimentary sequence at the site of core KB2 was as follows:

| | |
|---|---|
| 0–15cm | Fine sandy silt topsoil |
| 15–50cm | Coarsening-upward inorganic clayey silt and fine sandy clayey silt, occasional oxidised organic inclusions |
| 50–75cm | Coarsening-upward silty clay and clayey silt, traces of fine lamination and occasional organic inclusions |
| 75–98cm | Coarsening-upward silty clay and clayey silt, frequent organic inclusions |
| 98–118cm | Coarsening-upward silty clay and clayey silt, traces of fine lamination and occasional organic inclusions |
| 118–160cm | Peaty fine sandy clayey silt, traces of fine lamination |
| 160–210cm | Peaty clayey silt, finely laminated throughout |
| 210–250cm | Fining-upward medium-fine sandy silt, some organic inclusions above 240cm |
| 250cm+ | Sandy fine gravel (coring terminated) |

Radiocarbon assays on a bulk peat sample at 200cm (3280±40, Beta-256124) suggest the onset of organic-rich sedimentation in the abandoned channel occurred *c*. 1670–1450 cal BC (for calibration details see Chapter 2, Fig. 2.28) at the end of the Early Bronze Age.

### A HOLOCENE ALLUVIAL FLOODBASIN SEQUENCE AT CANNO MILL, RIVER GLEN

The Holocene alluvial valley floor of the River Glen features a small (0.09km$^2$) alluvial basin on the western side of the valley floor, and 0.5km downvalley of Canno Mill (Fig. A2). To the west the basin is bounded by the rising valley side, and to the north and north-east by upstanding glaciofluvial deposits. The basin is open to the valley floor to the south-east and, with a floodbasin surface lying at 62.5m OD, is *c*. 1m lower than the floodplain elevation immediately adjacent to the present channel. Exploratory coring using a combination of gouge and Russian-type corers (Raven and Passmore, unpublished data) revealed the southern part of the basin to contain up to 5m of inorganic sediment and peaty deposits, with the deepest recorded sequence being located at core CB1 (NT 90318 31060; Fig. A2). The sedimentary sequence at the site of Core CB1 was as follows:

| | |
|---|---|
| 0–170cm | Silty peat |
| 170–182cm | Peaty silty clay |
| 182–255cm | Slightly silty peat |
| 255–265cm | Silty clay with occasional organic inclusions |
| 265–278cm | Silty peat |

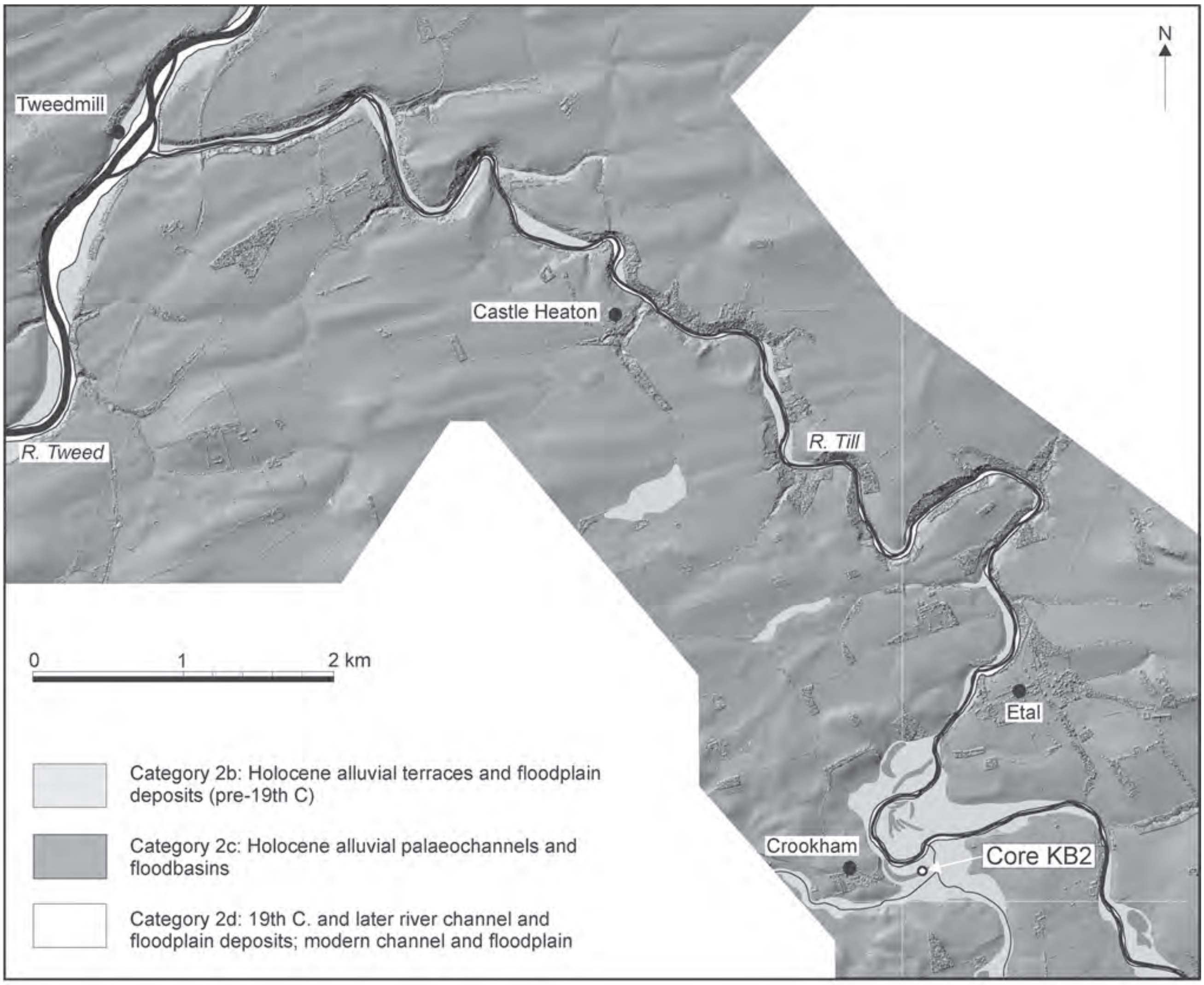



*Figure A1. Map of R. Till valley between Etal and Tweedmill showing location of sediment core KB2.*

| | |
|---|---|
| 278–284cm | Silty clay with occasional organic inclusions |
| 284–350cm | Silty peat, occasional wood fragments |
| 350–353cm | Silty fine sand |
| 353–380cm | Slightly silty peat, occasional wood fragments |
| 380–430cm | Peaty fine-medium sand and silt, becoming less organic down-profile |
| 430–500cm | Coarse-medium sand with occasional fine gravel |

(Coring terminated on gravel at 500cm)

Radiocarbon assays on a bulk peat sample at 380cm (5420±40, Beta-241520) and a fragment of alder at 350cm (5080±90, Beta-241520) date the initial phase of organic-rich floodbasin sedimentation at this site to the period spanning *c*. 4350–4170 cal BC and *c*. 4050–3650 cal BC (for calibration details see Chapter 2, Fig. 2.29), during the Mesolithic-Neolithic transition.

## A HOLOCENE PALAEOCHANNEL FILL SEQUENCE AT LANTON QUARRY (AKELD BRIDGE), RIVER GLEN

A Holocene palaeochannel fill sequence near Akeld Bridge (NT 9561 3050; Fig. A2) has been reported by Allen (2007) in association with site investigations conducted in advance of sand and gravel extraction at Lanton Quarry. Here, a poorly-defined palaeochannel evident on the alluvial surface to the north of the River Glen was investigated in detail at sediment core site Lan(2). This core was extracted using a Cobra-Stitz piston corer and revealed the following sedimentary sequence:

| | |
|---|---|
| 0–89cm | Fine sandy silty clay, homogenous, frequent Fe and Mn staining and with some organic inclusions below 82cm |

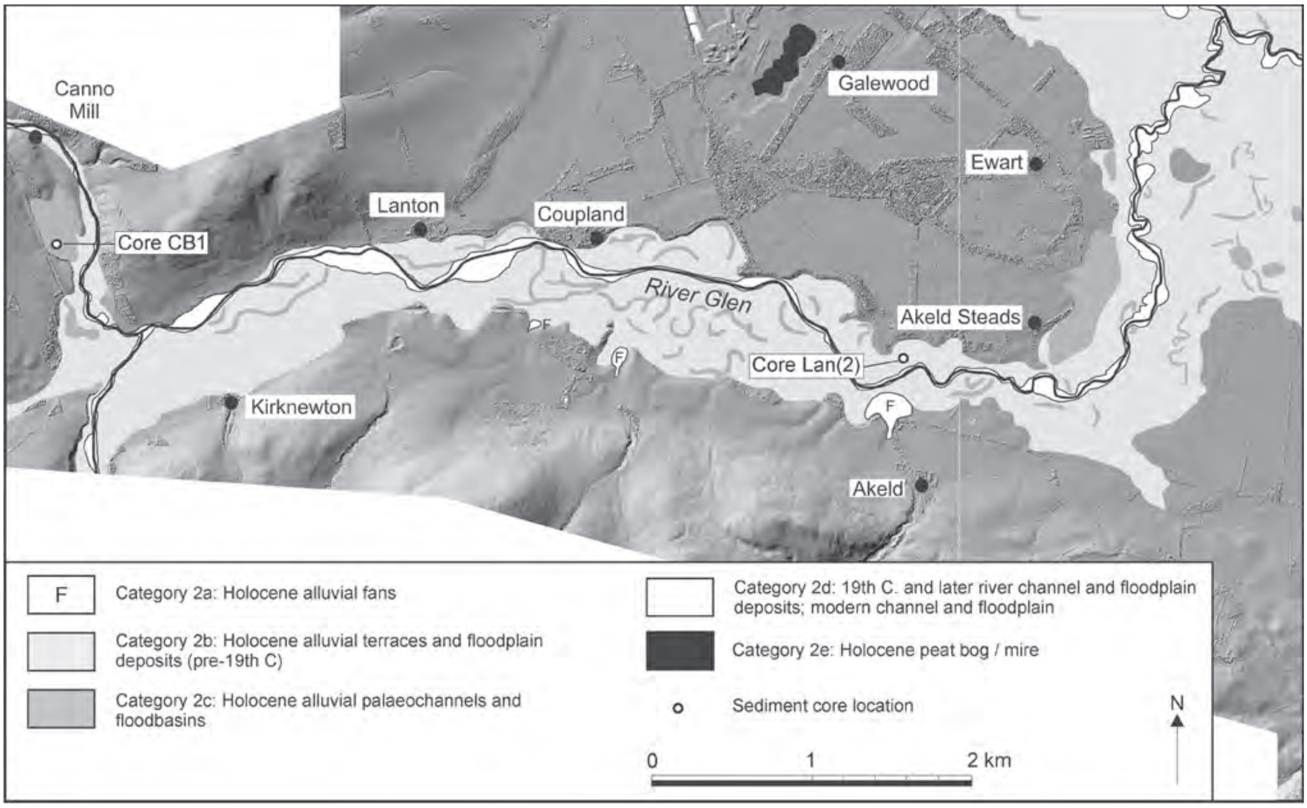



*Figure A2. Map of the lower Glen valley showing geomorphology of the valley floor and location of sediment cores CB1 and Lan(2).*

| | |
|---|---|
| 89–136cm | Fine sandy silty clay, homogenous with some organic content throughout, occasional lenses of medium-coarse sand |
| 136–163cm | Clayey coarse-medium sand, homogenous, inorganic throughout |
| 163–178cm | Fine-medium sandy clay, homogenous, frequent plant macrofossil inclusions |
| 178–184cm | Fining upward fine gravelly sand to clayey fine sand, homogenous, inorganic throughout |

(Coring terminated on gravel at 184cm)

A radiocarbon assay on an *Alnus* macrofossil at 172cm (4010±50, Beta-230049) dates the onset of fine-grained sedimentation in the abandoned palaeochannel to *c*. 2840–2450 cal BC (for calibration details see Chapter 2, Fig. 2.28) in the Late Neolithic.

# Appendix B

## Pollen analysis and chronology of Ford Moss

*Basil A. Davis and David G. Passmore*

### BACKGROUND

Appendix B1 presents a brief summary of a hitherto unpublished palaeoenvironmental investigation at Ford Moss, a 63.1 ha raised bog located in a small, shallow basin on the eastern fringe of the Carboniferous Fell Sandstone escarpment, 2km east of Ford (NT 971 376, 115m OD, see Chapter 2, Fig. 2.42). Ford Moss is a Site of Special Scientific Interest and was designated a Special Area of Conservation in 2005, having previously been registered as a Site of Community Importance. The bog is largely rain-fed and exhibits typical bog communities, as well as some locally rare species such as *Myrica gale* (bog myrtle). Some degradation of the bog surface has been recorded due to drainage, burning and grazing, and this has prompted the development of several 'rewetting' schemes (Joint Nature Conservation Committee 2002). The JNCC reports a 12m depth of peat within the basin. In the following sections we describe the lithostratigraphy, pollen assemblages and $^{14}$C chronology of an 8.28m peat core taken from the central part of the bog at NT 9720 3775.

### METHODOLOGY

The peat core was extracted using a Russian corer which recovered 8.28m of largely sedge peat (equipment limitations precluded recovery of peat below this level). To date, pollen analysis has been conducted at relatively low resolutions in order to establish the general vegetation record at Ford Moss. Pollen sampling was conducted at 16cm intervals between 0–128cm and at 8cm intervals between 128–828cm. Samples were prepared for analysis using standard laboratory techniques (Moore *et al*. 1991). Lycopodium tablets were added to each of the samples prior to preparation to allow the determination of pollen concentration. Pollen analysis was carried out using an Olympus CH-2 microscope at ×400 magnification (×1000 oil immersion / phase contrast for problematic grains) and counting of each slide continued until a minimum of 300 arboreal, shrub and land pollen grains were identified.

A total of four peat samples were submitted for $^{14}$C analyses to the Beta Analytic (Florida) Laboratory. Sample levels were selected in order to date major changes in the vegetation record that are likely to reflect the impact of anthropogenic activity on the regional forest cover and associated subsistence activity.

### LITHOSTRATIGRAPHY AND 14C DATES

The stratigraphy of the core and available $^{14}$C dates are as follows:

| cm | |
|---|---|
| 0–46 | Moderate-well humified herbaceous peat (monocot sedge peat) |
| 46–50 | Unhumified sedge peat, occasional lignaceous fragments |
| 50–67 | Moderate-well humified sedge peat |
| 67–92 | Well-humified sedge peat |
| 92–138 | Moderate-well humified sedge peat |
| 138–148 | Well humified sedge peat |
| 148–230 | Moderate-well humified sedge peat, occasional birch fragments |
| 230–254 | Well humified sedge peat |
| 254–302 | Moderate-well humified sedge peat |
| 302–322 | Well humified sedge peat |
| 322–368 | Moderate-well humified sedge peat |
| 368–460 | Well humified sedge peat, frequent wood fragments |
| 460–552 | Moderate-well humified sedge peat, frequent wood fragments |

*Table B1. Radiocarbon dates and age calibrations for Ford Moss peat samples.*

| Sample / depth *(cm)* | Lab code | $^{14}$C age (yrs BP) | 2-sigma calibration age spans* |
|---|---|---|---|
| FordMoss / 217 | Beta-219173 | 2570±40 BP | 810–550 cal BC |
| FordMoss / 417 | Beta-219174 | 3710±50 BP | 2280–1950 cal BC |
| FordMoss / 584 | Beta-219175 | 5340±40 BP | 4330–4040 cal BC |
| FordMoss / 739 | Beta-219176 | 7040±40 BP | 6010–5840 cal BC |

* Age calibrations made using the calibration curve of Reimer *et al*. (2004) and the computer program OxCal v4.0.5 (Bronk Ramsey 1995; 1998; 2001; 2008).

| | |
|---|---|
| 552–644 | Well humified sedge peat, frequent wood fragments |
| 644–654 | Moderate-well humified sedge peat |
| 654–690 | Well humified sedge peat |
| 690–739 | Moderate-well humified sedge peat |
| 739–828 | Well humified sedge peat, frequent wood fragments |

(Coring terminated at 828cm)

## POLLEN ASSEMBLAGES

The results of pollen analysis are plotted as % total land pollen in Figures B1a and B1b (note this diagram is confined to major taxa only). Also shown on Figure B1 is an age-depth series that has been scaled as a linear extrapolation between the mid-points of the four $^{14}$C age spans shown in Table B1. This is intended as a first-approximation exercise prior to a more intensive dating programme. Below we describe the major trends in the vegetation history.

### Zone FM1 (828–674cm)

The available pollen record at Ford Moss begins shortly before *c.* 6010–5840 cal BC, perhaps around *c.* 6750 cal BC, by which time the surrounding landscape had developed a mature hazel and oak woodland with some elm, birch and pine. Shortly after *c.* 6000 cal BC there is a marked reduction in tree and shrub pollen that may have persisted for some 500 years, albeit with some degree of regeneration in the middle part of this phase. Some degree of opening-up of the forest canopy at this time is most clearly expressed in reduced counts of hazel, enhanced values of grass and herb pollen and, in the later part of the phase, oak, although this latter trend also sees slight elevations of pine and elm. Cyperaceae (sedge), *Menyanthes trifoliata* (bog bean) and a trace of *Typha* (bullrush)/ *Sparganium* (bur-reed) all indicate the local presence of bog and marsh.

Hazel and, to a lesser extent, oak counts have recovered to their previous values by *c.* 5500 cal BC and this trend is mirrored by an associated fall in grass and herb pollen that suggests a greater degree of canopy closure. Towards the top of the zone a small increase in *Betula* pollen suggests an enhanced contribution of birch to the local pattern of woodland composition. However, at the very top of the zone around *c.* 5100 cal BC, there is a marked, short-lived suppression of all major tree species that is mirrored by peaks in *Pteridium* (brackens) and the fungi *Tilletia*. There is no corresponding increase in grass or herb pollen at time.

### Zone FM2 (674–526cm)

Zone FM2, provisionally assumed to span the period between *c.* 5100 and *c.* 3450 cal BC, is associated with the reestablishment of very high (>80% of the total terrestrial pollen sum) values of tree and shrub pollen, but with considerable variation in woodland composition. The zone features the first sustained presence of *Tilia* (lime), heath (Ericaceae, *Calluna*) and *Sphagnum* moss, and coincides immediately with the widely-recognised alder rise. The alder rise is typically dated at sometime between *c.* 6600–5500 cal BC in North-East England (Innes 1999), but the relatively late date at Ford Moss is comparable to dates for this event recorded by Tipping (2010) in the Cheviot hills at Yetholm Loch (from *c.* 5140 cal BC) and Sourhope (from *c.* 5240 cal BC). Towards the top of the zone, above 575cm (*c.* 4000 cal BC), the characteristic elm decline is broadly synchronous with the typical date range (*c.* 4300–4000 cal BC) for this this event in the wider region (Innes 1999), and is accompanied by declining values of oak and, especially, pine and lime. Bog and marsh species are present throughout the zone, while an occasional trace of *Myriophyllum alterniflorum* (water milfoil) provides tentative evidence of the local presence of open water on the bog surface.

### Zone FM3 (526–424cm)

The pollen assemblage of Zone FM3, broadly spanning the period between *c.* 3450 cal BC and *c.* 2200 cal BC, is associated with the highest sustained values (>95% of the total terrestrial pollen sum) of tree and shrub pollen throughout the Ford Moss sequence, reflecting the local dominance of *Alnus*, *Quercus*, *Corylus* and *Calluna*. Grass and herb pollen is present only as occasional traces in what appears to be a local mix

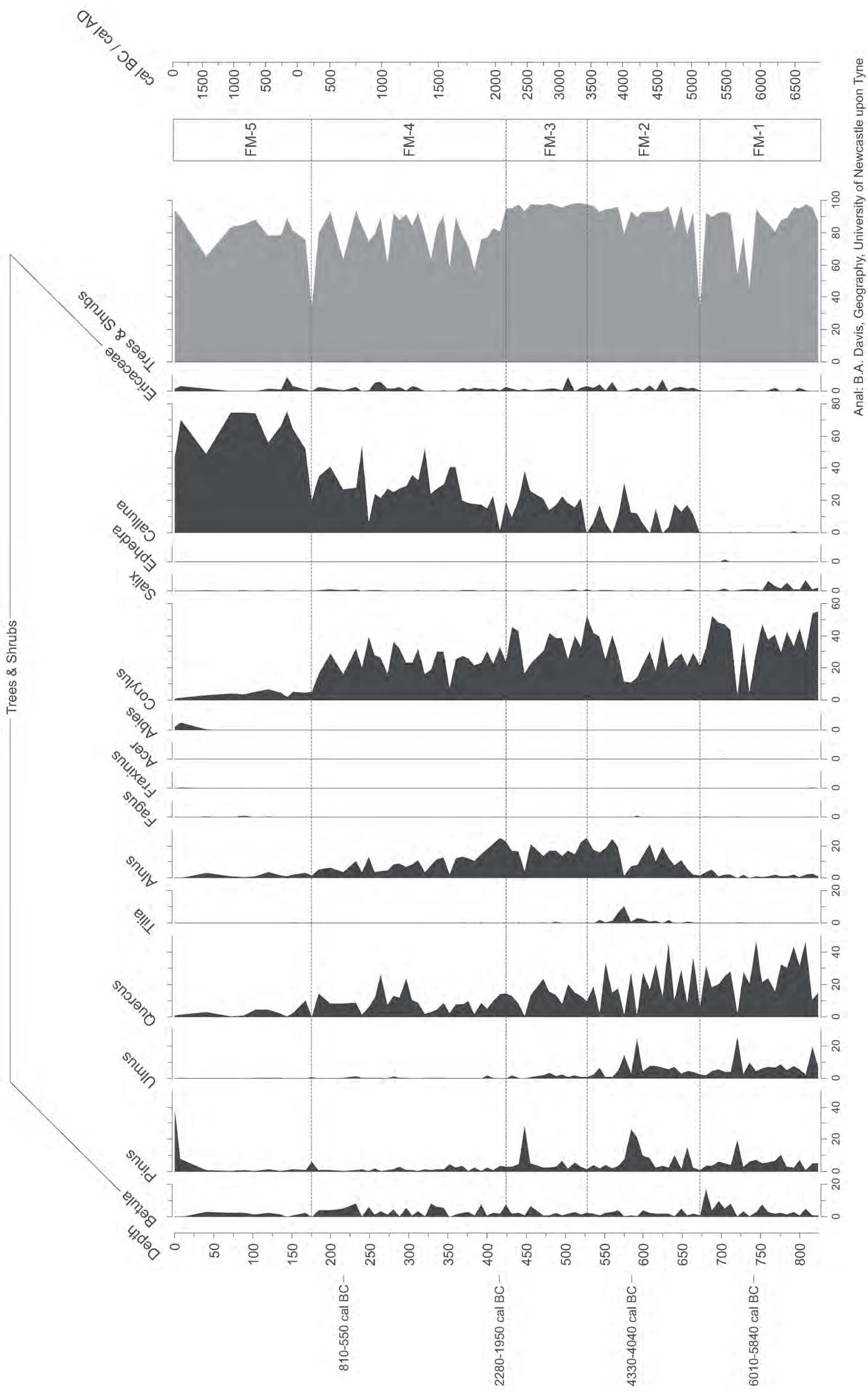



*Figure B1a. Pollen diagram (% total terrestrial pollen sum: trees and shrubs) for Ford Moss.*

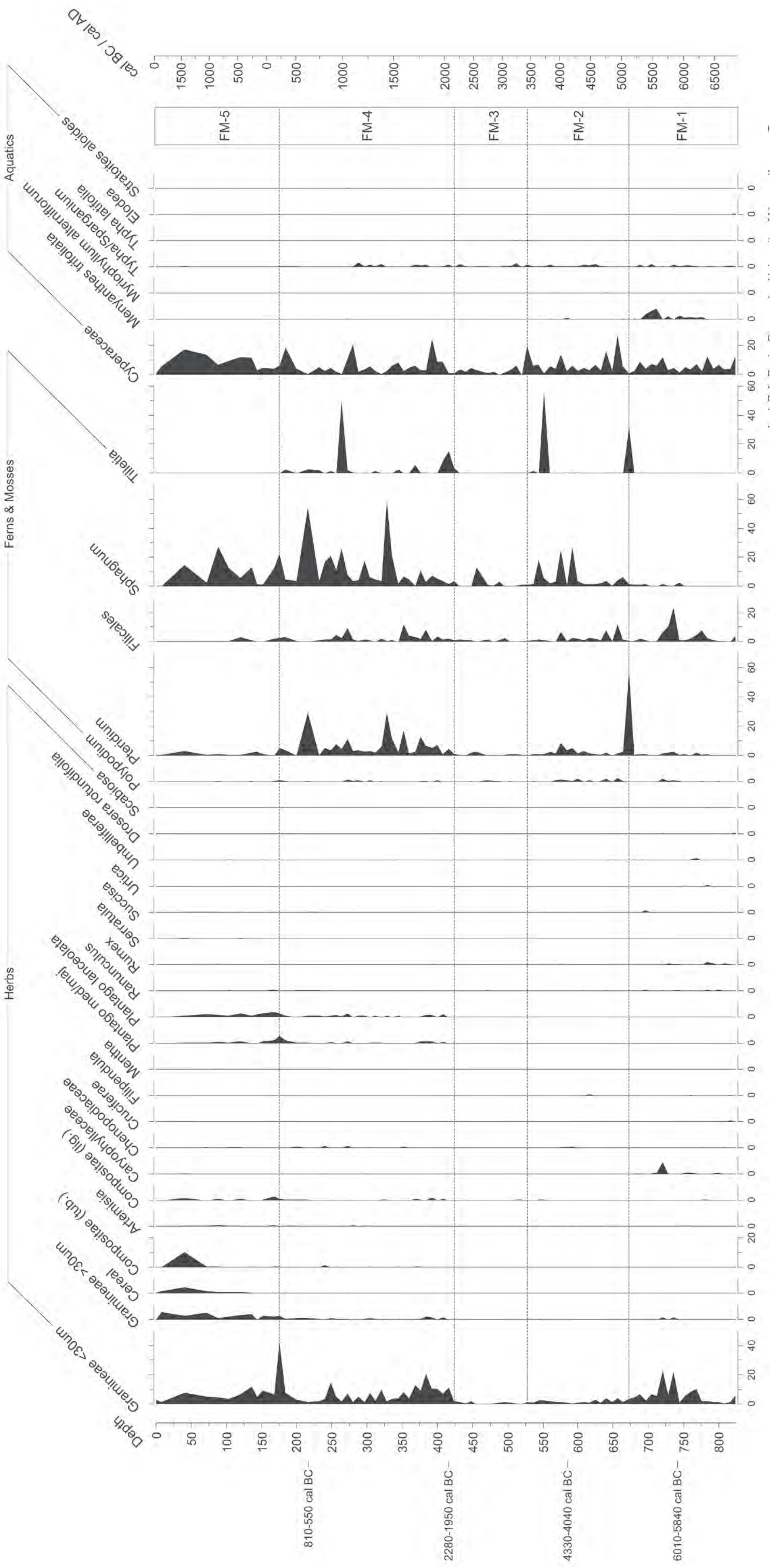



*Figure B1b. Pollen diagram (% total terrestrial pollen sum: herbs, ferns and mosses, aquatics) for Ford Moss.*

of dense alder carr, fringing stands of oak and hazel dominated woodland, and areas of heathland.

### Zone FM4 (424–174cm)

Zone FM4 broadly spans the later prehistoric period between *c.* 2200 cal BC and *c.* 220 cal BC and is notable for featuring fluctuating values of tree and shrub pollen (typically between 60–90% of the total terrestrial pollen sum) and, and the very top of the zone, a marked clearance event that signals the transition to a largely open, agricultural landscape. Localised and possibly intermittent clearings of the local oak and hazel woodland account for some of the reduction of tree and shrub cover, while declining values of alder in the poorly drained carr environments are mirrored by a rising trend in values of heathland pollen. Persistent and occasionally very high values of bog and marsh species perhaps reflect a more open landscape on and near the bog surface.

The sustained presence of elevated grass and herb pollen, including weeds such as *Plantago lanceolata* (ribwort plantain), *Plantago major/media*, Compositae (aster, daisy) and Chenopodiaceae (goosefoot), are suggestive of localised grazing activity, while single cereal grains at 275cm (*c.* 1000 cal BC) and 180cm (*c.* 300 cal BC) provide tentative evidence of cereal cultivation in the vicinity of the basin. This pattern of localised, small-scale clearance and subsistence activity through the Late Bronze Age and Iron Age period is consistent with pollen records from many mid-altitude and upland sites in the wider region, including those nearby at Broad Moss (Appendix C) and in the Cheviots (Tipping 2010; see also Chapter 2).

### Zone FM5 (174–0cm)

From *c.* 220 cal BC there is an abrupt change in the landscape surrounding the Ford Moss basin. Markedly reduced values of hazel pollen, and lesser reductions in the already diminished stands of birch, oak and alder, signal the transition to a largely deforested landscape that persists until the very recent establishment of pine plantations. Grasses and ruderal pollen consistent with agricultural activity are present throughout the zone and, from 137cm (*c.* cal AD 250), there is a continuous trace of cereal pollen. A provisional date for major deforestation in the Ford Moss area in the later Iron Age is consistent with other dated pollen sequences in the Till-Tweed area, including that at Broad Moss (Appendix C; see also Chapter 2). However, the rise to dominance of *Calluna* pollen (between 50–70% of the total terrestrial pollen sum) at Ford Moss suggests that agricultural landscapes, at least in the immediate vicinity of the basin, were subordinate to extensive areas of heath.

# Appendix C

## Pollen analysis and chronology of Broad Moss

*David G. Passmore and Tony Stevenson*

### BACKGROUND

Appendix C1 summarises the unpublished report of a pollen study of Broad Moss (NT 96352155, 390m OD, see Chapter 2, Fig. 2.42), a 51 ha bog located on the eastern flanks of the Cheviot Hills (Passmore and Stevenson 2004). This work was commissioned as part of the Breamish Valley Archaeology Project (BVAP), a collaborative research initiative designed to enhance understanding of the impact of human populations, since the Mesolithic, in relation to landscapes and settlement over the past 10,000 years. The BVAP formed part of the Northumberland National Park's 'Discovering Our Hillfort Heritage' initiative, funded by the Heritage Lottery Fund (HLF) and European Agricultural Guidance and Guarantee Fund (EAGGF). The work built on an earlier study by Davies and Turner (1979) that lacks independent dating controls. In the following sections we describe the lithostratigraphy, pollen assemblages and $^{14}$C chronology of a 2.6m peat core taken from Broad Moss at the original Davies and Turner (1979) core site.

### METHODOLOGY

The location of an earlier peat core recovered and analysed by Davies and Turner (1979) was located to within *c.* 5m using a GPS receiver and re-cored with a Russian auger. This new core recovered 2.6m of largely *Eriophorum* peat overlying bedrock. Pollen sampling was conducted at 4cm intervals between 32–260cm; no pollen was recoverable from the upper 32cm of the core which comprised unhumified fibrous *Eriophorum* peat. Samples were prepared for analysis using standard laboratory techniques (Moore *et al.* 1991). Lycopodium tablets were added to each of the samples prior to preparation to allow the determination of pollen concentration. Pollen analysis was carried out using an Olympus CH-2 microscope at ×400 magnification (×1000 oil immersion / phase contrast for problematic grains) and counting of each slide continued until a minimum of 300 arboreal, shrub and land pollen grains were identified.

A total of four peat samples were submitted for $^{14}$C analyses to the Beta Analytic (Florida) Laboratory. Sample levels were selected in order to date major changes in the vegetation record that are likely to reflect the impact of anthropogenic activity on the regional forest cover and associated subsistence activity.

### LITHOSTRATIGRAPHY AND $^{14}$C DATES

The stratigraphy of the core and available $^{14}$C dates are as follows:

| cm | |
|---|---|
| 0–29 | Fibrous Eriophorum peat |
| 29–60 | Brown poorly humified Eriophorum vaginatum peat |
| 60–110 | Black-brown humified Eriophorum vaginatum peat |
| 110–172 | Black-brown well-humified Eriophorum peat with occasional Eriophorum stems and roots |
| 172–224 | As above, but with occasional birch fragments |
| 224–230 | As above, but with frequent birch fragments |
| 230–233 | Brown unhumified monocot peat |
| 233–261 | Light brown humified monocot peat with occasional birch fragments |

### POLLEN ASSEMBLAGES

The results of pollen analysis are plotted as % total land pollen in Fig. C1 (note this diagram is confined to major taxa only). Below we describe the major

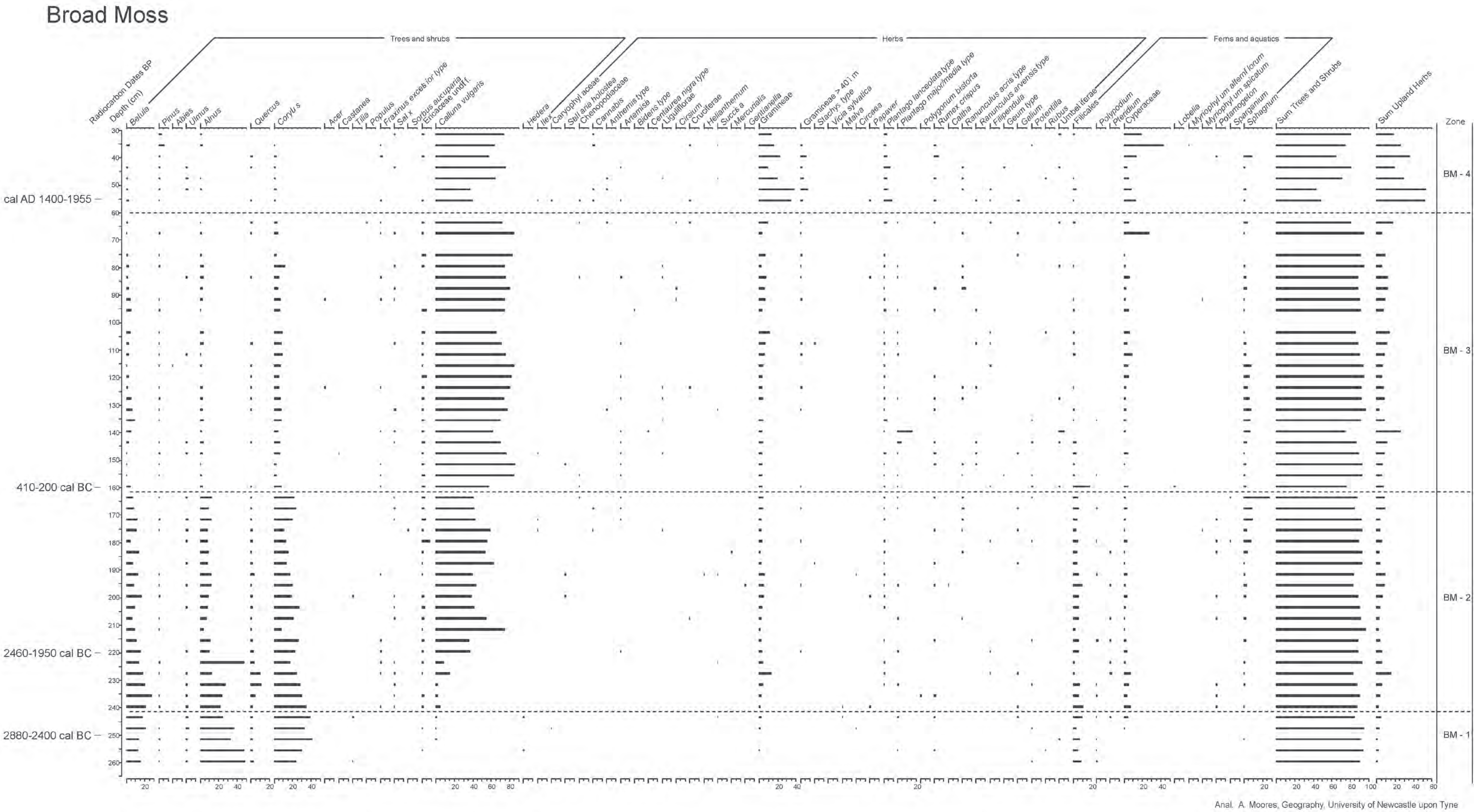



*Figure C1. Pollen diagram (% total terrestrial pollen sum) for Broad Moss.*

*Table C1. Radiocarbon dates and age calibrations for Broad Moss peat samples.*

| Sample / depth *(cm)* | Lab code | $^{14}$C age (yrs BP) | 2-sigma calibration age spans* |
|---|---|---|---|
| BRM / 55 | Beta-198567 | 370±90 BP | AD 1400–1955 |
| BRM / 160 | Beta-198568 | 2230±70 BP | 410–200 BC |
| BRM / 220 | Beta-198569 | 3750±70 BP | 2460–1950 BC |
| BRM / 250 | Beta-198570 | 4040±70 BP | 2880–2400 BC |

* Age calibrations made using the calibration curve of Reimer *et al*. (2004) and the computer program OxCal v4.0.5 (Bronk Ramsey 1995; 1998; 2001; 2008).

trends in the vegetation history with an emphasis on evidence for human activity.

## Zone BM1 (260–240cm)

Basal birch wood peat between 260–240cm is characterised by a pollen assemblage typical of upland alder carr with some birch and hazel. Low *Ulmus* counts indicate the peat began accumulating after the elm decline that is well recognised in regional pollen diagrams and typically post-dates *c.* 3000 cal BC. Sample BRM-250 dates this level to the period *c.* 2880–2400 cal BC and hence accords well with other regional (upland) vegetation records. A steady decline in alder pollen through the upper part of this zone, accompanied by a trace presence of *Calluna* and Gramineae (grass) pollen, probably reflects a slight opening up of the forest canopy associated with anthropogenic disturbance. Radiocarbon dates at 250cm (*c.* 2880–2400 cal BC) and 220cm (*c.* 2460–1950 cal BC) bracket this activity to the Late Neolithic/Early Bronze Age.

## Zone BM2 (240–160cm)

Peat between 240–160 cm is characterised by steady declines in alder, birch and hazel pollen that are mirrored by rising values of *Calluna*. A continuous presence of Gramineae is established through this pollen zone with a transient peak at 228cm, while occasional traces of cereal pollen and ruderal taxa (typical of weeds associated with disturbed and agricultural ground) point to a progressive increase in the incidence of localised, temporary clearances of the forest cover for subsistence activity. Sample BRM-220 gave a $^{14}$C age range of *c.* 2460–1950 cal BC and dates the final phases of the initial decline in birch, alder and hazel pollen and the onset of *Calluna* expansion. It also immediately follows the first marked peak in grass and ruderal pollen (and the first tentative trace of cereal pollen) that probably indicates a localised temporary clearance event. The upper level of the pollen zone at 160cm is dated to *c.* 410–200 cal BC (sample BRM-160). This pattern of vegetation development over the Bronze Age–Iron Age is consistent with the findings and estimated chronology of Davies and Turner (1979) at equivalent depths in their earlier core, although this study is the first to confirm their inferred date range for these levels.

## Zone BM3 (160–60cm)

Peat between 160–60cm is associated with major semi-permanent forest clearance and slightly enhanced evidence for pastoralism and episodic cereal production. Davies and Turner (1979) suggest the onset of major clearance in their earlier (undated) study probably dates to the beginning of the Roman period. In this study a $^{14}$C date at 160cm (BRM-160) gave an age span of *c.* 410–200 cal BC and suggests an earlier onset of this clearance phase in mid-Iron Age times. This finding is consistent with other recent dated pollen diagrams from upland and lowland sites in Northumberland which have demonstrated that major anthropogenic disturbance has occurred during the later prehistoric period (e.g. Barber *et al*. 1993; Dumayne 1993; Dumayne and Barber 1994; Moores 1998).

A sustained trace of cereal pollen in the upper levels of this zone, between 95–60cm, is associated with accelerated deforestation and is consistent with an expansion of land-use activities in Davies and Turner's earlier (1979) study. Davies and Turner provisionally ascribed this expansion of land-use activities to the early medieval period and suggested that it may have been associated with the development of major Anglo-Saxon settlement in the valleys of the River Glen and Till a short distance to the north. This new study appears to be consistent with this chronology with a $^{14}$C sample at 55cm (BRM-55) giving a date range of *c.* cal AD 1400–1955 and hence providing dating control for the upper limit of this zone to later Medieval / early post-Medieval times.

## Zone BM4 (60–32cm)

Pollen assemblages in peat between 60–32cm reflect a largely cleared landscape and a marked intensification of pastoral and particularly arable land-use; localised cereal production peaks at 52 and 40cm (between 5 and 10 cereal pollen grains at each level). This zone also contains evidence of *Cannabis* growth. These patterns also compare well to Davies and Turner's earlier (1979) study at Broad Moss, although they offer no provisional dating inference. In this study, however, a date range of *c.* cal AD 1400–1955 at 55cm (BRM-55) would suggest that agricultural expansion and the substantial clearance of regional tree cover may have occurred as early as the Medieval Warm Period (*c.* 10th–14th centuries AD). A slight decline in Gramineae and cereal pollen in the upper levels of this zone (between 40–32cm) is associated with increases in *Pinus* counts and may reflect a subsequent decline in land-use intensity.

## DISCUSSION

This study succeeded in verifying the broad pollen record of vegetation change and human activity described by Davies and Turner in their original (1979) study of Broad Moss. It also provided, for the first time in this part of the Cheviot Hills, a chronology for mid-late Holocene environmental change and largely confirmed the estimated chronology for key land-use changes identified by Davies and Turner (1979). In combination, these studies recorded the early phases of forest clearance and subsistence activity during the Late Neolithic–Beaker period, and the gradual escalation of this activity (including cereal production) during the later Iron Age and early historic periods. By the later Medieval period the landscape had been largely cleared of tree cover as a result of major land-use intensification and arable cultivation, although the early post-Medieval period appears to have witnessed a subsequent decline in land-use intensity.

# Appendix D

## North Northumberland temperature reconstruction from the European pollen database: methodology

***Basil A. Davis and David G. Passmore***

Palaeoclimate reconstructions based on fossil pollen data are increasingly turning to sophisticated numerical techniques that use analogue matching techniques against modern pollen samples (e.g. Cheddadi *et al*. 1997; 1998; Magny *et al*. 2001). These techniques have now been extended to yield area-average time series reconstructions of warmest month, coldest month and mean annual surface air temperatures across Europe during the last 12000 years (Davis *et al*. 2003). In Chapter 2 we present a 12000 year reconstruction of mean temperatures of the warmest month (MTWA) and coldest month (MTCO) for north Northumberland (Fig. 2.43e) using the techniques developed by Davis *et al*. (2003). Full details of the methodology may be found in Davis *et al*. (2003); here we present a brief summary of the techniques used to generate this reconstruction.

The approach developed by Davis *et al*. (2003) used an innovative four-dimensional gridding procedure to assimilate data from 510 well-dated pollen sequences and 2363 modern pollen surface samples from throughout Europe (west of the Urals) and parts of North Africa (based largely on data from the European Pollen Database and the PANGAEA data archive). Pollen-climate reconstructions proceeded by assigning palaeoclimate values to fossil pollen assemblages using modern analogue matching technique, modified to use Plant Functional Type scores (Prentice *et al*. 1996). The palaeoclimate and age estimate for each sample was then combined into a single dataset that also included their locational information (expressed as latitude, longitude and altitude). This dataset was then interpolated on to a four-dimensional grid in order to isolate the bias induced by erroneous data; it is assumed that the inevitable occurrence of erroneous data will be randomly distributed within a predominantly reliable set of observations. The technique thus compensates for the changing spatial distribution of available samples over time, and permits the calculation of area averages (thereby reflecting the changing conditions across an area).

Interpolation was undertaken using a 4-D smoothing spline (Nychka *et al*. 2000) with an output grid at one degree by one degree, and with a temporal resolution of 100 years. The reconstruction shown in Fig. 2.43e is generated from the grid point closest to Ford Moss, in an area that has not contributed any sites to the database. Accordingly, the reconstruction is largely driven by sites in the Central Belt of Scotland. It should be noted that the temporal resolution of the output is understood to most likely exceed the inherent resolution of the data, and hence the intention here was to develop a broad reconstruction of the climate trends in northern England, and especially for the early Holocene, rather than attempt an interpretation of climate changes at sub-millennial resolution. Here we note that, by comparison to the broader North West European area-average (Davis *et al*. 2003), the output suggests a slower rate of early Holocene summer warming (MTWA) in north Northumberland, and a slight tendency to winter cooling (MTCO) between *c*. 8000 and *c*. 6000 cal BC (Fig. 2.43e) before amelioration over the mid–late Holocene (see Chapter 2 and period chapters for further discussion).

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