An archaeological analysis of later prehistoric settlement and society in Perthshire and Stirlingshire

Davies, Mairi Helen

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Mairi Helen Davies

This thesis presents the first ever synthesis of the Late Bronze Age and Iron Age in Perthshire and Stirlingshire. It draws on evidence from excavations, field survey and aerial survey, the latter two largely undertaken by the Royal Commission on the Ancient and Historical Monuments of Scotland. It is clear from this study that the key to appreciating the structure of the data within this region is a sound understanding of the history of research. Several key players are identified in the history of antiquarian research in the area, with Christian Maclagan and David Christison emerging as pioneers in field recording. However, aerial and ground survey, particularly since the mid-1970s has been crucial in altering the perceived nature of the archaeological resource, with the density of known upland settlement increasing dramatically, and numerous plough-truncated sites being identified in lowland cropmarks. The geology, geomorphology and soils of the study area is characterised, and factors that might have affected how later prehistoric people interacted with and perceived their environment are identified. These include sea level change in the Forth Valley in the Iron Age, climatic deterioration in the Early Iron Age and major forest clearance and increased cultivation in the Late Iron Age. A mosaic of vegetation types can be envisaged for the later prehistoric landscape, which seems to have opened out in the last few hundred years of the first millennium BC, perhaps to cope with an increased population. Analysis of existing excavated data on plant macrofossils provided further detail here, suggesting that such crops were grown and processed in both the upland and lowland zones. While the absence of significant quantities of cereal pollen need not conclusively imply a pastoral dimension to the later prehistoric economy, a reassessment of zoo-archaeological evidence made it quite clear that domestic cattle and sheep/goat were in use, in addition to domestic horses and wild animals.

Following this, a critical review of the chronological framework is provided, followed by reclassification of the various site types known. It proves possible to assign broad date ranges to the different types of site identified. This new

classification is used as the basis for an assessment of dating and function of these sites. The case studies of Stirling, south-east Perthshire and north-east Perthshire enable an assessment of site morphology and settlement patterns on a more local level, armed with a regionally-specific chronological and functional framework. These various lines of enquiry are then drawn together to provide a narrative describing the nature of later prehistoric settlement and society. The study area is then put into context, through comparison with the evidence from adjacent areas of Eastern Scotland. The previous models, which emphasised the differences between settlement, society and economy in areas north and south of the Forth, as a long-term structural feature of Scottish archaeology have been shown to be erroneous. It is not until the Late Iron Age that marked differences in the settlement of Stirlingshire and Perthshire can be observed. A conscious decision was made in this study to move away from the status-dominated assumptions of previous accounts. When we look at the Iron Age of Stirlingshire in a chronologically dynamic way, we see rather than the no-man's land described by previous authors, or the highly stratified society envisaged by those who assume that the lowland brochs are high-status, a wealthy area with a high enough population to necessitate large-scale woodland clearance by the final years of the first millennium BC. In Perthshire too, both highland and lowland, there is little evidence of a social hierarchy at any time. The contextual, temporally dynamic approach to later prehistoric remains taken here has enabled us to gain a much more firmly-based view of settlement and society in Perthshire and Stirlingshire.

An Archaeological Analysis of Later Prehistoric Settlement and Society in Perthshire and Stirlingshire

Mairi Helen Davies

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This thesis is dedicated to the memory of my grandfather,
William Anderson Cram Shiels
(1917-1999)
Who was always there.

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List of Abbreviations

EBA Early Bronze Age
LBA Late Bronze Age (1000BC-800BC)
EIA Early Iron Age (800BC-400BC)
LIA Late Iron Age (400BC-AD400)

SRH Stone Roundhouse
SiSRH Simple Stone Roundhouse
SuSRH Substantial Stone Roundhouse
CSuSRH Complex Substantial Stone Roundhouse
TRH Timber Roundhouse
SiTRH Simple Timber Roundhouse
SuTRH Substantial Timber Roundhouse

CANMORE
CUCAP Cambridge University Committee for Aerial Photography
HS Historic Scotland
NMRS National Monuments Record of Scotland
NMS National Museums of Scotland
RCAHMS the Royal Commission on the Ancient and Historical Monuments of Scotland

A note on naming/referencing conventions used in the text

Sites mentioned in the text are referred to by the name they are listed under in CANMORE, rather than the name used in other publications/excavation reports. Where a site is better known by a different name, this name is provided in a footnote.

In order to avoid excessive cluttering of the main text, a gazetteer of excavated later prehistoric sites is included in Appendix 2. Cross-referencing to this, the database or CANMORE (RCAHMS' online database) is enabled through a reference given in the following format, immediately after the site name: (NUMLINK/MAPSHEET/SITE NUMBER), e.g. (28110/NO12NE14). The reference is given the first time a site is mentioned in each paragraph, in order that sites with the same/similar names are not confused. NUMLINK is the unique identification for the site in the thesis gazetteer and database. The mapsheet and site number can be used to locate the site in CANMORE without going through the gazetteer or database.

Chapter 1 Introduction: Research Aims and Previous Research

1.1. Research Aims

This thesis provides the first major synthesis of later prehistoric settlement and society in Perthshire and Stirlingshire. It is a contribution towards a detailed understanding of the later prehistoric period of eastern Scotland, and thus of the British Iron Age. A reappraisal of the later prehistory of this area is timely; it now being nearly 40 years since Piggott (1966) published his scheme for the Scottish Iron Age, which suggested a cultural cleavage between the north-east and south-east of Scotland, as shown in Fig. 1-3. It is nearly 30 years since RCAHMS began its programme of aerial survey, the accumulated results of which represent a high quality but so far under-used resource. Moreover, it is twenty years since the flurry of excavation and research on the Iron Age in eastern Scotland, which culminated in the publication of the 1981 conference on later prehistoric settlement in south-east Scotland (Harding 1982a). The last major synthesis of the later prehistory of eastern Scotland was Macinnes' (1983) doctoral thesis on settlement in Angus, north-east Fife and East Lothian. It is fourteen years since Hingley (1992) considered eastern Scotland in his overview of settlement and society in Scotland from 700BC to AD 200 and more than a decade since RCAHMS (1990; 1994c) published the results of its surveys of south-east and north-east Perth. Furthermore, it is twelve years since the publication of National Planning and Policy Guideline 5 (Scottish Office 1994), which changed the way that planners and developers were required to deal with archaeological remains. The time is ripe for a reassessment of the later prehistoric period of Perthshire and Stirlingshire, which can now draw on a vast corpus of accumulated published and unpublished results of excavation and aerial and ground survey.

A preliminary study of later prehistoric settlement in the areas around the Gask Ridge Roman frontier in Perthshire by this author (Davies 1999) highlighted the extent to which the accumulated aerial photographic evidence for Perthshire alters current perception of the character of later prehistoric settlement. While previous studies have tended to emphasise the role of unenclosed settlement north of the Forth in the Iron Age,

aerial survey since the mid-1970s has revealed a suite of other potentially later prehistoric sites, including numerous enclosures, many of them multi-vallate. Evidence has accumulated not only for enclosed settlement sites but also for sites that may have been the focus for burial. This thesis therefore assesses the extent to which the results of survey and excavation over the last thirty years or so change perceptions of later prehistoric settlement and society in the area. Through this process, the aim is to identify and highlight the specific questions that need to be addressed in further fieldwork, and identify ways in which they can be answered.

The following chapters will for the first time use archaeological analysis of both published and unpublished data that have accumulated for Stirlingshire and Perthshire to inform an assessment of later prehistoric settlement and society in those areas. The main aim of this research is therefore to produce a chronologically dynamic synthesis of later prehistoric settlement and society in Stirlingshire and Perthshire, through fresh analysis of the results of excavation and survey that have accumulated between the late-eighteenth century and 2000, and show how the resulting picture differs from that proposed elsewhere. The lack of detailed synthetic accounts of later prehistoric Stirlingshire and Perthshire is remarkable, given the long history of antiquarian interest in the area. The first subsidiary aim of this study, addressed in 1.5 below, is therefore to review the history of interest in the later prehistory of the area, from the end of the eighteenth century to 2000. This goes beyond the collation of a bibliographic database of relevant excavation, surveys and synthetic studies. It also specifically focuses on the identification of events and people that might have had an effect either on the number of excavations that took place at any given time, or on the number reported. The piecing together of this historical context enables a better understanding of the structure of the accumulated data, its quality, its strengths and its limitations. It also provides a solid background from which to assess the impact of modern fieldwork and other research on understanding of the period in question.

Chapter Two aims to set out the author's theoretical approach, showing how a combination of new and established theoretical approaches can be used in the analysis of

the data collated to provide new insights into later prehistoric settlement and society in the study area. Following on from this, the structure and nature of the data collated is considered. The methods of data analysis are then discussed, with the aim of showing how these, coupled with the robust theoretical approach adopted here, can be applied to extensive dataset collated in such a way as to provide new insights into the period in question.

Chapter Three provides an assessment of the extent to which palaeoenvironmental studies in and around the study area inform understanding of the later prehistoric landscape and settlement patterns within it. The importance of integrating palaeoenvironmental and archaeological research has become increasingly apparent over the past twenty-five years. Chapter Three goes beyond characterising the environmental background against which later prehistoric activities took place, since it is clear that people interacted with the environment and even precipitated change within it. Changes in land use and sea-level since the later prehistoric period have also affected the detectibility of relevant archaeological sites, and such factors are here identified. In particular, periods of environmental change are identified, since they would have been linked, whether by cause or effect to later prehistoric perception of the landscape. A review of existing data relating to isostatic land uplift and its effect on relative sea level, climatic deterioration/amelioration, major forest clearance and woodland regeneration is made. The basis of the later prehistoric economy is also ascertained, through analysis of excavated plant macrofossil data. Emphasis has generally been put on the importance of barley in the Scottish Iron Age and the assumption that arable cultivation was the major part of the economy is tested. To this end, an assessment is made of the excavated animal bone assemblages, in order to identify the animals that may have been used at the time. The evidence from plant macrofossil and animal bones, together with more indirect evidence for cereal cultivation and stock rearing from excavated sites informs a new assessment of the basis of the later prehistoric economy. This in turn informs understanding of how later prehistoric society was structured.

Chapter Four characterises the later prehistory of the study area, through the

identification of sites that might relate to the period in question. The basis of this reassessment is the construction of a chronological framework for the study area, something that has already been successfully achieved for the Iron Age of Atlantic Scotland (Armit 1991) but never before attempted in Perthshire or Stirlingshire. Haselgrove *et al* (2001, 2-3) have noted that despite the dense distribution of putative Iron Age sites in South-East Perth now known (RCAHMS 1994c), whole monument categories are undated. The first step taken here towards a chronology for the study area, is a detailed review and analysis of the existing chronological framework, including existing radiometric dates, artefact typologies and presumed structural sequences. Typological assumptions are treated here with caution, and the chronological implications of all artefact types are reassessed.

This new analysis of the available dating evidence provides a sound basis for an assessment of the dating of sites, through review and analysis of the available excavated evidence. It also informs the construction of a new morphological and structural classification scheme for the later prehistoric site types for the area. The need for this was identified through a review of National Monuments Record entries for the area, which made it abundantly clear that inconsistency of terminology had the potential to mask any patterns in the data from the study area; this is discussed in more detail in Chapters Two and Four. Following the reclassification of sites in the study area, a reassessment is made of the dating and function of each identified site type.

The chronologically sensitive model for later prehistoric settlement types in Perthshire and Stirlingshire devised here is then used to explore site morphology and settlement patterns in more detail, in specific case study areas (Fig. 1-2). The aim is to produce a local, chronologically dynamic picture of later prehistoric settlement and society. Chapters Five to Seven each present one of three case study areas, which were chosen in order to explore site morphology and settlement pattern in more detail. Each consists of around one hundred later prehistoric sites. The Stirlingshire case study area was chosen to include the area covered by RCAHMS' (1963) Stirlingshire inventory volume. This area also has the highest percentage of excavated later prehistoric sites. It includes an

area to the north and south of the Forth. Thus, it could be used to test the hypothesis that the Forth marks a later prehistoric cultural boundary. The Stirlingshire case study also includes the area that might be affected by any change in relative sea level in the later prehistoric period (see Chapter Three). The south-east Perthshire study area was chosen as a sample of lowland Perthshire, which included a high proportion of cropmark sites; it is within RCAHMS' (1994c) South-East Perth survey area and again, therefore, had the best quality data available. Again, it includes an area that might have been affected by changes in relative sea level in the later prehistoric period, and an area (the city of Perth) affected by urbanisation. The north-east Perthshire case study area was chosen as a sample of highland Perthshire, with the intention of comparing this study's findings to those of Harris (1984). The area chosen is within RCAHMS' (1990) North-East Perth survey area and therefore had the best quality survey data available, particularly important when analysing patterns in roundhouse and enclosure morphology.

Following the case studies, Chapter Eight provides a narrative account of each of the sub-periods, from the Late Bronze Age to the Later Iron Age, based on the results of the analysis. This then provides the basis for an assessment of whether the oft-repeated assertion that open settlement predominates north of the Forth (e.g. Armit 1997b, 61; Halliday 1985; Hingley 1992, 33; Maxwell 1983a; b) really applies to Perthshire and Stirlingshire. The chapter also provides a new assessment of how the later prehistoric period of the Study Area compares and contrasts with this period in other areas of eastern Scotland. This enables an assessment of the nature of later prehistoric society in Perthshire and Stirlingshire, and whether any signs of a social hierarchy can be identified. Particular attention is paid to collating the rather disparate evidence for burial in the study area, since no clear picture of burial traditions emerged from the case studies. An assessment is made as to how settlement patterns relate to the off-site depositional patterns recently investigated by Cowie (2001) and Hunter (1997). Previously excavated material is reassessed in the light of recent investigations of structured deposition in the Iron Age. The final chapter (Chapter Nine) assesses how well the study has addressed the aims detailed above.

1.2. Reasons for Selection of the Two Counties

> "Stirling, like a huge brooch, clasps Highlands and Lowlands together."
>
> Alexander Smith (1856)

Initially, Perthshire and Stirlingshire were chosen for study (Fig. 1-1). The Iron Age Research Seminar Agenda document (Haselgrove *et al.* 2001), in a table showing existing knowledge of the Iron Age in different parts of Britain, describes Perthshire as 'unsorted' while describing Stirling as a 'Black hole'. The term 'Black hole' describes "areas where site types are still ill-defined or unknown, and which have still seen relatively little modern research beyond the site specific". In contrast, 'unsorted' indicates areas where some significant data are already collated in easily accessible form, but regional frameworks have not been developed, although some research to that end may be in progress." (Haselgrove *et al.* 2001, 24-25). Many of the site types one can observe in the cropmark records of Perthshire are also evident in Stirlingshire, so there was potential for some cultural unity between these counties, which had never been considered together before. Stirling has been described as the buckle of the Central belt and as such, it is crucial to understanding of the Scottish Iron Age. It straddles the piece of land between Argyll in the west and Perthshire and the Lothians in the east.

As will be discussed in 1.5 below, there is a long tradition of active archaeological fieldwork and interest in the prehistoric sites of Perthshire. Interpretation of these sites, however, has rarely gone beyond the site-specific; indeed the last major study of later prehistoric settlement in south-east Scotland was that undertaken by Lesley Macinnes (1983). Macinnes, however, concentrated on East Lothian, north-east Fife and Angus. Her work will be discussed in more detail in Chapter Eight. The counties of Perthshire and Stirlingshire have never before been considered together and this thesis represents the first study to rectify this. Recent popular summaries of the Iron Age in Perthshire (MacGregor and Oram 2000; Stevenson 1999) did not go further than paraphrasing the findings of the recent RCAHMS surveys. The only synthesis of the Iron Age in Stirlingshire is a short but highly informed popular account by the Stirling District Archaeologist (Main 2002). The last inventory of monuments in Stirling was published

in 1963 and was followed eventually by an updated list in 1979 (RCAHMS 1979); these volumes contain information on just a handful of later prehistoric sites and give only limited interpretation or discussion. It is also twenty-four years since the publication of the classic series of papers which resulted from a conference on the later prehistory of south-east Scotland, held in Edinburgh in 1981 (Harding 1982a). The papers within that volume have been the major influence on perception of later prehistoric eastern Scotland. In particular, the interim excavation reports of Dryburn Bridge (Triscott 1982), St Germains (Watkins 1982) and Broxmouth (Hill 1982a) provided type-sites for the eastern Scottish Iron Age, which are still frequently cited in the literature.

The upsurge in developer-funded excavation, resulting from the implementation of NPPG5 and PAN42 has resulted in new excavated material from eastern Scotland accumulating at an unprecedented rate. The time therefore seems ripe for a reappraisal of the later prehistory of these counties, particularly since, as is discussed further below, the results are available of over twenty years of aerial and field survey carried out by the Royal Commission on the Ancient and Historic Monuments of Scotland (henceforth RCAHMS). The majority of these photographs are unpublished, but are available for public consultation in the National Monuments Record of Scotland (NMRS) Library in Edinburgh. Two landmark volumes, on the archaeological landscapes of North-East Perth (RCAHMS 1990) and South-East Perth (RCAHMS 1994c) were published in the early 1990s, as was a new survey in the Braes of Doune (RCAHMS 1994a). The titles of the first two reflect RCAHMS' move away from site-based inventories to an appreciation of archaeological remains as an element of the wider landscape. The North-East Perth volume retained an inventory of sorts, with detailed site descriptions, but the South-East volume, published a few years later, offered a thematic discussion, which considered first 'Ritual and Funerary Monuments' and 'Settlements', with various examples mentioned briefly where appropriate. This reflected the enhanced public access to the National Monuments Record of Scotland, culminating in the launch of CANMORE, the web-based version of the NMRS database. However, although these resources are of high quality and undoubted worth as a resource, one is left with the feeling that the full potential of the new data is not being fully realised (Haselgrove *et al.*

2001, 24). The thematic approach means that the account of prehistoric archaeology in particular suffers from a lack of temporal dynamism. In addition, one is left with little sense of how settlements related to other monuments; there is no recognition of the role that funerary customs and ritual played in the everyday lives of those living on the settlement sites.

Fig. 1-1 The pre-1974 counties of Scotland. Perthshire and Stirlingshire are the focus of this study. Note that prior to 1928, Angus was known as Forfarshire. The pre-1974 counties should not be confused with the region and district names used between 1974 and 1994, or the Council area names now in use.

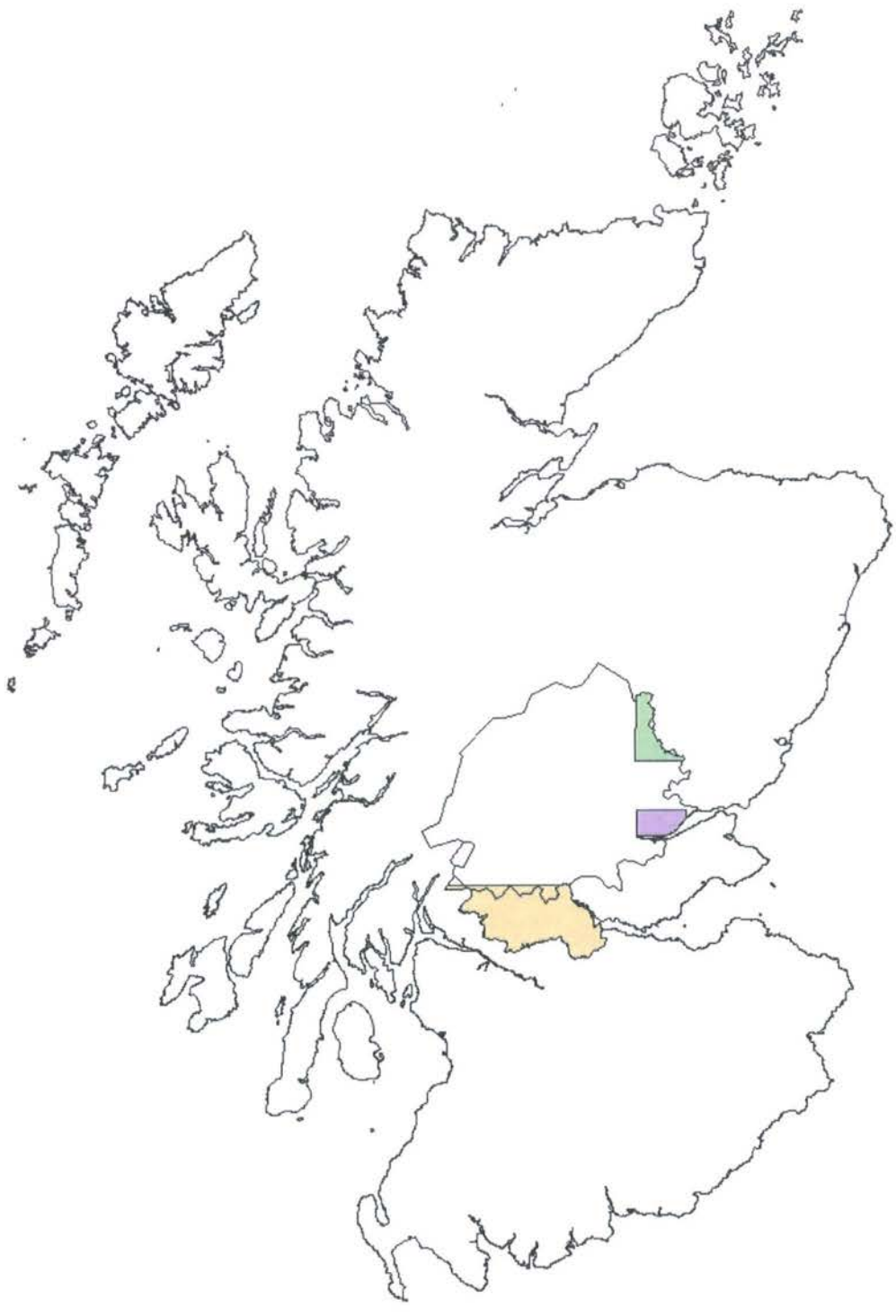

Fig. 1-2 The study area, with the case study areas marked. The Stirlingshire case study area is beige, the north-east Perthshire case study area is green and the south-east Perthshire case study area is purple.

1.3. Definition and Justification of the Study's Geographical Boundaries

The definition of boundaries for the present study immediately posed problems, as regional boundaries have been changed on a relatively frequent basis since interest in the archaeology of Tayside was awakened in the eighteenth century. Major changes took place in 1891, 1974 and 1994. The old, pre-1974 county boundaries of Stirlingshire and Perthshire have been used in the present study. The county names are those used after 1928 (Fig. 1-1). Gathering together relevant excavation reports required care, as older reports do not include National Grid References, and often use obscure place names and/or defunct county or burgh names. Thus, using the old counties in the study made it easier to search for excavation reports and other relevant material published in the two hundred plus years before the boundary changes of 1974. Since the current local authority area boundaries have only been in place since 1994, even extracting the relevant reports from Discovery and Excavation in Scotland had to be done carefully. CANMORE, the NMRS site database, includes both local authority areas and old counties in its site descriptions, so it was possible to obtain a database extract containing all sites in the relevant counties. The counties of Stirlingshire and Perthshire together represent a manageable tract of land, representative of highland and lowland areas. Although Angus was originally to have been included in this study, it rapidly became apparent that its inclusion was overly ambitious. The data collected from Angus before this decision was made did, however, prove useful in setting the study area in context (see Chapter Eight). The chosen area quite deliberately strays into Piggott's (1966) Tyne-Forth Province (Fig. 1-3), although most of it is within his North-East (NE) province, which included Strathearn, Strathtay, Strathmore, Strathdon/Strathdee, Strathspey, Buchan and Cromarty/Moray. Piggott's boundary was effectively broken down when the decision was made to include Angus in a more fluid definition of south-east Scotland for the Edinburgh conference of 1981 (Harding 1982b).

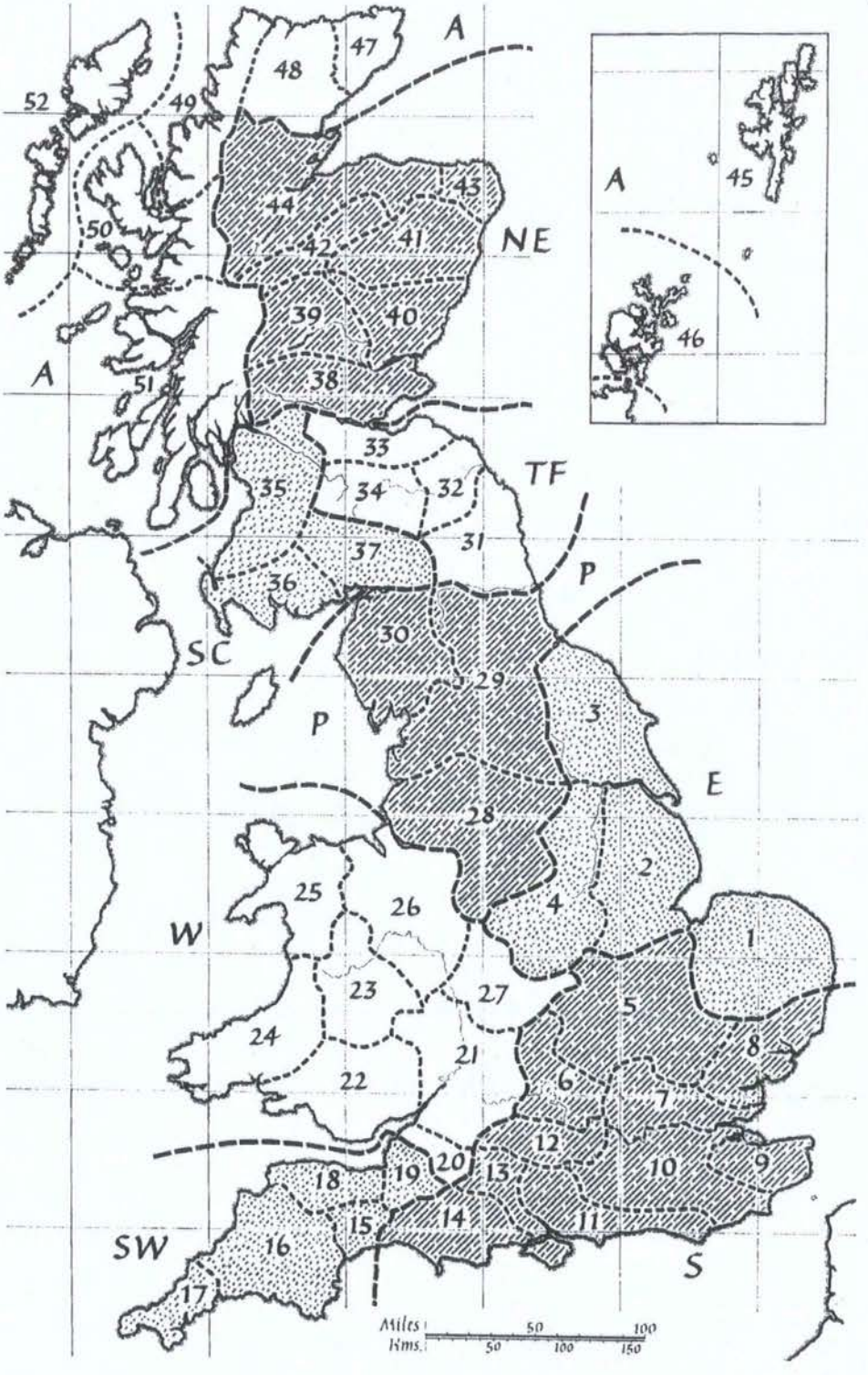

Fig. 1-3 Piggott's (1966) map illustrating his scheme for the Scottish Iron Age. The study area falls within his North-East and Tyne-Forth provinces.

It was felt that using relatively modern geographical boundaries would be useful precisely because they have nothing to do with the later prehistory of the area. Thus, the danger of reinforcing preconceptions regarding tribal or natural 'boundaries', such as rivers or mountain ranges, was avoided. Rivers may not have been perceived as boundaries in the later prehistoric period; numerous logboats have been found in the area (see 3.2 for further discussion of transport and communication). Hills and mountains are more likely to have been perceived as boundaries but it should not be assumed that they marked cultural boundaries; in using them, it might have been too tempting to reinforce unfounded assumptions. The area under consideration here would appear to fall within the tribal territories of the *Damnonii* and the *Venicones* (Fig. 1.4), as mentioned by Classical authors, including Ptolemy (Barrow 1989; Breeze 2002). However, there are numerous problems with using the tribes mentioned by Classical authors as a starting point for a study of an area of later prehistoric Scotland. Firstly, they relate to the period of the Roman occupation (or at least contact), and therefore may not be relevant to the greater portion of the later prehistoric period. Even for the proto-historic period, the validity and accuracy of tribal names described by Classical authors such as Tacitus, is debated.

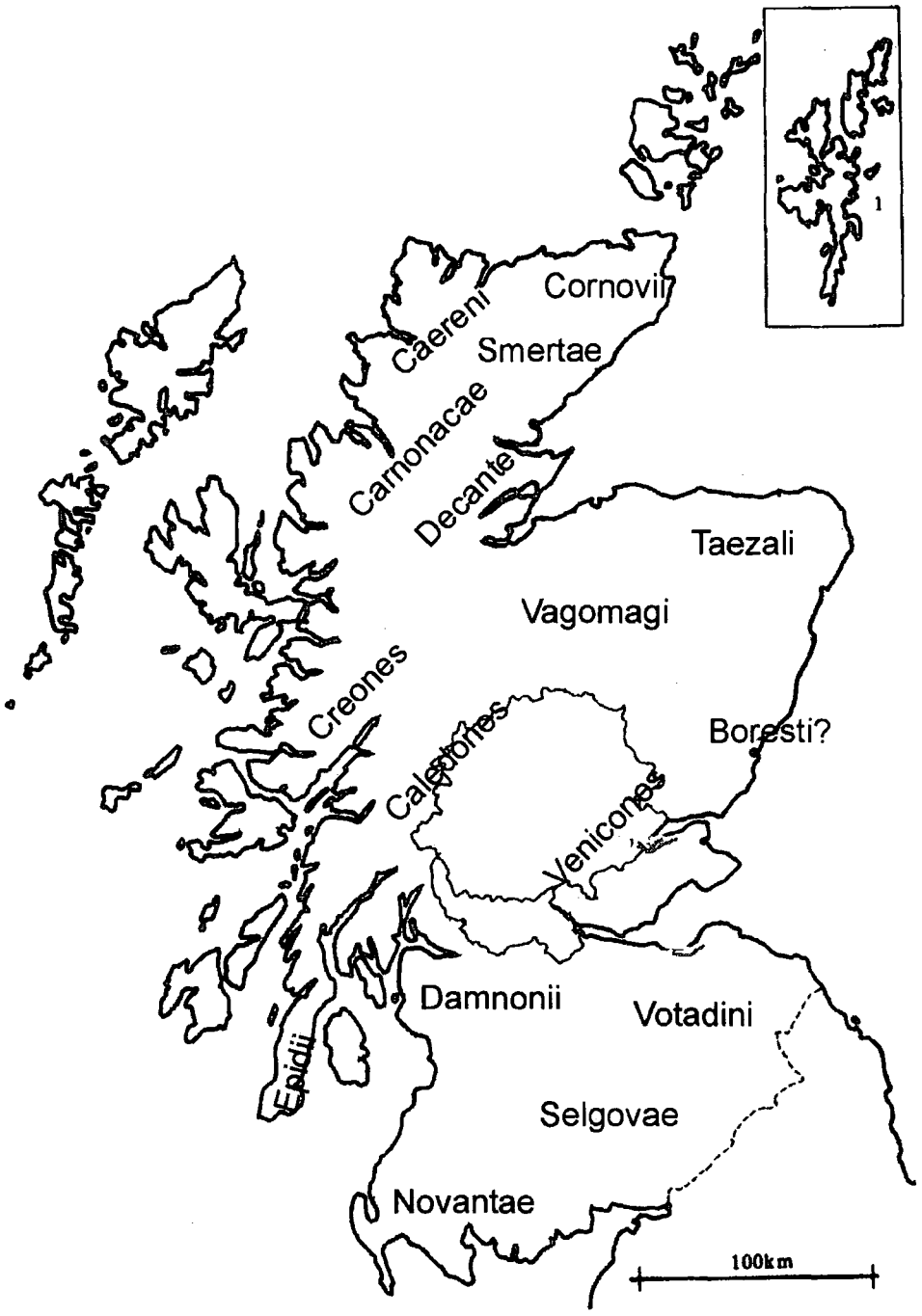

Fig. 1-4 Map of Scotland, with the study area outlined and rough locations of tribes mentioned by Roman authors indicated.

1.4. Definition and Justification of the Chronological Limits of the Study

The Three-Age System seems to have been embraced in Scotland before England (P. Rowley-Conwy pers. comm.), but in the first ever synopsis of the Scottish Iron Age, Joseph Anderson (1883) insisted that that period should not be assigned absolute dates. The term Iron Age has in the past been used in Scotland for a period beginning as late as the first century BC, a full four centuries after it was understood to begin in southern England on the basis of theories involving "iron-using, Celtic-speaking colonists", (Piggott 1958b, 75). This diffusionist perspective, however, became unsustainable and Piggott (1966, 3) subsequently backdated the event to 550BC. Later writers rejected the hyper-diffusionism and, following the radiocarbon revolution (Renfrew 1973), moved the date even earlier, to the seventh century BC (e.g. Harding 1974, 14; Ritchie and Ritchie 1981, 89). The Iron Age has in the past been understood to terminate with the Roman invasion of AD78 or in the third century AD or later if Piggott's (1966, 3) scheme is followed. Despite problems discussed in more detail below, this is still used by some researchers (e.g. Armit 1997b; Armit and Ralston 2003), albeit sometimes in a modified form (e.g. Hingley 1992, in which the terminal date was set at AD200, to avoid discussing the Picts).

However, a project by Needham *et al* (1997), aiming to establish an independent chronology for British Bronze Age metalwork, through a programme of radiocarbon dating of associated organic materials, has led to a revision of the dating of the LBA metalwork assemblages. This includes the backdating of the end of Ewart Park metalwork from 700BC to *c.* 800BC, suggesting that the LBA-IA transition should also be backdated by *circa* one hundred years. There seems no good reason to suggest a time-lag between the development of styles of metalwork in later prehistory in different areas of Britain. There is a danger, of course, that the dating of events in the Early Iron Age is smeared backwards as a result of the flat-point in the radiocarbon calibration curve, which begins at around 800BC. Any uncertainty about these issues can only be resolved through future work, and for now it would seem reasonable to use 800BC as a useful marker for the beginning of the Iron Age.

Since the late 1970s/early 1980s (e.g. Chapman and Mytum 1983; Ralston 1980), however, some archaeologists working in Scotland have adopted a chronological scheme known as the long Iron Age, breaking down perceived barriers between the Late Bronze Age, the Iron Age and the Early Historic period and taking incursions by the Norse, rather than the Roman army, as the terminus of the period (Haselgrove *et al.* 2001, 3). The long Iron Age therefore covers the first millennia BC and AD (as epitomised in the naming of the First Millennia Studies Group (Haselgrove *et al.* 2001, 3)), and has been summarised by Parker Pearson and Sharples (1999)[1], as shown in Table 1-1.

Table 1-1 Parker Pearson and Sharples' suggestions for chronological divisions within the Long Iron Age

Label	Chronological Span
Early Iron Age	700-100BC
Middle Iron Age	200BC-AD400
Late Iron Age	AD 300-900

A somewhat looser definition of the Later Iron Age, "in the first millennium AD prior to the Norse settlement" (Armit 1990b) was adopted for the Scottish Archaeological Forum of 1988; as Armit (1990b, 1-2) explained "...no precise dates [were] given for this...the division [was] clearly an arbitrary one...". Since then, the term Late/Later Iron Age has been used more precisely. Sharples and Parker Pearson (1999) define it variously as AD300-900 or AD400-800. Downes and Ritchie (2003) quote it as AD300-800. Most recently, Harding (2004, 3) has argued for a "'long' Iron Age, in which 'early' represents a span of time that in Southern Britain would cover the whole of the pre-Roman Iron Age, and 'late' is applied to the first millennium AD from around its second quarter". The 250 years between these two brackets becomes the Roman Iron Age, which rather seems to defeat the purpose of taking a long view of the Iron Age. Harding

[1] This is the chronological scheme outlined in Parker Pearson and Sharples' (1999, 359) concluding chapter. It is contradicted in Chapter One, where the scheme is outlined as Late Bronze Age/Early Iron Age (*c.* 1200-100BC), Middle Iron Age (*c.* 200BC-AD 400) and Pictish or pre-Viking Late Iron Age (*c.* AD400-800) (ibid. 1999, 15).

rejects the use of the term Middle Iron Age in a Scottish context, arguing that it constrains the occupation of brochs to "a limited span of two or three centuries around the turn of the millennium". This perceived failing would seem to be more down to what Sharples and Parker Pearson (1999) do with the evidence from Dun Vulan and other brochs than the chronological span of the term.

The usefulness of the term long Iron Age has become particularly apparent in the Western and Northern Isles (e.g. Armit 1990a; Downes and Ritchie 2003), where in the past cellular buildings have been described as 'Pictish', despite the evidence for continuity in architectural tradition, the lack of written records and the geographical distance from the Pictish heartland. The greater chronological fluidity allows the archaeologist to appreciate the evolution of architectural traditions and social development. The use of this long Iron Age does, however, reflect a bias towards the study of the Northern and Western Isles over the past twenty years (reflected in the title, "In the Shadow of the Brochs", of Ballin Smith and Banks 2002). In the south and east of Scotland, the Norse incursion can be no more a logical stopping point than the Roman invasion or the first historical mention of the Picts is in the Atlantic north and west. There have been suggestions that the long Iron Age of Scotland might usefully terminate with the start of David I's reign, David being the first King of Scots (1124-1153) (I.B.M. Ralston pers. comm.). Again, though, this takes the recording of a single historical event as the termination of a period largely known through its archaeological record.

There is much to be said for the adoption of a chronological scheme that does not lay so much stress upon the significance of the dates of the earliest surviving written records, and the rather artificial divisions between later prehistoric, Roman and Early Historic periods which result from this. However, a consideration of the Early Historic period was felt to be outwith the scope of this study. Despite some evidence for settlement continuity (Watkins 1984), it would have involved a consideration of many more settlements, burials, early Christian sites as well as place-name evidence, symbol stones and the limited contemporary written records. Whilst later prehistoric settlement and society has never been satisfactorily synthesised, Driscoll (1987) has already shown

what can be achieved with a limited and problematic dataset from Perthshire, with his study of the Early Historic Landscape of Strathearn.

It is clear from this discussion that there is no universally accepted chronological scheme for the Scottish Iron Age. A relatively traditional scheme is therefore applied to this study, although it should be noted that it is purely a chronological scheme. Although it has been said that the traditionally defined Iron Age (quoted as 700BC to AD500) merges 'imperceptibly' into the Early Historic (Armit 1997b, 15), there is evidence for major changes in the settlement record of Perthshire from *c.* AD 400 if not from AD297 (the date of the first historical reference to the 'Picts'), as the radiocarbon dates so far obtained from Pitcarmick-type buildings make clear (e.g. at Pitcarmick: Barrett and Downes 1996). Thus the period from AD 400 onwards is seen as Early Historic and not discussed here[2]. It is acknowledged that this falls between the most widely used end-dates for the Iron Age and that some later sites may have been included inadvertently.

Owing to the apparent longevity of many settlement types and the lack of tight chronological control, this thesis contains discussion of evidence from around 1000BC to AD 400. This period of 1400 years has been subdivided into Late Bronze Age (1000BC-800BC), Early Iron Age (800BC-400BC) and Late Iron Age (400BC-AD 400). The Early Iron Age is the period within which the flat point on the radiocarbon calibration curve falls; at present there is little way of refining the dating of Iron Age sites occupied in this period. Following the widespread but not universal convention within Scottish Iron Age studies, the term 'Middle Iron Age' is not used here. The term Roman Iron Age is used as a label for the relatively well-defined chronological period when the area was occupied intermittently by the Roman Army (Hanson 2003). It should not be taken to infer any cultural difference from the preceding period. Similarly, the term pre-Roman Iron Age is a chronological label, a convenient short hand for the period from the beginning of the Iron Age to *c.* AD 78, when the Roman army invaded Scotland. Even though its taphonomy is not necessarily straightforward, it must be conceded that the associated material culture gives greater chronological control

on the period of occupation than that preceding it. The chronological scheme used in this study can therefore be summarised as shown in Table 1-2. Throughout this study, the shorthand 'later prehistoric' is used to mean Late Bronze Age to Late Iron Age.

Table 1-2 The chronological scheme for the present study, spanning the period from 1000BC to AD 400. The whole period is termed Later Prehistoric.

Label	Chronological Span
Late Bronze Age	1000BC-800BC
Early Iron Age	800BC-400BC
Roman Iron Age	AD78-AD 213
Late Iron Age	400BC-AD 400

1.5. History of Archaeological Research on the Later Prehistory of Stirlingshire and Perthshire

Embarking on a major new study of this area of East Scotland, it was necessary first to review the work of antiquarians and archaeologists who have been attracted to its later prehistoric monuments over the past two centuries or more. An understanding of the processes by which the results of survey and excavation have accumulated is essential to understanding of the dataset, its strengths and limitations. Fig. 1-5 shows known excavations of Late Bronze Age, Iron Age and Roman sites in the study area and illustrates very well the trends in research over the past two hundred years[3]. It should, however, be noted that the number of nineteenth century excavations has probably been underestimated, particularly for the period preceding the publication of the first volume of *Proceedings of the Society of Antiquaries of Scotland.* It is clear from the Statistical Accounts that many sites were investigated by local clergy, farmers and landowners and it is fortunate if these were recorded at all, let alone published as excavation reports. Figures for this period are also underestimated because, even where it is known that an excavation took place, the year of excavation is not always mentioned in published

[2] See Harding (2004, 3-5) for a discussion of the chronological framework for the Scottish Iron Age.
[3] Raw data can be found in Table 6-4 of Appendix Six.

reports. In producing this chart, quality of excavation was not considered; none of the earlier excavations were conducted to modern standards and many were nothing more than uninformed diggings, especially in the eighteenth century. However some, such as those carried out at the end of the nineteenth century and beginning of the twentieth century by Christison might be said to be ahead of their time. The statistics for excavations from 1946 onwards are more reliable, since this marks the year that the CBA Scottish Group, later the Council for Scottish Archaeology, began publishing *Discovery and Excavation in Scotland*, which gives summary accounts of all archaeological excavations, surveys and new discoveries in Scotland. Occasionally, though omissions have been noticed; for this reason, information on date of excavation has also been collated from the NMRS, excavation reports and other publications.

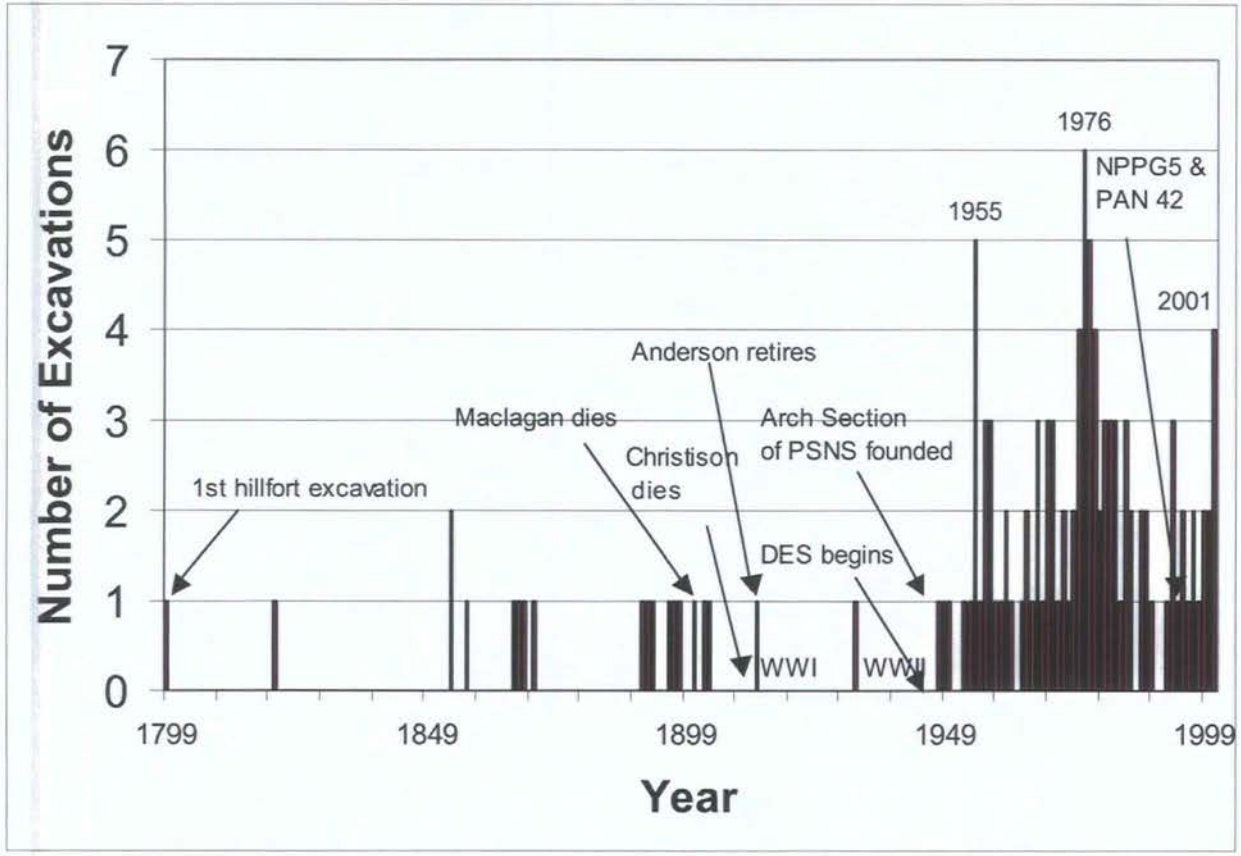

Fig. 1-5 Known Excavations of Later Prehistoric Sites in Perthshire and Stirlingshire, highlighting events that may have affected either the number of excavations that took place, or the number reported. The upsurge in reported excavations and events marked in the late 1940s and early 1950s are inextricably linked. This was the time that Margaret Stewart moved to Perthshire, triggering a renaissance in amateur archaeological fieldwork in the area. Stewart was also involved in the Scottish Branch of the Council for British Archaeology (which evolved into the Council for Scottish Archaeology), the foundation of Discovery and Excavation in Scotland and many rescue excavations.

1.5.1. The Eighteenth Century

1.5.1.1. The Old Statistical Account and the Early Years of the Society of Antiquaries of Scotland.

Interest in the later prehistoric remains of Perthshire and Stirlingshire can be traced back at least to the latter part of the eighteenth century (Fig. 1-5). While the early antiquaries of England plundered barrows, those of eastern Scotland 'cleared out' stone-lined souterrains, then known as earth houses, Picts' houses or weems[4], invariably turning up 'ashes' and 'vegetable mould'. The earliest accounts, though often imprecise, give tantalising glimpses of finds now lost. Reverend James Playfair, who went on to carry out the first recorded hillfort excavation in the area, appears to have at least witnessed, if not actively taken part in, the clearing out of several souterrains at Mudhall, Bendochy (30930/NO24SW2) in 1771 or 1772. It is known, largely from the Old Statistical Account that other excavations took place in the latter half of the eighteenth century on a variety of sites. If they are recorded at all, it is largely as a result of the local minister including notes on them in his submission to the editor of the Statistical Account. Thus, coverage is biased by the preoccupations of local ministers, some of whom had a particular interest in archaeology and others who had none whatsoever. While one may question the methods and the lack of recording of these early diggings, it must be remembered that the documents that do survive are the recollections of those present at the very birth of archaeology as a discipline.

Rev. Playfair, who later became Principal of St Andrews University, carried out the first recorded hillfort excavation, at Dunsinane Hill (30660/NO23SW1.1), running a long, narrow trench, shown in Fig. 1-6, across the interior (Christison 1900b, 86; Playfair 1819; Robertson 1799); his published report is brief but the significance lies in the fact that it was made at all. Christison suggests, from the results of a later excavation by Nairne, that, in fact, Playfair's excavation was superficial, despite his description of his trench as 'deep' (Christison 1900b, 89-90). It is perhaps significant that Playfair chose

[4] 'Weem' is probably a corruption of uamh, the Gaelic for 'cave'.

to examine a sizeable sample portion of the interior of the hillfort, an approach which was used again during the excavation of Orchill Fort (25372/NN81SE2) by Christison *et al* (1901, 21-23). This is in contrast to the approach prevalent in the area in the late twentieth century, where there was a tendency to concentrate on the defences at the expense of the interior (for example as at the recently excavated Caterthuns: see Dunwell and Strachan (forthcoming)[5].

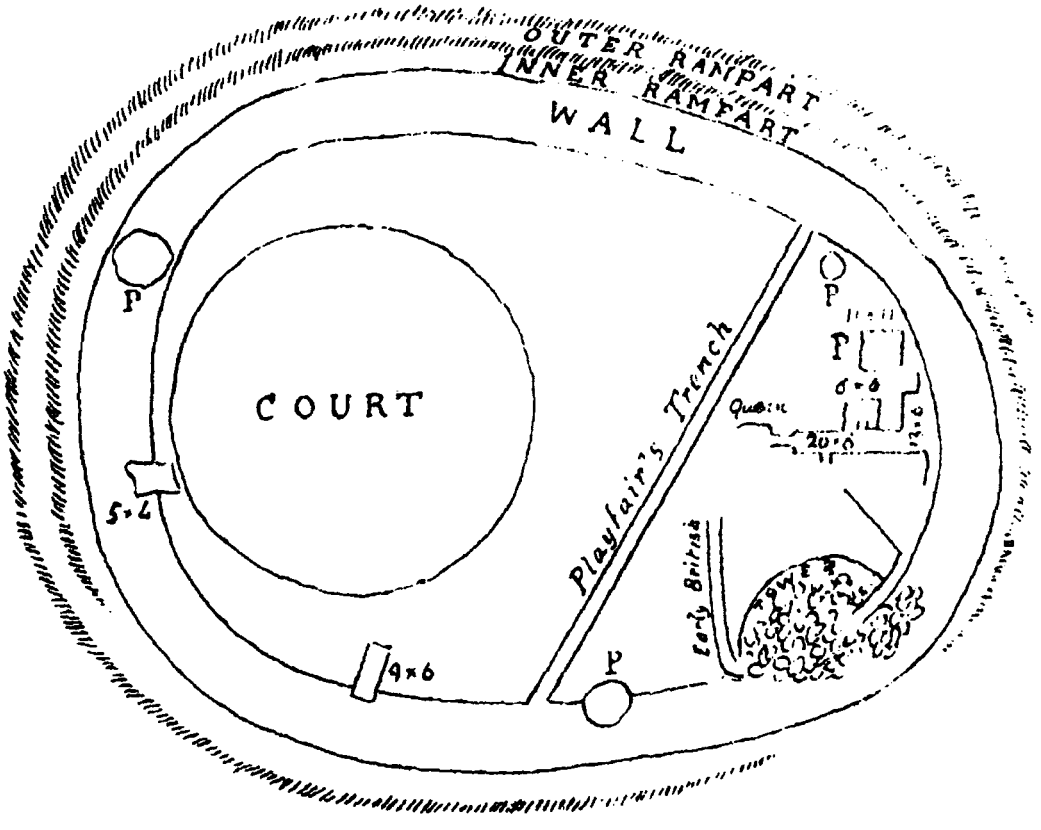

Fig. 1-6 Playfair's excavation at Dunsinane Hill (30660/NO23SW1.1), after Stewart (Christison 1900b)

Although the Society of Antiquaries of Scotland was founded in 1780, its interests remained rather disparate for the first few decades, embracing history, numismatics, travel writing etc as well as archaeology.

[5] This is partly due to different emphases in research design; the excavation of the Caterthuns took place within the University of Edinburgh Angus and South Aberdeenshire Field School, a Historic Scotland project investigating monument management issues (Finlayson *et al.* 1999).

1.5.2. The Nineteenth Century

The Proceedings of the Society of Antiquaries of Scotland began its run in 1856, and it is only then that substantial excavation reports began to appear. The first relevant to the present study was the second excavation of Dunsinane Hill hillfort (30660/NO23SW1.1), this time by the landowner. This was reported to the society by Thomas Wise (1857a). Dunsinane Hill probably attracted so much interest because of its association with Macbeth; the popularity of Shakespeare's (1606) Scottish play had been revived in the eighteenth century. Interest in souterrains and hillforts continued into the nineteenth century.

The 1860s and 1870s saw two broch excavations in the study area, the first of which involved the clearing out of the Torwood, The Tappoch (47004/NS88SW1) by Col. Dundas (Dundas 1866; Lefroy 1867). The excavator did not, however, make the connection between this structure and the brochs of north and west Scotland, although Maclagan (1872, 30; 1884, 14) did. Another broch, this time at Coldoch (45356/NS69NE6), was investigated by John Stuart on behalf of the Society of Antiquaries of Scotland, at the behest of Christian Maclagan (see 1.5.2.1 below). Judging by Maclagan's (1875) plan and section drawing, the excavation techniques employed at this site were rather more advanced than was usual for the time but the excavation was never published and the records are apparently now lost.

1.5.2.1. Christian Maclagan[6]

Christian Maclagan receives not a mention in the standard work on Scottish Antiquarians (Bell 1981). However, she published numerous valuable books and articles on the ancient monuments and sculptured stones of Scotland, in the 1870s, 1880s and 1890s, and carried out an excavation on the hillfort at Mither Tap o' Bennachie, Aberdeenshire (Maclagan 1881). Graham (1970, 258 & 261) alludes to the significance

[6] I have occasionally come across references to a "Christina Maclagan". She and Christian are one and the same. The misnomer can be traced back to a typographical error in Christison (1900b, 62).

of her work in passing, but fails to elaborate, despite discussing the work of her contemporaries in detail. Her work covers the whole of Scotland and beyond (including Sardinia and Brittany to which she travelled to make comparative studies of the ancient monuments, firmly believing that archaeological sites in Britain were best understood in their European context) and her observations on sites within the study area have proved surprisingly useful.

For example, she was the first to correctly recognise the site at Coldoch (45356/NS69NE6) as the remains of a broch and suggest that it be excavated. Her plan of the site is the most accurate available and her section drawing (Maclagan 1875 Pl. 30) the only one in existence. Significantly, her section drawing includes stratigraphic layers, despite being published five years before Pitt Rivers began his excavations at Cranborne Chase. Without her published drawings, the method of excavation would be unknown, since, as was common for the time, the work was not published. The significance of this information will be discussed in the concluding chapter.

Maclagan was given no credit by the Society of Antiquaries of Scotland for her part in the identification of Coldoch, and as a result protested in print, lamenting that "He [it is not clear whether she means Sir James Young Simpson or John Stuart] is chronicled by the Society as the discoverer, while the writer of these notes was completely ignored." (Maclagan 1884, 22). She was openly resentful of the discrimination she endured as "...a woman, and therefore unworthy of being a member of any Antiquarian Society...", lacing her comments with understandably bitter sarcasm (Maclagan 1894, 38). The spectre of sexism hung over the Society well into the twentieth century, a long-standing statute intimating that the number of Lady Associates should not exceed twenty-five, despite the number of male Fellows running into the hundreds from an early stage. The only other Scottish female antiquarian active in the field at the time was Lady John Scott, who became a Lady Associate the year before Maclagan and carried out much important work in the Borders (F. Hunter pers. comm.). Maclagan bore a public grudge over the Society's refusal to allow her to become a Fellow and apparently wanted to resign (Millar 1912, 531). In addition, she did not seem to be afraid of openly criticising

her male contemporaries, making scathing criticisms of, amongst others, Pitt Rivers himself (Maclagan 1894, 15-16). Nevertheless, David Christison, a leading figure in the Society during the latter decades of Maclagan's life, made several respectful references to her work in his classic paper on the hillforts of Perthshire (Christison 1900b, 62, 69, 103, 105, 109, 110 & 115). Around the time of Maclagan's death, the first female fellows were elected to the Society. Ironically, the laws of the Society did not need to be altered to make this possible; all that was required was a sea-change in attitude.

Maclagan gives useful comments, plans and sections on the extant monuments of Angus, Perthshire and her native Stirling. What is particularly notable about her work is her caution in describing the monuments she wrote about as fortifications or attributing them to the Romans. The circular homesteads of Glenlyon are cautiously referred to as circular structures and Christison (1900b, 110) follows her lead, doubting whether they can be described as fortifications. Coldoch (45356/NS69NE6) is another good example. While contemporary work described brochs as defensive structures and mused on their supposed Scandinavian origins, Maclagan described the site at Coldoch as "a round house, or rather the remains of one...British workmanship..." (Maclagan 1872). The monument had previously been thought to be a Roman well (Maclagan 1872)[7]. It was four years later that Anderson published his case for a native origin for the brochs, although he maintained that they were defensive in nature (Anderson 1877). Fergusson, however, continued to assert that they were of Norwegian origin, restating his case the following year (Fergusson 1878). Maclagan did eventually concede that brochs were defensive, a point which is still debated today (Armit 1997a; Sharples and Parker Pearson 1997), but the fact that she had a propensity to be circumspect regarding function is interesting.

She did, however, have a tendency to over-domesticise the archaeological record, never wavering from her belief that stone circles were not Druidical temples, as was commonly believed at the time, but the remains of robbed-out roundhouses (Maclagan

[7]Coldoch was also apparently recognised as a roundhouse by the gardener at Deanston House, nearby (Henderson 1866). Oddly, though, it is marked as a "Cave" on the First Edition Ordnance Survey map.

1875; 1894). This is easily accounted for by turning to her religious beliefs. Maclagan was a committed Christian, who had built a church in her native Stirling (Anonymous 1901; Millar 1912) and, especially in her later works, was prone to discussing at length the relevance of biblical texts to archaeological remains. She harboured the romantic hope that her prehistoric forebears were monotheistic and would have had need for neither "hideous idols" nor open-air temples (Maclagan 1894, 42). She seems to have overlooked the discovery of the Ballachulish figurine in 1880 (Christison 1881). The strength of this approach, however, is in the sense Maclagan gives of these monuments telling us about the daily lives of people in the past, something that is lacking from the drier accounts of Christison *et al.*

It is only very recently that Maclagan's achievements (not only as an archaeologist but also as a campaigner for social reform) have begun to receive the recognition they deserve; her first biography is forthcoming (S. Elsdon pers comm)[8]. Maclagan was a wealthy woman who seems to have maintained her independence despite the social climate of the time. Her first book must have taken many years to complete and much of it may have been done prior to her initiation into the Society in 1871, by which time she was sixty years of age. Maclagan remained a Lady Associate until her death in 1901, aged about ninety. It was to be another fifty years before another woman rose to prominence in the study of the ancient monuments of the east of Scotland.

[8] Maclagan wrote an autobiography, which has remained unpublished. All attempts to locate the manuscript have thus far failed. A visit to her Solicitors in Dunblane (Tho. Barty & Son), who appear to have been in possession of the manuscript in 1912, proved unsuccessful.

Fig. 1-7 Christian Maclagan's grave in the cemetery adjacent to Stirling Castle. The only inscription is the name ΧΡΙΣΤΙΑΝ ('Christian') in Ancient Greek (2002, M.H. Davies)

1.5.2.2. Joseph Anderson

From humble beginnings in Arbroath, Angus, Joseph Anderson eventually became a leading light within the world of Scottish Archaeology and was appointed curator of the National Museum of Antiquities (now the Museum of Scotland) in Edinburgh in 1869. Whilst editor of the *John of Groats Journal*, he had embarked on a programme of

excavation of Caithness chambered cairns and was nominated a corresponding member of the Society of Antiquaries in 1866. He published an astonishing number of books and academic papers[9], many of which remain classics. Without his salvage attempts, the results of Sir F.T. Barry's diggings in brochs in Caithness would have been lost. Indeed, many of his most important papers are on the subject of brochs and their origins (Anderson 1873; 1877). These papers were placed firmly within what he referred to as the Early Iron Age, a term which he insisted should not be ascribed absolute dates (Graham 1976, 286). He briefly discusses Coldoch broch (45356/NS69NE6) but the plan he provides, by a Mr Ballingal (Anderson 1877, 323-324), is inferior to Maclagan's, being highly stylised and quite obviously drawn using a compass and ruler. His book on the Iron Age (Anderson 1883) contains useful discussion of these as well as lake-dwellings (i.e. crannogs), hillforts and earth houses (i.e. souterrains). As Childe wrote in 1935, Anderson had, by 1886, "...sketched the essential outlines of Scottish prehistory in a comprehensive and scientific survey such as then existed in no other country." (Childe 1935b). In the context of the present study, his most important work must be the series of excavations he carried out with David Christison and John Abercromby on Roman sites in Perthshire. These are discussed in more detail in 1.5.2.3 and Chapter Four.

1.5.2.3. David Christison

"I could almost regret that the Society have undertaken the excavation of Roman 'Camps' in preference to our Native Forts. The secrets that lie beneath the ruins of the Caterthuns, Dunsinnan, and hundreds of other native fortresses, are no less worthy of being brought to light than the relics left behind by the Romans." (Christison 1900a)

David Christison was, perhaps, the single most important researcher and excavator working in the study area in the nineteenth century. Along with the other leading figures of the Society of Antiquaries of Scotland, he pioneered modern excavation techniques in

[9] For a bibliography of Anderson's work see Graham 1976, but note that this is not exhaustive (Clarke 2002, 16 endnote 6).

this part of Scotland. Clearly influenced by the methods of Pitt Rivers, whose volumes on Cranborne Chase appeared in the 1880s, Christison soon formed strong opinions on the necessity of scientific excavation methods, using the example of Nairne's excavations (Wise 1857a) at Dunsinane Hill (30660/NO23SW1.1) in 1854 to illustrate "...the evil results of unskilled, incomplete and hasty excavations, undertaken too often with the object of proving preconceived theories."(Christison 1900b, 86). As far as the Iron Age of Perthshire in particular is concerned, Christison's major achievement was in collating the disparate traditions, records and excavations which had taken place on various extant sites, especially hillforts, in a book based on his series of Rhind lectures (Christison 1898) and a subsequent paper (Christison 1900b), which give accurate plans and sections and cast a critical eye on thought surrounding these sites.

Also highly important is the fieldwork Christison, Anderson and others carried out under the auspices of the Society of Antiquaries of Scotland. This focussed on Roman sites in Perthshire and took place in the late 1890s and early 1900s (Christison 1901; Christison *et al.* 1898), although it included a native fort at Orchill (25372/NN81SE2: Christison 1901). The pair pioneered the archaeological investigation of timber structures, recognising and recording not just postholes but also beam slots, as at Moss Side Roman signal tower (26613/NO01NW14). The excavations at Orchill and Drumharvie (26154/NN92SE1), both native forts, deserve special mention, since it would appear that there, Christison was the first in Scotland to recognise palisade slots from their field remains (Christison 1900b, 120; 1901). Christison *et al* were not, however capable of identifying multiple phases at sites and thus there is a limit to the usefulness of their published reports.[10] They seem to have been much more successful in identifying negative features on Roman sites than on native sites and it might be speculated that there was enough already known about the general layout of Roman forts that they knew exactly where to look and what to see (F. Hunter pers. comm.).

[10] For a discussion of the merits and failings of the field techniques used by Christison and Anderson during their excavations of Roman sites, see Woolliscroft (2002b).

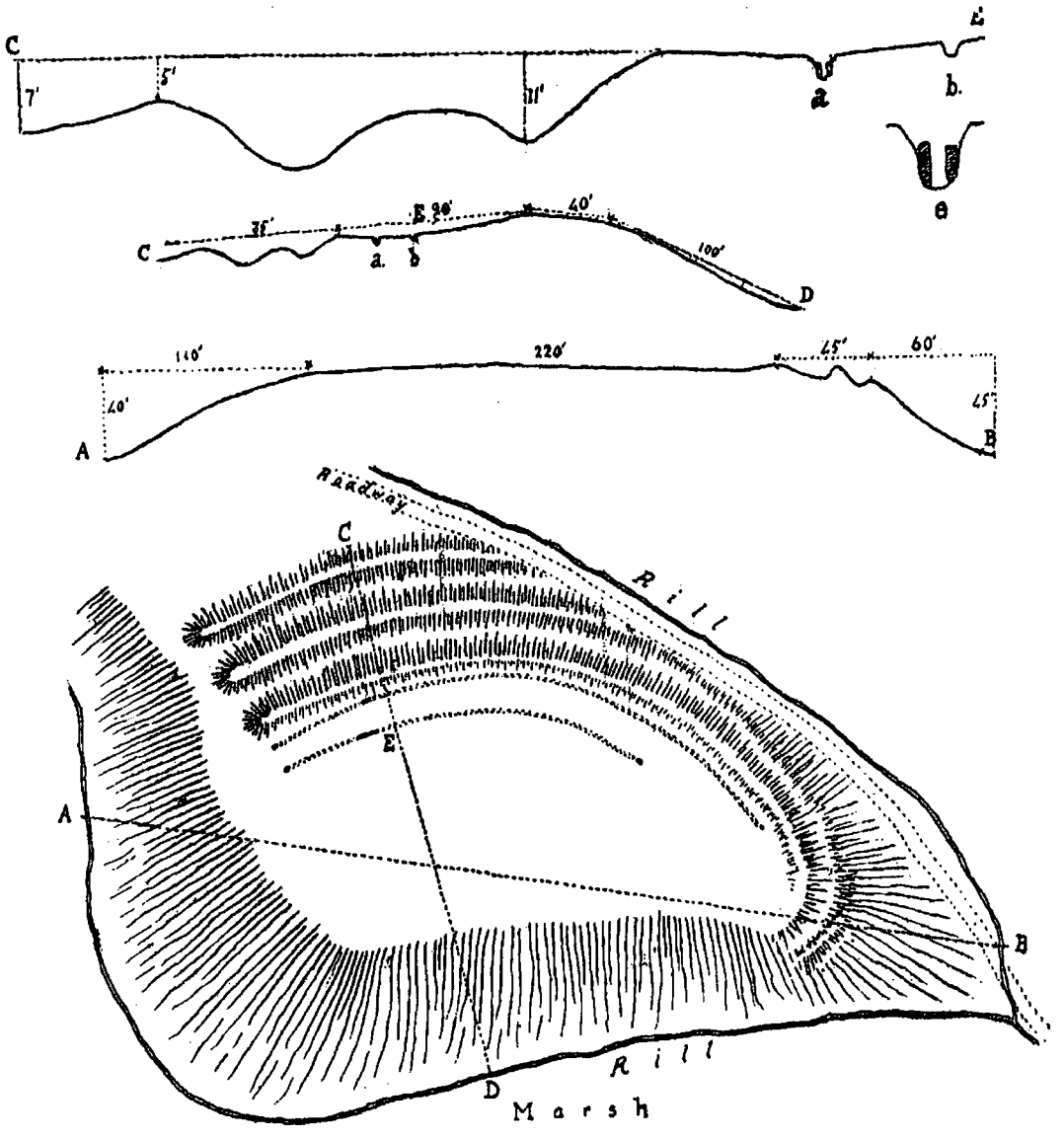

Fig. 1-8 Christison's plan and profile of Orchill Fort, where he identified the remains of a palisade from field evidence (after Christison 1901)

It should by now be clear that, by the late nineteenth century, the prehistoric and Roman remains of this region of East Scotland were the focus of much attention. Anderson, Christison and their contemporaries not only shed light on the prehistory and early history of Scotland, but in Perthshire, pioneered modern excavation methods, having the skill to recognise not just upstanding remains but also the remains of timber structures, at Roman sites such as Ardoch (25227/NN80NW10: excavated 1897) and Inchtuthil (28592/NO13NW5: excavated 1901). They were clearly familiar with Pitt Rivers' work

at Cranborne Chase, although their uptake of concepts such as stratigraphic recording and section drawing was somewhat erratic. A lasting legacy was left by Maclagan, her skilled observations and detailed and informative drawings filling some of the gaps left by her male contemporaries.

1.5.3. Twentieth Century

The death of David Christison in 1912 and the retirement of Joseph Anderson in 1913, followed by the outbreak of the First World War, resulted in a drop in archaeological activities in Perthshire and Stirlingshire (Fig. 1-5). Some research did, however, continue in other regions over this period, the most notable perhaps being A O Curle and J E Cree's major excavations on the hillfort at Traprain Law (Cree 1923; 1924; Cree and Curle 1922; Curle 1915; 1920; Curle and Cree 1916; 1921). Technically, however, these were not as accomplished as the earlier excavations by Christison *et al* (e.g. Christison 1901; Christison *et al.* 1898) and were disappointingly limited in their objectives. Other important work was done in the Scottish Borders by Margaret Piggott, who carried out hugely important excavations at Hownam Rings (Piggott 1948), Hayhope Knowe (Piggott 1949), Bonchester Hill (Piggott 1950) and Milton Loch Crannog (Piggott 1953). In the first three, her research aim was to elucidate the development of the hillforts of southern Scotland. Hownam Rings (Piggott 1948), of course, was to become a type site for Iron Age forts of eastern Scotland; concerted deconstruction of Piggott's model did not really begin until the late 1970s, as Armit (1999b) has discussed.

Archaeological work carried out in this district in the early twentieth century was inevitably variable in quality, being carried out almost exclusively by enthusiastic members of the local field club. While the discovery and description of Deuchny Wood hillfort (28217/NO12SE3) by R R B Watson (Watson 1995; Watson 1923) won him the Chalmers-Jervise prize in 1929, supposed Celtic hillforts identified by Rutherford (1938) and Scott (1923) were later found to be a Farmstead (Whitefield Hill: NO06SE8) and a Mediaeval deer park (Buzzart Dikes: NO14NW2) respectively. As is evident from Fig. 1-5, little in the way of excavation took place in the first half of the twentieth century.

1.5.3.1. W J Watson

W J Watson was a Professor of Celtic at the University of Edinburgh and produced the definitive work on the placenames of Scotland (Watson 1926), which is still in print today. Watson's foray into archaeological excavation is the only one recorded during the period from 1904 to 1931. In quality it bears comparison with the better excavations of the nineteenth century, although Watson did take the admirable decision to sieve all the soil from the site (Watson 1915, 28), something which was not standard practice at the time or for a long time afterward. The first detailed treatment of the circular homesteads of Perthshire appeared immediately before World War I (Watson 1913); this subject had not been discussed since Maclagan looked at them in the late nineteenth century, although notes on some of the sites appeared at a very early stage, in the Statistical Accounts. A further consideration of these sites appeared two years later (Watson 1915) and this included an account of the excavation at Borenich, Loch Tummel (25880/NN86SW6).

1.5.3.2. Wallace Thorneycroft

Wallace Thorneycroft, who later went on to work on Scottish vitrified forts with V.G. Childe (Childe and Thorneycroft 1938), was able to recognise the timber elements of a roundhouse at Dalrulzion (29060/NO15NW2: Thorneycroft 1938; 1947). This is something that Curle and Cree notably failed to do at Traprain Law, despite wooden elements of a native fort having been recognised more than a decade previously at Orchill (25372/NN81SE2: Christison 1901) and Curle himself having recognised a post-ring within the broch at Dun Troddan, Inverness-shire (Curle 1921). This slow progress in development of field techniques is likely a reflection of the loss of the antiquarian greats (John Abercromby, Joseph Anderson and David Christison) of the late nineteenth century and the break in works due to the World War I.

1.5.3.3. V Gordon Childe

The arrival of Gordon Childe makes a useful marker for the inception of professional archaeology. However, the strong tradition of amateur involvement in archaeological fieldwork has prevailed until the present day. Vere Gordon Childe arrived in Edinburgh in 1927 to take up the Abercromby Chair of Prehistoric Archaeology, but took a while to establish his influence amongst his new colleagues (Stevenson 1981, 190). This was apparently due to political differences (Graham 1970, 280) although it may also have been due to the fact that he began in Edinburgh as the only member of staff in the new archaeology department, with few students (I.B.M. Ralston pers. comm.). Although he did not carry out excavation in Perthshire or Stirlingshire, later prehistoric sites in this area are discussed in his synthesis of prehistoric Scotland (Childe 1935b). His particular interest in the phenomenon of vitrified forts led to several excavations in other counties, the nearest being that at Finavon, Angus (Childe 1935a; 1936), as well as some experimental work (Childe and Thorneycroft 1938). This interest in the forts of Scotland continued for the rest of his career and is reflected in their inclusion in numerous later works (Childe 1946; 1947; Childe and Graham 1943). His influence has also undoubtedly been felt through his students, notably Margaret Mitchell (later Stewart), who was one of his first PhD students (1.5.3.6 below).

1.5.3.4. F.T.Wainwright

Frederick T. Wainwright (d. 1961), whose major work on *The Souterrains of Southern Pictland* was published posthumously (Wainwright 1963), was a lecturer in History at University College Dundee, which was renamed Queen's College Dundee in 1954[11]. Despite his historical background, Wainwright was amongst the first to apply modern archaeological techniques to excavations in Scotland. He can truly be said to have been ahead of his time and his meticulous attention to detail can be observed in his exemplary publications on souterrains (Wainwright 1953a; b; 1956; 1963). Like Margaret Stewart, whose work is discussed below, he mobilised the enthusiastic amateurs in the Angus and

[11] Following the end of its affiliation with the University of St Andrew's, University College Dundee was renamed Queen's College Dundee. It ultimately became the University of Dundee, in 1967.

Perthshire. Wainwright concentrated for the most part on Angus in his excavations but provided an invaluable gazetteer of Angus-group souterrains (Wainwright 1963) and the first scientific excavation of a Perthshire souterrain, at Longforgan (31710/NO32NW1: Wainwright 1956).

1.5.3.5. Doreen Hunter

Doreen Hunter, then the Curator at Falkirk Museum, directed excavations at Torwood, the Tappoch in 1948 and 1949 (47004/NS88SW1: D. M. Hunter 1949a; c). She concentrated on the outworks, the interior already having been cleared out by Col. Dundas in the nineteenth century (Dundas 1866; Lefroy 1867). The subsequent publication, however, was disappointing; despite her primary aim being throwing light on "The construction of the ramparts, in which dateable material might be found stratified." (D. M. Hunter 1949c, 89). She did not publish contexts for any of her finds, all of which have subsequently disappeared (F. Hunter pers. comm.). Her plans, sections and small find drawings are little more than sketches. Hunter also carried out excavation of cists at Denovan Mains (Hunter 1971), and took part in many other excavations, including Margaret Stewart's.

All in all, very little excavation and even less of sufficient quality took place in the region between the deaths of Anderson and Christison and the second half of the twentieth century. As it was, a new era in the investigation of the prehistoric period in this area did not really dawn until M.E.C. Stewart began her campaign of survey and excavation, which was to run for four decades; this trend can be seen very clearly in Fig. 1-5.

1.5.3.6. Margaret Stewart

Margaret Stewart (née Mitchell) was a student of Childe's, whose doctoral thesis consisted of a new analysis of the Early Bronze Age pottery of Scotland; the results were published in *PSAS* (Mitchell 1934). Following her marriage, she moved to Perthshire and thence became the guiding light of archaeological research into the prehistory of the

region. Margaret and Stuart Piggott were regular visitors to her home (I.B.M. Ralston pers. comm.) and she also carried out excavations with John Coles and Megan Feachem. She had links with numerous local societies and was a key figure in the foundation, in 1948, of the Archaeological Section of her local field club, the Perthshire Society of Natural Science. This enabled her to pursue her own research interests, whilst co-ordinating and encouraging the growth of amateur interest in archaeology, directing area surveys (e.g. Stewart 1959) and excavations of many sites.

Fig. 1-9 Margaret Stewart's excavation of a stone roundhouse on Law Hill, Arnbathie in 1950; the diggers were volunteers from the Perthshire Society of Natural Science (Perth Museum and Art Gallery, reproduced by kind permission of The Perthshire Advertiser).

Inevitably, given her specialism, the majority of the sites investigated under her direction were early prehistoric. However, her work on the hut-circles at Dalnaglar, Glenshee (29381/NO16SE2: Stewart 1964) and Law Hill, Arnbathie (28116/NO12NE2; Fig. 1-9) (Archaeological Section of Perthshire Society of Natural Science 1950; Stewart 1950) and the circular homestead at Queen's View, Loch Tummel (Taylor 1990) was highly significant for the later prehistory of the region, as was the discovery of Iron Age metalworking debris within the stone circle at Moncrieffe House (Stewart 1985). In the 1970s, Stewart turned to the urban archaeology of the city of Perth, initiating the Perth

Archaeological Survey in order to assess archaeological potential in advance of development. Sherriff (2000) provides a useful discussion of Stewart's role in the rise of local societies. Stewart died in 1986 (R. M. Smith 1987; Taylor 1988) and her extant work was taken on by the Historic Scotland Backlog Project (Stewart *et al.* 1999, 106)[12].

1.5.3.7. Anne S Robertson

Professor A S Robertson (d.1997), a Roman military and coin specialist based at the Hunterian Museum at the University of Glasgow (Keppie 1997), had very little interest in the Iron Age of Perthshire. Her work is nevertheless worth mentioning, as it is crucial to understanding of the Roman occupation of the area. Where she did uncover later prehistoric remains, she was dismissive of them; she suggested that the quantity of Iron Age pottery and coarse stone tools recovered from Cardean fort, Angus (MacKie 1967; 1969a) (excavated 1968-1973) implied that it had been built over an Iron Age settlement, but this cannot be evaluated, since she did not record any pre-Roman contexts (Robertson 1968; 1971; 1972; 1973; 1974; 1975)[13]. Perhaps her most important contribution was the syntheses of Roman finds found on non-Roman sites (Robertson 1964; 1970), following James Curle (1913; 1932a; 1932b), which have provided the foundations for future work on this subject (Hunter 2001a).

1.5.3.8. The History of Aerial Photography

An interest in the Roman remains of Perthshire and Stirlingshire was also behind the first archaeological aerial reconnaissance in the area. Archaeological aerial survey of Perthshire began in the 1920s, with O G S Crawford, who in 1929 flew along the Gask Ridge, observing the Roman remains at Ardoch, Inchtuthil and Grassy Walls and noting that nothing was visible at Carpow (Crawford 1930, 276). The only non-Roman site to be noted in Perthshire on that occasion was the Cleaven Dyke, now confirmed as a Neolithic cursus monument (Barclay and Maxwell 1998) but then thought to be a Roman earthwork (Richmond 1940). However, a further foray into Perthshire and

[12] The Dr Margaret E C Stewart Collection is archived at the NMRS.
[13] Final publication of Cardean, edited by B Hoffmann (forthcoming) is imminent.

Stirlingshire, again primarily aimed at seeking Roman remains - this time for the third edition of the Ordnance Survey's Map of Roman Britain - was wider in its scope. It led to the confirmation of a native fort on Myot Hill and the noting of numerous other native forts (Crawford 1939, 287). A subsequent lull in aerial survey was necessitated by the outbreak of World War II, although Eric Bradley of the Royal Air Force (RAF) made some discoveries in 1941 (RCAHMS 1994c, 5-6) and J K St Joseph managed a few hours over south Perthshire in 1944, whilst working at Scone airfield (St Joseph 1976, 2). The end of the war saw the RAF undertaking a survey of the entire country from the air, with complete photographic coverage enabled through vertical photography at a scale of 1:10 000 or 1: 40 000. Subsequent aerial reconnaissance began as part of the RAF's training programme but from 1948 was sponsored by the University of Cambridge Committee for Aerial Photography (CUCAP). The aims of these reconnaissance expeditions, led from the start by St Joseph, with assistance from D R Wilson (from 1963), were not entirely archaeological. However, the archaeological results, which were reported in the *Journal of Roman Studies* and *Antiquity,* often included the discovery of cropmarks indicating the remains of later prehistoric sites (St Joseph 1951; 1955; 1958; 1961; 1965; 1969; 1973; 1977; 1978). Notable discoveries include the cropmark complex at Forteviot (St Joseph 1978). In 1976, Prof. St Joseph looked back over more than thirty years' experience in the aerial reconnaissance of Roman Scotland, in a contribution to a collection of papers in honour of Anne Robertson (St Joseph 1976). His activities continued until 1980 but from 1975, archaeological aerial survey was also undertaken by the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS 1994c, 6). Today, the corpus is dominated by the massive amount of data accumulated since 1975, much of it documenting new discoveries of cropmark sites.

1.5.3.9. The 'Heroic Age' of Scottish Archaeology

Lesley Macinnes' important doctoral research on the later prehistoric settlement of East Lothian, north-east Fife and Angus (1983)[14] was carried out at Newcastle University,

[14] For a discussion of how Macinnes' (1983) findings compare to those in this thesis, see Chapter 8.

under the supervision of George Jobey, during and immediately after a floruit of excavation and research on the later prehistory of south-east Scotland. Aspects of her PhD research were published in two papers (Macinnes 1982b; 1984b), with other publications, some in collaboration with W.S. Hanson, concentrating on Roman-native interaction in Scotland (Hanson and Macinnes 1980; 1991; Macinnes 1984a; 1989). The importance of Macinnes' work lies in the fact that she was the first to undertake a period-based study of settlement patterns in eastern Scotland since RCAHMS began its aerial survey programme in 1975. Thus, she had access to a significant quantity of new data, particularly related cropmark sites. She was also able to take advantage of the results of Jobey's extensive programme of survey and excavation in Northumberland in her comparative work. So far, no extensive retort to Macinnes' (1983) thesis has been attempted, although the data set is not only now much larger, but also of a different character.

Classic papers and interim reports on various sites which were to serve as type-sites for the next twenty years were published in a volume of the proceedings of a conference held in Edinburgh in 1981 (Harding 1982a). In addition, several other extremely important excavations were published (e.g. Taylor 1982; Watkins 1980a; b). A useful summary of the effects of the rise of rescue archaeology in Tayside and Fife has been provided by Sherriff (2000) and need not be recounted in any great detail here. Much of the work carried out during this surge of activity, however, remained unpublished or incompletely published until very recently. Main's (1998) excavations at, Buchlyvie, 'Fairy Knowe' (44651/NS59SE3) for instance, were carried out between 1975 and 1978 but the complete excavation report was not published for another twenty years. Euan MacKie's excavation of the neighbouring broch at Leckie (45379/NS69SE12), which was conducted between 1970 and 1975, is yet to be fully published, despite an interim report appearing in the early 1980s (MacKie 1982). Sites outwith the study area, crucial for comparative purposes, have also been subject to extended publication delays; Peter Hill's excavation of the multi-vallate fort at Broxmouth and Triscott's work at Dryburn Bridge palisaded enclosure, both in East Lothian have yet to be fully published despite interim reports appearing in 1982 (Hill 1982a; Triscott 1982). Final publication is,

however, imminent (Dunwell forthcoming). Similar problems occurred in the Atlantic zone (Smith 2002, 809)

This unfortunate situation, associated in particular with rescue excavations carried out in the late 1970s and early 1980s (Barclay and Owen's (1995) 'heroic age'), was identified by Historic Scotland as a cause for concern and resulted in the initiation of The Historic Scotland Backlog Project (Barclay and Owen 1995). This has been successful in bringing to completion many important delayed publications, including Aldclune (Hingley *et al.* 1997), Ironshill (Pollock 1997), Douglasmuir (Kendrick 1995) and Boysack Mills (Murray and Ralston 1997). PSAS was expanded to two volumes per year from 1995 to 2000 to accommodate these excavation reports, most of which were quite substantial. The potential log-jamming of reports on recent developer-funded excavations has been averted by the launch of the *Tayside and Fife Archaeological Journal* in 1995. In future Scottish Archaeological Internet Reports (SAIR) should be able to carry some of the burden.

1.5.3.10. Relevant Journals

The *Proceedings of the Society of Antiquaries of Scotland* has been the main outlet for the dissemination of excavation reports for the area, since it was first published in 1856. *PSAS* was in the past complemented by local periodicals, including the *Transactions of the Stirling Natural History and Antiquarian Society*. This was by its very nature an amateur publication but contains details of antiquarian discoveries which might otherwise have gone unrecorded, as well as notable articles by Christian Maclagan (1884; 1886). Occasional articles of archaeological relevance are published in *Forth Naturalist and Historian*.

The equivalent field club in Perthshire did not have an archaeological wing until 1948, although it did publish occasional archaeological articles before then. Its journal has been variously called *Transactions of the Perthshire Society of Natural Science*, *Transactions and Proceedings of the Perthshire Society of Natural Science* and *Journal of the Perthshire Society of Natural Science*. The Society and its journal are run on an

amateur basis, and until 1995, Perthshire and its neighbouring counties did not have an academic archaeological periodical equivalent in standard to other regional publications, such as *The Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society.*

Tayside and Fife Archaeological Journal was founded by the Tayside and Fife Archaeological Committee (TAFAC) in order to cope with the output of the Historic Scotland Backlog Project and provide an outlet for regionally significant articles and excavation reports. Its role is becoming more important as *PSAS* moves away from its former role as publisher of major excavation and survey reports for Scotland. *TAFAJ* has carried most of the reports from the Angus and South Aberdeenshire Fieldschool (Cameron 2003; Finlayson *et al.* 1999; McGill 2003; R. J. Strachan *et al.* 2003) and in the future it is likely that *Scottish Archaeological Internet Reports* will publish those thought to be of national significance.

Since its inception in 1946, initially as a section in the Annual Report of the Scottish Regional Group, Council for British Archaeology, *Discovery and Excavation in Scotland* (*DES*) has carried short reports on (nearly) every excavation, survey or archaeological discovery in Scotland. DES became a separate, annual periodical in 1955, under the editorship of Margaret Stewart (see 1.5.3.6 above). Since 1996 it has also published lists of radiocarbon dates obtained from archaeological sites. It also publishes a list of Treasure Trove acquisitions. *DES* has always been an invaluable resource but has become more so since the inception of NPPG5, allowing the researcher to keep track of developer-funded excavations carried out by the numerous commercial archaeological units now active in Scotland. Since some of the most important excavations of the late 1970s and early 1980s have yet to be fully published (e.g. Tulloch Field, Enochdhu: 27582/NO06SE20), it serves as the primary source of information for some sites. Notable omissions in *DES* have included reports on much of the work carried out by T.N.Dixon at Loch Tay, Oakbank crannog, (25024/NN74SW16: see 4.4.1.3). Generally, however, *DES* is a publication that serves its function extremely well. *DES* was used as a starting point for tracing, where possible, further information

on unpublished sites and finds. Published syntheses and review articles were used to identify published pollen analyses relating to the study area.

1.5.3.11. The Impact of NPPG 5 and PAN 42

The implementation of National Planning Policy Guideline 5 (NPPG5: 1994) and Planning Advice Note No 42 (PAN 42 also 1994), has had a huge impact on Scottish archaeology in general, as can be observed from a review of issues of *Discovery and Excavation in Scotland* for the last eight years. It has resulted in the excavation of some extremely important later prehistoric sites in eastern Scotland, such as Brechin West, Angus (Baker 1999; Baker and Moloney 1998; Cameron 1999a; c) and Forest Road, Kintore, Aberdeenshire (Cook 2001). Many of the staff within such contractual units as AOC (Scotland) Ltd. and CFA Archaeology Ltd. are undertaking their own archaeological (often doctoral) research and maintain an active involvement in academic circles. This has undoubtedly had a positive effect on the quality of survey and excavation.

1.6. Conclusion

To conclude, it seems clear that the structure of the accumulated evidence for later prehistoric settlement in Perthshire and Stirlingshire can be best understood through an appreciation of the historical context of research. There is a tradition of amateur antiquarian and archaeological interest in the area stretching back at least as far as the eighteenth century, with the work of Christian Maclagan and the key players within the Society of Antiquaries of Scotland ushering in the beginning of scientific excavation and recording. Many of their accounts form a substantial part of the NMRS site records, with published inventories available for less than half of the study area (RCAHMS 1963; 1979; 1990; 1994a; c). Much of the archaeological research carried out in Perthshire and Stirlingshire has concentrated on the Roman remains, with little consideration until recently of the contemporary Iron Age population. Despite the long tradition of antiquarian and amateur interest in the area, there has no major modern synthesis of its later prehistory. Major strides were made by Lesley Macinnes (1983) in her

comparative survey of later prehistoric settlement north and south of the Forth. However much of her work has never been followed up, with simplified generalisations of her models for Angus and north-east Fife being adopted and applied to the whole of eastern Scotland 'north of the Forth'. The most recent overviews of Iron Age Scotland (Armit 1997; Hingley 1992) have necessarily relied on models produced for adjacent counties in providing syntheses of eastern Scotland. What follows, therefore, is the first major synthesis of later prehistory in Perthshire and Stirlingshire, which provides a new archaeological analysis of settlement and society in the period.

Chapter 2 Theory, Data and Method

2.1 Introduction

This chapter sets out a discussion of the author's theoretical position on the dominant trends in settlement and landscape studies in general and Iron Age studies in particular, and provides justification for the approach taken in the thesis. It shows how a combination of new and established approaches to the data are used in the present study to provide new insights into the later prehistoric settlement and society of a previously under-studied area. Following this, the data sources used, their strengths and limitations are discussed. Through this, it becomes clear that, despite inherent problems, the data collected for the first time here can be used as the basis of a new analysis of later prehistoric settlement and society in Stirlingshire and Perthshire. Following this, the research methodology is described, showing how the use of a relational database and geographical information systems can be used to help develop new insights.

2.2 Theory

2.2.1 Settlement Patterns

The concept of settlement patterns is one that has a long history within Iron Age studies. The underlying principle is that through analysis of the relationships between settlement sites and variables ranging from environmental features such as river-courses to other archaeological features, the social structure and the society can be understood. In the past an over-reliance on environmental variables - a product of the processualist approaches of the 1970s and early 1980s - has dogged this.

Traditionally, settlement patterns are investigated through the production of distribution maps, with each 'site' being marked by a dot or other shape. A settlement site with a sequence of occupation, reoccupation and abandonment spanning potentially hundreds of years is thus reduced to a single point on a two-dimensional plane. What is problematic here is that a landscape filled with people, ever-changing foci of activity *and the spaces between them* is analysed as if it were static and unchanging. Such

analyses are also done from a removed reality, rather than from the perspective of a *mobile* individual (Llobera 1996, 613). Put crudely, no-one in the Iron Age hovered over the surface of the earth as they experienced the landscape but it is, in effect, assumed that their society can be understood by doing exactly that. Distribution maps can give the false impression that they represent snapshots of the past. Disused sites do not just disappear from the landscape; they can remain part of it for thousands of years (and can survive in the imagination or memory, even once they have been destroyed: see 2.2.2 below), contributing to later experiences of the landscape.

Another problem is that the occupation of even radiocarbon-dated sites cannot be narrowed down to the extent that contemporaneity can be confirmed. While many sites may have been occupied over a period of decades, if not hundreds of years, Halliday (forthcoming) has suggested that the Butser experiments - showing that a large wooden roundhouse can be maintained successfully for several decades - have misled archaeologists into expectations of longevity for later prehistoric sites in general. On the basis of a lack of multi-phase hearths etc., he suggests that the upland hut-circle 'settlements' of Scotland actually represent the remains of far fewer families than is normally supposed, with families abandoning each house after a period of occupation of five years and building (or re-inhabiting) another house nearby (Halliday forthcoming; cf. Roymans and Gerritsen 2002)

Although Cunliffe's (1971) application of central place theory to the Iron Age hillforts of Southern England through Theissen polygon analysis may seem naïve in retrospect, more recent studies have shown that analysing distributions can still lead to an improved understanding of later prehistoric social organisation (e.g. Ferrell 1997; Jackson 1999). An awareness of the problems in interpretation of distribution maps is a step in the right direction. The next is the investigation of potential solutions. One solution is the application of GIS to the problem, in order to appreciate the landscape in three dimensions[15].

[15] No GIS is truly 3D, however: we still use it through a two-dimensional interface (the PC screen).

Aerial photographs could be geographically referenced and thus included as raster layers in a GIS. Another would be to create polygons (rather than, or probably in addition to, point data) to represent archaeological sites. However, it is important to be realistic; only a small number of sites will ever be excavated, so even for multi-period ones, a truly temporally dynamic model of settlement patterns is an unattainable ideal. Therefore, it is necessary to deal with large chunks of time when investigating settlement patterns on a regional scale, as many later prehistoric settlement *types* (such as the multi-phase, multivallate enclosures in Perthshire) may be long-lived (c.f Halliday forthcoming) and large standard deviations for radiocarbon dates are a problem for much of the first millennium BC. Spatial/temporal models must necessarily, therefore, be coarse-grained. This is not necessarily a disadvantage, since it is through an appreciation of the broad changes in settlement that broad changes in society can be understood.

GIS has been met with suspicion by some archaeologists, who have misconstrued it as being environmentally deterministic. This, as Llobera (1996, 613) has shown is a result of a confusion of the terms *environmental* and *determinism*: "An archaeological study which incorporates environmental information is not condemned to determinism (or *vice versa*). Determinism is the product of our interpretation as reflected through the way we use our information." GIS is simply a 'toolbox' for storing, displaying and manipulating and analysing spatial data (Wheatley and Gillings 2002, 9). It is not inherently environmentally deterministic, although a GIS-based analysis that only takes into account environmental variables may well lead to an environmentally deterministic interpretation of the results. In particular, predictive models of settlement (particularly popular in the USA for predicting Native American site locations for Cultural Resource Management purposes: see for instance, various papers in Westcott and Brandon (2000)) are often charged with over-emphasising environmental variables.

What is needed here, perhaps, is a broader understanding of the term 'environmental', which includes aspects of the landscape beyond topography, soil-type, slope etc. What especially needs to be remembered, however, is that people may have imbued practical

tasks with religious or ritual meaning to the extent that the original practical reasons were lost or forgotten to them (see Hill 1989; 1995). To truly understand sites in context, environmental concerns must be considered as well as all others (or at least as many as there is available evidence for or might be relevant). This is something that phenomenological approaches to landscape seek to address. However, these necessarily concentrate on what may have been, since they are based on the premise that different places are experienced in different ways by different people (Brück 1999). If one concentrates purely on locales that seem significant to oneself, the analysis may only tell one about oneself. Llobera (1996, 614) has pointed out that Tilley's (1994) study lacks a formal methodology in that he makes no attempt to ascertain whether his observations would apply equally to the locales in the landscape that he did not study. While there can be no definitive experience of place (Brück 1999), phenomenological approaches that do not give this issue due consideration, risk coming no nearer to understanding past societies than an environmentally deterministic approach.

A suggestion by Hill (1989) that archaeologists need to defamiliarise the Iron Age in order to understand it better, heralded various applications of post-processual approaches to the data. The late 1980s to mid-1990s thus saw a revolution in understanding of later prehistoric societies. Although these fresh approaches have undoubtedly enabled us to shed light on hitherto neglected evidence throughout Britain and the Continent (e.g. Hill 1995), the temptation in some cases has been to take the leap to universal models before examining the evidence from all individual areas. The instances where this has happened are discussed below.

2.2.2 Phenomenology

When you go, space closes over like water behind you,
Do not look back: there is nothing outside you,
Space is only time visible in a different way,
Places we love we can never leave.

Ivan V Lalic, transl. F.R. Jones 1996 (Astley 2002, 424)

Attempts to appreciate the later prehistoric landscape in all its dimensions also form the basis of the phenomenological approaches that have mushroomed in the past decade. Tilley (1994) was one of the first to apply this to archaeological data, introducing the concept of locales, places within the landscape to which significance and meaning has been attached; in such ways existential space is created. While these might be connected to the immediate past through personal memories (where someone used to go with their grandfather, for instance), there might also be a notion of these places being connected to the ancestors, reinforced by oral tradition and collective memory, even if they do not include earlier artificial monuments. Tilley (1994, 34) has argued that if one 'reads' the landscape *correctly*, one can thus supposedly understand the worldview of the past people who constructed it. Tilley used Heidegger's phenomenological theory of the relationship of 'Being' and 'Being in the world' as a starting point for an detailed study of the meaning of prehistoric (primarily Neolithic) monuments, interpreting them as an attempt to bridge the divide between the objectified world and the self. Existential space can be created through the attachment of meaning to certain foci within the landscape. These can be buildings, objects or local topographical features, which are then used to define the space within which a society or group exists, since "Space can only exist as a set of relations between things and places" (Tilley 1994, 17). Locales are places (natural or artificial) created, named and known through common experiences. From this he shows how controlling access to such places is an act which results from - and reinforces - the power of certain individuals, who dominate the community (ibid., 19 & 27). Every time someone is affected by these restrictions as they interact with their environment, the existing power structure is reinforced. If one 'reads' the landscape correctly, one can thus supposedly understand the worldview of the past people who constructed it (ibid., 34).

While a useful reference point for landscape studies, Tilley's (Tilley 1994) thesis is flawed by being constructed within a culturally specific appreciation of the landscape. The Evenk of Siberia, for instance, understand the world to move when they travel (Grøn and Kuznetsov 2003), rather than themselves, which puts a very different perspective on the idea of moving through the landscape. Phenomenology has become

particularly popular as an archaeological approach in recent years but unfortunately there has been a tendency for those who use it to do so in such a way that it is little more than inspired flights of fancy, inherently deficient in quantifiable data. It has also tended to be associated with romantic visions of a prehistoric past peopled by groups preoccupied with the ritual and religious rather than the mundane. It is true that later prehistoric people were not 'us in roundhouses' but it is important that interpretations of the 'different Iron Age' (Hill and Cumberpatch 1995) do not swing to the other extreme (see also James forthcoming).

However, the important point here is that no site must be viewed in isolation. To come to an understanding of the social structure of the Iron Age societies of the study area, all features within the landscape that may have had meaning for later prehistoric people should be considered. This includes not only sites of the period which may have been contemporaneous but also natural features (hills, valleys, bogs *et cetera*) and, as Hingley (1996) and Bradley (1993; 1998b) have argued, monuments from earlier prehistory which may have been visible during the Iron Age (stone circles, standing stones and barrows). While this is all very well in theory, it is a moot point whether it can be applied successfully in practice. A session at the Theoretical Archaeology Group conference (TAG) in 2001 discussing how phenomenology and palaeoecology might be reconciled[16] seemed to highlight the rift, although Chapman and Gearey's (2000) work and Richard Tipping's (2001; Tipping *et al.* 2004) at Pict's Knowe, Dumfries and Galloway suggests that there are ways forward

It is difficult to see how pollen analyses, which cannot by their very nature, depict area successfully, can be incorporated into a detailed phenomenological study. While landscape features such as hills may be largely morphologically unchanged since the Iron Age, other features such as shorelines, forests and river courses may have changed dramatically. It has, for instance, recently been contended that sea level in the Forth Valley was up to 13.4m higher in the later prehistoric period than it is now (Smith *et al.* 2000: see 3.2 for discussion); this would obviously have had a dramatic effect on how

later prehistoric people experienced the landscape, an idea which is explored further in Chapter 5. Although aerial photography can identify old river courses, dating these is another matter. There is no hope at present of identifying the exact position of other landscape features, such as trees (or indeed forests: see Chapter 3), which may have also been imbued with significance. Trees may have been associated with ritual, the gods or mythical creatures or been used as meeting points or landmarks; the possibilities are, indeed, endless. One landscape feature type, the remains of monuments from earlier prehistory which may be visible now and may have had a profound effect on how later prehistoric peoples experienced the landscape, whether they saw them as, to quote Hingley, "...natural, supernatural, ancestral or a mixture of all three." (Hingley 1999, 235).

2.2.3 Re-use of Earlier Monuments

This popular line of enquiry, initiated by Bradley (1993; 1998b) in his studies of Neolithic and Bronze Age Britain, is the hypothesis that prehistoric peoples had a sense of - and an affinity with - the past, and interacted with the monuments erected by their ancestors, *or those they perceived to be their ancestors*. This is in itself an entirely reasonable premise. It would, in fact, be rather strange if communities without written records did not have a strong tradition of oral history, which might involve not only reciting lineages but also passing on stories through generations. This might inevitably involve exaggerations, omissions and distortions, just as a written history invariably does.

However, it is argued here, following Whitley (2002) that the 'ancestral' option has been over-emphasised at the expense of other possibilities. Hingley (1999), following Bradley , has recently argued for a sense of the past in the Iron Age, too, as manifested in the reuse of Neolithic and Bronze Age monuments. The juxtaposition of Bronze Age and Iron Age cemeteries is therefore potentially highly significant. However, there is an implicit and unsubstantiated assumption in some of these studies: that later prehistoric

[16] The Session was organised by H P Chapman and B R Gearey and was entitled "Palaeoecology and

people had a linear view of the past. As Adam (1994, 503) has shown "..the way we perceive and conceptualize that experience varies with cultures, historical periods and contexts, with members of societies and with a person's age, gender, and position in the social structure. The meanings and values attributed to time, in other words, are fundamentally context-dependent." Activity in the later prehistoric period on earlier sites need not provide confirmation that people saw the monuments as being part of *their* past. As Whitley (2002, 123) has pointed out, in more modern times, prehistoric monuments have been associated by local inhabitants with the 'other'. In the study area, this is reflected in the site names, which refer to a variety of mythical creatures[17] and with more recent occurrences, such as the execution of witches[18]. MacRitchie (1917) even suggested that the souterrains of Southern Pictland, traditionally known as *eirde hooses* (earth houses) might be the origin of local myths about the 'little people', since they were understood to be dwellings despite the roofs being too low to allow a grown man to stand upright in them. The researcher should be open to a consideration of various possible motivations behind the reuse of old sites or burial grounds, only one of which is the veneration (and perhaps worship) of the ancestors. If researchers do not, they are simply projecting an attractive model into the past, cherry-picking that which fits it and rejecting without explanation that which does not.

2.2.4 Cosmology

"...the men who are in possession of the fewest facts are those who indulge in the greatest amount of theory."

(Maclagan 1881, 1)

There has been a tendency in later prehistoric archaeology, since the beginnings of post-processualism, for some archaeologists to indulge in a magpie approach to the archaeological evidence and thus apply sweeping generalisations to the record. This has

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Phenomenology – Integrating 'Scientific' and 'Theoretical' Approaches to Landscape Interpretation".

[17] There are nine instances in the study area of site names which include the word "fairy", including 7 "Fairy Knowes".

[18] There are ten site names in the study area that refer to witches. Most are "Witch Knowe"; they include three standing stones, one Roman watch tower, one cairn, one building, one cave ("Witches' Hole", in the side of Castle Law Abernethy, also the site of a hillfort), one mound, one natural stone feature, one barrow

been particularly evident in the attempts of various authors to demonstrate a shared roundhouse cosmology across the whole of later prehistory throughout the British Isles (Giles and Parker Pearson 1999; Oswald 1997; Parker Pearson 1996; 1999; Parker Pearson and Sharples 1999, 350-353), based in particular on observed patterns at Dunston Park, Berkshire (Fitzpatrick 1994) and Cladh Hallan, South Uist (Marshall *et al.* 1999). This has been recently convincingly challenged by Pope (2003, 48-50 & 175-177; forthcoming), who has shown that the excavated evidence from northern and central Britain indicates wide regional variation. Her dataset of 800 circular structures indicates a general spread in roundhouse orientation, with 76% of doorways orientated between north-east and south (Pope 2003, 176), indicating that the correlation with the sunrise has been overstated. Ralston (1999) has noted that Parker Pearson's (1999) hypothesis fits neither the evidence from the Southern Hebrides nor the central Scottish Borders (two areas picked by Ralston at random to test the model). In particular, the variety in orientation of roundhouse entrances reflects the influence of practical concerns and not solely astronomical alignments (Pope 2003; forthcoming). In addition, the model of division of space within the roundhouse suggested by Fitzpatrick (1994) and Parker Pearson (1999) cannot be generally applied. It is overly reliant on the unlikely principle that artefacts in roundhouses have been left and preserved where they were used and dropped (Binford's (1981) Pompeii Premise) and the idea that a universal model is actually there to be discovered (Pope 2003, 50).

2.2.5 Symbolism of Enclosure and Defences

The late 1980s saw a revolution in understanding of the significance of hillfort defences, with the realisation that these might not always have been designed to protect inhabitants from a marauding enemy. Bowden and McOmish (1987, 760), in a seminal paper, attempted to show how ritual is visible in the supposedly defensive hillforts of the Iron Age, arguing that the huge labour invested in such sites and the massive proportions of the defences indicate considerations additional to fortification. Taking Maiden Castle, Dorset as an example they argue that multivallation increased the degree of social

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and just one with a primary classification of "execution site". There is also a "Wizard's Stone" which is

isolation of the hillfort and enhanced the prestige of the site and its inhabitants. Thus, elaborate 'defences' of the Iron Age act as boundaries or barriers. Moving to examples from eastern Scotland, Bowden and McOmish (1987, 77-78) also suggest that the replacement of wood with stone in defences reflects a desire for permanency and the reinforcement of power and social isolation by a detached élite. They also noticed that there is apparently no direct relationship between size of enclosure and strength of defences (ibid., 77). This has particular resonance in the cropmark record of eastern Scotland, where there are many ditched enclosures in which the extent of the vallation appears entirely disproportionate to the area enclosed. There is obviously potential to interpret the hillforts and lowland defended enclosures of the study area with reference to these considerations of security, status and power. There is a danger here, however, that one may assume the existence of an élite within this area without first demonstrating that a social hierarchy was in existence throughout the later prehistoric period. To establish the existence of a social hierarchy requires the consideration of the complete suite of evidence (Hill 1996, 102), especially considering the possibility that for at least some of the period, open settlement was the norm.

2.2.6 Structured Deposition

The past decade or so has also seen a revolution in understanding of deposition, largely as a result of an application of Schiffer's (1987) theory of cultural transforms to the later prehistoric evidence. Hill (1995), in particular, has shown that, in Wessex at least, a contextual analysis of the evidence from pits indicates that the fills are highly structured. They represent not the casual discard of domestic refuse but the highly structured deposition of the remains of single events, such as ritual feasts. Hill (ibid.) has argued that all excavated material is special and that attention must be paid to the complete suite of evidence, from animal bone fragments, coarse stone tools or tiny glass beads to coins, weaponry and elaborate jewellery. In his own words, "The finds from Later Prehistoric settlements are just as structured as those from graves or hoards" (ibid., 125), the traditional 'ritual' deposits. Most importantly, he argues that archaeologists should

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supposedly the site of a late 16th century execution (Watson 1995, 141).

expect to find nothing when excavating Later Prehistoric settlements and be pleasantly surprised when they do (ibid., 125). This has particular resonance for the later prehistory of eastern Scotland, which is usually seen as impoverished in terms of material culture.

In a similar vein, Hingley also examined the contexts of quernstones in Scotland (Hingley 1992) and of the so-called currency bars of southern England (Hingley 1990b). Hingley sees quernstones as a symbol of fertility and their deposition in liminal contexts as significant. He developed this approach in the Aldclune report (Hingley *et al.* 1997) and, like Hill (1995) in his analysis of Iron Age pits in Wessex, examined the contexts of all the artefacts, not just the quernstones. This approach is to be favoured since it allows us to see beyond modern notions of cultural value. Objects now deemed prosaic may in the past have been imbued with huge significance and symbolism. There is a suggestion that the querns formed part of the foundation deposit at Aldclune; the same could not be said for the metalwork on the site (although the latter did provide some evidence for a left-right division of space (see 2.2.4 above)).

These studies highlight the necessity of a contextual analysis of all recovered remains, from plant macrofossils and bones (whether human or animal) to material culture, whether special or prosaic, sacred or profane. It is apparent that such an approach can shed much light on the beliefs and practices of later prehistoric people. In applying these techniques it must be borne in mind that post-depositional factors will have served to distort the evidence that has been deposited. One is a lot less likely to find querns, for instance, in ramparts or walls on cropmark sites; these may instead be recovered as stray or surface finds. Aside from Hingley's review, there has been no systematic study of artefact deposition on settlement sites, although Hunter's success in identifying trends in the deposition of hoards (Hunter 1997) and Roman finds on native sites (Hunter 2001a) suggests that there is much potential here.

Attractive though the idea of structured deposition is, it should be borne in mind that most of what was produced by later prehistoric societies was disposed of in ways which

are archaeologically invisible (Hill 1995). Rathje (Rathje and Murphy 2001, 33) has identified four basic methods of garbage[19] disposal: 1. Dumping it; 2. Burning it 3. Recycling it; 4. Source Reduction. He argues that a civilization "of any complexity" will use a combination of all four (*ibid.*). All sorts of ways in which evidence might be erased from the archaeological record through its disposal can be imagined, from bonfires to feeding of kitchen waste to pigs to spreading midden material on the fields. In an area where no later prehistoric middens have been located, all of these need to be considered in order to understand the formation of archaeological deposits. It is necessary, of course, to also be wary of the interpretation of 'occupation deposits' in older reports on rural excavations (Matthews 1993). Matthews (1993, 61) has asserted that, "Use of the term [occupation deposit] implies a greater knowledge about the formation processes than can be claimed with present knowledge and it is recommended that a better term is found". However, this is just using semantics to dodge the issue. The formation processes that have influenced any context must be judged on a case-by-case basis and defined as such; no single term will suffice, since these deposits may represent anything from a conflagration event to squatting to a post-depositional closure event. Soil micromorphology has the potential to shed light on these issues but has only recently become anything like routine. The study of structured deposition in the Iron Age must not become restricted to consideration of single classes of artefacts and should include plant macrofossils etc. too.

As will become evident in the following chapters, a theoretical approach that takes into account the developments discussed above can advance understanding of later prehistoric social organization in the Study Area. In reassessing the later prehistoric settlement of Northumbria, Ferrell (1992) noted that *attitudes* to the data then available were posing a serious hindrance to research; the same could be here. Although there was a *floruit* of activity on later prehistoric settlement in south-east Scotland in the late 1970s and early 1980s, this was not sustained and purely research-driven investigations

[19] Rathje defines "garbage" (as opposed to trash, refuse or rubbish) as "wet" discard items i.e. food remains, yard waste and offal. However, he admits that he himself often uses the term "garbage" to refer to "the totality of human discards". Garbage is apparently what was historically fed to pigs (Rathje and Murphy 2001, 9).

in the area have been few and far between. There is a prevailing view that more excavation is needed before anything can be said about later prehistoric settlement and society, as well as pessimism over the quantity and quality of excavated data. In fact, as will become evident in the following chapters, a reassessment of the available data shows that there is a large dataset and certainly enough evidence to enable the identification of broad regional, chronological and social trends and suggest a regional research agenda for the future. Without such an agenda, it is unlikely that the potential of any future excavations will be realised.

2.3 Data

This study's new assessment of later prehistoric settlement and society has been influenced by Ferrell's (1992, 15-17) contention that there is no use in delaying analysis until 'better data' are available, as this perpetuates the tendency to collect further data in a theoretical vacuum without an appropriate research agenda. The first step towards this is collating the data currently available, something that has never previously been attempted for the Study Area. In the present study, the starting point was a literature search of the relevant national, regional and local archaeological journals. Thus, a bibliography was constructed which included all published excavation reports, 'stray'/surface finds and field surveys.

The NMRS does not consistently classify by period and in the case of prehistoric sites, not at all. The huge variation in detail provided in the report sections of site records in CANMORE necessitated a complete review of the aerial photographs and other material held on the open shelves in the NMRS; few of these plans, records or photographs have been published. The photographs and plans are filed by Ordnance Survey 1: 10 000 mapsheet number and *all* those from within the study area were examined in order to identify sites likely to date to the later prehistoric period. All sites are marked on Ordnance Survey 1: 10 000 sheets, also on the open shelves. In the case of cropmark sites rough transcriptions appear on the maps, although the degree of accuracy in these is extremely variable, so they could not be used as the basis of analysis. The process of

identifying sites of potential later prehistoric date for the present study is described below.

The tradition of archaeological aerial survey and reconnaissance in Perthshire has been discussed in 1.5.3.8. This is reflected in the huge numbers of oblique aerial photographs of sites, both extant and cropmark, which have accumulated in the NMRS. RCAHMS is responsible for much of the aerial photography and field survey carried out in the region (e.g. RCAHMS 1994a), and for providing data pertaining to ancient monuments to the Ordnance Survey. The body of work is impressive in its scope and its quality, but there are problems with the way in which the data has been classified. The NMRS holds information on every known archaeological site in Scotland, although the data is of varying quality. Much of the later prehistoric settlement record of eastern Scotland is made up of the results of aerial reconnaissance by RCAHMS and CUCAP. NMRS also holds aerial photographs of sites in this area taken by W.S.Hanson (University of Glasgow) and John Dewar.

An assessment of the potential of the area for enhancing knowledge of the later prehistory of Eastern Scotland was made by a complete review and analysis of the original aerial photographs, transcriptions of these where they existed, and in the case of upstanding monuments, plans. The criteria for identifying later prehistoric sites from largely uninterpreted aerial photographs are discussed in 2.4.2 below. In 2000, a download from CANMORE, which included *all* archaeological and historical sites (and some small finds) in Stirlingshire, Perthshire and Angus, was obtained from the NMRS in Access 97 database format. It contained 15955 records. The first step undertaken was to identify sites that could clearly be dated to the early prehistoric or historic period. After an assessment had been made of which sites could reasonably be assumed to be Iron Age, the relevant records were extracted from the main table and saved as a separate table. This contained 1783 records, i.e. 11.18% of the total records, a substantial proportion. Once it was decided that the Angus data would not be used in the

main analysis, these records were extracted, leaving 1231 records for the main study, 1139 in Perthshire and 92 in Stirlingshire.[20]

Digital Ordnance Survey maps were downloaded from Digimap under the terms of the University of Durham site licence. The digital elevation model (DEM) used here was constructed by the author using Land Form Panorama contour data, which is at 1:50 000 (Landranger) scale, with a 10m vertical interval and 3m accuracy. Shape files of National and County Boundaries were downloaded from UK-Borders, also hosted by Edina (University of Edinburgh).

As stray finds are not consistently included in CANMORE, a search was also made in the existing corpuses of later prehistoric metal and glass work, namely MacGregor's (1976) of Iron Age decorative metalwork, Coles' (1960) of Late Bronze Age metalwork, Fowler's (1960) of penannular brooches, Hull and Hawkes' (1987) of fibulae, Guido's (1978) of glass beads and Kilbride-Jones' (1938) of glass bangles.

2.3.1 Data Quality

The main source of morphological data was the NMRS reports, which are derived primarily from the old Ordnance Survey record cards, data published in the RCAHMS Inventories and/or lists and relevant *DES* reports. Any other data required was, where possible, taken from published plans and other published material. Where accounts differ in the measurements given, the most recent was used. There is a fairly high error margin for written survey/field observation data compared to excavated data, but it was felt that rough measurements would still prove useful in identifying trends in, for instance, enclosure size. In particular, there is a suspicion that some of the external and internal diameters quoted for roundhouses are over-estimates or underestimates respectively, since they may include tumble or spread. This will have had a knock-on effect on the accuracy of figures for wall thickness and percentage wall base (PWB-see 5.2.1.1.2). The distorting effect of inaccurate survey data was minimized by the choice

[20] See Appendix Six for data.

of case study areas. The case study areas were chosen largely, as discussed in section 1.1, because published survey data/inventories were available for them. In particular, the areas of Perthshire chosen fell within those covered by RCAHMS volumes and therefore had recently-acquired survey data. Similarly, the analysis of site types provided in Chapter Four is based entirely on excavated evidence, ensuring that the data and therefore analysis is as reliable and accurate as possible. The approach adopted here allows a new archaeological analysis of the study area to be undertaken. An awareness of the limitations of, and problems with, the data, should, as is shown here, inform rather than prohibit such a new review and analysis.

Many of the records are in imperial measurement; such measurements were converted and then rounded to the nearest metre. Since the imperial measurements are in themselves likely to have been rounded to the nearest foot already, this introduces a likelihood of imprecision, although this was deemed acceptable in the terms of the study. A high proportion of the enclosures have never been planned and only written observations with basic dimensions were available. Where multiple descriptions were available, the most recent was used to obtain such data. Where no description was available, measurements were taken from any existing plan. Unfortunately, there were some sites for which no useful data were available, usually because they were known only from vague antiquarian accounts for which pinpointing an exact location was impossible. RCAHMS has gathered its grid reference data from a variety of sources and their degree of precision is not, therefore, consistent. The varying levels of accuracy of the grid references available has, of course, a real effect on what one can actually do with the locational data, particularly when examining distribution patterns. RCAHMS has therefore graded its XY co-ordinates for accuracy on a scale within which "2" represents accuracy to 1km, "3" to 100m and "4" to 10m. Where appropriate, only sites with an accuracy of "4" were used in the analysis e.g. when considering inter-visibility (see 5.3.1.3).

The effect of variable landuse on the preservation of sites is discussed elsewhere and the structure of the data in the present study is covered in section 4.2. Particularly pertinent to the current study (and the Stirlingshire case study in particular) are the Improvements

of the eighteenth century (Cadell 1929). In the Forth Valley, this involved the reclamation of land covered in peat bog and thus the discovery of timber trackways, apparent ritual deposits and Bronze Age wooden wheels. However, it is unclear how much of this area was still under the sea in the later prehistoric period (see Chapter 3). As will be discussed later, this area of the Forth Valley is entirely devoid of later prehistoric settlement sites, although the reasons behind this are unclear.

In the lowland area of south-west of Scotland, Cowley (2002) has shown that the aerial reconnaissance survey biases of RCAHMS have had a profound effect on the known distribution of archaeological sites of every period. This is a point that needs to be seriously considered in the context of the current study, especially since major Roman sites in the area (mainly sites along the Antonine Wall and the Gask Ridge) have acted as 'honey-pots' for aerial photographers in the past. Cowley (2002) has also shown that pastureland can produce parchmarks, so straying from this might have valuable rewards. There is a very strong correlation between the RCAHMS flight paths (1993-2001), major roads and later prehistoric settlement, something which was noted by Cowley (2002) in Dumfries and Galloway. A review of available maps of pre-1993 sorties (RCAHMS 1993, 4; 1994b, 4; 1996, 2) indicates that the 1993-2001 flight paths obtained from RCAHMS as shapefiles are representative of the general practice of the RCAHMS survey team since 1990 at least. It seems likely that aerial surveyors have been using roads for navigational purposes and have not strayed far from where they can be seen, although there may also be some auto-correlation with good quality, low-lying arable land. The effect of the RCAHMS survey programme on the patterns of settlement is discussed in Chapters Five to Seven.

An intractable problem with the stray finds was the quality of the find-spot data; most of the finds were made in the nineteenth century and the information recorded, often no more than the name of a farm, would be insufficient to relocate the find-spot precisely. Some finds surviving in museum collections are unprovenanced, though thought to be from the study area. Another problem is chronology; as Hunter (1997, 109-110) has explained, lack of independent dating has led to an over-reliance on tying chronology to Roman imports. Thus native metalwork tends to be dated to the Roman period, with the

earliest datable material then coming from the south, where the Roman presence was first felt.

2.4 Method

2.4.1 Data Selection

This study's analysis takes into account all excavated and published sites that have yielded any evidence of activity in the later prehistoric period (defined as LBA to post-Roman Iron Age), from the old (pre-1974) counties of Perthshire and Stirlingshire (see Fig. 1-1). The cut-off date for the literature search was 2000 but value judgements were made for material published after this date. For example, Shanzie (183018/NO25SE55) was included – despite being published in 2002 - because it was the only souterrain since Newmill, Bankfoot (27007/NO03SE13.1) to have been excavated totally, to modern standards, and the only one to have had a systematic environmental sampling strategy. New papers on ongoing excavations, such as those at Loch Tay, Oakbank (25024/NN74SW16) and East Coldoch (46081/NS79NW34), were also included.

A thorough and comprehensive survey was made of the relevant national and regional periodicals (see Appendix One for a list). All volumes were consulted; no fixed start date was imposed, as relatively little excavation of later prehistoric sites has taken place in the study area and many important sites were investigated prior to the development of modern field techniques. In addition, the area does not seem to have suffered as much as others from the antiquarian concentration on small finds at the expense of structural remains, so in some cases quite detailed information is available from early excavations.

Information gleaned from *Discovery and Excavation in Scotland* (*DES*) and any other relevant publications was used, relying largely but not exclusively on bibliographic information gleaned from CANMORE. As should be clear from the above discussion, in order to provide the most comprehensive assessment of the later prehistoric remains of the study area, it was necessary to also locate unpublished sources of data. Using *DES* and CANMORE as a guide, any archive material available in the NMRS was consulted. Where necessary (and possible), contact was also made with the researchers. Without

exception, all were very willing to discuss their work in detail and where appropriate provide copies of Data Structure Reports and draft reports prior to publication. Thus, as much detailed relevant information as possible was collected. *All* known excavations were detailed in the database; thus, the potential of the data could be maximised. This meant the inclusion of all field investigations, from fieldwalking to trial trenching and at best, total excavation.

2.4.2 Justification for Defining Unexcavated Sites as Iron Age

Obviously, there is a problem in dealing with large numbers of un-excavated sites in a study area where relatively few excavated parallels are known. A review and analysis of the evidence, however, indicated morphological similarities with excavated sites both outwith the study area, especially the rest of eastern Scotland (and particularly Angus and East Lothian). Although this is at best, a coarse-grained and at worst, a crude method of identifying later prehistoric sites, it was felt that a reasonable level of confidence could be asserted. It is acknowledged that some of the sites identified here as later prehistoric may, in fact, belong to an earlier or later period. For instance, an open settlement recently excavated at Chapelfield, Cowie, presumed by the excavators to be Iron Age, turned out to be Neolithic (Atkinson 2002b). This site is so far unique amongst the excavated sites of Scotland but serves as a cautionary tale.

The inclusion of apparent cropmark square barrow cemeteries is perhaps controversial, given that the excavated evidence provides only one example that might be dated to before AD400 (i.e. Boysack Mills in Angus). However, the sites do bear comparison with the square barrows of England and the Continent and the recent discovery of an Iron Age cart/chariot burial, radiocarbon dated to some time in the sixth to fourth centuries BC, at Newbridge (Carter and Hunter 2003), suggests that Continental burial practices were influencing those of eastern Scotland well before the Early Historic period. It is therefore likely that some of the cropmark square barrows are Iron Age, and to exclude from the present study would be misleading.

Moving now to enclosures, the excavated evidence provides strong evidence for a later prehistoric date for the oval or circular palisades (see Chapter 4), which are particularly common within the study area. For this reason, morphologically similar enclosures, visible as very narrow curvilinear cropmarks (sometimes with evidence for internal features or structures) were included in the present study. There are also numerous ditched enclosures visible as cropmarks in the study area. Again the excavated evidence gives no reason to doubt that many if not all of these are later prehistoric in date. Most are multi-vallate and/or multi-phased and some show apparent remains of circular buildings in the interiors again giving support to the idea that they might be later prehistoric.

All 'hut-circle' sites were assumed to be later prehistoric, since all the excavated evidence from within the study area indicates Late Bronze and/or Iron Age occupation of such sites (see 4.5.1). Of the upstanding enclosures, traditionally known as hillforts, there is evidence from some, in the form of surface finds, to strongly support their chronological similarity to those excavated and known to be later prehistoric. For the most part, however, morphological similarity must be relied upon, with the so-called nuclear forts, such as Dundurn (24873/NN72SW3: Alcock *et al.* 1989) more likely to represent Early Historic constructions .

2.4.3 The Database

The database was constructed using Microsoft Access 97[21] and was based on a download from the NMRS database, CANMORE, which included data on *all* archaeological sites of *all* periods, in the counties of Stirlingshire, Perthshire and Angus. Although Angus was initially to have been included in the study, it became apparent that the three counties together provided data on more sites than could be reasonably included in a study of this scale. As a result, Angus was excluded from the main study area, although as will become apparent, it provided valuable comparative material and excavated parallels. Following the identification of definite and probable later

[21] Later converted to Access 2000.

prehistoric sites (excavated or not), the basic NMRS data on these was extracted from the main table and used as the basis for a new table, named 'Iron Age Sites' (using the Access 'Make Table Query' function). This, along with all the new tables, retained the 'NUMLINK'[22] unique to each site; this then allowed queries across multiple tables. Another table, named IA Sites Details, was constructed to record basic information on the sites, including Form; Excavation; Publication; Small Finds (Table 6-4 in Appendix Six). A further table, named 'Exc(avated) Enviro(mental)' organised detailed information on Sampling strategy; animal bone evidence; plant macrofossil evidence noted in the excavation reports (Table 6-5 in Appendix Six), in order to avoid reinforcement of unsubstantiated preconceptions. In several cases, there was more than one roundhouse excavated at each site, so data on these was kept in separate tables, named 'Excavated Stone Roundhouses' (Table 6-8 in Appendix Six) and 'Excavated Timber Roundhouses' (Table 6-6 in Appendix Six); for definitions see Chapter 4. The fields in these recorded: construction; entrance orientation; diameters; complexity (for definition see Chapter 4); hearth. The Enclosure Morphology fields are based on the data categories used by EH in its MORPH classificatory system, although they have been adjusted and added to slightly. Morphological data on enclosures was held in separate tables. Although the original plan was to enter the data for every site within the study area, it became clear that this was an over-ambitious goal, which would result in too large a proportion of the research period being devoted to data collection and entry. Instead, the detailed morphological information on enclosures was collected for smaller 'case study' areas (see below). An extract from the database used in the study is provided on a CD-ROM at the back of the thesis (Appendix Six).

2.4.4 Rectification and Transcription of Aerial Photographs

Following the identification of cropmark sites likely to be later prehistoric, a note was taken of those sites for which rectified transcriptions were available and where they were not, an assessment made as to whether they had enough control points for a successful

[22] This is an integer and is different from the NMRS Number, which is made up of an OS 1:10 000 mapsheet "number" and a site number.

rectification to be made. Several aerial photographs, which had not previously been subject to such processing by RCAHMS, were rectified and transcribed. In this way, accurate measurements and morphological description could be obtained. It was not considered worthwhile to rectify and transcribe further images of more ambiguous cropmarks or open settlements. Any aerial photograph will provide only a partial representation of the archaeological remains, and in the case of unenclosed settlements, the photograph often indicates no more than presence of such a site. Counting the roundhouses in an aerial photograph of either an open or enclosed settlement does not seem to give a true indication of either the actual number of roundhouses or the size of the settlement. One must remember that observing a cropmark complex from the air involves looking at a composite plan, which may have built up over decades, if not centuries. Also, variations in soil type or underlying geology may affect the visibility of roundhouse remains across the site. Rectifying an aerial photograph of an open settlement cannot, therefore, provide any detail sufficiently useful for the present study to warrant rectification of photographs of these. Laser copies of the photographs in question were bought from the NMRS and these were then scanned for processing. Photographs were rectified using *Aerial 5.1* and then imported into *CorelDraw 7* for transcription.

2.4.5 Data Analysis

Analysis of the newly collated data was carried out in the Access database, using Queries. Query data was then imported into Excel 97 for numerical and graphical analysis and presentation. The primary aim was to analyse and evaluate general trends in the data. In the case of the excavated data, a subsidiary aim was to test the assumptions made by previous researchers regarding the usability of the data. For instance, the available animal bone reports were used as the basis of a new analysis aimed at identifying recurrent species across the Study Area (see Chapter 3). For consistency, all radiocarbon dates used in this study were recalibrated by the author using OxCal v3.5 (Bronk Ramsey 2000).

The area of circular buildings or enclosures was calculated using the following equation: $A = \pi r^2$ where r is the radius. Oval enclosure areas were therefore calculated using MacKie's (1976) formula (A = 0.75(l X b)), which is based on the assumption that an oval enclosure will be three quarters of the area of a rectangle drawn around it and calculated using the length and breadth. This had the advantage that it could be used as a calculated field in a database query.

2.4.6 Geographical Information Systems

The approach adopted for this study made use of a Geographical Information System for viewing and overlaying the various spatial datasets described in 2.3. Some avenues, particularly those involving the *ArcView* add-in, *3D Spatial Analyst*, had to go unexplored owing to time constraints. The risk of spending a large proportion of the research period in learning GIS techniques and testing the suitability of the technology in analyzing settlement patterns was that the resulting piece of work would focus on testing the technology rather than providing a comprehensive synthesis of later prehistoric settlement and society in the area. This tension is observable in many archaeological research projects that have used GIS over the past ten years (e.g. Werner 2002; Woodman 1997), but will hopefully become less apparent as GIS becomes more widely used in academic research.

Although the analysis of the Access database represents the core of this study, it was recognized that such an approach would best be complemented by an appreciation of the site in the landscape for the reasons discussed in 2.2.1 above. Therefore, the decision was made to construct a GIS mainly for visualization and overlaying analysis. The strength of this approach was that the Access 97 database could be linked directly to the GIS using ArcView's 'SQL Connect' function; there was no need to design and construct a new ArcView database. X and Y co-ordinates were in the original NMRS download. This enabled the generation of distribution maps, using any of the data contained within the database. Data from the database could also easily be superimposed for instance, on GPS flight-path data from RCAHMS aerial surveys, which had been obtained from the NMRS in line format. GIS also enabled the display

of these crop-mark transcriptions obtained as line-and-point data from the NMRS. Thus, the spatial relationships between geo-referenced data-sets could be explored.

2.5 Conclusion

In conclusion, it is clear from the discussion above that a combination of new and established theoretical approaches to later prehistoric archaeology provides a useful basis for this new study of later prehistoric settlement and society in the Study Area. This is the first time that this data has been considered at this scale in the study area. While it requires much evaluation before use, and a sound awareness of its limitations, it is still a rich resource that can provide fresh insights into later prehistoric settlement and society. The use of a relational database and GIS tools to analyse the collated data provides a powerful way of identifying patterns within it. Together with the theoretical approach discussed above, this framework provides a robust basis for this new analysis, which provides for the first time a synthesis of the Late Bronze and Iron Age material from Perthshire and Stirlingshire.

Chapter 3 Geological, Environmental and Economic Context

3.1 Introduction

This chapter sets out to review the environmental context of the later prehistoric settlement of the study area. In particular, periods of later prehistoric environmental change need to be identified, whether they were triggered by outside factors or by the inhabitants themselves. It is for this reason that pollen analyses from the study area are discussed, and the periods of major clearance, woodland regeneration and rise in cereal pollen identified. The contrast between upland and lowlands is also a theme that needs to be explored, since it is likely to have an impact on understanding of the changes in later prehistoric settlement patterns and in particular the apparent move from the uplands in the Late Bronze Age or Early Iron Age.

This does not just involve examining the evidence for the environment and economy of these areas in the period *c.* 1000BC to *c.* AD400 in its own right. In order to understand the archaeological remains, it is also important to be aware of how the landscape and environment has evolved subsequently, especially how land-use in the modern period has affected the preservation of sites. There are numerous problems inherent in the interpretation of the environment of past landscapes and these will also be discussed. A comprehensive synthesis of the environmental evidence relating to the later prehistoric period will be made, using evidence from pollen cores and pollen and identifying crucial changes, plant macrofossils and animal bones retrieved from archaeological contexts. Following this, key areas that require further research will be highlighted.

3.2 Geology, Geomorphology and Soils

The study area includes parts of four discrete physiographic regions (Fig. 3-1), as defined by Bown & Shipley (1982, 6) and Walker et al (1982, 3), namely the North-East, North-West and South-West Grampian Highlands and the Central Lowlands, which form part of the Midland Valley of Scotland. The Highland Boundary Fault runs along the northern side of Strathmore from Dunkeld to Alyth and divides the landscape into Dalradian metamorphic rocks and intrusive granite to the North and

eroded Old Red Sandstones, overlain with glacial and alluvial deposits, to the South (Bown and Shipley 1982). The area gives representative samples of both the upland and lowland geology and landforms of Eastern Scotland. Owing to this, the lowlands and highlands are discussed separately below.

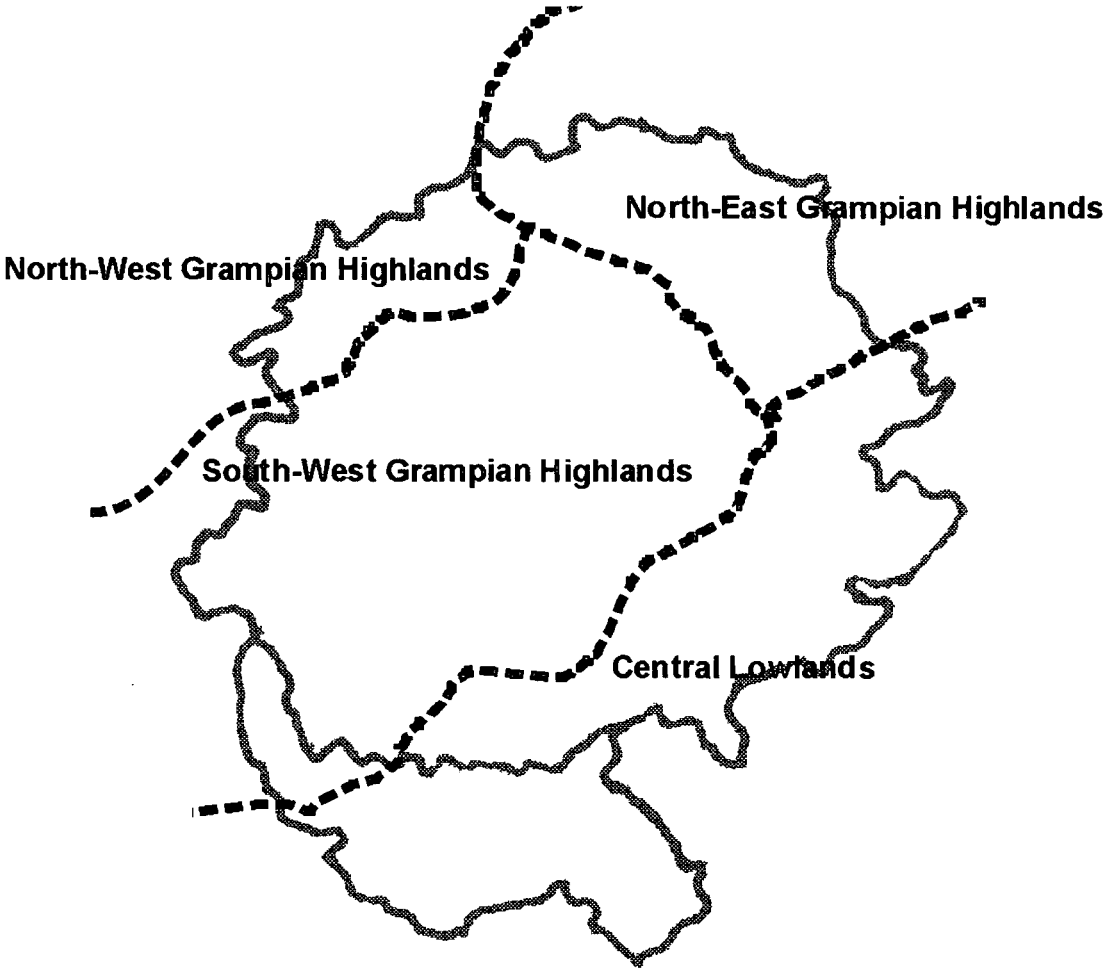

Fig. 3-1 The Physiographic regions of the study area.

The soils of Scotland are relatively young and, as a result, owe much to the underlying geology. For this reason, discussion of the two is inextricable and here, they are treated together. The Soil Survey of Scotland's data for soil type and land use capability was consulted at a scale of 1: 250 000. In using data collected by the Soil Survey of Scotland (Soil Survey of Scotland 1982a; b; c; d; e; f), it needs to be borne in mind that this was collected from the post-Improvement landscape. Climate affects soil, through its effects on various processes (Bown and Shipley 1982, 9), and has changed not only over the course of later prehistory but since then. Geology,

landform and biology also interact with each other to affect soil formation (Bown and Shipley 1982, 9).

3.2.1 Lowlands

The central lowlands are part of a rift valley that runs between parallel faults. Its character has been influenced by differential erosion of the underlying rock types. Whilst igneous rocks form the basis of the Ochil Hills, which act as a boundary between Perthshire and the Fife peninsula, the broad plains like Strathmore are underlain by soft, sedimentary rocks. Strathearn, Strathallan and the Carse [23] of Stirling are all underlain by Lower and Upper Old Red Sandstone sediments. Modification of these by glaciation has contributed to the variation in soils within the region. Most are of relatively fine sandy clay loam or clay (Bown and Shipley 1982, 19). There are occasional outcrops of sandstone, conglomerates and mudstones (Bown and Shipley 1982). Parts of the lowlands, particularly the area between Crieff and Callander in Perthshire, are relatively high since the basal conglomerates have resisted erosion. Even higher ground is represented by the Sidlaw Hills and the Ochil Hills, craggy deposits of volcanic rock (Walker *et al.* 1982, 13-14) in southern Perthshire and Stirlingshire. South of the Forth, the Gargunnock Hills are made up of basaltic lava flows which form terraces and mounds rising up from the valley floor (Walker *et al.* 1982, 15).

The frontal margin of a major ice limit is represented by a swathe of moraine ridges, which spread from the Port of Menteith to Buchlyvie in the Western Forth Valley (Walker *et al.* 1982, 15). Three phases of glaciation have been recognised in the Central Lowlands. The first resulted in glacial till being deposited as hummocky moraines in the upper Forth and Teith Valleys and as a layer on gentle slopes. The second came from the north-east rather than the south-east and resulted in till from Old Red Sandstone being spread across the landscape. The third glaciation phase was represented by a temporary re-advance of Highland ice, followed by the retreat of glaciers along the Tay and Forth valleys. The main consequence of these glaciation episodes was the deposition of large amounts of fluvioglacial material in

the area, forming the hummocky landscape which is evident today (Walker *et al.* 1982, 17).

Post-glacial fluctuations in land and sea level resulted in the estuarine silts and clays that form the Carses of Stirling (see Chapter Five), Gowrie (see Chapter Six) and Earn as well as raised shorelines on the southern bank of the River Forth at Bannockburn, Carbrook and further west along the Forth valley at Arnprior. The carseland extends for 3km north and south of the Forth and peat began to form on it around 6500 years ago. Raised mosses are restricted to the upper Forth Valley (Smith 1993; Walker *et al.* 1982, 17-18). Brown forest soils cover much of the till deposits in the area while peaty podzols are mainly confined mainly to the higher and wetter areas of the Ochil and Gargunnock Hills, where the acidity of the soil excludes the soil fauna that can digest plant matter (R. Tipping pers. comm.). Non-calcareous gleys are present in some areas but do not dominate; the same can be said of peaty gleys, although there is a significant area of these in the Braes of Doune (Walker *et al.* 1982, 20-21).

The Main Postglacial Shoreline, dated to 5800-6850 ^{14}C years BP, was thought to have been the highest Holocene raised shoreline in Scotland (Smith *et al.* 2000, 489). In the Carse of Gowrie, test-pitting at Inchture revealed marine bivalve shells and diatoms compatible with an estuarine environment, 3m below the current ground surface, at the base of a thick deposit of blue marine clay. Coupled with evidence from elsewhere in Strathearn, this would suggest that sea-level in the Perth vicinity rose to *c.* 9m OD, culminating at around 6000BP (Cressey *et al.* 2003). Cressey *et al* (2003) suggest that the carse clays would not have attracted later prehistoric settlement, an idea that will be tested in Chapter 6.

However, work by Smith *et al* (2000) on isostatic land uplift during the Holocene indicates that there was also a later period of high relative sea level (the Blairdrummond Shoreline) in the Forth Valley and elsewhere, *pace* Ellis (2000a, 247 & 254; 2000b; Ellis *et al.* 2002) and Reid (1993, 3). The Forth Valley was nearer the centre of the uplift on Rannoch Moor and thus demonstrated the highest sea-levels

[23] Carse is Scots for an area of estuarine silts and clays. Following Gordon and Sutherland (1993) the term is retained here.

during the period (Smith *et al.* 2000, 492-493), as shown in Fig. 3-2. On the basis of Smith *et al*'s (2000) isobase model, the Blairdrummond Shoreline is not quite as high in the Perth area as in the Stirling area. Using these data within archaeological timescales such as that under consideration here requires caution, as shoreline formation in glacio-isostatically affected areas is understood to be diachronous. Thus, measured altitudes along any shoreline do not represent an instant in time, but rather a period of several hundred years (Fretwell *et al.* 2004, 175; Smith *et al.* 2000, 498). In addition, it has been suggested the sea would have withdrawn earlier from shorelines nearer the area of maximum uplift; the Forth Valley may have seen the most dramatically raised sea-levels but also the earliest retreat.

The Blairdrummond Shoreline is identifiable at 94 points in former estuarine mudflats in the Forth Valley, where distinct breaks of slope occur at the inland margin of the carselands. The Shoreline has been dated to *c.* 2000-4200 ^{14}C years on the basis of radiocarbon dates from conformable peat horizons. This means that during later prehistory and possibly even within the very early years of the first millennium AD, the Shoreline may have been at 11.3-13.4m OD (Fig. 3-2), with a MHWS[24] of 8.3-8.4m. The Blairdrummond Shoreline has also been identified at Wick River (Caithness), the Dornoch Firth (Sutherland/Ross and Cromarty), the Beauly Firth (Inverness-shire), the Ythan Estuary (Aberdeenshire), Montrose (Angus), East Fife, Dunbar (East Lothian), the Cree Estuary (Wigtownshire/Kirkcudbrightshire), Islay (Argyll) and possibly also near Grangemouth (Stirlingshire). The latter site produced evidence of a shoreline at 10.8m OD, which was radiocarbon dated, via shells to c4200 BP. Data from 59 points in East Fife would suggest that the altitude of the Blairdrummond Shoreline there is at 7.9-8.9m OD (5.6-6.6m MHWS) (Smith *et al.* 2000, 497). Together, these data suggest that relative sea levels in Scotland were up to 6m above present HWMOST[25] levels as recently as 2000-4200BP and possibly even later (ibid. , 498). Consequently, it seems possible that during part of the Late Bronze Age and Iron Age, a large area of the Forth and Tay Valleys and Firths would have been unavailable for settlement or even for the activities that would have been possible on

[24] Mean High Water Springs i.e. the highest average tide height.
[25] High Water Mark of Spring Tides, which is currently 2.95m OD in the Firth of Forth and 2.3m OD in East Fife.

carseland. On a more positive note, a larger area for fishing and water transport would have been available. Beaches would have been closer to some settlements than has previously been assumed, providing more convenient access to seaweed and other marine resources.

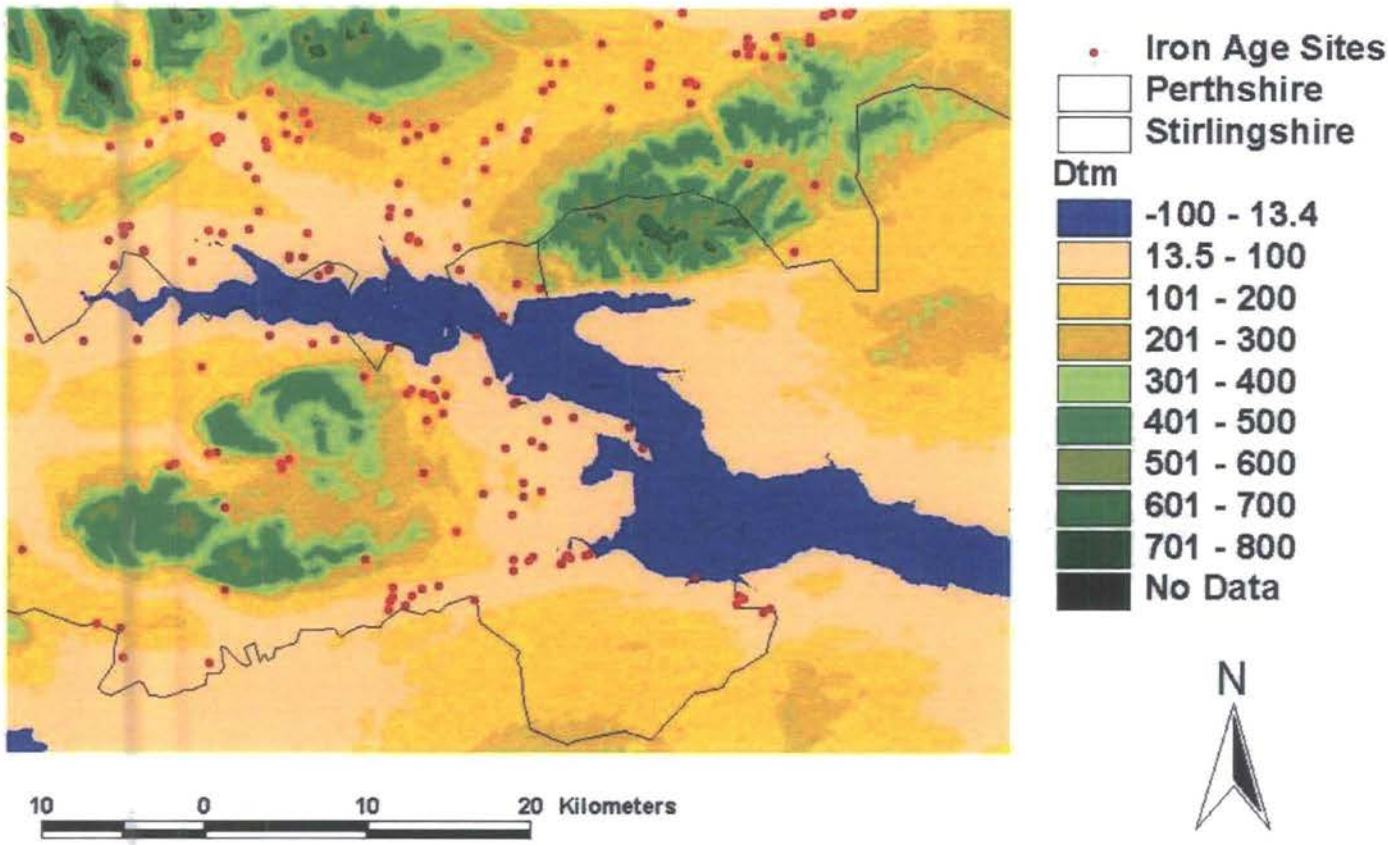

Fig. 3-2 Later Prehistoric Sites Plotted against the Blairdrummond Shoreline, at 13.4m OD. The blue area depicts the possible extent of waterlogging during the Blairdrummond phase. The DEM used here is insufficiently detailed to show the areas of carse land to the West of Stirling, which continued to grow during the later prehistoric period. However, this model does demonstrate clearly that aside from a single site near Grangemouth, the area potentially affected by the Blairdrummond phase and later prehistoric settlement are mutually exclusive. The implications of this are discussed in more detail in Chapter Five.

3.2.2 Highlands

The Highland zone consists of land over 300m OD, aside from a few river valleys. The soils tend to be thin and as they are affected mainly by topography, there is significant variation over relatively small areas (Bown and Shipley 1982, 19). North-east Perthshire includes part of the foothills and uplands of the North-East Grampian Highlands. These hills rise to 1300m OD but much consists of areas with peaks at 400m to 600m OD, part of a peneplain with distinct planation surfaces. Hills in this area rise smoothly from the valley floors to broad, gently sloping summits. Tributaries of the Tay drain the upland area, which still bears the deep scars of glaciation. Inevitably, there are vast areas of glacial drift, particularly in the valleys and lower hills (Walker *et al.* 1982, 19). During the Loch Lomond Readvance, most of the North-East Grampians were subjected to periglacial processes which resulted in the smoothing of the hills (Walker *et al.* 1982, 21). In contrast to the Lowland areas, the North East Grampians are underlain by pre-Cambrian schists, which have contributed to soil composition.

Optimum blanket peat development occurs at 550m-750m but podzolic soils dominate in the uplands (Walker *et al.* 1982, 24-25). Very little work has been done on the inception of blanket peat in Scotland (Tipping 1995, 59) but it would seem from studies at Carn Dubh (Tipping 1995) and Amulree (Cowie *et al.* 1996) in the study area, and Rannoch Moor (Bridge *et al.* 1990) lying just outside, that peat had expanded locally to its full present extent well before the later prehistoric habitation of the uplands (R. Tipping pers. comm.). At Carn Dubh, this event was dated to *c.* 7060BC-6680BC (AA-10503) (Tipping 1995, 62-67). Thus, blanket peat would have been a feature of the landscape in later prehistory and may not hide later prehistoric sites and field systems as it does elsewhere. The significance of this is that upland areas with no visible later prehistoric remains may never have been settled by later prehistoric people (R. Tipping pers. comm.). Nevertheless, upland areas may well still have been used for grazing, peat-cutting for fuel or ritual deposition, as in the case of the Bronze Age hoard from Amulree (Cowie *et al.* 1996).

All the major river valleys include sand and gravel deposits. Fluvioglacial terraces, often overlain with recent alluvium, are present in the glens of Perthshire (Walker *et al.* 1982, 20). It is a possibility that erosion and valley-widening may have erased the remains of some prehistoric settlement in the Highlands (Howard and Macklin 1999) along with earlier fluvioglacial surfaces. However, studies by Tipping in the Milfield Basin, north-east England (Tipping 1998) and the Kelvin Valley (R. Tipping pers. comm.), which is just south of the study area, indicate that these processes were complete by the earliest Holocene and, therefore, well before the later prehistoric archaeological record had been formed.

3.2.3 Land Capability for Agriculture

The Soil Survey of Scotland has also carried out evaluation of the land capability for agriculture in the three counties, which fall within its 'Eastern Scotland' and 'South-East Scotland' zones. This evaluation cannot provide information on land capability for agriculture in the past, as the assessment is based not only on soil characteristics and relief but also on such factors as modern climate and is aimed at farmers, land-use planners and agricultural advisers (Walker *et al.* 1982, 165-169). However, it is useful to have a broad understanding of the land-use capability divisions, as land use ultimately affects the survival of archaeological sites and the visibility of those that have been plough truncated. All lowland areas within the Study Area are Class 2 or 3, signifying high quality agricultural land that is capable of supporting a wide or moderate range of crops and producing average to high yields. In contrast, Highland areas are almost entirely Class 5 or 6, suitable only for improved grassland or rough grazing, with a few patches of Class 7, i.e. land of little agricultural value (Walker *et al.* 1982).

3.3 Transport and Communication

The role of transport and communication is barely touched upon in the Iron Age Agenda document (Haselgrove *et al.* 2001). Cunliffe devoted a chapter in his *Iron Age Communities in Britain* to it (Cunliffe 1991) and syntheses of later prehistoric Scotland (Armit 1997b, 81-82; Hingley 1992, 35) have included brief summaries of what is known for the study area. Considerations of the sea in Scottish prehistory

have tended to concentrate on trade and economy in the Western and Northern Isles. The phenomenological concept of 'seascapes', first investigated in an early prehistoric context (Cummings 2002; Parker 2001; Warren 1997)[26], to address the dry land bias of researchers, has not yet been explored in Scottish later prehistory. This failure to explore the role of the sea stems from the over-emphasis of the prosaic, agrarian, domestic Iron Age, critiqued by Hill (1989) and a concentration over the last decade on regionalisation (e.g. Bevan 1999; Hill and Cumberpatch 1995) at the expense of wider networks of communication.

Although it might be argued that the apparent avoidance of seafood (see 3.6.1 below) indicates that there was no need for deep water fishing and therefore vessels more substantial than logboats (Harding 2004, 12), the continental influences in Hallstatt (three Gündlingen type swords have been found in Perthshire: see Table 3-1) and La Tène material culture (e.g. the La Tène Ic fibula from Castle Law, Abernethy: 27917/NO11NE12) and perhaps also LIA burial practice (Murray and Ralston 1997), would suggest some communication with the Continent (Cunliffe 1991). Two Wilburton-type swords and ten Ewart Park-type swords (Table 3-1) have been found in the study area and this would suggest some LBA contact with areas to the south[27]. Influences from the Northern and possibly Western Isles are evident in the use of broch architecture in some stone roundhouses[28] (see Chapter 4), so at least some sea-borne passage must be envisaged, whether undertaken by visitors or locals. MacKie (1969b; 1976) has suggested that the timber-laced forts of north-east Scotland, which include some in Perthshire, indicate immigration from northern Europe. However, as Cunliffe (1991, 419) points out, this is more likely to reflect a period of contact and innovation. The low numbers of burials known for the period and the acidic soil conditions, however, would certainly impede the application of the technique of lead and strontium isotope analysis, trialled on Neolithic samples from Southern England (Montgomery *et al.* 2000), to this issue. Knowledge of lifetime movements of later prehistoric individuals in this area may therefore never be known. While it might be assumed that pottery was locally produced (on the basis of its poor quality), thin-

[26] See also papers given in a session entitled "Landlocked and Introspective: Archaeology all at Sea" at the Theoretical Archaeology Group Conference in Manchester, 2002.

[27] The rarity of this type in Scotland led Coles (1960) to define the Poldar phase, a retarded industry.

section analysis has never been undertaken for pottery from the study area, and neither has any clay-sourcing analysis been carried out. It is therefore as yet unknown whence the clay came or whether it was traded over short or long distances, if at all.

Fig. 3-3 Hallstatt sword recovered from the River Tay near Perth NMS Accession No. DL5 (© Trustees of the National Museums of Scotland)

Table 3-1 Gündlingen, Ewart Park and Wilburton-type swords from Perthshire and Stirlingshire

Name	NMRS Number	Context	Type	Current Loc.
Elcho	NO12SE16	River Tay	Gündlingen-variant d	NMS
		River Tay, near Elcho Castle	Wilburton type-variant g	PMAG
River Tay	NO12SW8	River Tay, near Perth	Gündlingen-variant d	NMS
Cambuskenneth	NS89SW8	Found 2' down when lowering the floor of the old weaving shop at Cambuskenneth in 1832 or 1833	Gündlingen-unclassified	Lost
Poldar Moss	NS69NE7	In Poldar Moss	Wilburton-variant A	NMS
Crieff	NN82SE21	Found in grave, sticking in skull	Ewart Park-Northern unclassified	PMAG
Glenquaich	NN83NE10	?from grouse moore	Ewart Park-Northern Step 2	PMAG
Bailielands	NN91NE10	On farm	Ewart Park-Northern Step 3	NMS
Huntingtower	NO02SE17	No further info.	Ewart Park-Northern Step 2	Dundee
Blairgowrie	NO14NE29	No further info.	Ewart Park-Northern Step 3	Glasgow

[28] MacKie's theory that brochs were built by immigrants from Southern England has been widely rejected, as have antiquarian theories which see the origins of the broch in immigrants or invaders from Norway (e.g. Anderson 1877; Fergusson 1878) or Sardinia (e.g. Maclagan 1881, 7-8).

Druidstone Park, Errol	NO22SE6	Druidstone Park not located	Ewart Park-Northern Step 2	Marischal 253.2
			Ewart Park-unclassified	Hunterian
Bridge of Allan	NS79NE11	No further info.	Ewart Park-unclassified	SAGM
Perthshire	NN93SE9	Found in quarry about 0.5m below ground surface	Ewart Park-Northern unclassified	Marischal
Perthshire	NN93SE10	Unknown	Ewart Park-unclassified	PMAG

It seems likely that the major lochs and rivers of Perthshire and Stirling served as important arteries of communication in the later prehistoric period. Stirlingshire is bisected by the River Forth, which leads to the Firth of Forth, while the River Tay flows from Loch Tay through Strathmore to Perth and out to the Firth of Tay and thence the sea. The other major river of Perthshire is the River Earn, from which Strathearn takes its name. Wherever there are major bodies of water, wooden boats have been found preserved in the sediments. So far, no vessels as sophisticated as that found at Hjortspring (Crumlin-Pedersen and Trakadas 2003) and Nydam[29] in Denmark have been recovered, although one undated plank-built vessel was discovered at St. John Street, Perth (Table 3-4). This does not mean that vessels suitable for traversing greater distances were not in use; much larger vessels have been found further South, for example in the Humber. Numerous log boats have been found in Perthshire and Stirlingshire; these are listed in Table 3-4. Few have been dated radiometrically (Mowat 1996), but the dates available (Fig. 3-4) indicate that at least one is later prehistoric.

[29] Now in the Archäologisches Landesmuseum, Schleswig, Germany.

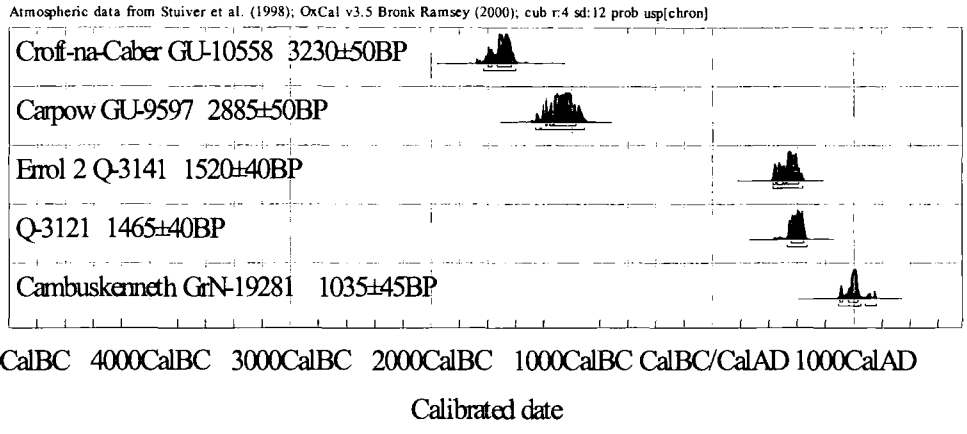

Fig. 3-4 Radiocarbon dates from logboats in the study area. None have been dated to the Iron Age; two fall into the Bronze Age range and two into the Early Historic period. There is no reason to believe that logboats were not used in the Iron Age too.

Evidence for land-based travel is also scarce. Horse-gear, such as the simple terret from Ardoch and the enamelled strap junction from Inchtuthil (28592/NO13NW5), indicates that horses, or rather ponies, were used for local transport. *Chevaux-de-frise* have been found at three enclosure sites (Lower Greenyards, Bannockburn: 47244/NS89SW12 Law Hill, Arnbathie: 28116/NO12NE2 and Deuchny Wood: 28217/NO12SE3) but, despite the term, these would have provided effective defence against infantry rather than cavalry. Indeed, this might suggest the use of horses in warfare (or at least raiding) as well as day-to-day transport. Horse bones were recovered from later prehistoric contexts at Aldclune SuSRH (25822/NN86SE1), Dunsinane Hill multivallate enclosure (30660/NO23SW1.1) and Buchlyvie, 'Fairy Knowe' SuSRH (44651/NS59SE3). Oddly, bridle-bits are restricted to the area south of the Forth, and none have been found in the study area (Palk 1984). Harding (2004, 193) suggests that this may be because those north of the Forth were fashioned out of organic materials. However, owing to a combination of saliva and wear, organic bits would rapidly disintegrate. It is perhaps more likely that bridle-bits were not required and that in the study area, horses were used purely as pack-animals, with only a headstall and guiding rein therefore required (C J Davies pers. comm.). However, this is difficult to reconcile with the evidence for *chevaux de frises* discussed above, and carts (see below). Another possibility is that metal bridle bits were made, but were not deposited in archaeologically visible ways.

Table 3-2 Horse gear from Perthshire and Stirlingshire. Finds made since MacGregor's doctoral research was completed have done little to alter the general distribution she noted.

Find Spot	County	Description	Reference (to MacGregor's (1976) gazetteer unless otherwise stated)
Inchtuthil	Perthshire	Enamelled strap junction	No. 32
Ardoch	Perthshire	Simple terret	No. 46
Unknown-?Roman fort at Bertha (Perth)	Possibly Perthshire	Bronze belt fitment/horse trapping	No. 256
Shanzie souterrain	Perthshire	Two copper alloy rings, possibly from a bridle bit	Coleman and Hunter (2002, 90-91)

The four wooden wheels found in Blairdrummond Moss (NMRS No. NS79NW12: Fig. 3-6) demonstrate that horse/cattle-drawn carts or wagons were in use. A radiocarbon sample obtained from the surviving tripartite disc wheel described by Piggott (1957) was dated to the Late Bronze Age (Ashmore *et al.* 2001; Sheridan 1996). How these wheels ended up in the moss, whether by accident or design, remains obscure. While entire carts have not been found in the area, the example in a burial at Newbridge, Edinburgh (Carter and Hunter 2003) shows what one might have looked like.

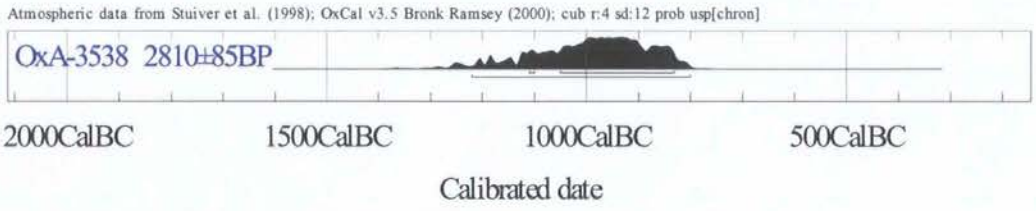

Fig. 3-5 Calibrated radiocarbon date range from the surviving wooden wheel retrieved from Blairdrummond Moss.

Fig. 3-6 The surviving wheel from Blair Drummond Moss, which has produced a Late Bronze Age radiocarbon date (© Trustees of the National Museums of Scotland).

Evidence for land-based routeways is rare and those known cover short distances. At Drumturn Burn (29005/NO15NE10), for instance, trackways lead from the fields to the adjacent stone roundhouses (RCAHMS 1990, 46-49). None of these trackways have been excavated or dated. While it can be imagined that people used natural landscape routes, it is possible that longer prehistoric trackways lie undetected or have been destroyed by road-building from the Roman period on. The Roman road in Perthshire and Stirlingshire, which was built in the late first century AD, may have

continued in use after the Romans left. Indeed, parts of it were used into modern times and stretches of it lie under modern roads, as at Kaims Castle Roman fortlet (25365/NN81SE1). It seems likely that native people used the Roman roads during the occupation but it is unclear how useful they might have been given that they were designed to service Roman rather than native needs.

The Roman road ran from the Roman fort at Camelon (46920/NS88SE23) to that at Bertha (26734/NO02NE25), although its course is uncertain in places, particularly across the Forth Valley. It provided a land route, linking forts, fortlets and watch/signal towers, across the Forth Valley and Strathearn up to Perth and beyond. The system between Glenbank fortlet (25236/NN80NW19) and Bertha fort is known as the Gask Ridge, and is interpreted by some as an early frontier (e.g. Woolliscroft 2002a) and others as a fortified road. The road has been shown by excavation to be between 5.8m (Woolliscroft and Davies 2002) and 7.9m wide (at Ardoch fort, 25227/NN80NW10: Christison *et al.* 1898, 56). Its construction varies greatly (Woolliscroft and Davies 2002, 56-57), with the Parkneuk section (142988/NN91NW146.1) being rather unusual in its use of turf as well as stones and gravel.

Several sections of apparent timber trackways were noted by antiquarians, preserved within the mosses of the Forth Valley; these are listed in Table 3-4. In most cases, ignorance of their true date must remain, since they were destroyed during the eighteenth century Improvements described by Cadell (1929). Some of the descriptions, however, certainly recall the better-known trackways of England (e.g. Coles and Coles 1986; Crockett *et al.* 2002) and Ireland (Raftery 1990). It should not, however, be assumed that the antiquarian identifications were accurate. A supposed trackway recorded on the first edition Ordnance Survey map of 1862 and interpreted at the time as a Roman road, was relocated at Parks of Garden, Stirlingshire during a Historic Scotland funded project (Hingley *et al.* 1999). The remains uncovered turned out, however, to be of a timber platform, radiocarbon dated to the Neolithic and interpreted by the excavators as a hunting hide (Ellis *et al.* 2002). Neither date nor function can therefore be assumed for the sites attested by antiquarians. If some are trackways and are later prehistoric, however, they might be interpreted as offering *routes across* the mosses, or alternatively, *access to* the

mosses. Access may have been required for peat extraction (peat ash was noted in roundhouse floor deposits at East Coldoch), hunting, grazing or ritual deposition (Hingley and Ingram 2002). The latter is supported by the discovery of two Iron Age bronze cauldrons in Blairdrummond Moss (NS79NW1: Anderson 1885, 313; Gray 1845, 1263), an LBA sword in Poldar Moss (NMRS No. NS69NE7) and a Kilbride-Jones Type 3A glass bangle (NS59NE2: Anonymous 1892, 216; Stuart 1868b, 125), a late Bronze Age bucket (NS69NW5: Coles 1960, 29 & 88) and two swords (NMRS No. NS69NW2) in Flanders Moss. Some of the mosses could be investigated further in future, as small areas of unimproved land still exist in the Forth Valley, at Flanders Moss and Blairdrummond Moss (Soil Survey of Scotland 1982b).

Table 3-3 Possible timber trackways in Stirlingshire and Perthshire. The only one excavated in modern times (Parks of Garden) turned out to be a Neolithic platform. Main references are given; full reference lists can be obtained by searching RCAHMS' online database.

Site Name	NMRS No.	Reference
Flanders Moss (Drymen parish)	NS59NE3	
Flanders Moss (Port of Menteith parish)	NS69NW3	(RCAHMS 1979)
Parks of Garden	NS69NW7	(Ellis *et al.* 2002; RCAHMS 1979)
Kippen	NS69SW16	(RCAHMS 1979)
Blairdrummond Moss	NS79NW17	(RCAHMS 1979)
Loch Ericht	NN46NE1	(Carter and Rideout 1998)

Fig. 3-7 The surviving Iron Age cauldron from Blairdrummond Moss, which can be interpreted as a votive deposit and provides evidence that the mosses were being visited during the later prehistoric period. © Trustees of the National Museums of Scotland

Table 3-4 Logboats and associated equipment from Perthshire and Stirlingshire. None are definitely Iron Age, and Carpow has been dated to the LBA. Unless otherwise stated, cross-references are to Mowat's (1996) near-comprehensive gazetteer. If required, reference lists for each logboat, including contemporary newspaper accounts, can be obtained from this invaluable resource.

Site Name	County	NMRS No.	Ref. (to Mowat's (1996) gazetteer, unless otherwise stated)
Cambuskenneth	Stirlingshire	NS89SW28	No. 14
Carpow	Perthshire		Strachan (2004)
Croft-na-Caber	Perthshire	NN74SE30	No. 24
Errol 1	Perthshire	NO22SE5	No. 37
Errol 2	Perthshire	NO22SE4	No. 38
Falkirk	Stirlingshire	None (poor locational info)	No. 45
Flanders Moss	Perthshire	NS69NW3	No. 47
Friarton	Perthshire	NO12SW24	No. 50
Lindores 1-2	Perthshire	NO12SW62 & NO21NW6	Nos. 87-8
Loch Ard	Perthshire	NN40SE7	No. 91
Portbane (?=Croft-	Perthshire	NN74SE14	No. 144

na-Caber)			
Portnellan Island	Perthshire	NN50NE2	No. 145
River Carron	Stirlingshire	None (poor locational information	No. 148
River Forth	Stirlingshire	NS89SE78	No. 150
River Tay	Perthshire	NO12SW210	No. 151
Sleepless Inch	Perthshire	NO12SW211	No. 152
Stirling, King Street	Stirlingshire	NS79SE168	No. 153
Oakbank-paddle	Perthshire	NN74SW16	No. A56
Perth, St John Street-plank-made boat with rivets and heather rope	Perthshire	NO12SW215	No. A58

Having briefly examined the geological and geomorphological context of the area, the later prehistoric vegetation must be considered, starting with evidence from pollen analyses associated with archaeological sites and from lochs and bogs in the study area and beyond.

3.4 Pollen Analyses

There has been relatively little in the way of palynological investigation carried out in the two counties (Tipping 1994). Of those cores that include dateable deposits, even fewer have given data pertaining to the later prehistoric period. In order to set the later prehistory of the region in its landscape context, therefore, it is necessary also to look at pollen sequences from outwith the study area. The perennial problem in interpreting such sequences is ascertaining the core's catchment area (Edwards 1991). Nonetheless, the later prehistoric landscape and environment of the study area is here reconstructed in broad terms, demonstrating the value of the existing data.

This is a selective study, which concentrates solely on the analysis of pollen cores taken from the study area or within 10km of its borders. Relevant pollen core sites were identified using R. Tipping's gazetteer (Tipping 1994) and advice (R. Tipping pers. comm.). Only published radiocarbon-dated cores were used and this restricted

the study to data gathered since the early 1960s. This archaeological study is restricted to a narrow period of vegetational history and fairly chronological specific events (i.e. climatic deterioration in the LBA/EIA, major forest clearance, woodland regeneration, sharp rise in cereal pollen) and cross-correlation to cores without associated radiometric dates would not have been helpful. Locations of pollen cores referred to are shown in Fig. 3-8.

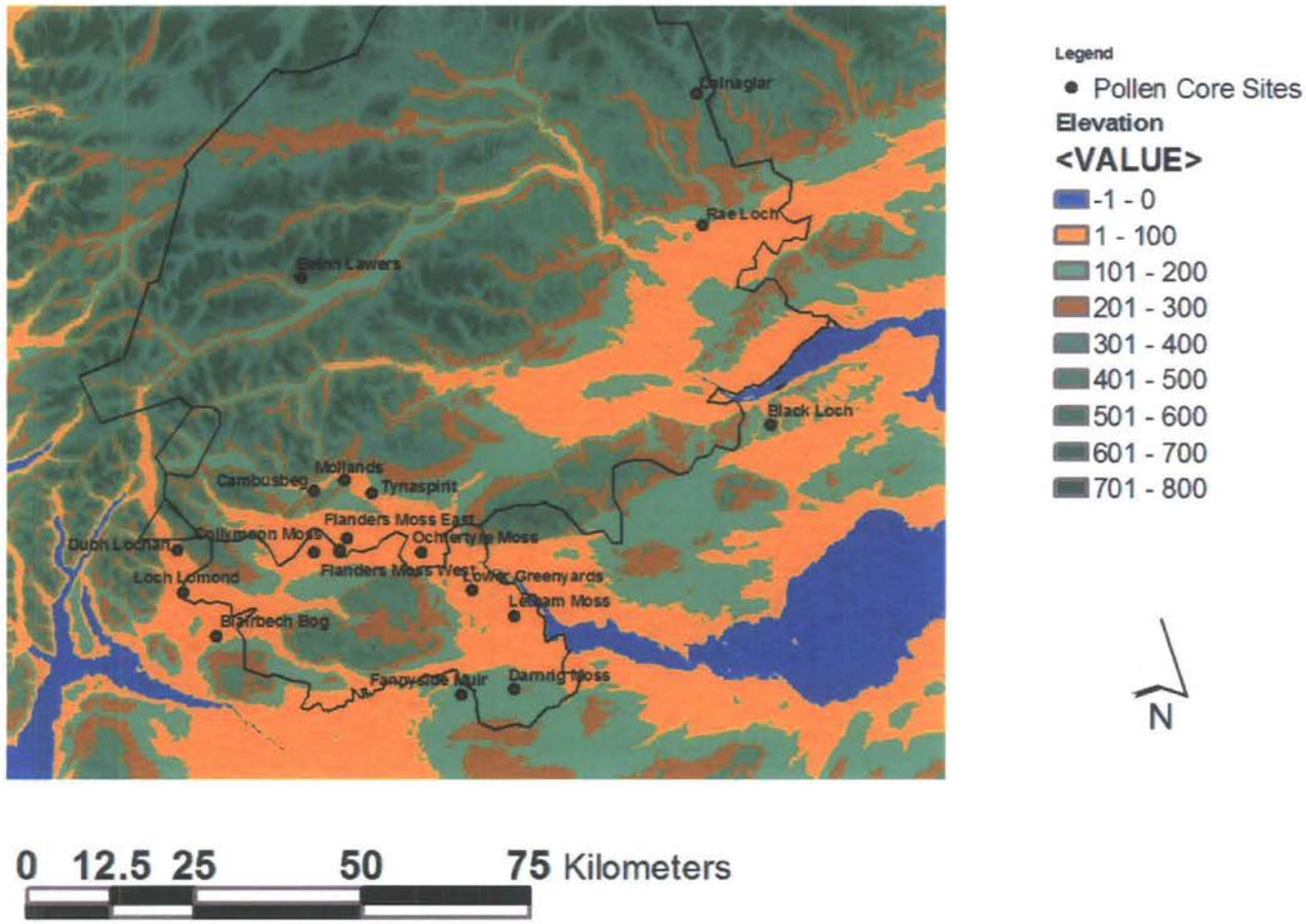

Fig. 3-8 Locations of Pollen Core Sites in and around Perthshire and Stirlingshire

In 3.4.1, the implications of this analysis are discussed and related to the impression of landscape and landuse given by cores from the rest of Eastern Scotland and Northern England. For consistency, all dates were re-calibrated by the author using OxCal v3.5. Those from pollen cores are listed in Table 3-5 and those from animal bones (see 3.6) in Fig. 3-14. All calibrated date ranges are quoted at the 2 sigma (95.4%) confidence level.

Table 3-5 Pollen Core Radiocarbon Dates Mentioned in the Text

Site	Reference	Lab. Code	Uncalibrated bp	Calibrated at 2σ
Flanders Moss West	(Turner 1965; 1981)	Q-541-3	2712±120	1300BC-500BC
		Q-575	1731±120	AD 1- AD 600
		Q-570	1858±110	100BC- AD 450
	(Ellis 2000b)	AA-30321	2435±50	770BC-400BC
Flanders Moss East	(Ellis 2000b)	AA-30336	1680±50	AD240-AD540
		AA-30337	2480±60	790BC-410BC
		AA-30338	3125±55	1520BC-1260BC
Ochtertyre Moss		AA-30318	1690±45	AD230-AD440
		AA-30319	2080±45	210BC-AD30
		AA-30320	2550±50	820BC-410BC
Killorn Moss		AA-30312	1840±65	AD20-AD350
		AA-30313	2255±50	400BC-190BC
		AA-30314	2590±50	840BC-250BC
Collymoon Moss		AA-30329	1685+50	AD230-AD540
		AA-30330	2135+60	370BC-AD1
Lower Greenyards	(Birnie 1996)	GU-1659	3485+65	1980BC-1620BC
		GU-1660	1905±90	120BC- AD 350
		GU-1661	1350±55	AD 560- AD 810
Letham Moss	(Dumayne-Peaty 1999)	SR-4543	2125±40	360BC-40BC
		SR-4542	1715±40	AD 240- AD 420
		SR-4541	1465±40	AD 530- AD 670
Rae Loch	(Edwards and Whittington 1998)	GU-4766	3190±90	1690BC-1250BC
		GU-4767	2000±80	210BC- AD 220
		GU-4768	1750±110	AD 1- AD 550
Black Loch	(Whittington *et al.* 1990)	SRR-2615	3890±80	2580BC-2130BC
		SRR-2614	3280±110	1900BC-1300BC
		UB-2299	3070±105	1600BC-1000BC
		UB-2295	2015±75	350BC- AD 250

		UB-2294	1885±75	50BC- AD 340
Fannyside Muir	(Dumayne-Peaty 1998b)	SRR-4616	1550±40	AD 420- AD 610
		SRR-4617	1925±45	40BC- AD 220
Blairbech Bog	(Dumayne-Peaty 1998b)	SRR-4619	1750±45	AD 130- AD 410
		SRR-4620	2865±40	1130BC-910BC

The case for a climatic deterioration, from warm and dry to cool and wet, during the LBA or EIA, is supported by the pollen core evidence from several sites in the Forth Valley. The peat bog recurrence surface that marks this event is dated to 1300BC-500BC (Q-541-3) and 770BC-400BC (AA-30321) at Flanders Moss West and 790BC-410BC (AA-30337) at Flanders Moss East. This correlates well with a date of 840BC-520BC (AA-30314) from just above the recurrence surface at Killorn Moss. Together, these dates suggest climatic deterioration started at some point between 800BC and 500BC. Similar recurrence surfaces were noted at Darnrig Moss (Durno 1956) and Collymoon Moss (Ellis 2000b) but these are undated. The available dates, however, correlate well with those from recurrence surfaces from across north-west Europe, which have been dated to *c.* 500BC (Bell and Walker 1992, 72). Renewed glacial activity in Europe has also been reported for the mid first millennium BC (Bell and Walker 1992, 72).

However, none of the recurrence surfaces at Carn Dubh can be dated to this period (Tipping 1995). Neither is there evidence for a LBA or EIA climatic deterioration at Black Loch (Whittington *et al.* 1990). This need not be significant, though, as the Black Loch cores appear to give a very localised picture of vegetational change (Whittington and Edwards 1994; Whittington *et al.* 1990). Ellis (2000b) interprets the evidence from the Forth Valley as representing gradual climatic deterioration. In contrast, Burgess (1985) has argued that the evidence from Northern Britain as a whole points to sudden, dramatic and catastrophic climate change in the Late Bronze Age. The potential links between changes in climate and settlement pattern are explored in the chapters that follow.

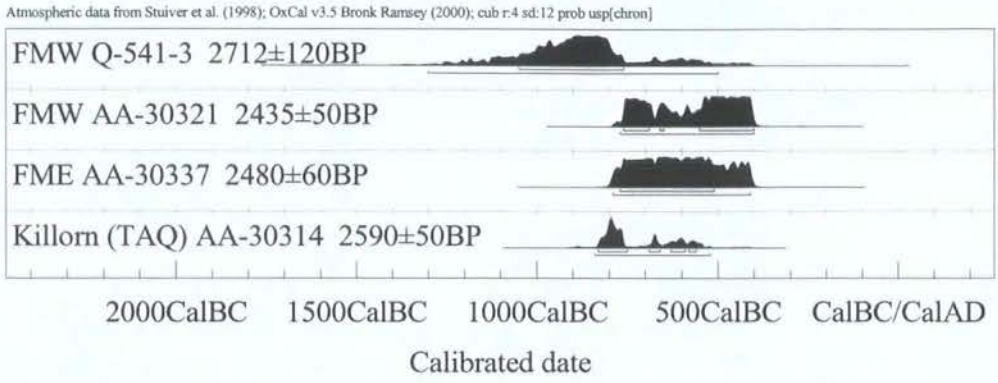

Fig. 3-9 Radiocarbon dates for peat bog recurrence surfaces, indicating a period of climatic deterioration in the LBA or EIA.

As throughout northern Britain, there is evidence, from Flanders Moss West, Lower Greenyards, Letham Moss, Fannyside Muir and Blairbech Bog, for extensive forest clearance in the latter half of the first millennium BC or early first millennium AD (Fig. 3-10). At Flanders Moss, a short lived maximum in grass and plantain was evident at some point between 100BC- AD 400 (Q-570) and AD 1- AD 600 (Q-575), a total range of 700 years. Unusually, the major elm decline represented in the Lower Greenyards core dates to 120BC- AD 350 (GU-1660), far later than is evident from cores obtained from other regions. From then on, there was wet grassland, with sedges and some heath, around the site. At Letham Moss, there seems to have been a marked increase in the proportion of mire and taxa and herbs (including *Hordeum* type), at *c.* 360BC-40BC (SR-4543) matched by a pronounced reduction in trees and shrubs. This is reversed again at around AD 240-AD 420 (SR-4542). However, there seems to have been a short lived period of woodland regeneration between these two events (closer to the latter), evident at a depth of 1-1.05m, with *Hordeum* pollen absent from the record (Dumayne-Peaty 1999, 660). At Fannyside Muir, the LIA is represented by Phase FSMe, the beginning of which Dumayne-Peaty dates to *c.* 385BC (230-540BC), a date which has been extrapolated from the two radiocarbon dates obtained from this core and based on peat accumulation rates. During this period, it appears that there was a gradual deforestation of the area, with arboreal pollen decreasing to 70% and proportion of herb pollen slowly rising. In Phase BBBd, which covers the Late Iron Age, the beginning of which Dumayne-Peaty dates to 375-80BC by extrapolating from the radiocarbon dates, there is a rapid decline in arboreal pollen with *Corylus avellana*, *Alnus* and *Quercus* dipping to 30%.

In response, there was an increase in herbs of open ground. At Rae Loch, sometime after 1690BC-1250BC (GU-4766), in Subzone 6a, which produced a radiocarbon date range of 210BC-AD 220 (GU-4767), there are indications of expansion in grassland, along with sedges, plantain, sorrel and bracken. There was remarkably little cereal pollen in evidence from this zone.

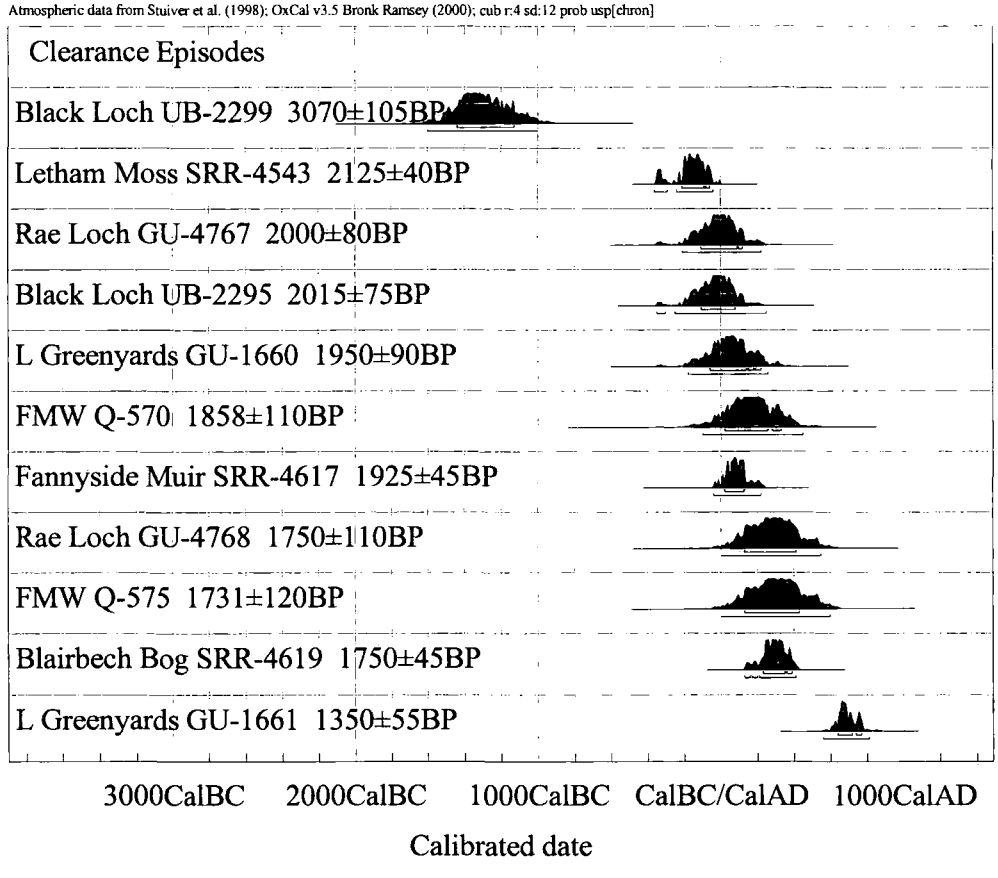

Fig. 3-10 Radiocarbon dates from major forest clearance in the Iron Age, showing that episodes took place at different times in different places and on different scales, between 200BC and AD 400.

Most of the radiocarbon dates suggest that this process was underway before the Roman army had even set foot in Britain. What is also clear is that these clearances took place at different times in different places and on different scales, although the episodes are all situated within a range of 600 years, between 200BC and AD400. The start of woodland regeneration varies somewhat from site to site but there is consistency on five sites for such an episode in the LIA, between AD1 and AD400 (Fig. 3-11). On other sites, woodland regeneration does not appear to have started until the Early Mediaeval period.

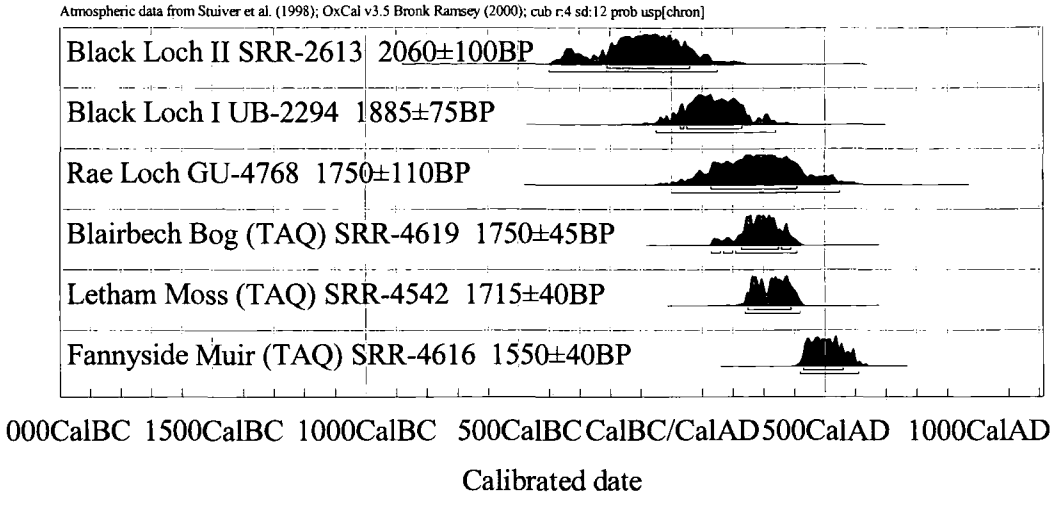

Fig. 3-11 Radiocarbon dates for the start of woodland regeneration

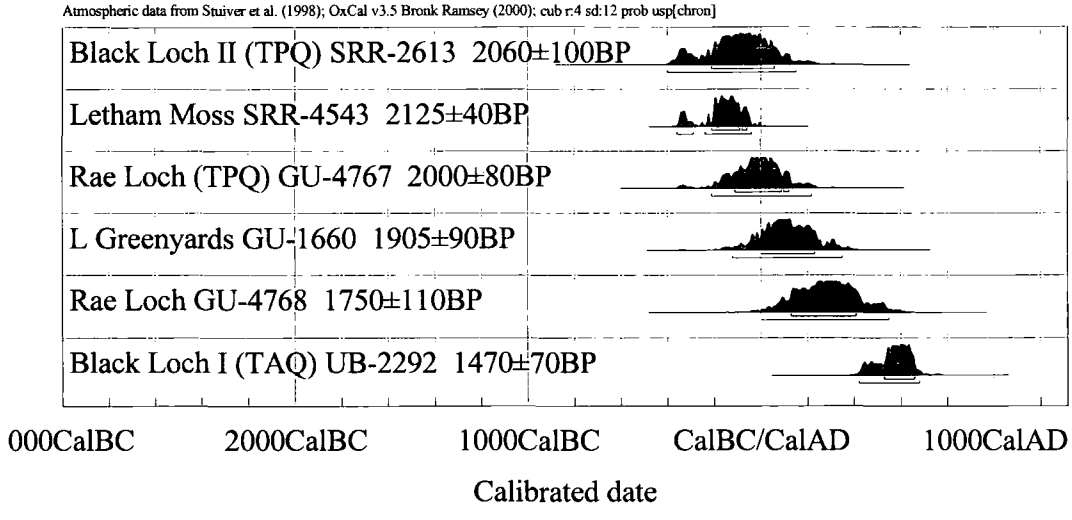

Fig. 3-12 Radiocarbon dates for rise in cereal pollen

The dating of this woodland clearance correlates quite well to a rise in cereal pollen at some point between 200BC and AD 450, evident in six cores and corresponding to dates shown in Fig. 3-12. The rise in cereal pollen, however, is only really noticeable in around half of the cores that produced evidence for clearance in the later prehistoric period and is not as well defined as the clearance episode. This need not be significant, however, since cereals are self-pollinating. It is possible, however, that some of the land was cleared in order to provide house plots or grazing for livestock, rather than arable agriculture. Some of it may have been to meet a demand for timber by the Roman army but this factor may well have been overstated

in the past. Timber would also have been required by local people, for fuel and for house building (see Chapters 4-6). Particularly important is that an early dramatic rise in cereal pollen is noticeable at Carn Dubh during the main period of occupation of the adjacent LBA settlement at Badyo (Tipping 1995).

3.4.1 Discussion

The case for a 'dramatic' climate change in the LBA or perhaps EIA is supported by the pollen core evidence from several sites in the Forth Valley, including Flanders Moss East and West and Darnrig Moss but not from Black Loch. As throughout Northern Britain, there is evidence for extensive forest clearance in the latter half of the first millennium BC, as evidenced in data obtained from Flanders Moss West, Lower Greenyards, Letham Moss, Fannyside Muir and Blairbech Bog. With the exception of those from Rae Loch, all of the radiocarbon dates suggest that this process was underway before the Roman army had even set foot in Britain, as has also been recognised in southern Scotland and northern England (Tipping 1997a). What is also clear is that these clearances took place at different times in different places and on different scales, just as they did in northern England (cf. Dumayne-Peaty 1998a). The overall impression is of mixed and fluctuating landuse in the later prehistoric period in the study area, with deforestation happening well before the Roman invasion in many places and woodland regeneration occurring in most areas in the post-Roman period (cf. Dumayne 1993a; b; 1994; Dumayne and Barber 1994; Dumayne-Peaty 1998a; b; 1999). As in northern England and southern Scotland, the data suggest a marked intensification of agriculture from c.350BC onwards, leading to dramatic deforestation (Tipping 1997a). Arable and pastoral aspects of the landscape can be recognised, but the relative proportions of these cannot be deduced from the data gathered thus far.

The review undertaken here thus provides evidence to refute van der Veen's (1992, 153) assertion that the Scottish landscape was not cleared until the Roman period. The evidence from Perthshire and Stirlingshire analysed here adds weight to Hanson's (1996) argument, based on pollen core data from Strathclyde, Durham, Northumbria, Cumbria and Central Scotland, that extensive deforestation evident was well underway over much of northern Britain by the late pre-Roman Iron Age.

Indeed, Hanson's argument that this gradual process had more to do with the expansion of settlement and agricultural activity than the specific timber requirements of the Roman army, is convincing. The analysis of the Study Area provides little support for Whittington and Edwards' (1993, 20) contention, derived from the evidence at Black Loch and the Aberdeenshire lochs of Braerroddoch and Davan that the dramatic changes in landuse, which took place in the first few centuries AD, were caused by the devastation wrought by the Roman army.

Richard Tipping (1994) has argued that the sampling strategy and temporal resolution of pollen diagrams needs to be improved. He also provides a useful cautionary note when he points out that the actual extent of farmed land cannot yet be determined from pollen data: "Pollen sites are point sources, and do not depict area at all successfully" (Tipping 1994, 33-35). A far greater density of securely dated pollen profiles from Perthshire and Stirlingshire is required before anything but the most generalised picture of landscape development over the later prehistoric period can be given. Of course, the relatively small number of lochs in the area means that potential pollen core sites are limited, and the Forth Valley mosses may hold the most potential for elucidating these issues. Raised mosses and valley peat bogs still survive in Cardross Moss, Gartrenich Moss, Flanders Moss West, Flanders Moss East and Ochtertyre Moss (Soil Survey of Scotland 1982f) and these probably present the most potential for enhancing understanding of the later prehistoric environment in the lowlands of the study area. To improve understanding of later prehistoric landuse, the macrofossil and bone evidence from archaeological sites must also be considered, along with the indirect evidence available from artefacts recovered from later prehistoric sites.

3.5 Plant Macrofossils

It is only really within the past twenty years that on-site palaeoenvironmental analyses of sufficient quality, using appropriate sampling strategies, have taken place. Although there are a few cases of antiquarian excavators spotting burnt grain within archaeological deposits, it is only since wet-sieving of soil samples has

become commonplace that other plant remains have been recovered. The available data is summarised in Fig. 3-13 and Table 3-6 and discussed in detail below[28].

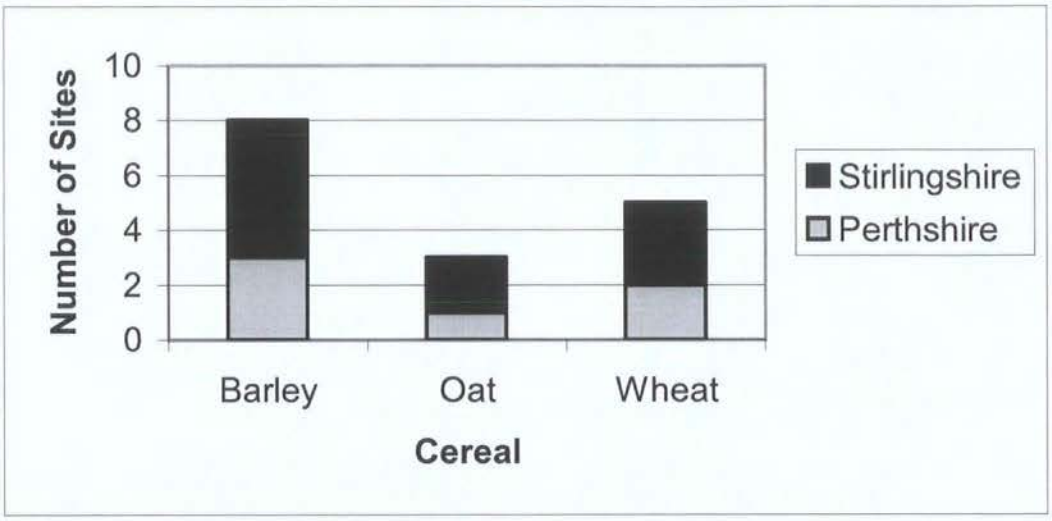

Fig. 3-13 Histogram showing presence of cereal macrofossils recovered from Later Prehistoric sites

[28] See also Table 6-5 in Appendix Six.

Table 3-6 Select Plant Macrofossil (Cereal) Evidence

Site	County	Cereal Type	Details
Leckie (45379/NS69SE12)	Stirlingshire	Barley	Heap of charred barley from Phase 3 (interpreted by excavator as destruction deposit)
		Barley	Scatters of barley grains over large parts of broch interior
Camelon (46920/NS88SE23)	Stirlingshire	Hulled Barley (Possibly four-row or six row, not two-row)	From rectangular pit F1 within enclosure, to W of roundhouses: homogeneous fill included Roman glass.
Lower Greenyards, Bannockburn (47244/NS89SW12)	Stirlingshire	Barley (mostly hulled)	From Ditch 0, Palisade 2, Antenna 2, House 1: various features, House 2, Palisade 0, Ditch 1, Ditch 3, Ditch 4, Ditch 5
		Oat	From Ditch 0, Palisade 2, House 1: various features, House 2, Ditch 3
Myrehead (47816/NS97NE37)	Stirlingshire	Barley (six-row, hulled)	Various Period B features, Palisade in Period C & Pit A in Period D
		Wheat	Various Period B features
		Rye	In burnt material under Period B stony layer
Buchlyvie, 'Fairy Knowe' (44651/NS59SE3)	Stirlingshire	Barley (six-row, hulled)	From pre-broch, broch occupation and post-occupation
		Oat (common wild oat, bristle/black oat)	From destruction layers
		Wheat (emmer, club, bread)	From destruction layers
East Coldoch (46081/NS79NW34)	Perthshire	Barley (6-row, hulled)	Caryopses and chaff from roundhouse floor, 1 900 caryopses in PH1, similar numbers in PH2, oval cist fill
		Oat	Roundhouse floor, oval cist fill
		Wheat (emmer, spelt)	Roundhouse floor, emmer glume from oval cist fill
Loch Tay, Oakbank (25024/NN74SW16)	Perthshire	Barley	Not stated
		Wheat (emmer; spelt)	Not stated

Dalrulzion (29060/NO15NW2)	Perthshire	Barley	From black occupation layer in Q1, F
Badyo (26422/NN96SE27)	Perthshire	Barley (hulled; six-row)	Central hearth & post-abandonment contexts (A1) & various other house contexts
		Oat	Post-abandonment contexts (A1) & various other house contexts

3.5.1 Stirlingshire

Of the eighteen later prehistoric sites in Stirlingshire that have been excavated, only 6 yielded plant macro-fossil evidence. In most cases, this lack of suitable data can be attributed to the fact that the excavation was carried out before sampling of soil for flotation was routine, or even common. Only three sites, namely Bannockburn (47254/NS89SW21), Lower Greenyards, Bannockburn (47244/NS89SW12) and Gillies Hill (46246/NS79SE60), had a systematic environmental sampling strategy. This obviously severely limits the extent to which conclusions can be drawn regarding the economy of this area. Indeed, on reflection, Rideout argued that his bulk sampling strategy at Bannockburn and Lower Greenyards, Bannockburn was not worthwhile, since so many of the contexts sampled could not be related to the main structural phases on the sites (Rideout 1996, 258). Most of the later prehistoric macrofossil evidence from Stirlingshire thus far collected can only be used at the most general level of inference. However, the evidence that is available is reviewed and analysed here and a general picture given of the type of economy reflected in it.

The one-sentence report on the charcoal from Castlehill Wood dun (46233/NS79SE49), i.e. "All the samples of charcoal layer were identified by Dr E.M. Knox as Birch" (Feachem 1957, 40) is typical for the 1940s, 1950s and 1960s. Indeed a subsequent excavation of another dun (Wallstale: 46232/NS79SE48) contains no comments at all on environmental evidence (Thomson 1969). Hunter's excavations of the defences of Torwood, The Tappoch broch (47004/NS88SW1), do not provide much in the way of enlightenment, either, since she does specify the rampart contexts from which oak, hazel and birch were retrieved (D. M. Hunter 1949c, 99), which cannot therefore be dated, although they are likely to be Iron Age (see 4.5.4.3.1). Even presence or absence information is of dubious worth when only four samples were taken from the entire excavation. In a 1956 excavation report, Knox (1956) lists the plant species present in a soil sample taken from the lower fill of the enclosure ditch at West Plean, indicating the relatively high percentages of *Quercus* (oak) and *Betula* (birch) pollen compared to that of *Alnus* (alder) as well as presence of pollen from various herbaceous plants and occasional sphagnum and fern

spores. However, since this was not retrieved as part of a systematic sampling strategy, observations are limited to indication of presence or absence.

No cereal grains were recovered from the excavation of Gillies Hill (46246/NS79SE60), an Iron Age univallate hilltop enclosure 4km south west of Stirling, despite a total sampling strategy being in place (Rideout 1992). However, investigation was restricted to a single section through the ditches and ramparts, and this may just be a result of a lack of the kind of depositional activity that would result in such remains surviving in this part of the site. At Camelon native site (46920/NS88SE23), a multi-vallate inland promontory enclosure, hulled barley (it is unclear whether it was the two or six-row variety) was recovered from a large rectangular pit (2.44m wide, 3.05m and 0.61m deep) in the interior (Dimbleby and Sheldon 1978). Unfortunately the pit could not be related stratigraphically to other features on the site. The fill contained other items that could be interpreted as 'rubbish', including a fragment of Roman glass bottle, dated to the 1st to 2nd century AD. The excavator interpreted this pit as one used either in daub preparation or disposal. Given the lack of radiocarbon dates from this site, and the mixed nature of the pit fill, it would probably be wise to assume only that this barley is LIA, and most probably Roman Iron Age in origin. Since there was no systematic environmental sampling strategy in use during the excavation, no further interpretation of its significance can be given (Proudfoot 1978). As well as *Hordeum*, *Avena* (oat) spp and possibly *Triticum* (wheat) were recovered from contexts at Lower Greenyards multi-vallate promontory enclosure. The oat grains were thought to be *Avena strigosa*, *Avena fatua* and possibly also *Avena sativa*. Most of the barley grains were hulled and Fairweather argues that they were a six-row type.

Seaweed (possibly *Fucus* and/or *Pelvetia* sp) was recovered from an isolated pit within the enclosure and the fill of a palisade antenna relating to the pre-fort palisaded homestead phase at Lower Greenyards, Bannockburn (47244/NS89SW12). Depending on the species, seaweed could have been eaten or dried and then used for fertiliser. Holden (1998a, 10 & 29) has suggested it could also have been used to thatch roundhouses, although Pope (2003, 199) argues that reed thatching was favoured in Northern Britain in later prehistory. Seaweed is also one of the ingredients of lye, which could have been used for washing clothes, making soap or

fixing dye. It could, too, have been used for making glass, a possibility that should not be discounted given the occasional finds in the area of Iron Age glass beads. Fairweather (1996, 248) speculates that the Firth of Forth might have been nearer the site than it is now and that the seaweed could have been a picked off the local beach. This view may be confirmed by Smith *et al*'s (2000) dating of the Blairdrummond Shoreline (see 3.2.1 above). However, it is possible that later prehistoric communities judged this commodity useful enough to be worth trading for, or travelling further afield to collect. Seaweed was also found in an apparently Roman Iron Age context at Whittingehame in East Lothian (C.C. Haselgrove pers. comm.), which is 8km from the shore, as well as at the Iron Age coastal site of Fishers Road, Port Seton (again *Fucus* sp i.e. wrack) (Huntley 2000, 161).

Given the possibility that seaweed was used in the dying process, it is worth mentioning that *Empetrum nigram* (crowberry) pyrenes were also found at Lower Greenyards, Bannockburn (47244/NS89SW12). Fairweather (1996) expressed bemusement that these were not accompanied by seeds from the more palatable blaeberries or cowberries, which could have been gathered at the same time. He suggests that they may have been derived from animal, bird or human faeces, or heather used as thatch, bedding or fuel, rather than gathered and brought to the site as food. He does not, however, mention the possibility that crowberries could also have been used for dye. It is worth noting that crowberry grows on moorland which is not subject to intensive grazing (Huntley 2000, 162-3). Its presence (which does not necessarily imply use) suggests that there was at least some such land nearby. Crowberry macrofossils were also recovered from Fisher's Road East, East Lothian, where it was thought most likely that they were brought to the site fortuitously. As Rideout notes "...all that can be said about the results of the macroplant sampling is that they suggest that the economy of [Lower Greenyards], throughout its occupation, was at least partly arable, with barley, oats and possibly wheat featuring in the diet." (Rideout 1996, 258).

The assemblage at Myrehead (47816/NS97NE37) contained both wheat and 6-row barley (some hulled) in its later prehistoric contexts (postholes and burning pits); in this case only presence or absence could be discussed, since the sampling strategy was not standardised. However, Barclay suggested that the absence of wheat from

later features, probably dating to the mid-late millennium BC and the late first millennium AD, might indicate that this cereal had dropped out of use by this time. In one Late Bronze Age context, rye and a sclerotium of the hallucinogenic fungus ergot were noted (Barclay 1983a, 61-62, 70-71; Barclay and Fairweather 1984). It is, of course, impossible with such circumstantial evidence to deduce whether people were actively using natural narcotics, although it is perhaps worth noting that opium poppy seeds were present at Loch Tay, Oakbank crannog (Miller *et al.* 1998).

Although the results of MacKie's excavation at Leckie broch (45379/NS69SE12) have yet to be fully published, some provisional results were laid out in an interim report. (MacKie 1982, 62). Scatters of barley grains were found over large parts of the interior destruction deposit. Grains from one heap produced a date of 200BC-450AD (GX2779) again suggesting the predominance of barley in the area in the latter part of the Iron Age. This emphasis on the importance of barley is further substantiated by the finds made at Buchlyvie, 'Fairy Knowe' (44651/NS59SE3). Here, six-row barley macrofossils were recovered, as well as those of *Avena strigosa* (bristle oat), bread or club wheat and *Triticum dicoccum (*emmer wheat). Of these, only barley was recovered from the pre-broch roundhouse remains (which Main interprets as being 1st century BC or 1st century AD), as well as the broch occupation layers. *Avena fatua* (common wild oat) was also recorded, but is likely to have simply been a weed in the main barley crop. Hazelnut shells were also in evidence, as well as the remains of raspberries and blackthorn or sloe berries (Boyd 1998, 313). *Allium ursinum* (ramsons) roots were found in the destruction deposit; the plant has a garlic flavour (Mabey 1975) and could have had either culinary or medicinal use. Boyd also identified various weed seeds, caryopses, seedpods etc., which he interpreted as being weed contaminants from the cereal crops. However, some of these weeds may have been collected for culinary purposes, used as salad vegetables or seasoning (Boyd 1998, 312). Fat hen, for instance, is as high in iron, protein, vitamin B1 and calcium as cabbage (Mabey 1975, 90). It should not be assumed that later prehistoric people were monoculturists; stray oats and wheat, and indeed weeds, in the main barley crop need not have been perceived as a problem.

Overall, the general picture given by the macrofossil evidence from sites excavated in Stirlingshire is that later prehistoric communities in the area practised arable

agriculture, harvesting barley and potentially also wheat and oats. The possibility of some wheat cultivation in the east of the county, south of the Forth is not that surprising given the apparent mixed barley/wheat regime predominant in later prehistory in the Tyne-Forth zone (Huntley 2000; van der Veen 1992). This fits in very neatly with the evidence from the rest of Scotland; barley is the dominant cereal over much of the country in this period. People continued to gather fruit, nuts and edible plants just as their Mesolithic forebears had done and this component of the later prehistoric diet should not be ignored.

3.5.2 Perthshire

Of the 52 later prehistoric sites excavated in Perthshire, only seven produced macrofossil evidence. Only three (less than 6%) of these excavations included a systematic environmental sampling strategy. Again, only with the most recent published excavations can anything but the most general conclusions regarding later prehistoric economy in the area be drawn.

An initial assessment of the economy of East Coldoch (46081/NS79NW34), using a routine bulk sampling strategy, suggested that there was a predominance of 6-row hulled barley. Smaller quantities of wheat and oat may indicate that these occurred as weeds amongst the main crop. Huntley has suggested that this site might lie just beyond the northern or western limit for wheat growing, since the assemblage contrasts sharply with the mixed barley/wheat culture implied at Port Seton, East Lothian (Huntley 2000, 159-161 & 169-170; Miller *et al.* 2000, 46) and sites in the north of England (van der Veen 1992). This observation certainly ties in with that made by Barclay (1983a) at Myrehead (47816/NS97NE37), which is 32.5km (just over 20 miles) south-east of the site. There may also have been cultural reasons for this difference. The sealed roundhouse destruction deposit at East Coldoch contained ring diffuse wood from birch, alder and hazel, presumably from the walls and roof. Hazelnut shells were found in the roundhouse floor deposits, indicating that such nuts were collected locally (Huntley 2001). One AMS date, which calibrates to 110-330AD (Beta-167226) at 2σ, was obtained from the roundhouse floor but it seems reasonable to assume that the latest phases on the site are later prehistoric. Hazelnut shells were also found at Newmill (27007/NO03SE13.1: Watkins 1980a, 189). The

East Coldoch excavation is ongoing and the final results of Huntley's analysis are awaited with interest.

At Methven Wood palisade (26752/NO02NE41), charcoal from various common trees and shrubs were noted. The excavator argued, however, that they were fortuitous incorporations into backfill of the palisade. They therefore need not indicate human use or even derive from the period of occupation (Sherriff 1986, 98). Given the lack of dating evidence from this site, it is appropriate only to mention it in passing. The same interpretation could potentially be extended to the fragments of oak, hazel and willow charcoal derived from a palisade slot at Orchill Fort (25372/NN81SE2: Christison 1901, 23), although these are just the sort of materials one might expect to be used in a palisade or wattle fence. "Small twigs of hazel, ferns, etc, partially converted into a kind of peat" were also noted, apparently stratified, in a waterlogged rock-cut cistern at Castle Law, Abernethy (27917/NO11NE12: Christison 1899), but it is unclear whether this deposit is later prehistoric.

At the multi-vallate terrace-edge enclosure of North Mains, Strathallan (26000/NN91NW12), only three samples were taken, all for charcoal. The first was from an oak post, apparently burnt *in situ*. It was radiocarbon dated to 390BC-110BC (GU-2681). The second sample, also oak, from the surface of the paved area in the upper fill of the inner ditch gave an anomalously early date of 1740BC-1310BC (GU-2682) (Mills 1990). This could be explained by its being derived from bog-oak (Barclay and Tolan 1990, 51), but given that only two radiocarbon dates were obtained from the site, it would be unwise to worry unduly about its incongruity. An oak beam was also noted at Castle Law, Forgandenny (26583/NO01NE5: Bell 1893).

The excellent preservation at the underwater site of Loch Tay, Oakbank crannog (25024/NN74SW16), which was occupied in the Late Bronze Age and Early Iron Age, ensured the survival of an impressive range of macrofossils, including some which are rarely found on prehistoric sites in Scotland. This includes seven cloudberry seeds, two of which have dated the latest surviving deposits to some point in the fourth to first centuries BC (Miller 2002); cloudberries have the same uses as

raspberries etc. (Mabey 1975, 179). The parent plant, *Rubus chamaemorus* L. is native to Ben Lawers, just a few km from the site, but now rare. Miller *et al* interpret the presence of these seeds as indicative of long-range gathering by the community and suggest they may have been brought back from transhumance or hunting expeditions "as a treat for the family" (Miller *et al.* 1998). Perhaps it is as likely that they were eaten during the expeditions and deposited on the site as components of human faeces. They could also have been derived from the stomach contents of deer brought back for butchering.

The main structural timbers at Oakbank (25024/NN74SW16) seem to have been derived from forest oak and alder. Miller (2002, 37) suggests that this felling activity would have contributed to the clearance of the local wooded landscape, something she regards as typical for the period, in light of Ramsay's (1995) work on west central Scotland. Birch (*Betula*), willow (*Salix* sp L.), elm (*Ulnus* sp L), ash (*Fraxinus* sp L.), hazel (*Corylus*) and Scots pine (*Pinus sylvestris* L.) were also present, the latter probably having been used for fire-lighting Alder was particularly abundant and it seems that the long, straight timbers recovered must have come from dense, *unmanaged* woodland with maiden trees. The lochside environment would have been ideal for alder, as it is now, and by its very nature resistant to the wet conditions it would have to endure in a crannog context.

Alder and oak have also been identified at other crannog sites, such as Buiston (Crone 2000, 105). The choice of these wood taxa is particularly significant, as they would minimise the need for the regular refurbishment envisaged by Morrison (1985). Indeed Dixon and Sands (1997) have only found evidence for a few consolidation episodes during the four hundred year occupation of the site. Alder was also used for various artefacts, including an ornately carved plate. Woodworking chips found scattered over the site were mostly alder and oak. Miller (2002) also notes the possibility that alder was used during the metalworking activity evident at Oakbank. Oak seems to have been kept mainly for construction, which is understandable given the relative difficulty of carving it.

Miller (2002) also found an abundance of hazel wood and hazelnut shells, which ties in well with the apparent high levels of hazel pollen present in the LBA/EIA in this

area. Significantly, there is strong evidence of coppicing here, perhaps on a seven-year cycle. Hazel roundwood seems to have been used for wattle or hurdles used in walls and internal partitions. Miller suggests that wattle may have been consolidated with moss rather than daub, given the relative quantities of these two materials. The moss species identified would not have been out of place in just the sort of woodland the later prehistoric inhabitants were exploiting for timber (Miller 2002, 39). Birch also seems to have been used as firewood and also rope. The low levels of willow on site could be a result of various factors but Miller favours the interpretation that it was available but neglected in favour of other species.

Miller (2002) argues that bracken (which was also present at East Coldoch: 46081/NS79NW34) was used as thatching material, given the absence of reeds and great fen-sedge and the incidence of parallel aggregations of stripped bracken rachis (stems) in some Oakbank contexts. The absence of rhizomes suggests the more sustainable method of harvesting where mature plants are cut in the late summer. Some rushes (soft/compact rush: *Juncus effusus/conglomeratus* L. and jointed/sharp-flowered rush: *J. articulatus* L./*acutiflorus* Ehrh ex Hoffm.) may also have been used to patch thatch, but also flooring and for oil lamps. It appears that bracken was also used as flooring material.

The high numbers of selfheal (*Prunella vulgaris* L.) seeds in domestic scatter contexts suggest use. Selfheal is a traditional herbal remedy for cuts and abrasions and does not seem out of place on a site where so much woodworking took place as well as everyday domestic activity (Miller 2002, 40-41). Twelve species of moss were also found at Oakbank and depending on their individual properties could have served a variety of purposes, from weatherproofing walls to toileting to weaving and rope making. Heather, flax (*Linum usitatissimum* L.) or nettle (*Urtica dioica* L.) may also have been used for ropes (Miller 2002, 42). Heather can also be used as a dye or flavouring (Mabey 1975, 154), whilst nettles are perfectly edible once cooked (ibid., 100-101)

Miller's doctoral research found evidence that arable cultivation by the inhabitants of Oakbank (25024/NN74SW16) was so successful that surplus barley (*Hordeum vulgare sl* L.) was fed to livestock as a supplement to hay. Miller argues that the

presence of emmer (*Triticum dicoccum* Schübl), as well as spelt chaff, indicates not only wealth and status but trading links with the south (Miller 2002, 35). While Miller *et al* (1998) argue for the high status of the crannog site, based on the evidence for traded plant stuffs, it may be appropriate to be rather more circumspect. As should be clearly evident from this discussion, Oakbank Crannog is exceptional in terms of preservation. Although much has been done in recent years to remedy the problems caused by lack of systematic environmental sampling, sites such as Oakbank, which have been sampled appropriately, still make up only a small proportion of the total excavated sites. Much of the plant material recovered from Oakbank came from the immediate vicinity and it is not yet known how representative it is of the LBA/EIA economy. This issue can only be elucidated once such intensive studies of other later prehistoric sites in the area have been undertaken, covering land-based settlements as well as crannogs.

The problem of lack of sampling is also encountered in attempting to assess the economy of upland settlements in the region. However, during a 1932 excavation by Thorneycroft at Dalrulzion (29060/NO15NW2), two barley grains, one from a 'black occupation layer' in hut-circle Q, the other from hut-circle F, were recovered (Thorneycroft 1947). Despite attention being paid to the prehistoric environment at Dalnaglar (29381/NO16SE2), in the form of peat-coring by Durno and soil analysis by Shipley and Romans, no attempt was made to retrieve plant macrofossils from excavated contexts (Stewart 1964). This is hardly surprising given the dates of the excavation (1958 & 1960), but it means that it is necessary to rely almost exclusively on the evidence from Badyo (J. Rideout 1995) for the economy of hut-circle settlements in upland Perthshire.

At Badyo (26422/NN96SE27), a bulk sampling strategy was used, with 290 contexts being wet-sieved and a fraction of each of the >1mm flots and retents sorted. Of these, only 46 contexts produced charred plant remains and were sorted to completion (Boardman 1995, f2: B3); these were all from contexts in the excavated houses. Boardman notes that all of the contexts contained evidence for bioturbation, including modern plant rootlets, uncharred seeds, modern insect remains and worm egg capsules. Therefore, the possibility that some of the plant macrofossils had been displaced from their original contexts cannot be discounted. As at all the previously

discussed later prehistoric sites in the area, hulled barley (*Hordeum* sp.), including six-row barley (*H. vulgare* L.) was the dominant cultivated plant at Badyo. Oat (*Avena* sp.) was also present but since it could not be identified by genus, it is unclear whether it was of the wild or cultivated variety. Flax (*Linum isitatissimum* L.) seeds were also recovered from a central hearth deposit in House 1, and possibly from the fill of a hollow in House 1 and a hearth deposit in House 8. As at other sites of the period, hazelnut shell fragments were recovered, as were wild radish (*Raphanus raphanistrum* L.) seed capsules, and brassica (*Brassica* sp) seeds, also the remains of edible plants, which could include black mustard, wild cabbage or turnip (Mabey 1975, 147, 103 & 102). Numerous weed seeds were also recovered, including those associated with cultivated or disturbed ground and others that would have been from woodland or scrub areas. Most of the macrofossils recovered came from the hearths, indicating that crop-processing waste may have been disposed of by burning. Some of the remains may have been spilt during cooking, or swept off the floor into the fire. Given the context of most of the oat grains, it is possible that this cereal was only present or used in the Late Iron Age and early mediaeval period. Barley, however, seems to have been used during all periods of occupation on the site, from Late Bronze Age through to early Mediaeval (Boardman 1995, f2B4). Boardman (1995) urges caution in interpreting all this as evidence for local cultivation of cereals and flax, since cereal straw and chaff (rachis internodes), were not present. It is possible that grain was traded in from the lowlands but given the relatively poor levels of preservation on the site, no absolute conclusion could be reached. The presence of saddle querns indicates that at least some grain processing occurred on site.

The general picture of the later prehistoric economy derived from the plant macrofossil record in Perthshire is very similar to that implied in Stirlingshire. It seems unwise to set any finer chronological resolution on the data currently available. Of the published excavations, only East Coldoch (46081/NS79NW34), Loch Tay, Oakbank (25024/NN74SW16) and Badyo (26422/NN96SE27) had a systematic environmental sampling strategy. Thus, there is only a single example from the lowland zone and just two from the Highland zone, including one crannog site. Of these, only Badyo (26422/NN96SE27) has been fully published.

3.5.3 Discussion

Throughout later prehistory, barley was cultivated in Perthshire, although possibly only in the lowland zone. It was however, certainly in use in the Highland zone, as evidenced at Dalrulzion (29060/NO15NW2) and Badyo (26422/NN96SE27). This may have been supplemented by oat and possibly also wheat. Although Boardman (1995) tends towards the idea that crops may not have been grown in the uplands in this period, this interpretation is belied by the presence of weed seeds of cultivation in the assemblage from Badyo. Given the evidence from upland hut-circle sites outwith the study area, it is possible that the absence of chaff from the sieved contexts at Badyo is the result of taphonomic processes. As Holden (1998b, 171) has noted, chaff does not tend to survive well and at any rate, may have been used to feed livestock and thus rendered archaeologically invisible. Certainly, there is evidence for crop cultivation in the upland zone in the Bronze and Iron Ages from sites far further north, including Kilphedir (Romans and Durno 1971), Upper Suisgill (van der Veen 1985) and Lairg (Holden 1998b). Indeed, at Upper Suisgill, the macrofossil assemblage might have been interpreted as having been indicative of imported grain had it not been for the ard-marks which were also found (van der Veen 1985). However, it cannot be assumed that since the hut-circle settlements of Sutherland were economically independent, the same can automatically be said of those in Perthshire. To arrive at a more definitive economic model for the upland settlement of Perthshire, more excavations need to be undertaken to modern standards, with appropriate sampling strategies. It would be entirely ill-advised to come to any more certain conclusion given the inconclusive nature of the limited evidence available.

3.6 Animal Bones

Hingley (1992, 35) did not discuss animal husbandry in a review of the evidence for production, distribution and consumption in the Iron Age of southern, eastern and central Scotland, arguing that the animal remains which had been recovered were insufficient. It would seem that ignoring the animal bones from those few sites where they have been found has had two unfortunate consequences. Firstly, it may have led to archaeologists over-emphasising the role of arable farming in this area. Secondly, animal bones have been omitted from any research agenda for sites in this area. There may be little evidence, but if what is already there, however meagre, is not

assessed, there is a risk of failing to identify ways of solving the problem. In fact, a significant minority (32%) of excavated sites has produced at least some bone. On some of these sites, this amounts to small quantities of unidentifiable burnt or calcined bone. However, as shown in Table 3-7, there is positive evidence for cow, sheep/goat, pig, horse, roe deer, red deer, bird, fox and hare[29].

None of the bone assemblages from the study area/period are statistically representative. Bone is not a common find on sites of any period in this area, owing to the notoriously acidic nature of the soils. As can be seen from Table 3-8, where it does survive, it tends to be on upstanding sites such as brochs, duns or hillforts. This suggests that the preservation conditions on sites that are not being heavily ploughed are more conducive to bone survival. Having said that, while bone was recovered from hut-circles at Dalrulzion (29060/NO15NW2) and Balnabroich (29054/NO15NW14), it was not recovered from Tulloch Field, Enochdhu (27582/NO06SE20; L. Thoms pers. comm.) or Dalnaglar (29381/NO16SE2). It might be speculated that there is sufficient variation in the acidity of soils in the upland zones to affect such preservation.

Table 3-7 Animal Bone evidence

Site	Animal type	Details
Leckie Broch (45379/NS69SE12)	Unspecified	Bone ball-shaped head of iron pin, lying on top of secondary floor deposits in Phase 5
Castlehill Wood Dun (46233/NS79SE49)	Sheep	Fragments from "the vicinity of fire places"
Fairy Knowe Broch (44651/NS59SE3)	Cattle	Phases 1, 2, 3 & 4, bone and teeth
	Sheep or goat	Phases 2 & 3, bone and teeth
	Pig	Phases 2 & 3, bone and teeth
	Horse	Phase 3, teeth
	Red deer	Phase 3, bone, teeth and antler
	Bird	Phase 3
	Dog	Phase 3, bone
	Dog or fox	Phase 3, bone
	Rabbit or Hare	Phase 2, heat-distorted bone; most likely hare!

[29] See Table 6-5 in Appendix Six.

Myrehead (47816/NS97NE37)	Ovicaprid: sheep	Burning pits 2/2, 2/3 & 3/22, feature Group 3 & ?3/12 /Stony layer (Phase B): long bone and cranium fragments, some definitely sheep and sheep horn core. Prob. & poss. frag's from Pit A (Period D)
	Bos	2/2, fragment (Phase B), poss. frag. from palisade
	Pig	Tooth from 2/5, 3 prob. tooth frag's from 3/13 Phase B
	Deer	Poss. antler frag, Pit A (Phase D)
Meikle Reive (45194/NS67NW6)	Unspecified	Very small fragments, associated with lower pavement and lowest context in interior
	Sheep	Context as above
Torwood, The Tappoch, (47004/NS88SW1)	Sheep	Small fragments from rampart
Lower Greenyards, Bannockburn (47244/NS89SW12)	Cattle	16 fragments from Ditch 0, Palisade 2, House 1, fire pit F30 etc
	Sheep/goat	18 fragments from Ditch 0, Palisades 0 & 2, House 1, fire pit F30 etc.
	Pig	2 fragments from House 1 & possibly Palisade 0 & fire pit F30
Loch Tay, Oakbank Crannog (25024/NN74SW16)	Cow	Teeth: precise context not stated
	Sheep	Faeces
	Insects	Details not given
Castle Craig Fort (26048/NN91SE11)	Unspecified	Small pieces of animal bone from the pits
East Coldoch (46081/NS79NW34)	Unspecified	Small pieces (burnt, apart from one tooth fragment) from roundhouse floor deposits and fill of two cists
Borenich (25880/NN86SW6)	Unspecified	Bone bodkin & bone implement; lower strata of house interior
Dalrulzion (29060/NO15NW2)	Unspecified	"great number" of crushed bones "mostly near the hearth stones"
Castle Law, Forgandenny (26583/NO01NE5)	Oxen	Lower jaw, teeth, horn, foot bones, rib, forearm vertebrae, scapula, humerus
	Pig (possibly wild boar)	Tusks of boar, hips of hog, tibia of hog, lower haw & teeth of hog, humerus of hog, canine teeth with part of jaw of hog

	Wild roe deer	Humerus
Castle Law, Abernethy (27917/NO11NE12)	Deer	Antler knife handle
	Roe deer	No details
	Red deer	No details
	Ox	No details
	Pig	No details
	Goat	No details
	Various birds	No details
Balnabroich (29054/NO15NW14)	Unspecified	Bone, minute fragments in some hut-circle interiors
Aldclune (25822/NN86SE1)	Pig	Mostly from site 1, mostly small calcined fragments, sample not statistically valid
	Cow	As pig
	Horse	As pig
	Red deer	As pig
	Sheep or goat	As pig
Badyo (26422/NN96SE27)	Unidentifiable	Small fragments of burnt bone from Area 1, House 1
	Unidentifiable	Burnt bone from Area 3, House 5
	Unidentifiable	Burnt bone from Area 4, House 6
Camelon (46922/NS88SE24)	Unidentifiable	Calcined bone from hearth area of roundhouses
Gillies Hill (46246/NS79SE60)	Unidentifiable	Tiny fragments of burnt bone

Most of the bone from later prehistoric sites comes from excavations that took place in the late nineteenth century and early twentieth century. There are several possible explanations for this. Firstly, between World War II and the present (and particularly since 1970), cropmark sites have attracted more attention from researchers. Their lowland situation means that these heavily ploughed sites are also more likely to be investigated in advance of development. These sites, by their very nature, are less likely to include surviving bone. When bone does survive in this region, it tends to be very soft and if it is disturbed by the plough will rapidly be destroyed. Thus, sites with bone on them are less likely to have been excavated with an appropriate sampling strategy. Cropmark sites are more likely to have had an appropriate sampling strategy but this has not led to many more bones being recovered. This may not be only due to geochemical factors. The features most likely to act as reservoirs for bone are ditches and other deep features. However, the modern trend

has been towards only sampling these, cutting sections at regular intervals. This not only lowers the possibility that significant quantities of bone will be retrieved, if they are there, it also means that spatial patterning may go un-noticed.

Bearing these obvious biases in mind, the evidence for stock-rearing and use of wild animals is examined, firstly in Stirlingshire and then in Perthshire, before pulling the evidence together and comparing it with the indirect evidence from pollen. The data is summarised in Fig. 3-14 and discussed in detail below.

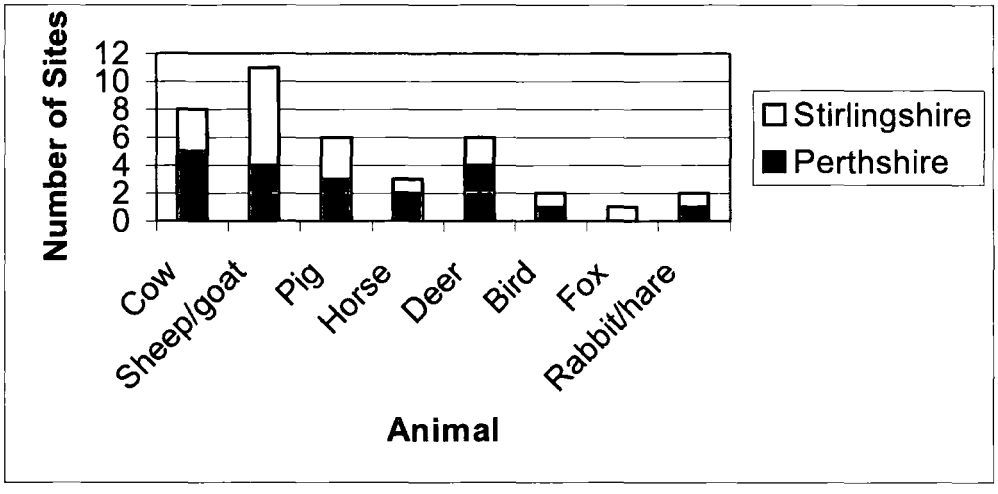

Fig. 3-14 Animal bones recovered from Later Prehistoric Sites

3.6.1 Stirlingshire

Most of the evidence for Stirlingshire comes from duns and brochs. However, it should be noted that of the eighteen excavated later prehistoric sites in Stirlingshire, only five produced no bone whatsoever. While brochs appear to have been in use in the first few centuries in this area, duns are poorly dated. MacKie details some bone in his interim report on Leckie (45379/NS69SE12), but only sheep bones found in a posthole in the pre-broch phase are identified to species. These produced a date of 1AD-340AD (GU-1370), although given the context, they are more likely to belong to a time at the initial end of the scale. Some bones from rubble associated with dislodged stair lintels date to 200BC-550AD (GX-2780) (MacKie 1982); the mixed context and the wide range of the 2σ means that this is not very helpful (Table 3-8).

Table 3-8 Radiocarbon dated Animal Bones

Site	Animal Type	Details	Lab Code	Uncalibrated bp	Calibrated at 2 σ
Leckie Broch (45379/ NS69S E12)	Sheep	Group of sheep bones in post-hole in pre-broch phase (Phase 1)	GU-1370	1870±70	1AD-340AD
	Unspecified	Large 'animal' bones from rubble associated with dislodged stair lintels	GX-2780	1840±150	200BC-550AD

Much more informative is the data from Buchlyvie, 'Fairy Knowe' (44651/NS59SE3). Although no radiocarbon dates were retrieved from bones on this site, a wider range of species is represented and there is data on the phase to which each belongs. The only species represented in all four phases including the pre-broch phase is cattle. Sheep/goat and pig are present in phases 2 and 3. In phase 3 horse, red deer, bird and dog fox are also represented. The wild animals are likely to have been eaten, but one might speculate that the horse was used for transport or traction. Without detailed contextual information, it would be foolhardy to say more than this, although one wonders if the bones and other remains of this animal were kept for a reason. Remains of another wild animal, hare, were recovered from phase 2. Only sheep bone fragments were recovered from the rampart at Torwood, The Tappoch (47004/NS88SW1) but excavations concentrated on what had not been cleared out during the nineteenth century.

Sheep bone fragments were also recovered from Castlehill Wood Dun (46233/NS79SE49) and Meikle Reive hillfort (45194/NS67NW6), where they were retrieved from primary contexts. Of the cropmark sites in Stirlingshire, only two produced any animal bones. At Myrehead (47816/NS97NE37), in the east of the county, ovicaprid, cattle and pig bones were all recovered, echoing the suite of domesticated animals which occurs on upstanding sites. Some of the ovicaprid remains, which came from pits in Phases B and D, were definitely from sheep. The pig remains were all teeth, raising the possibility that for some reason, teeth were kept or deposited on site preferentially. There is no way of knowing though, unless routine phosphate and pH tests are carried out on site, which did not happen at Myrehead. At Lower Greenyards, Bannockburn (47244/NS89SW12) most of the meagre animal bone assemblage came from the promontory fort. The results of the initial assessments of samples from the first season were so disappointing that those

from the second season were not processed. Nonetheless, the general picture matches that of Myrehead, with cattle, sheep/goat and pig all represented. It is not yet clear whether fish and/or shellfish were part of the later prehistoric diet in the study area. Whilst the sea may not have been as close to Lower Greenyards, Bannockburn as Fairweather (1996, 248) suggests, the very presence of seaweed indicates that the inhabitants are likely to have had access to fish and other seafood. The absence of fish bones can be explained most reasonably by their small size and relative fragility. Absence of seashells can probably be best explained by the fact that the study area does not include any coastline, although it does include some estuarine areas. Having said that, a fish/shellfish taboo is a distinct possibility; this is a proven phenomenon during the Iron Age around the North Sea (Dobney and Ervynck forthcoming). However, in Late Iron Age contexts at Ardestie in Angus, Wainwright recovered seashells such as periwinkles (*littorina littorea*) and mussels (*mytilus edulis*) as well as lobster/crab in souterrain and post-souterrain Roman Iron Age contexts (Wainwright 1963). It is perhaps worth noting that the only definite deer bone came from a broch (Buchlyvie, 'Fairy Knowe': 44651/NS59SE3), although a possible piece of antler came from a pit at Myrehead (47816/NS97NE37). It has been suggested that access to deer in this period was linked to status (Armit 1997b) but there is not enough data from Stirlingshire to test that contention.

Although very little chronological resolution is possible with this data, it would seem reasonable to suggest that in this lowland zone, people were farming cattle, sheep and/or goat and pig They are likely to have supplemented this with seasonally available game resources such as red deer, bird or hare.

3.6.2 Perthshire

The bias in preservation of bone in Perthshire is again towards upland or at least upstanding sites. Much is unidentifiable. Although bone was found at twelve sites, it was identifiable to species at just five. It is clear, as in Stirlingshire, that bone was being worked for other purposes; this is demonstrated by a bone bodkin from Borenich circular homestead (25880/NN86SW6) and an antler knife handle from Castle Law, Abernethy (27917/NO11NE12). The core suite of cow, sheep/goat and pig was found at Aldclune (25822/NN86SE1) and Castle Law, Abernethy. This

assemblage was complemented at Aldclune with red deer and horse. This is very similar to the assemblage from Castle Law Abernethy, which also included roe deer and various bird bones. The bones from Castle Law Forgandenny (26583/NO01NE5) included cattle, pig/wild boar and roe deer but not sheep/goat. At Oakbank and Dunsinane Hill (30660/NO23SW1.1), cow and sheep/goat were present but pig was absent. Deer were present at four sites (Aldclune, Castle Law, Forgandenny, Castle Law, Abernethy and Dunsinane Hill) while horse bones were found at just two (Aldclune and Dunsinane Hill). At three of the four sites where deer bones were found, pig was also noted.

3.6.3 Discussion

All of the evidence discussed above ties in well with the points made by Hambleton (1999) in her discussion of the animal husbandry regimes in Iron Age Britain. Hambleton chose to consider only evidence from south of the Forth, since the assemblages from further north are, with notable exceptions, generally extremely poor. She considered evidence from a slightly narrower chronological range (750BC-AD50) than that of the present study. Hambleton noted a low incidence of pig bones across the assemblages she studied and suggested that this might be the result of differential deposition of pig remains, away from settlement sites and therefore less likely to be recovered during archaeological excavation. This might be reflected in the fact that pig bones are sometimes recovered from human burials. North of the Forth, though, it seems that a very different trend can be noted. In the Northern Isles, pig bones occur in high quantities on later prehistoric sites, often making up 25% of mammal assemblages (Bond 2002). Similarly high proportions of pig have also been recovered from Iron Age sites in Caithness (e.g. Crosskirk broch: 16%) and the Western Isles, as at Dun Vulan (22%) (Mulville 1999). Lower, but still significant, proportions of pig bones have been recovered from Iron Age sites in East Lothian. Smith (2000) and Mulville (1999) have both argued that in the Iron Age, pigs were peculiar to high status households. In light of the evidence from Perthshire and Stirlingshire, however, which indicates presence of pig in all but one (Oakbank) of the cases where cow and ovicaprid bones were recovered together, this interpretation may not be tenable. Pig bones have been found at apparently humble

homesteads as well as the supposedly high-status hillforts and brochs. Similarly, it should be noted that deer bones were recovered from as many sites as ovicaprid or pig, indicating that using deer as an indicator of high status may also be unjustified.

There is of course the possibility that some of the fragmentary bone noted by early excavators and more recently at sites such as Gillies Hill (46246/NS79SE60: Rideout 1992, 129) may actually be human. The issues surrounding 'the invisible dead' in the area are discussed further in Chapter Eight.

3.7 Conclusion

The analysis of environmental and economic evidence in the Study Area in later prehistory suggests a mosaic of vegetation types, similar to that suggested by Dumayne-Peaty (1998a) for the Hadrian's Wall area. In later prehistory, the study area included areas of arable and pastoral land, some of which is likely to have been deliberately cleared for the purpose. It also included land set aside for other purposes or left in an unmanaged state, such as woodland and peat bog. It would seem reasonable to suggest that the fertile lowlands within the study area also had a high agricultural potential in the later prehistoric period. However, it should be borne in mind that woodland is likely to have been more extensive than today and to have supported a wide variety of wild animals and plants suitable for human exploitation. Importantly, it would have provided timber for building projects and for fuel. Tipping argues for maintenance of woodland clearings in Southern and Eastern Scotland from *c.* 500BC through to and perhaps beyond the Roman occupation (Tipping 1997b, 157) and such a clearance is evident in this area between 200BC and AD400. As Armit and Ralston (2003, 192) have pointed out, Roman legionary fortresses, forts and camps show that there were large areas of unforested land by the Roman period. Whilst the Romans may have cleared land themselves for long-term sites such as forts and fortresses (Hanson 2003), they would have taken advantage of areas cleared already by native people in establishing temporary camps (Armit and Ralston 2003, 192). In contrast to what Dumayne-Peaty (1998a; 1998b; 1999) has argued for the Hadrian's Wall area, the evidence from the Study Area indicates indigenous triggers for changes in landuse, and no such major changes in land-use during the Roman period (Tipping 1997b, 157).

It should be borne in mind that large areas of the Forth Valley were still bog at this period and would not have been suitable for growing crops. However, they may still have been useful for grazing domestic animals such as sheep or goats. It should not be assumed that the mosses were only used for the ritual purposes often associated with prehistoric wetlands. The five undated timber trackways (RCAHMS 1979) and LBA wooden wheels (Piggott 1957) found during land reclamation in the eighteenth century would suggest that the mosses did not represent an insurmountable barrier to the local people.

Table 3-9 Summary of Indirect Excavated Evidence for Cereal Cultivation and Stock-rearing

Site	Item	Context
Leckie Broch (45379/NS69SE12)	Sheep Shears	Broch destruction deposit, Phase 3
	Rotary Quern	Broch destruction deposit, Phase 3
Wallstale Dun (46232/NS79SE48)	Bun-shaped rotary quern	Outer slope of dun, in rubble
	Part of saddle quern	Outer slope of dun, in rubble
Castlehill Wood Dun (46233/NS79SE49)	1 saddle quern fragment	In dun wall
	Half of unfinished stone of rotary quern	On surface, among debris from core of north arc of wall
	2 other rotary quern fragments	West sector
Buchlyvie, 'Fairy Knowe' Broch (44651/NS59SE3)	Iron Awl	On paving, phase 2
	Spindle Whorls	Phase 2 & 3

	10 Weights	Phase 2 & 3
	5 Rotary querns	Phase 2 & 3
Dalrulzion (29060/NO15NW2)	Saddle Quern	Section 3 of hut-circle F: at 'G', 2' NE from centre, smooth side down on top of 'occupation layer'
	2 broken saddle querns	Hut-circle Q1
Balnabroich (29054/NO15NW14)	Saddle Quern?	Described as "a large boulder with a hollow, as if for grinding": in centre of 1 of hut-circles
Castle Law, Forgandenny (26583/NO01NE5)	Whorl	Context not specified
Borenich (25880/NN86SW6)	Half Quern	Type not specified, near top of round house interior deposits
Badyo (26422/NN96SE27)	Saddle Querns	Trough quern: House 4 doorway paving
	2 Whorls	Homestead 1: A1-from A & B horizons
West Plean (46898/NS88NW5)	Schist Whorls	From central area of site
	Rotary Quern	Part, from cobbled yard
Torwood, The Tappoch (47004/NS88SW1)	Saddle Querns	Context not specified
	Rotary Querns	Context not specified
	Whorls	Context not specified
Lower Greenyards, Bannockburn (47244/NS89SW12)	Saddle Querns	1 from Palisade 0, 1 from posthole packing in A1,
	Spindle Whorls	1 from A1, A-horizon 1 from B-horizon
Newmill Souterrain (27007/NO03SE13.1)	Rotary Querns	Topstone in souterrain backfill; 2 fragments from chamber backfill; 1 from roundhouse posthole.
Queen's View (25844/NN86SE3)	Rotary Querns	2 "in the centre of primary occupation"
Litigan (24945/NN74NE6)	Rotary Querns	2 small fragments; unstratified

Castle Menzies Home Farm (25639/NN84NW29)	Rotary Querns	4 in a large (hearth?) pit
Aldclune (25822/NN86SE1)	23 Rotary Querns	Reused as paving and packing stones; all phases
	Spindle whorls	Site 1, Phases 2-3; Site 2, Phase 1
	Hoe/weeding tool	Site 1, Phase 1 or 2
	Shears	Site 2, Phase 2 or 3
Myrehead (47816/NS97NE37)	Saddle Querns	Fragments from late-mid first millennium BC pits (Period B)
Loch Tay, Oakbank (25024/NN74SW16)	Ard-like cultivation implement	Context not stated
	Sheep coprolites	Context not stated
Shanzie (183018/NO25SE55)	Upper stone of bun quern	Surface find
	Upper stone fragment of disc quern	Unstratified
Inchtuthil (28598/NO13NW6)	Upper stone of a rotary quern	Not stated
Barry Hill Enclosure (31065/NO25SE26)	Numerous querns	Among stones in central passage
Dunsinane Hill (30660/NO23SW1.1)	Quern	Above and by the side of passage b

Note: this table does not include surface finds from unexcavated sites

The chronological resolution that can be applied to the animal bone evidence from excavated sites is low. There is enough evidence to suggest, however, that farming peoples in this area were rearing a variety of stock, including cattle, sheep/goat and pig and at least some also had access to domestic horses and dogs. The finds of sheep shears at Aldclune (25822/NN86SE1) and Leckie (45379/NS69SE12) indicate that sheep were being used for wool as well as meat and/or milk (Table 3-9). People

continued to hunt, adding deer, boar, hare and birds to the menu. It should be borne in mind that there would have been wolves and bears in Scotland during the period. As Morrison (1985, 64) has pointed out, bears were not eradicated until *c.* AD 1000 (speculative date) and wolves not until 1749 (McCormick and Buckland 2003, 87). This would have provided a very good reason for bringing domestic animals in (whether to a building or defended enclosure) at night, especially in areas near the forests that are the predators' natural habitat. Having said that, if there was still extensive woodland in the area in later prehistory, wolves would likely have stayed in the forest, populated as it would have been with deer and other mammals. Bears would also have stuck to their natural habitat. The resources later prehistoric people needed could have been gathered from the edges of the forests and an antagonistic relationship between people and carnivorous animals need not therefore be envisaged.

At the moment, it is impossible to assess the importance of dairying to the economy. There are not enough well-preserved bones to carry out a study of cattle mortality and there has been no lipid analysis on pottery from this area. It is tempting to argue that souterrains were used for the storage of cheese but there is no archaeological evidence for this. The discovery of a wooden container of butter at Loch Tay, Oakbank (25024/NN74SW16: Dixon 2000) is, however, tantalising, as is a find of bog butter at Cromaske Moss (NMRS Number: NN93SE30). Hingley has suggested that bog butter deposits may represent ritual offerings associated with fertility (Hingley 1992, 24), something that might suggest an economy with a dairy surplus.

It seems that in the Late Bronze Age, on the evidence from Badyo (26422/NN96SE27), people living in the uplands may have been growing crops as well as rearing stock. Evidence for the Iron Age comes largely from the lowland zone and, where environmental sampling was undertaken, indicates that people were exploiting a wide range of plant resources. While they were largely cultivating barley, as seems to be the case all over later prehistoric Scotland north of the Forth, there is some evidence for wheat growing from sites in the south of the Study Area. There is also evidence that oats were being grown. The idea that the northern limit for wheat growing may be in the central belt, however, is belied by the discovery of emmer and spelt wheat at the EIA site at Loch Tay, Oakbank (25024/NN74SW16).

While it is possible that this was imported, it is also possible that the cereal was more widespread than had previously been assumed. A reassessment, however, will have to wait for the retrieval of a larger corpus of palaeoenvironmental data. The assemblage from Loch Tay, Oakbank is exceptional, but it would seem naïve to assume that it is representative of an especially rich site, rather than an ordinary site with exceptional preservation conditions. This point will be returned to in Chapter Four. All the evidence points to a mixed agrarian economy with exploitation of wild plant and game resources where it was deemed appropriate.

Of the 72 excavated sites analysed in this study, most of which were domestic, nineteen yielded one or more quern-stone (27%). Rotary querns were present at slightly more sites than were saddle querns, but there is no obvious chronological correlation (pace Caulfield 1978); see 4.2.3.2.1 for further details. Many of these had been reused as post-packing, paving or walling, so their absence from many sites need not imply that they were not widely used. Other coarse stone tools may have had culinary uses, although their exact purpose is impossible to pinpoint and their flexibility may have been their strength.

A thorough analysis of existing data has demonstrated that it is possible to characterise the later prehistoric environment of the study area, and identify periods of major change within it. It has also proved possible to characterise the later prehistoric economy, drawing on the evidence from palynological analysis and excavated plant macrofossil and bone assemblages. It is only through reviewing the evidence in this way that an appropriate research agenda for the future, which is properly integrated with other aspects of material culture and society (see Haselgrove *et al.* 2001), can be developed. An agrarian sociology, as suggested in the recent Iron Age Agenda document, is perhaps not an unattainable goal, even for this geographical area, which is notoriously fraught with difficulties, as point that will be returned to in Chapter Nine.

Chapter 4 The Classification of the Data

4.1 Introduction

This chapter reviews the structure of the data before moving on to discuss the dating of the sites, stressing the value of the radiocarbon dates that are available and discussing the specific problems encountered in using artefacts as dating evidence in this area. The potential of certain items, notably stone lamps, to provide more detailed chronological information in future is highlighted. The use of structural typology and site morphology are discussed, before the classes and types used in the present study are outlined. A detailed discussion of the excavations within the study area is provided; the dating of each class and type is discussed, using the hierarchy of dating methods and function and where relevant, patterns of artefacts deposition on certain types of site are considered. References to sites within the study area are given in Appendix Two. The data used in this study has been evaluated in Chapter 2. It consists of upstanding sites, cropmark sites and sites discovered during development; a relatively low proportion have been excavated (see 4.2 below).

4.2 The Structure of the Data

In a distribution map of 1957, Feachem (1957) was able to show only 32 Iron Age sites in Stirlingshire. There are now over twice as many known (Fig. 4-1). In 2000, when the download was obtained prior to analysis, the National Monuments Record for Scotland CANMORE database contained 12257 records for the study area, covering sites and finds dating from early prehistory to the modern period. There are 1984 sites listed for Stirlingshire and 10273 in the much larger county of Perthshire[30].

As is evident in Fig. 4-1, a far higher proportion of later prehistoric sites have been excavated in Stirlingshire than Perthshire. Few have been excavated extensively to modern standards, though, and some investigations (e.g. Abbey Craig: 47113/NS89NW10) have been rather small scale in nature.

[30] See Tables 6-1 and 6-2 in Appendix Six.

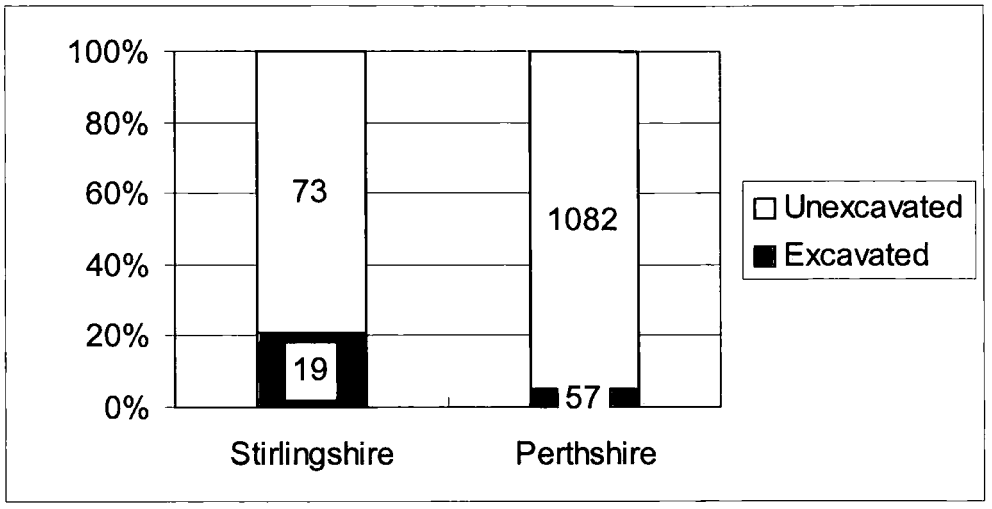

Fig. 4-1Chart showing proportions of excavated sites in Stirlingshire and Perthshire

As can be seen in Fig. 4-2, most later prehistoric sites survive as upstanding monuments, although a significant proportion are known only from the cropmark record. In comparing these figures with those for excavated sites (Fig. 4-3), it becomes clear that a roughly representative sample of cropmark and upstanding sites has been excavated in Stirlingshire but there has been a bias towards upstanding sites in Perthshire. Forty-five of the 76 recorded excavations have been published (59%), 14 from Stirlingshire and 31 from Perthshire[31]. Of those that remain unpublished, some have surviving archives in the NMRS and where available these have been consulted. Efforts were made to contact the directors of unpublished excavations and surveys and this yielded much valuable information.

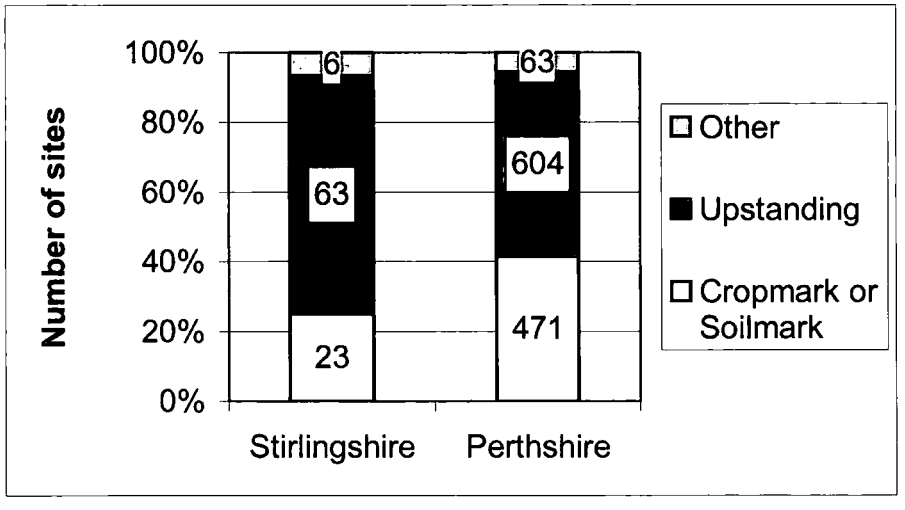

Fig. 4-2 Chart showing how later prehistoric sites are known. 'Other' covers sites found during construction, quarrying, etc as well as those where details are unknown.

[31] See Table 6-4 in Appendix Six for data.

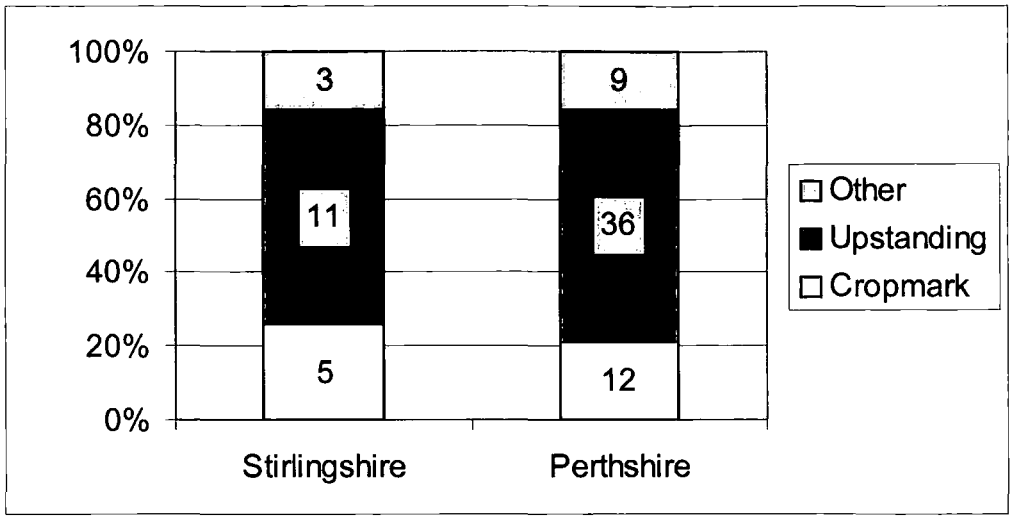

Fig. 4-3 Chart showing how excavated sites are/were known.

4.3 Dating of the Sites

4.3.1 Radiocarbon Dating

Twenty later prehistoric sites have produced radiocarbon dates[32]; this amounts to 55 later prehistoric dates. Many of the radiocarbon dates so far obtained also fall within the notorious 'flat point' on the radiocarbon calibration curve, which means that dates from the period 800BC-400BC are indistinguishable. As will become evident, this has particular implications for the dating of the multivallate enclosures in this area. However, since the dating potential of other material obtained from sites in the area (discussed in 4.3.3) is low, it is important to maximise on the radiometric dating evidence available. Inevitably, radiocarbon dates obtained from archaeological contexts in the past may not meet the criteria now recommended by Historic Scotland and these problems need to be taken into account. However, the recent discussions surrounding appropriate sampling strategy need not be rehearsed here (see Ashmore *et al.* 2001; Ashmore 1999; 2000). Suffice it to say that problems with samples must be considered on a case-by-case basis. For consistency, all dates discussed below were recalibrated by the author using OxCal v3.5 (Bronk Ramsey 2000).

[32] See Table 6-4 in Appendix Six for data.

4.3.2 Roman Material Culture

Just twelve of the 76 excavated sites in the study area have produced Roman finds (16%), emphasising the limitations of using this material as dating evidence. This is significantly lower than the 40% figure suggested by Hunter (2001a) for his North-East lowlands. Roman finds include samian, coarse ware, glass vessels, coins and jewellery. Obviously they can only provide dating evidence for the period of Roman contact and later, or occasionally act as *termini ante quos*. Most of the sites that have produced Roman finds are in Stirlingshire, a phenomenon which no doubt owes much to the proximity of the forts and garrisons of the Antonine Wall. In an area so close to the frontier it is easy to suggest ways in which Roman material may have entered native hands and there is no need to envisage any time delay in such goods making their way onto native sites. However, one should bear in mind the possibility, given the relatively short-lived nature of the Roman incursion, that people looted abandoned Roman sites. This is certainly something that should be considered in the case of samian sherds that show evidence of secondary use. Certainly, the researcher is not faced with the same problem as those in the Western Isles have had, of trying to understand the processes by which Roman material ended up on sites many miles beyond the northernmost reaches of the Empire. Once the limitations in using Roman finds for dating purpose is understood, it is possible that the origin of certain site types may be dated to an earlier period, in much the same way that the dating of the 'Atlantic roundhouses' of the Western Isles has been revolutionised by Armit's (1991; 1992) doctoral research.

Fig. 4-4 Finds from Shanzie souterrain (183018/NO25SE55) in Perthshire, which include Roman masonry, samian and a pair of tweezers. Native items include two rings from a horse-harness and an amber finger-ring. © Trustees of the National Museums of Scotland

Table 4-1 Excavated sites on which Roman material has been found.

NUMLINK	MAPNO	SITE	NMRSNAME	Revised site type	Finds	County
25295	NN81NE	19	Cuiltburn	Univallate enclosure	samian sherd (form 37, South Gaulish)	Perthshire
183018	NO25SE	55	Shanzie	Souterrain	Tweezers (?Roman influence), samian sherd (Dragendorff 37 or 29), fragment of architectural moulding	Perthshire
30958	NO24SW	46	Wester Denhead	Univallate enclosure	pottery sherd	Perthshire
25822	NN86SE	1	Aldclune	Substantial Stone Roundhouse	samian sherd (Dragondorff form 36)	Perthshire
46235	NS79SE	50	Castlehill	Substantial Stone Roundhouse	possible Roman pottery sherd	Stirlingshire
45379	NS69SE	12	Leckie	Substantial Stone Roundhouse	various pottery sherds (including samian), glass sherds	Stirlingshire
44651	NS59SE	3	Buchlyvie, 'Fairy Knowe'	Substantial Stone Roundhouse	various pottery sherds (including samian and amphorae), glass sherds, glass gaming counter, reused Roman metal, coins	Stirlingshire
46233	NS79SE	49	Castlehill Wood	Univallate enclosure	pottery sherd	Stirlingshire
46922	NS88SE	24	Falkirk, Camelon	Multivallate enclosure	pottery (including 1 samian sherd), glass phial sherd, iron nails	Stirlingshire
46860	NS88NE	49	Easter Moss	Souterrain	samian sherd (no analysis to date)	Stirlingshire
46294	NS79SW	4	Keir Hill of Gargunnock	Substantial Stone Roundhouse; multivallate enclosure	pottery sherd, glass	Stirlingshire
47004	NS88SW	1	Torwood, the Tappoch	Substantial Stone Roundhouse	2 pottery sherds	Stirlingshire

Curation of Roman material by native people is an important factor; Willis (1998, 330-331) demonstrated that Roman sherds from Buchlyvie, 'Fairy Knowe' (44651/NS59SE3), had been 'reused' or trimmed down for use as polishers or small dishes. This is also evident on other sites in Eastern Scotland, such as Hurly Hawkin, Angus (Taylor 1982, 241), Traprain Law (Erdrich *et al.* 2000, 449) and possibly West Mains of Ethie, Angus (Wilson 1980, 120: Find 6). The possibility that Roman artefacts continued in use long after being acquired needs to be borne in mind when considering their chronological implications. The heirloom factor (Schiffer 1987, 35) may have been underplayed by previous scholars, but there is currently little way of quantifying this. Lessons can be learnt from the fact that at Buchlyvie, 'Fairy Knowe', most of the closely datable finds came from a post-abandonment deposit, although without the radiocarbon dates, the whole occupation might have been dated to the Roman period (Hunter 1998b).

Roman coins are rare on native sites and often their contexts are not helpful in dating the actual occupation. A good example comes from the rediscovered, albeit circumstantial, small coin hoard from a souterrain near Alyth (argued by Small and Bateson to be Drumderrach but more recently by Coleman and Hunter (2002, 97) to be Shanzie: 183018/NO25SE55), which may provide a *terminus ante quem* of the second century AD for the souterrain (Small and Bateson 1995). Unfortunately, so little is known of the context of this find that conclusions can be no more specific than this; whether this find came from the souterrain floor, the primary fill or secondary fill is unknown. Despite the conclusions arrived at by Armit (1999a) in his case for a souterrain abandonment horizon, there are real problems in using dating evidence from the fills of souterrains. Coleman and Hunter (2002, 97) have shown that the Roman finds from souterrains do not fit the narrowly defined window in the Roman Iron Age that Armit (1999a) envisages (see Chapter Eight). At any rate, it is difficult to know how long after the primary occupation of the site the finds were deposited and whether these finds were deliberately and individually deposited or just happened to be in the midden material which was used for backfilling.

Interestingly most of the exotic Roman material comes from sites that might also be termed exotic in this region, namely the brochs. Buchlyvie, Fairy Knowe

(44651/NS59SE3) and Leckie (45379/NS69SE12), in particular, have produced relatively substantial artefact assemblages including large amounts of Roman goods. While this is very useful in determining dates for the small number of lowland brochs in the study area, it needs to be borne in mind that absence of Roman finds from any site need not preclude use or occupation in the Roman Iron Age.

4.3.3 Native Material Culture

Chronological patterns in the later prehistoric material culture of eastern Scotland are poorly understood. The following discussion concentrates exclusively on reviewing the dating of such items and highlights objects that urgently need re-assessment in light of this new analysis.

4.3.3.1 Native Pottery

The Study Area is notable for the paucity of pottery recovered from later prehistoric sites, in contrast to contemporaneous sites in the Northern and Western Isles. The finds from Loch Tay, Oakbank (25024/NN74SW16) and Leckie (45379/NS69SE12) indicate that the low levels of pottery in this area may in part be a result of a preference for wooden vessels. This may also be hinted at on sites that produced stone 'pot-lids' but no pottery (e.g. Balnabroich: 29054/NO15NW14). An alternative explanation is provided by Willis (1999, 90) in discussing a similar phenomenon on Iron Age sites in North-East England. He suggests that the small quantities of pottery there indicate a social awareness of pottery - a 'ceramic consciousness' - but not a habit of everyday use. This could indicate that pottery had special, occasional uses and therefore only needed to be manufactured on an infrequent basis. Neither Perthshire no Stirlingshire is aceramic in this period, but the pottery that is recovered tends to be undecorated and poorly fired with few diagnostic features. Ceramic specialists have tended to suggest a date no more specific that 'Iron Age' when assessing these assemblages. Until recently, the pottery of eastern Scotland, north of the Forth, had been thought to be chronologically insensitive but ongoing doctoral research by Catherine McGill seeks to rectify this problem (C. McGill pers. comm.). In the meantime, however, native ceramics cannot be used to date the sites under discussion here, beyond supporting a later prehistoric date suggested from other dating sources.

Fig. 4-5 Cordoned pottery sherd from Buchlyvie, 'Fairy Knowe' (44651/NS59SE3), a substantial stone roundhouse in Stirlingshire. Such coarse pottery is typical for Perthshire and Stirlingshire. © Trustees of the National Museums of Scotland

4.3.3.2 Coarse Stone Artefacts

4.3.3.2.1 Quern Transition

No systematic petrological survey has been undertaken for the later prehistoric quernstones of Eastern Scotland, although they are generally assumed to have been locally sourced (MacKie 1987, 5). It is possible, however, given their portability, that quernstones were moved by people from site to site, especially if they were thought of as personal items. Caulfield's (1978) proposition, that a quern replacement horizon can be observed in the Western and Northern Isles, initially used to suggest that broch architecture originated in the Northern Isles, is generally believed to hold true for the rest of later prehistoric Scotland (MacKie 1987, 7). Caulfield himself did not suggest a date for this horizon (although he argued that it was a more or less immediate changeover) but MacKie (1987, 7-9) posited a date in the first or second century BC. This was subsequently taken up by Armit (1991, 192), who argued for a date of *c.* 200BC. However, there is little concrete evidence to support this, from the Study Area. It is true that generally, hut-circle sites have yielded saddle querns while later sites such as souterrains, brochs and circular

homesteads have yielded rotary querns[30]. However, the direct *replacement* of saddle querns by rotary querns is harder to prove, particularly since saddle querns could have remained useful for processing materials other than grain, even after the introduction of the rotary quern (Armit 1991, 192). A modern analogy can be found in the retention of the small pestle and mortar in the British kitchen, despite the technical superiority of rotary salt and pepper grinders, and electric spice mills (Slater 2001, 58). There is certainly not enough data to date any putative quern replacement horizon in the study area to *c.* 200BC, as Armit (1991, 191-192) was able to do for the Atlantic zone, or even to infer that the transition happened around the same time everywhere.

Fig. 4-6 Saddle quern from Castlehill Wood. © Trustees of the National Museums of Scotland

The reports for the sites that have produced both rotary and saddle querns, notably the Torwood, The Tappoch (47004/NS88SW1), Wallstale (46232/NS79SE48) and Castlehill Wood (Fig. 4-6: 46233/NS79SE49), do not contain enough stratigraphic information to ascertain succession, as was possible for Gurness, Jarlshof and Clickhimin, on which Caulfield's (1978) argument was based. Indeed, Armit's (1991) dating of this quern replacement horizon was necessarily based on

[30] See Table 3-9 for quernstone contexts.

radiocarbon dates from only two sites; Crosskirk, Caithness and Baleshare, North Uist. Moreover, inferences from data from just five sites, four of which are in the Northern and Western Isles, are hardly a sound basis from which to extrapolate a chronology for the whole country. That said, the dates of primary contexts within which some quernstones were found at Aldclune (25822/NN86SE1) does not contradict the quern horizon hypothesis (Cool 1997, 443). However, even if it is assumed that the sites where both saddle and rotary querns were found all had EIA as well as LIA remains, the site of Loch Tay, Oakbank (25024/NN74SW16) remains an anomaly. Despite all the radiocarbon dates being pre-200BC (see 4.5.3.1 below), published reports only mention rotary querns being found. This phenomenon is not restricted to the study area; Port Seton East in East Lothian produced mostly post-200BC radiocarbon dates but the only quern recovered from this site was a saddle quern (Haselgrove *et al.* 2000). Thus, it is far from clear that the transition from saddle querns to rotary querns is clear-cut and sudden enough to merit the identification of a 'quern horizon'.

Fig. 4-7 Rotary quern from West Plean, Stirlingshire. © Trustees of the National Museums of Scotland

Interpretation is, of course, made difficult by the fact that most quern stones in the study area have been found either unstratified (as at Wallstale: 46232/NS79SE48) or in secondary contexts, such as posthole fills (as at Aldclune: 25822/NN86SE1 and Lower Greenyards, Bannockburn: 47244/NS89SW12), paving (as at Badyo: 26422/NN96SE27) or walling (as at Castlehill Wood: 46233/NS79SE49). Where they were found in pits, as at Myrehead (47816/NS97NE37) and Castle Menzies Home Farm (25639/NN84NW29), it is difficult to tell how long they had been in use before being deposited. Moreover, it should be borne in mind that querns need not have been used solely for grinding grain; saddle querns may still have been deemed useful for grinding cosmetics, dyestuffs, foodstuffs or temper for domestic pottery production, even after the introduction of the rotary quern. Given the uncertain applicability of Caulfield's (1978) model to this area, therefore, and the secondary contexts of the quern finds, it would seem inappropriate to date the excavated sites on the basis of quernstones. It is an intriguing possibility - as raised by Hingley (1997, 451-452) in the context of Aldclune - that there was ritual significance in the fragmentation and deposition of quern stones and this will be discussed in further detail in 4.5.1.2.3 below. For dating, however, other sources must be turned to.

4.3.3.2.2 Stone Lamps/Cups

A relatively common artefact type is the bowl lamp or cup: 30 stone examples are known from the study area (for details see Table 4-2), those from excavated contexts include West Plean (46898/NS88NW5, artefact 1), Buchlyvie, Fairy Knowe (44651/NS59SE3, artefact 125), Castlehill Wood (46233/NS79SE49, artefact 22), the Torwood, The Tappoch (47004/NS88SW1), Meikle Reive (45194/NS67NW6), Queen's View (25844/NN86SE3), Castle Law, Abernethy (27917/NO11NE12), Barry Hill enclosure (31065/NO25SE26) and possibly also at Castle Craig (26048/NN91SE11) and Castle Law, Forgandenny (26583/NO01NE5, artefact 2, described as a stone implement with cup-shaped depression). Two lead versions were recovered from Leckie (45379/NS69SE12). Unfortunately, the remaining 21 are 'stray' finds with vague or unknown contexts. Steer (1956, 243-246) has reviewed the evidence for stone lamps, although the corpus has been significantly

added to since, with numerous stray finds (e.g. Weem Farm: Clark 1973) as well as further excavated ones (Table 4-2).

Stone lamps and cups are found all over Scotland and Ireland but there is a noticeable concentration in North-East Scotland (Steer 1956). Particularly notable are the incised example from Farleyer Moor, Perthshire (Close-Brooks 1972) and the recent find of a stone lamp with anthropomorphic decoration in the fill of a souterrain at Red Castle, Angus (Alexander and Rees 1997a, 13). However, stone lamps have also been recovered from Early Medieval contexts in eastern Scotland, such as Easter Kinnear in Fife (Driscoll 1997) (artefact 16). It should be noted that the Easter Kinnear lamp came from a secondary context, having been built into the wall of a rectilinear mediaeval building. Although Driscoll (1997, 102) argues that such a small object is unlikely to have been salvaged for building material, it is still possible that it was old when deposited; given the Iron Age practice of building quern-stones into walls, noted by Hingley (1992; Hingley *et al.* 1997), we should not be blind to the possibility of some particular ritual significance being attached to stone lamps and cups (see Footnote 35). As Driscoll (ibid., 102) has noted, it cannot be assumed that stone cups and lamps are exclusively Iron Age. It has been suggested that there is chronological significance to the perforated handle (ibid., 102), but this is not strongly supported by the evidence from the Study Area. Only the Buchlyvie, Fairy Knowe (44651/NS59SE3) and Queen's View (25844/NN86SE3) examples had perforated handles. Presence of a handle might be significant though; none of the hillfort examples had one but both broch examples did. Stevenson (1966, 28) believed these to be skeuomorphs of Roman lamps. The range of sites at which they have been found indicates that these stone lamps have a wide chronological range (assuming that residuality is not distorting the picture) and cannot be used as a fine dating tool.

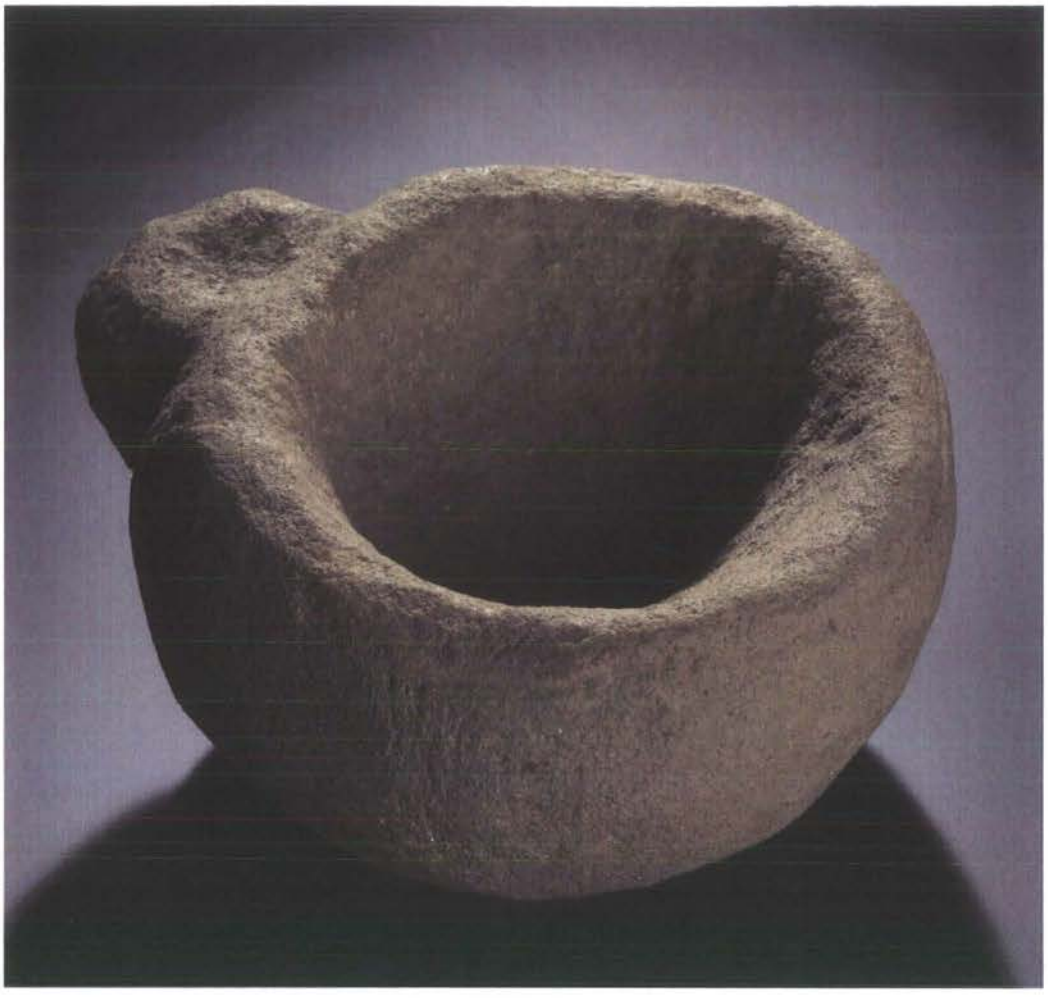

Fig. 4-8 The stone lamp or cup from West Plean, Stirlingshire. There may be chronological significance in the presence or form of the handle. © Trustees of the National Museums of Scotland

Table 4-2 Contexts of stone lamps and cups included in the study, showing those with and without contexts. Presence/absence of handle and perforation is also included, as it has been suggested that these are chronological indicators.

MAPNO	SITE	NMRSNAME	Handle	Perforation	Context	Reference
NN52SE	4	Lochearnhead	No	No	Found during exc of curling pond	Haggart (1888)
NN70SE	12	Kilbryde	No	No	Unknown	See NMRS record
NN75SW	1	Schiehallion	Yes	No	'Stray' find near top of Schiehallion	MacKenzie (1900)
NN80NW	15	Greenloaning	No	No	Dug up in a field	See NMRS record
NN82SW	14	Loch Lane	Yes	No	Found on farm; ?palisade	Anon. (Anonymous 1895)
NN84NE	34	Aberfeldy	No	No	Unknown	Reid (1985a)
NN84NW	30	Weem Farm	Yes	No	Found during ditching operations	Clark (1973)
NN86SE	3	Queen's View	Yes	Yes	On subsoil in south half of interior	Taylor (1990)
NN91SE	11	Castle Craig	No	No	In rubble in inner of the 2 outer ramparts	Sherriff (1984)
NO01NE	5	Castle Law, Forgandenny	No	No	Not stated, found during 19thC excavation	Bell (1893)
NO11NE	12	Castle Law, Abernethy	No	No	"In the fort"	Anderson (1899)
NO12NW	17	Old Scone	Yes	No	Unknown	(Anonymous 1908)
NO12NW	26	Jeaniebank	No	No	Unknown; ?multivallate enclosure	RCAHMS (1994c, 155)
NO12SE	3	Deuchny Wood	No	No	Found in ash of 1918 bonfire (fort interior)	Watson (1929a)
NO13NE	68	Cargill	No	No	Unknown	(Coutts 1971, 67)
NO22NW	35	Inchmichael	No	No	Found in gravel pit during railway building	(RCAHMS 1994c, 155)
NO23SW	5	Fairygreen	No	No	Ploughed up	Small (1962)
NO24SW	5	Coupar Angus	No	No	Unknown	(Anonymous 1898)
NS59SE	3	Buchlyvie, 'Fairy Knowe'	Yes	Yes	Destruction deposit	(Main 1998)
NS67NW	6	Meikle Reive	No	No	Near the inner end of the west entrance	Fairhurst (1956)
NS69SE	12	Leckie	No	No	Not stated	(MacKie 1982)
NS79NE	61	Bridge of Allan	Yes	No	Unknown	See NMRS record
NS79SE	49	Castlehill Wood	No	No	West half of interior	Feachem (1957)
NS88NW	5	West Plean	No	No	Central area of site	Steer (1956)
NS88SW	1	Torwood, the Tappoch	Yes	No	Not given	Hunter (1949c)
NS98NW	62	Airth	Yes	No	Old Parish Church graveyard	Bailey (1996)
NO12SE	72	Glencarse	No	No	Unknown	RCAHMS (1994c, 155)
NO13SW	74	Hill House, Stormontfield	No	No	Unknown	RCAHMS (1994c, 155)
NO12NE	59	Tarrylaw Farm	No	No	Unknown	RCAHMS (1994c, 155)
NO13NW	6	Inchtuthil	No	No	Unknown;?multivallate enclosure	RCAHMS (1994c)

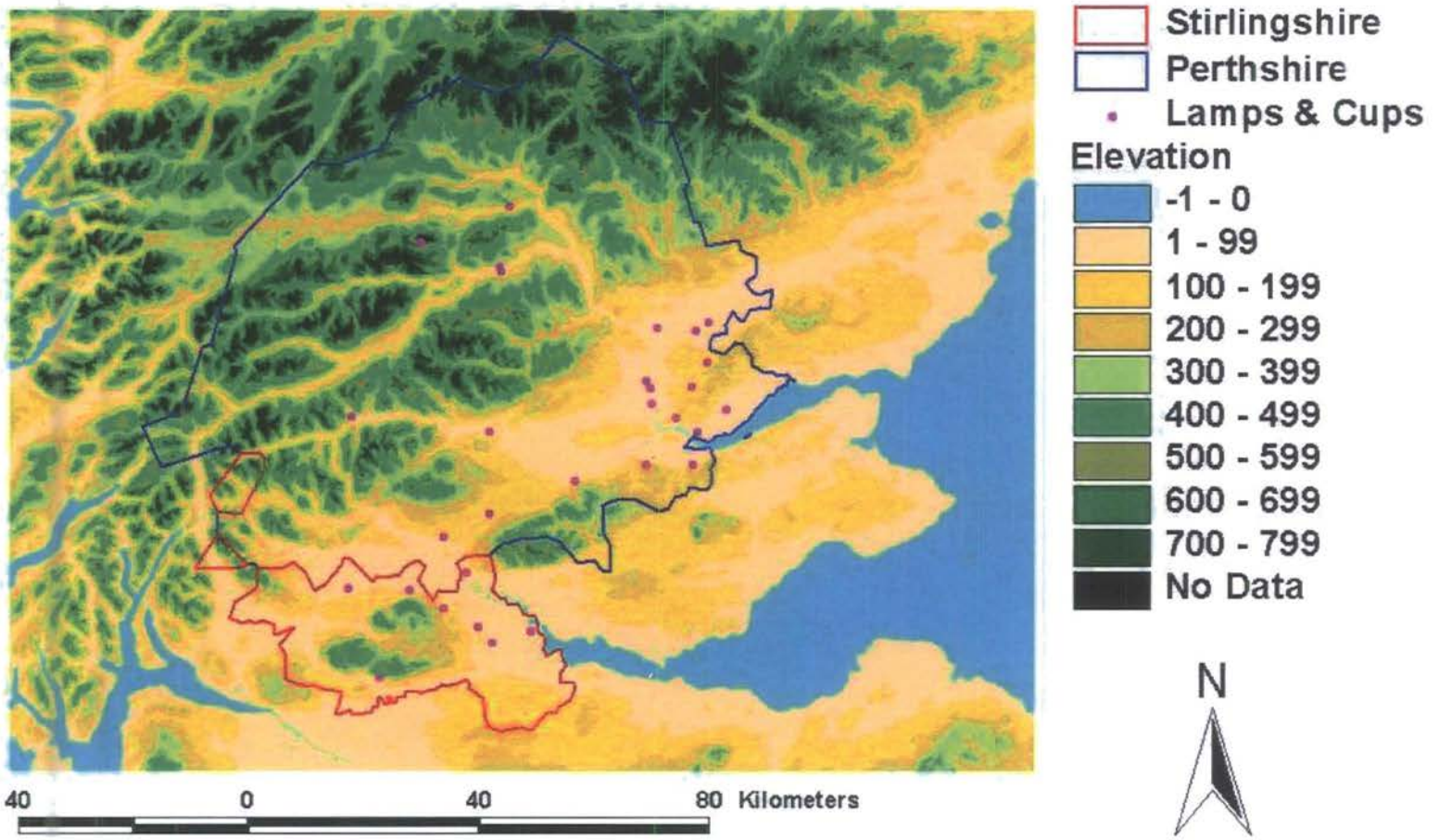

Fig. 4-9 Distribution of stone lamps and cups in Perthshire and Stirlingshire, as listed in Table 4-2. Most are from the lowland zone.

4.3.3.2.3 Other Coarse Stone Tools

Other coarse stone tools, including cobble grinders, hammer stones, spindle whorls and hones are common on sites of this period, as elsewhere in Britain, but again, they can only be assigned to the Iron Age in general. In the study area, 27 of 76 of excavated sites produced at least one coarse stone tool (36%)[34]. This is likely to be an underestimate, as early antiquarians may not have recognised the significance of these artefacts and even if they did, may not have recorded them. In addition, many interim reports do not mention such finds even if they were present. In future, dating of these various objects will perhaps be refined, but in the meantime, regional syntheses of such artefacts would provide a first step on this path (Haselgrove *et al.* 2001, 21).

4.3.3.3 Metalwork

Metalwork is perhaps more common than might be assumed, despite the fact that the acidity of the soil is not conducive to preservation. A significant minority (39% of excavated sites) yielded some metal artefacts or metalworking debris. Many of these items are, however, unidentifiable. Pieces or fragments of metal jewellery were discovered at 11% of excavated sites: Dalrulzion (29060/NO15NW15), Balnabroich (29054/NO15NW14), Aldclune (25822/NN86SE1), Shanzie (183018/NO25SE55), Falkirk, Camelon (46922/NS88SE24), Leckie (45379/NS69SE12), Castle Law Abernethy (Fig. 4-10: 27917/NO11NE12) and Buchlyvie, Fairy Knowe (44651/NS59SE3). Numerous such items have also been recovered as stray finds (e.g. Table 4-3). Prosaic native metal items such as knives (as at Aldclune, Shanzie, Lower Greenyards, Bannockburn: 47244/NS89SW12 and possibly East Coldoch: 46081/NS79NW34) are perhaps less likely to be affected by the biases of preservation and deposition afforded to the Roman items discussed in 4.3.2. Nevertheless, they bring their own problems, not least because not enough pieces have been retrieved from securely dated contexts to provide closely dated parallels. The possibility of residuality, which could potentially lead to mis-dating, is ever-present. At Badyo (26422/NN96SE27) and Aldclune, the chronologically diagnostic

[34] Table 5-4 , Appendix Five for data.

metal artefacts were from post-occupation contexts and were dated to a period long after the later prehistoric structures were in use. EXRDF work by Dungworth (1998) on composition of metal from sites in Northern Britain, notably Fairy Knowe, has shown that even items considered to be pre-Roman in nature may actually be Roman.

Fig. 4-10 The La Tène Ic fibula from Castle Law, Abernethy described by Anderson © Trustees of the National Museums of Scotland

The most useful artefacts in this category for dating are the metal pins. However, these too are fraught with complications. At Buchlyvie, Fairy Knowe (44651/NS59SE3), a ring-headed pin (artefact 114) would have been dated to the third to first century BC, but was found in a destruction deposit dated to the Roman

or post-Roman Iron Age (Hunter 1998b, 393). Similar lack of faith in the chronological implications of such finds can be found in the report on the excavation of the Boysack Mills square barrow, Angus (Murray and Ralston 1997). A ring-headed pin was also found at Castle Law Abernethy. Other types, such as the Iron Age enamelled finger rings from Buchlyvie, Fairy Knowe, Leckie (45379/NS69SE12) and Tarnavie (Fig. 4-11) are highly chronologically diagnostic, but are far from common on sites in the Study Area and are not, therefore, particularly helpful in constructing a framework for other sites.

Fig. 4-11 Enamelled copper alloy finger ring from a reportedly natural hummock at Tarnavie, Dunning, Perthshire. Similar rings have been found at Fairy Knowe, Buchlyvie and Strageath. (© Trustees of the National Museums of Scotland: Accession No. FA.109).

In addition, both of the examples excavated from Iron Age sites artefacts derive from brochs, a relatively uncommon site type. Indeed Hunter's (1998b, Illus 21) map of the distribution of these rings shows only six other sites in Scotland, including the Roman fort of Strageath in Perthshire (NN81NE2). Brooches are relatively

uncommon on sites in Scotland and although a relative chronology has been established for the British Isles in general, it is unclear the extent to which the date ranges established can be applied to Scottish material (C.C. Haselgrove pers. comm.). There have simply not been enough finds from secure, radiometrically dated contexts in Scotland to confirm the accuracy of the date-ranges, although there is no good reason to think that the extended, archaeologically visible, time-lags envisaged by Stevenson (1966) occurred. Modern analyses have tended to err on the side of caution in consideration of such goods (e.g. Hunter 1998a, 346; 1998b, 393). In conclusion, although native metalwork does have the potential to refine the dating of sites on which it is found, the problems of lengthy chronological survival currently limit its helpfulness in refining the dating of site types, as has been shown to be the case in the Atlantic zone (Armit 1991, 200).

Table 4-3 Details of later prehistoric and Romano-British metal jewellery from the study area, based on the NMRS and published sources.

Find Spot	County	Description	Context	Reference (to MacGregor's (1976) gazeteer unless otherwise stated)
Bunrannoch (NN65NE11)	Perthshire	Bronze spiral armlet with snake head terminals	Foot of Schiehallion, found with some other smaller articles, in a vessel	No. 213
		Massive bronze armlet	Liminal	No. 238
Pitkelloney, Muthill: NN81NE9	Perthshire	Bronze and Iron massive armlet with red and yellow enamel	Found in 1873 during ploughing	No. 242
		Bronze and Iron massive armlet with enamel	Found only a few feet from No. 242	No. 243
Unknown	possibly Perthshire	Bronze massive armlet	Found before 1901, circumstances unknown	No. 250
Unknown	Possibly Perthshire	Bronze shield-shaped belt fitment with enamel	?Roman fort at Bertha (Perth)	No. 255
Tarnavie, Dunning	Perthshire	Bronze finger ring with circular enamelled bevel	Found before 1910 during casual investigation into a natural hummock	No. 260

Newpark, Polmaise (NS79SE59)	Stirlingshire	'Polden Hill' type bronze brooch (late first century AD?)	Found in 1850 during digging of a drain	NS79SE59 (Callander 1918; MacGregor 1976, 120, pl 13; Robertson 1970, 222)
Buchlyvie, Fairy Knowe (44651/NS59SE3)	Stirlingshire	Enamelled finger ring	Broch	Hunter (1998a)
		Finger ring with openwork decoration		
		Ring-headed pin fragments		
		Penannular brooch (Fowler type A3)		
		Fragment of Pennanular brooch (Fowler type A3		
		Spiral finger ring		
		Possible finger ring		
Leckie (45379/NS69SE12)	Stirlingshire	Enamelled finger ring	Broch	Mackie (1982; 1987)
		Dress-fastenings and other items of jewellery-details not given	Broch	
		Bone-headed iron pin	From context interpreted by excavator as post-broch floor level	
Strageath (NN81NE2)	Perthshire	Enamelled finger ring	Roman fort	Frere and Wilkes (1989)
Castle Law, Abernethy (27917/NO11NE12)	Perthshire	La Tène Ic fibula	Multivallate enclosure: contexts not provided.	Hull and Hawkes (1987, No. 2238)
		Ring-headed pin		Anderson (1899, 32)
		Bronze spiral finger-ring		Anderson (1899, 31)
		Bronze bead		Anderson (1899, 31)
Cultmalundie (NO02SW1)	Perthshire	Bronze fibula in the form of a dog with three diagonal lines across its body	Unknown	
Castlecary (NS77NE26)	Stirlingshire	Bronze Age Italian boat-shaped brooch	Near Castlecary	
Falkirk (NS88SE32)	Stirlingshire	Bronze Age Italian boat-shaped brooch	Near Falkirk	
Stenhousemuir	Stirlingshire	Bronze brooch	At Goschen Sandhills,	

(NS88SE34)			associated with bronze spearhead, found near short cist	
River Tay, Inchyra (NO12SE73)	Stirlingshire	Romano-British Collingwood Class R (ii) brooch with blue enamel inlay	In river silt Watery	
Stirling University	Stirlingshire	Romano-British copper alloy trumpet brooch	In grounds of University, found by metal detectorist	Hunter (1999)
Doghillock (NS88SW93)	Stirlingshire	Romano-British copper-alloy headstud brooch	Suspected dun site; swampy area Settlement/Watery	
Dalrulzion (29060/NO15NW2)	Perthshire	Copper Alloy brooch pin (possible)	High up in the 'occupation layer' south-west of the hearth stones Settlement	Thorneycroft (1947, 196)
Balnabroich (29054/NO15NW14)	Perthshire	Copper Alloy brooch pin (possible)	Settlement	Stuart (1868a, 406)
Tulloch Field, Enochdhu (27582/NS88SW1)	Perthshire	Copper Alloy brooch pin (possible)	Settlement	L. Thoms (pers. comm.)
Law Hill, Arnbathie (28110/NO12NE14)	Perthshire	Copper Alloy brooch pin (possible)	Settlement	Stewart (1950)
Falkirk, Camelon (46922/NS88SE24)	Stirlingshire	Penannular brooch (Fowler type A, probably A3)	Multivallate enclosure	Proudfoot (1978, 125)

4.3.3.4 Glass

Native glass objects are restricted to jewellery; Kilbride-Jones (1938) and Stevenson's (1956; 1976) typologies for glass bangles and Guido's (1978) typology for glass beads are still in use today. Iron Age glass beads have been recovered from eight (11%) of excavated sites in the Study Area, half in Stirlingshire and half in Perthshire. Although there is a basic typology for the glass of this region, the conventional typological dating of native glass beads by Guido was based on a diffusionist model. Unfortunately, the most common glass artefacts from the study area, namely the yellow or blue glass beads, seem - like the stone lamps discussed above - to have had a long currency (Haselgrove *et al.* 2001), stretching from the Iron Age to the early Historic period. It does not help that many examples are 'stray'

finds (e.g. Newton of Pitcairn: Hunter 2000) or from insecure contexts (e.g. Lower Greenyards, Bannockburn: Henderson 1996) and thus have limited potential actually to date the sites. Beads are just the sort of objects that could represent casual losses rather than on-site occupation. Given the broad chronological range, the limited number of sites, and generally unhelpful contexts of these artefacts, beads do not represent a very helpful tool in dating sites from this region.

Glass bangles, such as those from Flanders Moss, shown in Fig. 4-12 (44618/NS59NE2: Anonymous 1892, 216; Kilbride-Jones 1938, 377; Stuart 1868b, 125)[35] and the broch site of Leckie (45379/NS69SE12: MacKie 1987, 3-4)[36], also have potential as dating tool. Whatever their chronological implications, they do not have much impact on understanding of the study area as a whole, having only been recovered from two sites. There is still some discussion as to whether glass was made by native craftspeople or melted down from Roman vessels or bullion and then reworked (Henderson 1989). It is also possible that the bangles were imported from the Continent as finished objects. This obviously has implications for dating, with earlier dates possible if indigenous manufacture is accepted. While Stevenson (1966, 28) believed these to be Roman in origin, this has since been called into question. However, this study does nothing to extend the concentration of glass bangles in southern Scotland and northern England, as identified by Stevenson (1966). Since glass bangles have only been recovered from two sites in the study area, they are not useful as dating tools.

[35] Hunter has suggested that this find supports the idea "...that the habit of votive deposition stretched across the social spectrum." (Hunter 1997, 108). His theory may also be supported by a decorated stone lamp (NN75SW1) found near the top of Schiehallion, hardly an altitude likely to be associated with settlement.

[36] Some apparently show signs of having been prepared for secondary use (MacKie 1987, 3).

Fig. 4-12 A Kilbride-Jones Type 3A glass bangle found in the eighteenth century in Flanders Moss. © Trustees of the National Museums of Scotland

4.3.4 Structural Typology /Site Morphology

The Royal Commission on the Historical Monuments of England has pioneered a morphological classification system (MORPH) which enables (relatively) impartial identification of similar sites and analysis (Edis *et al.* 1989; Horne and MacLeod 1991; Startin 1991). Thus, it is possible to identify easily sites with similar morphological characteristics by querying the database rather than reverting to laborious direct comparison of aerial photographs and/or plans, at the initial stage. However, in practice, this system may be less straightforward to use than might at first be imagined, particularly for complex sites with many different phases. Nevertheless, the basic principle that it is useful to classify sites morphologically allows the identification of trends and patterns within the data, is adhered to here. A morphological classification system is used in the current study; it was adapted so that it could also be used to classify upstanding sites. This is not a perfect system, since form is not necessarily directly linked to function or dating; using such a system does, however, allow one to organise information on sites in such a way that

basic morphologically analysis can be undertaken and similarities identified. It will become evident that in some cases, the site categories used in this study differ significantly from those traditionally used by RCAHMS.

In contrast, much of RCAHMS' original classification for timber roundhouses has been retained here, since it seems to be a useful tool for classifying the structures from the study area, based on the excavated evidence. RCAHMS' classification was criticised by Hill (1982b, 27) on the basis that "Post-rings are a structural component, ring-grooves are a construction technique, ring ditches are a design feature and stone walling is a fabric choice". However, post-rings, ring-grooves, ring-ditches and stone walls are the surviving remains and this is all that is available in the archaeological record. In separating out timber roundhouses from stone roundhouses, the chronological or cultural significance to this division is not assumed; it is just a way of organising the data. The same can be said of the division according to the structural remains that survive, whether this be post-ring, ring-groove, ring-ditch or a combination of these. Macinnes (1982a) seems right to argue that Hill has confused the different levels of interpretation of archaeological evidence. In doing so, it is possible to avoid Hill's side-stepping of chronological and cultural affinity, which he eventually seems to admit are the important issues for consideration (Hill 1982b, 31).

A morphological approach has also been used for drystone field monuments, following the success that Armit (1992) had in using this approach for the later prehistoric sites of the Western Isles. Armit (1992, 16) broke down the existing terminology of brochs, duns etc, arguing that the typological classification used by MacKie in particular had resulted in the discussion "becoming too specific to be constructive, with classifications introduced to rationalise interpretations rather than as tools for study". He was particularly critical of MacKie's (e.g. 1971a) insistence that there was such a thing as a 'true broch' with the term 'dun' begin used for any structure which fell short of his stringent criteria, arguing "that classification systems are tools to be used during archaeological analysis and not facts inherent to the data" (Armit 1992, 16). Armit's idea was to construct a basic classification that could be used to analyse settlement patterns on a local basis. As with Armit's study, the classification here is based on field survey and the limited excavated evidence. The classification of drystone structures has here been kept just as simple as Armit's (see

4.4.1) and is used simply as a way of ordering the data and identifying similarities and differences between sites; firstly by structural form and then by evidence of use of space within the structure. As will become evident below, it includes what would previously been classified as 'hut-circles', 'duns', 'brochs', 'ring-forts', 'circular homesteads' etc. There is no equivalent of Armit's 'broch towers' in this area although there are several showing signs of complexity.

4.4 Site Types Used in this Study

4.4.1 Stone Roundhouses

The stone roundhouses are those in which stone is the *major* component of the building fabric. It is fully acknowledged that some structures may have also included turf or wood. Indeed, there is evidence for a central post-ring at several stone roundhouse sites, including Lub Chalan (23965/NN43NE3).

4.4.1.1 Simple Stone Roundhouses

The term simple stone roundhouse (SiSRH) has been adopted for the sites that would traditionally be referred to as hut-circles[37]. These are the remains of stone or part-stone circular structures, less than 15m in maximum diameter. A previous attempt was made by Margaret Stewart (1964) to reject the term hut-circle and replace it with the more neutral circular enclosure; this was never widely adopted although Thoms (1976; 1977; 1979a; 1979b; 1980; 1981; 1982; 1983) used it during her work at Tulloch Field, Enochdhu (27582/NO06SE20). While the intention was good, the chosen term is rather vague, and since it carries no implications of size or structural ability (e.g. capacity to support a roof), could apply to any number of 'forts' or 'enclosures' as well as the remains of circular buildings. Although hut-circles are generally thought to represent upland dwellings, topography does not form part of the criteria for the classification, which is based on morphology alone. The term 'hut-circle' has been rejected, however, on the basis that it carries connotations of low status and suggests a hovel. In fact, these circular structures are, in many cases, quite substantial and there is no reason to suggest that they did not make pleasant and habitable dwellings. It was thought that the term simple stone roundhouse was

[37] Although this is broken down by the classification used here, with four 'hut-circles' being classified as substantial stone roundhouses and four showing signs of complexity.

sufficiently neutral a term. These structures may not necessarily have been houses in the usual sense of the word, or even domestic in nature, but it was thought that 'circular structures' was unnecessarily long-winded, given the various prefixes used to subdivide the class.

4.4.1.2 Substantial Stone Roundhouses

The similarities between the sites that are here grouped together have, in the past, been obscured by the variant terminology employed in the NMRS and elsewhere. These substantial stone-built roundhouses have variously been recorded as 'duns', 'brochs', 'ringforts', 'circular homesteads', 'homesteads', 'forts', and even, by Gordon Childe (1935b) as 'castles'. Although RCAHMS seems to have attempted to separate the duns from homesteads on the basis of their topographic location and defensive potential, the classification is inconsistent. For this reason, it was thought wise to revert to less loaded terminology, with the term 'substantial stone roundhouse' (SuSRH) being used for any circular or sub-circular stone structure of 15m to 25m[38] in *external* diameter, which could feasibly have been roofed. Thus, similarities, as well as differences, could be explored. Any sub-classes could then be identified on the basis of topography or other factors.

4.4.1.3 Complex Substantial Stone Roundhouses

Complex substantial stone roundhouses (CSuSRH) are those that exhibit what Armit (1992) has termed broch architecture. In this study, broch architecture includes the following attributes: mural staircases, mural cells, and guard cells. If present, it would also include hollow-walled construction but this technique cannot be found in any of the known brochs or duns in this region. They are all, in the traditional terminology, 'solid-walled brochs'. Similarly, only one scarcement is known from a CSuSRH in the study area (Torwood, the Tappoch: 47004/NS88SW1), but this is hardly surprising given that few survive much above door lintel level. Thus, the complex substantial stone roundhouses here are *not* the exact equivalent of Armit's (1992) Complex Atlantic Roundhouses. The terminology used here allows the breaking down of the artificial division created between duns and brochs in this area.

[38] But see reservations expressed below.

What should be borne in mind, however, is that architectural complexity is often invisible prior to excavation. Neither Leckie (45379/NS69SE12), Torwood, The Tappoch (Fig. 4-13: 47004/NS88SW1) nor Buchlyvie, 'Fairy Knowe' (44651/NS59SE3) had recognisable signs of complexity prior to excavation. All appeared to be mounds and it was not even clear if they were the remains of buildings. Thus, the known number of complex substantial stone roundhouses is likely always to be an underestimate.

Fig. 4-13 View of the eastern part of the interior of Torwood, the Tappoch (47004/NS88SW1), a complex substantial roundhouse in Stirlingshire, taken from the west side. The entrance faces south-east. The building includes elements of broch architecture and has seen two excavations, one in the 1860s and another in the 1940s. (M.H.Davies).

4.4.2 Crannogs

For reasons discussed further in 4.5.1.3.2 below, crannogs are not part of the class of either 'stone roundhouses' or 'timber roundhouses'. Dixon (2000) maintains that the crannogs of Loch Tay were essentially timber roundhouses on stilts (i.e. pile-structures) but this interpretation fails to take into account some of the excavated evidence (Holley 2000, 36-37: see 4.5.1.3.2 below), most especially the fact that crannogs in the study area survive as boulder mounds. It is entirely unclear whether these piles of stones were part of the structure or not. In the present study, crannogs

are of Henderson's (1998b, 236) Highland type which "...can be defined as a circular, or near circular (ovoid) mound of stone, with or without evidence of timber, which bear no structural, coursed, drystone remains such as walling but can have evidence of causeways, jetties or canoe docks...Highland boulder mound sites are usually completely, or almost completely submerged.".

4.4.3 Timber Roundhouses

Timber roundhouses represent just over half of the total number of excavated roundhouses in the study area for which detailed information exists. Of the excavated examples, all are either of post-ring construction, ring-groove construction or a combination of the two. They range in maximum diameter from 4m to 18.6m, with a peak at 5.1-10m (Fig. 4-14)[39].

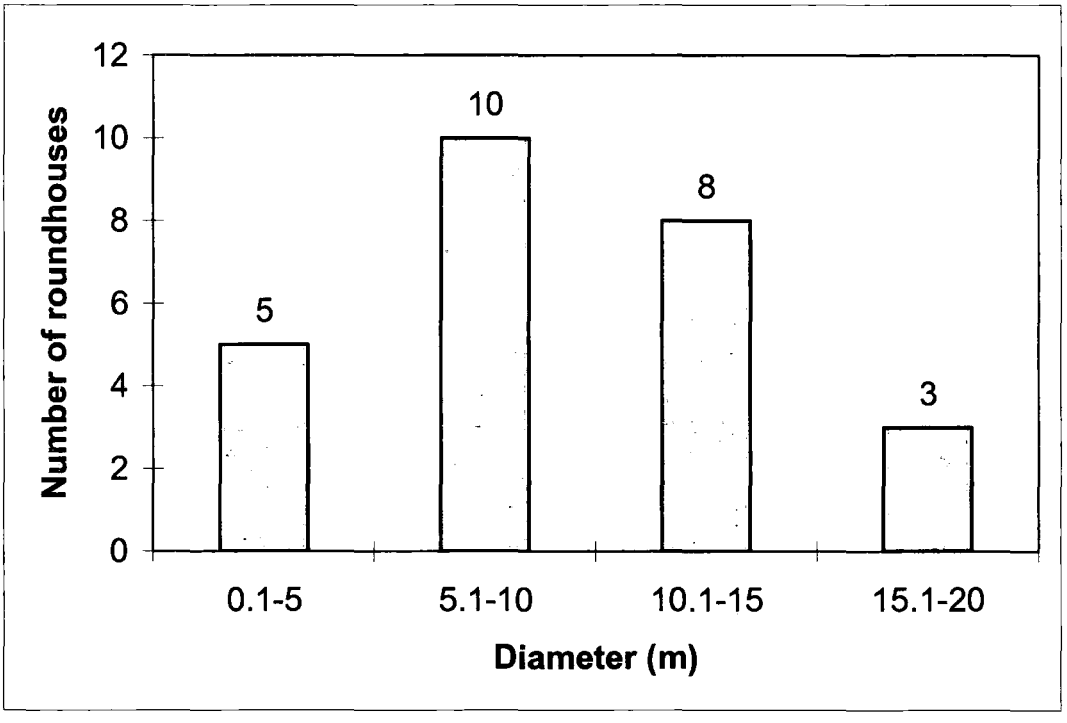

Fig. 4-14 Diameters of excavated timber roundhouses

4.4.3.1 Simple Timber Roundhouses

Simple timber roundhouses are those for which only negative features remain and which measure less than 15m in diameter. They include examples of both post-ring and ring-groove construction.

[39] See Table 6-5 in Appendix Six for data

4.4.3.2 Substantial Timber Roundhouses

Substantial timber roundhouses are those for which only negative features remain and which measure 15m or more in diameter. The three excavated examples in the study area include both post-ring structure and post/groove construction. The typology for roundhouses is summarised in Fig. 4-15 below.

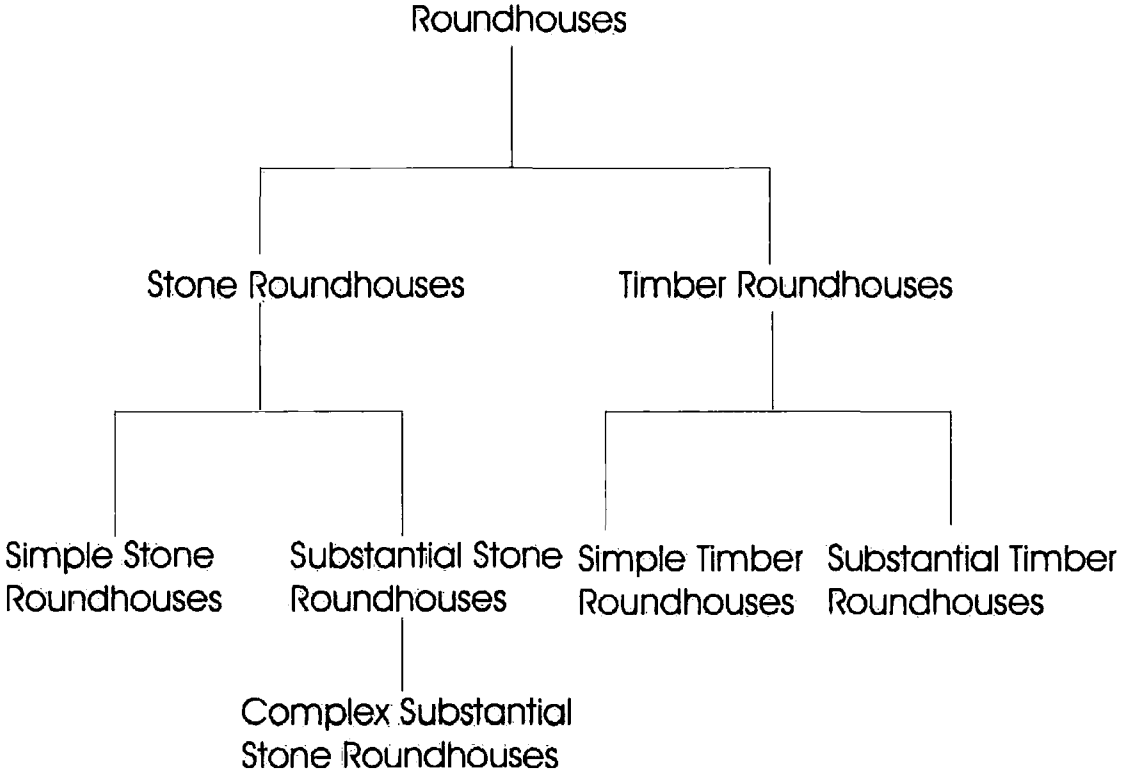

Fig. 4-15 Typology for roundhouses in the Study Area

4.4.4 Souterrains

The morphology of souterrains has been discussed in detail by Wainwright (1963) and more recently by Armit (1999a). Within the context of the present study, souterrains are those of Wainwright's (1963) 'Southern Pictland Group'; these are significantly larger and often more complex (e.g. Pitcur: MacRitchie 1900) than those found further north. Typically, they are curving passages, sometimes with adjoining cells and often with aumbries. Until the late 1970s, only the stone-lined ones, which had fascinated the early antiquarians (see Chapter 1), were known. However, the extensive aerial surveys carried out by RCAHMS in the late 1970s and early 1980s brought to light large numbers of what were nicknamed 'aerial bananas' (Maxwell 1983a), which resembled the known souterrains in size and shape.

Suspicions were confirmed when Gordon Maxwell conducted trial excavations at The Welton (28896/NO14SE29) and Glencarse (30488/NO22SW12). The cropmark record has been shown to include both stone-lined examples, like Glencarse and timber-lined examples, such as The Welton, Dalladies, Kincardineshire (Watkins 1980b) and Redcastle, Angus (Alexander 1998a; Alexander and Rees 1997b). In some cases, the stone slabs of sides or roof are visible as parch-marks.

4.4.5 Enclosures

The blanket term 'enclosures' covers sites with enclosing circuits of ramparts/ditches and/or palisade slots, which could not feasibly have been roofed. Some of these sites may conceivably include the remains of what was once unenclosed settlement, but this is often impossible to prove or disprove without excavation. The subdivisions within this class are described below. They override a multitude of different terms used by the NMRS, including 'fort', 'enclosure', some 'duns', 'enclosure: palisaded', 'fort: promontory', 'fort: vitrified', the 'enclosed crescents' as defined by RCAHMS (1994c) and many others. Vitrification is not used as a qualifier because it is abundantly clear from various experiments (e.g. Ralston 1986b)[40] and stratigraphic evidence (MacKie 1976) that vitrification was not a constructional technique.

4.4.5.1 Palisades

When Anna Ritchie (1970) published her work on palisaded sites in North Britain, she was able to list just three palisades in Perthshire - and none in Stirling - and noted that sixty palisades were known for the whole of Britain. These all seem to have been known as upstanding monuments or as the result of excavation; the Perthshire examples she cites are Inchtuthil (28598/NO13NW6: Abercromby *et al.* 1902), Drumharvie[41] (26154/NN92SE1: Christison 1900b, 119-120; 1901, 37-38) and Orchill (25372/NN81SE2: Christison 1900b, 117-119; 1901, 21-23). She treated palisades as a single structural tradition, an assumption that no longer survives scrutiny. All of these Perthshire sites listed by Ritchie are palisaded elements or phases of ditched enclosures and bear little morphological similarity to the

[40] A more recent experiment in Fort William produced similar results to the Yorkshire Television one. This exercise was flawed, however, as the timbers were all placed on the outside of the wall and therefore burned too quickly (I.B.M. Ralston pers. comm.).
[41] Referred to by both Christison (1900b; 1901) and Ritchie (1970) as Kempy.

curvilinear palisaded enclosures that form a significant part of the later prehistoric settlement record of the region.

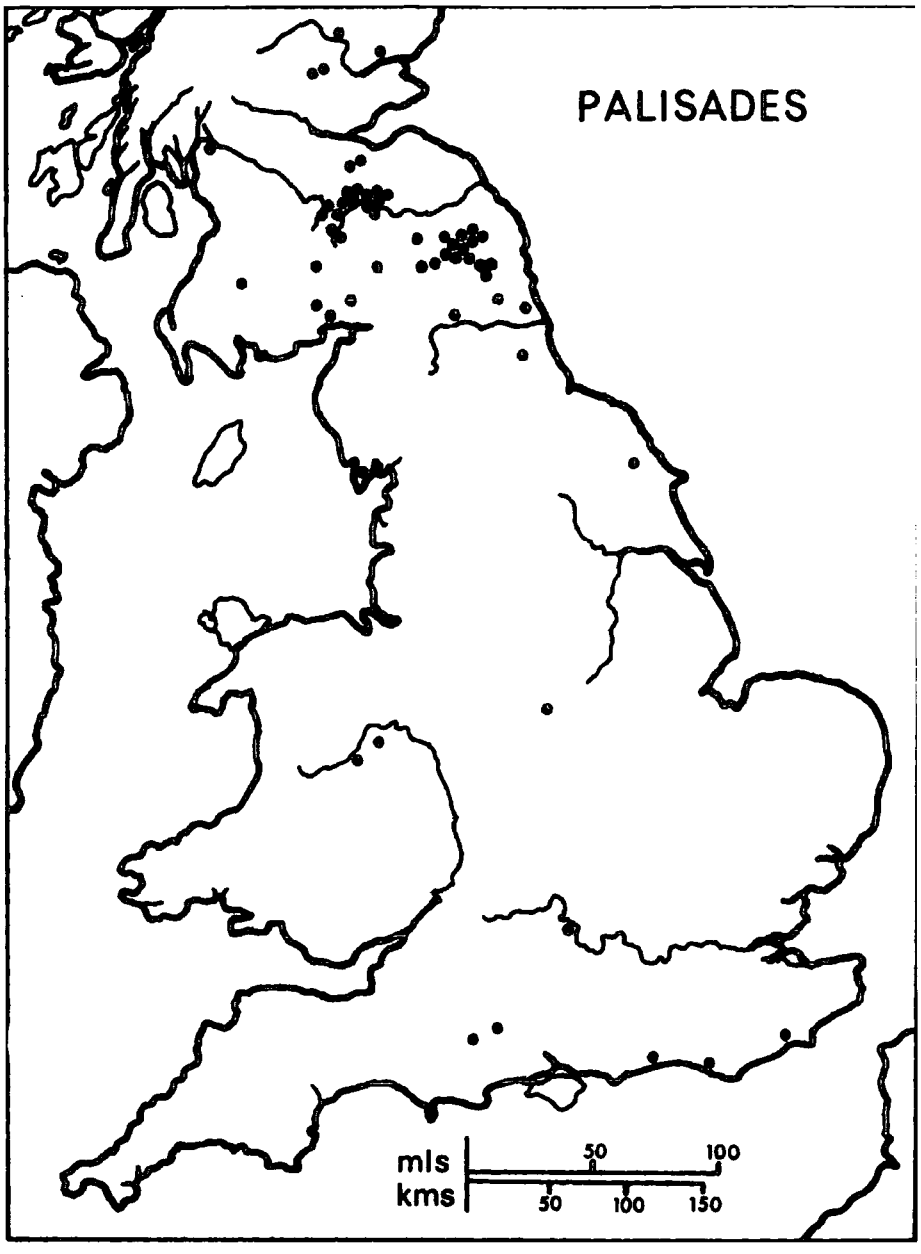

Fig. 4-16 Anna Ritchie's (1970) distribution map of palisaded sites in Britain, showing a sparse distribution in the Perthshire area and indeed throughout the British Isles.

Following the RCAHMS surveys in Roxburghshire (RCAMS 1956) and Peebleshire (RCAHMS 1967), Ritchie (1970, 48-49) used the number of known houses as the criterion for classifying palisaded sites as homesteads, settlements or enclosures. This method has fundamental flaws. Ritchie argued that those enclosures with three houses or less could be classed as homesteads, while those with more could be classified as settlements. However, those where evidence of occupation is either

absent or unknown are just referred to as enclosures. She argued that this system is more reliable than one based on number of circuits, shape or size. However, she also admitted that those enclosures with space only for one roundhouse were classed as homesteads anyway and those too small to enclose more than three houses were classed as probable homesteads. In effect, this means that Ritchie's classification is based on enclosure size anyway.

Maxwell (1983a, 52) argued that the cropmark palisades, as he termed them, newly noted in the valleys of the Forth and the Teith, formed a distinct group which could be recognised as a manifestation of a distinct sept of the confederacy of the Dumnonii. There are obvious problems with trying to reconcile architectural types with historically known cultures, especially since it is now known from excavated evidence that the oval or circular enclosures that Maxwell discussed pre-date the Roman occupation. In addition, the *Dumnonii* were said to inhabit the south-west and Maxwell argued that the area he discussed represented the northern transect of this tribal territory. With the distribution of palisades now extending up into Tayside (and beyond), the correlation of these sites with the *Dumnonii* does not stand up to scrutiny.

Maxwell (1983a, 447-48) also suggested that one could subdivide the class of cropmark palisades on the basis of the presence or absence of a single timber roundhouse, into homesteads and enclosures. Maxwell himself admitted that it disregards the fact that what is seen in the aerial photographs can only be a partial reflection of what exists on the ground. At any rate, Maxwell's scheme for cropmark sites was simply a perpetuation of the classification advocated by Ritchie (1970), itself heavily indebted to the scheme developed by RCAHMS for *upstanding* sites. This is highly misleading. It is not appropriate to classify cropmark palisades on the basis of aerial evidence for internal roundhouses; far too much of this argument hinges on a feature whose discovery is dependent on appropriate conditions like soil type and weather. Palisades, as defined in the present study, are usually identified from the air as circular or oval enclosures, indicated by very narrow cropmark lines, which are taken to show the remains of palisades. The excavated remains range in diameter from 21m to nearly 50m, with wide variety in the size of internal

structures[42]. They are treated here as a single class, to avoid the inherent contradictions involved in using Ritchie's (1970) scheme. Lochlane (Fig. 4-17: 25519/NN82SW25) is a typical example.

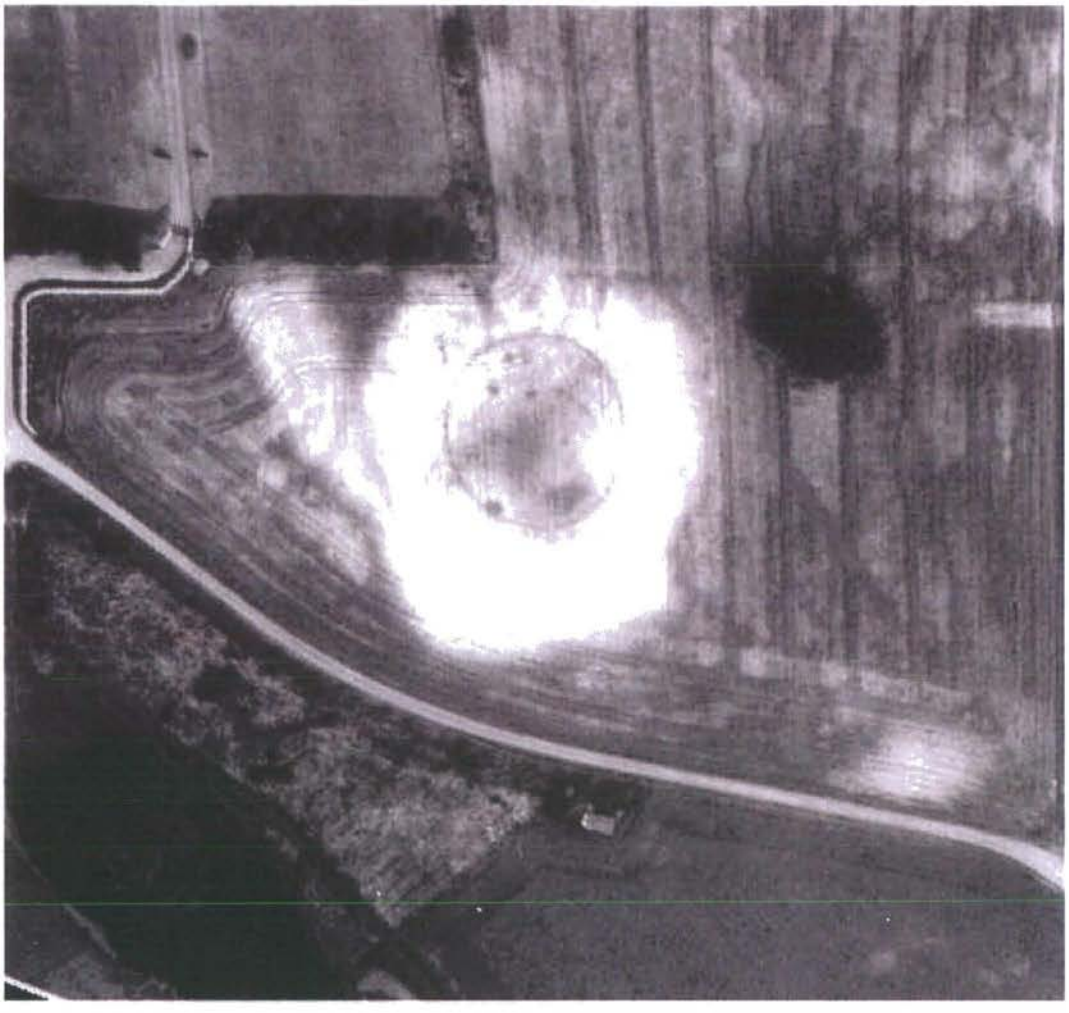

Fig. 4-17 Aerial photograph of Lochlane palisade (25519/NN82SW25), rectified from oblique to vertical by the author, using Aerial 5. Internal features can be clearly seen and include a curvilinear line that may represent the foundation of a roundhouse, as well as some maculae that may represent pits. Original photograph Crown Copyright: Royal Commission on the Ancient and Historic Monuments of Scotland.

[42] See Table 6-7 in Appendix Six for data.

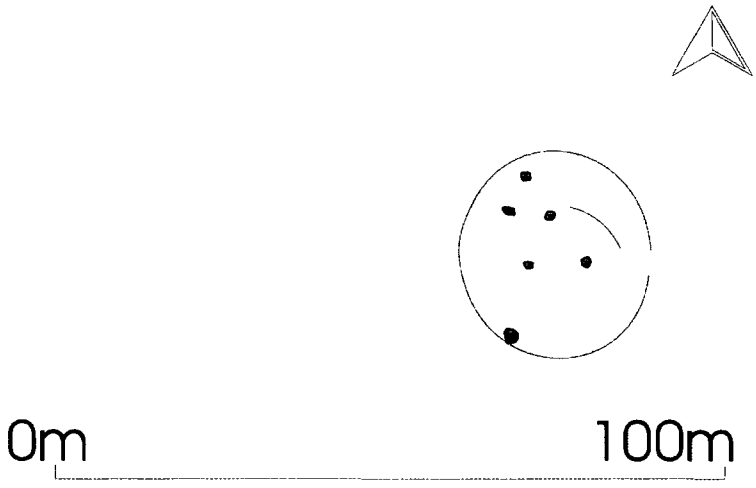

Fig. 4-18 Transcription of Fig. 4-17, by the author. This palisade is typical for Stirlingshire and Perthshire.

4.4.5.2 Univallate Enclosures

This class is self-explanatory and includes all enclosures with a single ditch circuit, whether visible on the ground or only from the air and whether curvilinear or not. The number of Univallate Enclosures could well be underestimated, since they may form just one part of complex settlement sequences and be masked by later, or indeed earlier, features (see 4.4.5.3 below).

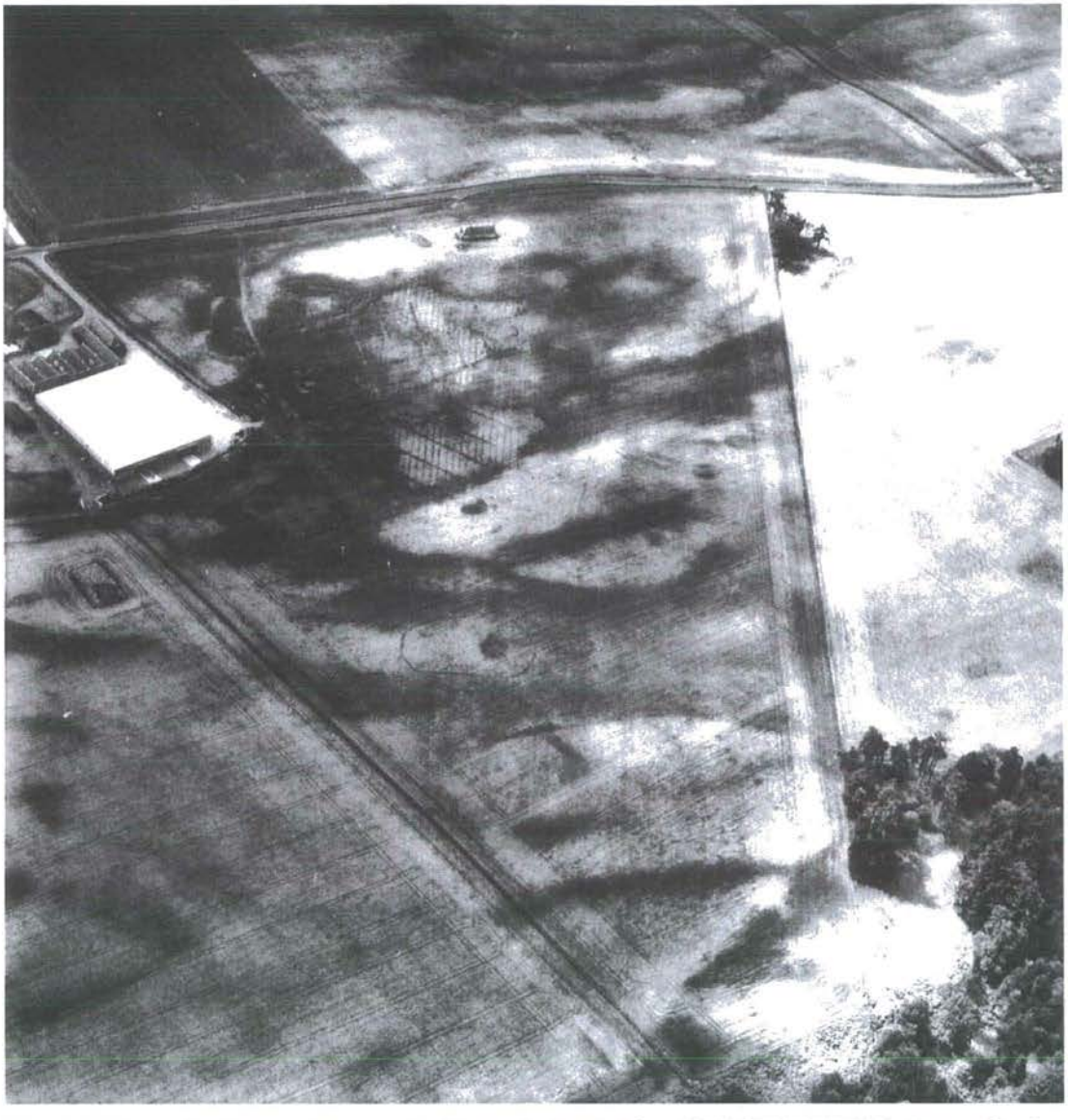

Fig. 4-19 The univallate enclosure at Baldarroch, Perthshire (28586/NO13NW30), located in the same field as maculae that may represent a phase of unenclosed settlement. The circular macula in the enclosure, indicating a roundhouse, may be related to its occupation. Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Scotland.

4.4.5.3 Multivallate Enclosures

Owing to the fact that this study is largely based on unexcavated sites, it was not thought prudent to separate out bivallate sites from those with more ditch circuits. It is not possible to ascertain the true sequence of events prior to excavation and any attempt to do so is likely to be disproved during excavation; Broxmouth, East Lothian (Hill 1982a) and the Brown Caterthun, Angus (Dunwell and Strachan forthcoming) are cases in point. Even sites that appear to be solely bivallate may prove to have a more complex history. Some bivallate enclosures may conceivably be the remains of successive univallate enclosures. Multivallate enclosures (e.g.

Haughbrae of Grandtully: 148956/NN95SW66, shown in Fig. 4-20 and Fig. 4-21) were separated out from univallate only so that any potential variability in the distribution of them could be noted; it is not assumed, though, that this is the case.

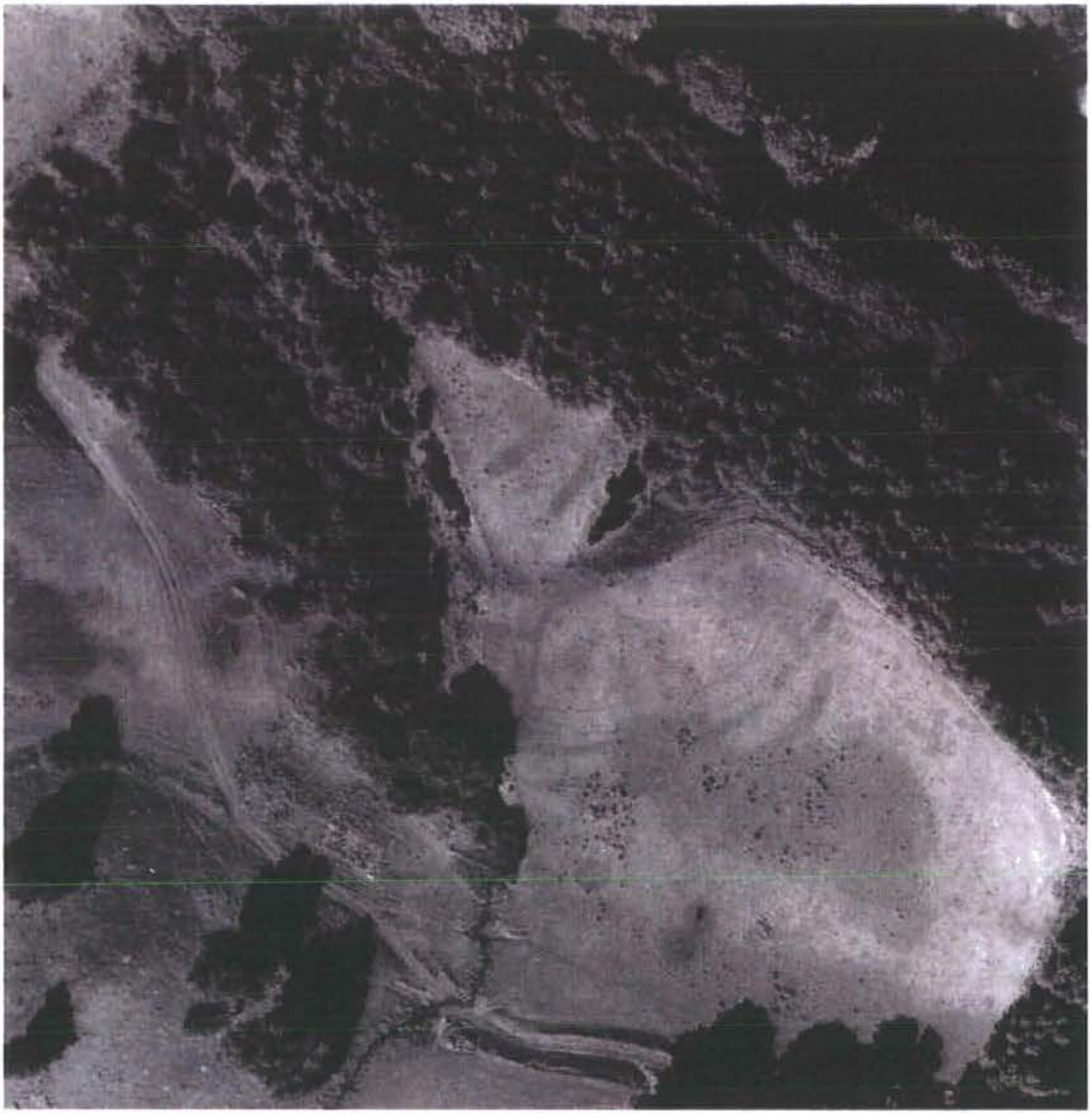

Fig. 4-20 Haughbrae of Grandtully (148956/NN95SW66), a multivallate fort in Perthshire visible as cropmarks. The photograph has been rectified from the oblique to the vertical, using Aerial 5 and cropped, by the author. Original Photograph Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Scotland.

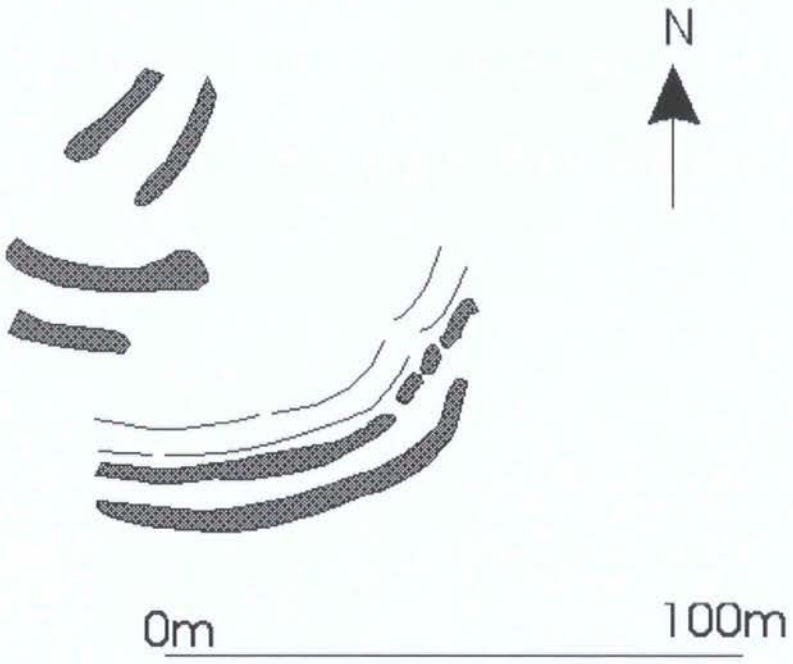

Fig. 4-21 Transcription of Fig. 4-20, by the author

4.4.5.4 Square Enclosures

The term 'square enclosures' refers to rectilinear sites that measure 15m or less in length. Normally these are referred to as 'square barrows' especially if they contain a macula that could be interpreted as a burial. The deferment of labelling for function in this study, however, enables a consideration of other functions for these sites, especially the larger ones, including Wester Denhead (30958/NO24SW46) and Hallhole (28475/NO13NE10: see 4.5.4.4.1 below).

4.5 Discussion of Excavations within the Study Area

Evidence for environment and economy has been discussed in detail in Chapter 3. Below, the excavated evidence available for each of the site types defined above is reviewed, discussed and analysed, with the emphasis on dating, function and patterns of deposition[43]. The emphasis is on sites from within the study area, but comparisons are made with data from outside the study area, where deemed necessary. The aim here is to build up a broad chronology that can then be used to inform a temporally dynamic model of settlement and society in the later prehistory of the area. In discussing use of space and artefactual evidence, patterns are identified in the data,

[43] See Table 6-4 in Appendix Six.

which can be used to throw light on the various functions of sites within the landscape.

4.5.1 Stone Roundhouses

There are 23 excavated stone roundhouses in this area for which detailed information is available (see Table 4-4)[44]. Of these, nine are simple stone roundhouses and 14 are substantial stone roundhouses, reflecting the past bias towards investigating the so-called brochs and duns of the Forth Valley in particular. This is also reflected in the fact that the mean maximum external diameter for excavated stone roundhouses is very high, at 16.9m.

[44] See Table 6-8 in Appendix Six for data.

Table 4-4 Basic data for excavated stone roundhouses in Perthshire and Stirlingshire.

NUMLINK	MAPNO	SITE	Structure No	NMRSNAME	Construction	Entrance	Max Diameter (m)	Complexity	Hearth
29136	NO15SE	23	1	Craighead	single-walled	unknown	9	No	No
29060	NO15NW	2	1	Dalrulzion	double-walled	SE	9.1	Yes	Yes
26422	NN96SE	27	7	Badyo	double-walled	unknown	10	Yes	No
27582	NO06SE	20	1	Tulloch Field, Enochdhu	single-walled	SW	11.6	No	No
26422	NN96SE	27	3	Badyo	single-walled	S	13	No	No
27582	NO06SE	20	2	Tulloch Field, Enochdhu	single-walled	S	14	No	No
26422	NN96SE	27	5	Badyo	double-walled	SE	14	Yes	No
29060	NO15NW	2	3	Dalrulzion	single-walled	unknown	14.6	No	No
29060	NO15NW	2	2	Dalrulzion	single-walled	SE	14.6	No	No
26422	NN96SE	27	6	Badyo	single-walled	SE	15	No	No
26422	NN96SE	27	2	Badyo	single-walled	SE	16	No	Yes
45356	NS69NE	6	1	Coldoch	single-walled	E	16.5	Yes	No
26422	NN96SE	27	1	Badyo	double-walled	NE	17.3	Yes	Yes
26422	NN96SE	27	4	Badyo	single-walled	SE	19	No	No
25868	NN86SW	17	1	Borenich	single-walled	W	19.8	No	No
45379	NS69SE	12	1	Leckie	single-walled	NE	20	Yes	Yes
46294	NS79SW	4	1	Keir Hill Of Gargunnock	single-walled	S	20	No	Yes
46232	NS79SE	48	1	Wallstale	single-walled	SE	20.4	No	No
25844	NN86SE	3	1	Queen's View	single-walled	W	21	No	No
24945	NN74NE	6	1	Litigan	single-walled	S	21.5	No	Yes
47004	NS88SW	1	1	Torwood, The Tappoch	single-walled	SE	24.4	Yes	No
25822	NN86SE	1	2	Aldclune	single-walled	S	25	No	Yes
25822	NN86SE	1	1	Aldclune	single-walled	W	25	No	Yes

4.5.1.1 Simple Stone Roundhouses (SSRHs)

Very few simple stone roundhouse sites have been excavated in the study area of which only Dalnaglar (29381/NO16SE2), Badyo [45] (26422/NN96SE27), Craighead (29136/NO15SE23), Dalrulzion (29060/NO15NW2), Law Hill, Arnbathie (28110/NO12NE14) and Tulloch Field, Enochdhu (27582/NO06SE20) have been excavated to modern standards. Neither Tulloch Field, Enochdhu nor Law Hill, Arnbathie have been fully published.

4.5.1.1.1 Dating

Balnabroich (29054/NO15NW14), excavated in 1864, produced only a few artefacts. There were coarse stone tools but of these only the saddle quern has broad dating potential. A worked mica schist object was found in a rabbit burrow on the same site more recently and apparently bears comparison with one found at Litigan (24945/NN74NE6). A fragment of bronze, which Stuart interpreted as the pin of a brooch, is not illustrated and therefore impossible to assess. Fragments of bronze pins were also recovered from Dalrulzion (29060/NO15NW2), Tulloch Field, Enochdhu (27582/NO06SE20) and Law Hill, Arnbathie (28110/NO12NE14) but again, the metal finds are not illustrated. Thorneycroft does, however, illustrate some of the unusually large pottery assemblage (137 sherds) from Dalrulzion and divides them into Type A and Type B on the basis of their morphology. Without a typology of later prehistoric pottery from this area, however, little more can be said about this assemblage, other than to flag up its potential for future dating purposes.

Tulloch Field, Enochdhu (27582/NO06SE20) was, like Balnabroich (29054/NO15NW14), devoid of datable finds other than bucket shaped vessels and a saddle quern, which is entirely consistent with an LBA or indeed IA date. Radiocarbon dates were also obtained from this site; their ranges are shown in Fig. 4-22. Two came from birch charcoal from shallow depressions in Site A. Lisbeth Thoms (pers. comm.) interpreted these as being arcs of post-trench, with the charcoal representing the remains of a roof and its supports. It is difficult to assess this claim

[45] The current study uses the site names as listed in the NMRS; therefore Carn Dubh is referred to as Badyo throughout.

without access to the site plans but similar shallow depressions were found at Queen's View (25844/NN86SE3: see 4.5.1.2.2). The dates calibrate to 1410BC-1110BC (GU-1147) and 1410BC-1120BC (GU-1148). The remarkable consistency makes it quite possible that the material dated is contemporaneous; certainly these dates point strongly to the structure being LBA in date. In contrast, a date of 420BC-160BC (GU-1489) was obtained from birch charcoal in a pit at Site B; Thoms (Thoms 1979a) believes this feature to have been a hearth pit. The iron-working slag and a possible mis-casting fragment from just outside the entrance of Hut-Circle 2 at Hill of Easter Bleaton (29119/NO15NW8: Hall 1995a) suggests Iron Age or later activity at this site, but it not clear whether this relates to the main occupation or later reuse. Thus, it is unclear whether the Iron Age evidence at Tulloch Field, Enochdhu and Hill of Easter Bleaton relates to permanent or transhumant occupation of the sites. The dates from Tulloch Field, Enochdhu are, however, consistent with Iron Age radiocarbon dates obtained from SiSRHs further North, such as those from House V at Kilphedir (Fairhurst and Taylor 1971, 90) and House 7 at Lairg (McCullagh and Tipping 1998, 57-58).

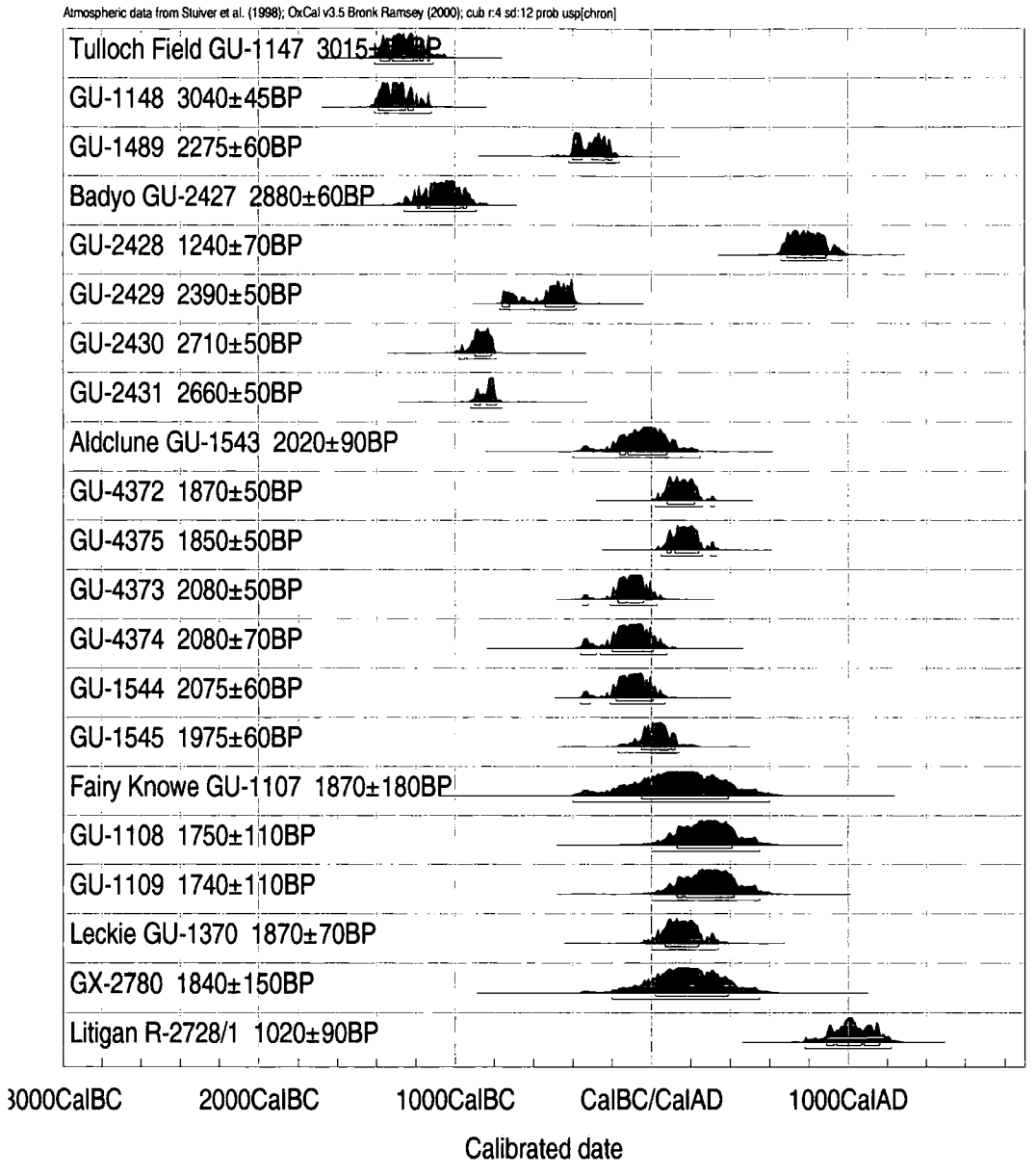

Fig. 4-22 Radiocarbon dates from stone roundhouses

In the case of Dalnaglar (29381/NO16SE2), radiocarbon dates are again lacking. However, Coles (1964, 154) suggests that the pottery is LBA or IA and notes its similarity to pottery from Traprain Law. Other than this, the only finds were undatable coarse stone tools. A pottery assemblage similar in size to that recovered from Dalrulzion was recovered from Badyo (26422/NN96SE27) and Craighead (29136/NO15SE23). McLellan (1995) compared the assemblage from Craighead to those from Dalrulzion (29060/NO15NW2), Dalnaglar (29381/NO16SE2) and also Green Knowe, Peebleshire. The similarity in pottery might suggest contemporaneity

but McLellan (ibid.) goes no further than suggesting a LBA or IA date for this assemblage and no other dating evidence was recovered.

The evidence from Badyo (26422/NN96SE27, Fig. 4-23) was more informative, with all but one of the roundhouses producing radiocarbon dates in the LBA (see 4.5.1.2.1 below for a discussion of the problems associated with the interpretation of GU-2429). Houses Three, Five and Seven are discussed here, and Houses One, Two, Four and Six in 4.5.1.2 below. House 3, like House 2, was overlain by House 8, providing it with a TAQ. Unfortunately, the relationship between Houses 2 and 3 was never established. Bronze Age ard marks were found underneath House 3. Nothing chronologically diagnostic was recovered from House 3 except a bead, which came from a post-abandonment context. This was a blue annular glass bead of Guido's (1978) Group 6 and as such could have been made at any point during the first millennia (Henderson 1996). Indeed, it could be a casual loss associated with the occupation of House 8. House 5 produced a date of 980BC-790BC (GU-2430) from *Alnus* charcoal from a context within the floor deposit over the western inner gully. This context must have accumulated some time after the house was constructed, indicating that both House 4 and House 5 were constructed and used during the LBA. House 7 remains undated, having produced only chronologically undiagnostic flint flakes.

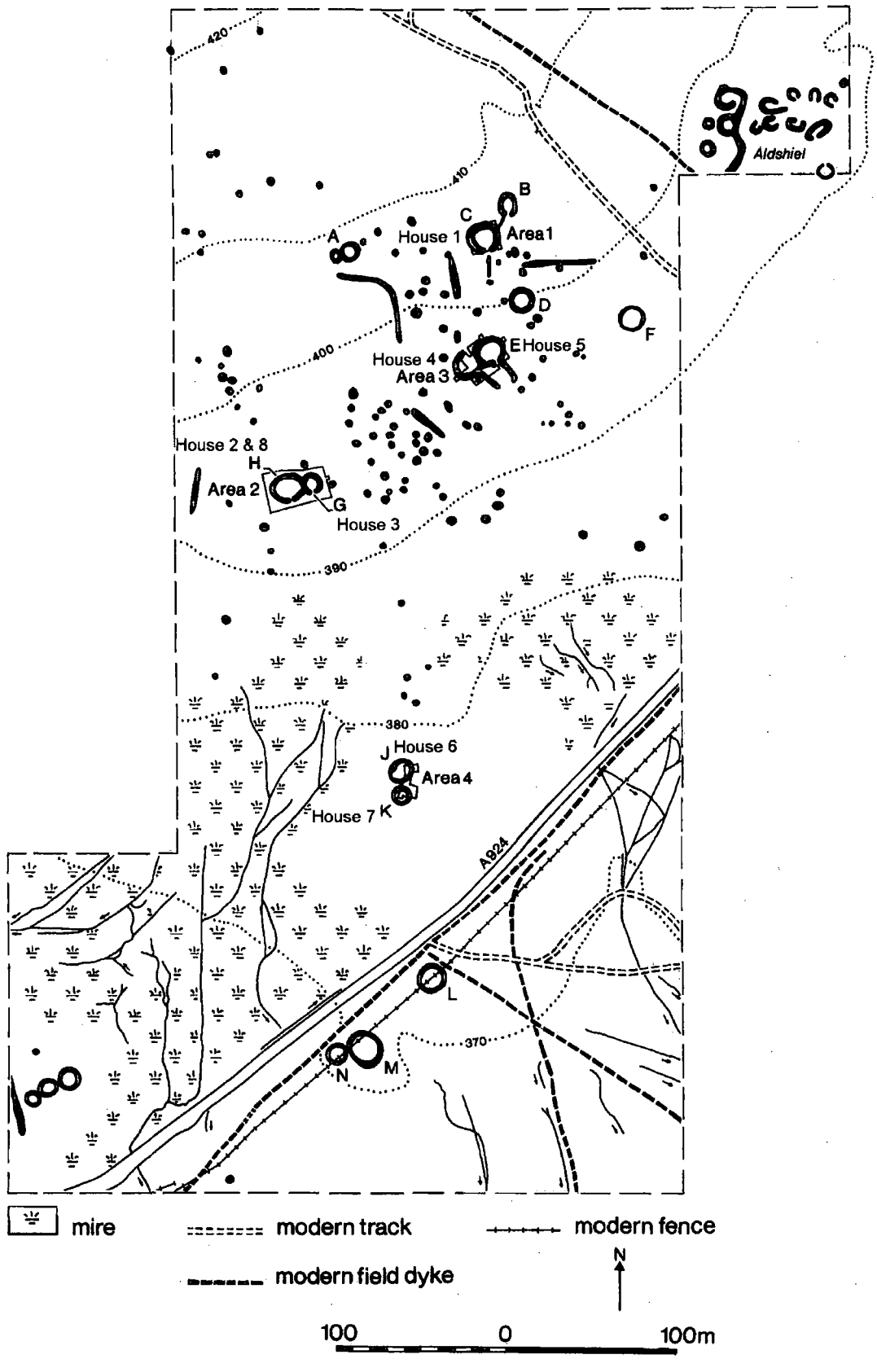

Fig. 4-23 Badyo (after J. Rideout 1995, with additions)

Radiocarbon dates have not yet been obtained from the simple stone roundhouse recently excavated on Ben Lawers, which included metalworking debris (Atkinson 2002a). It is clear from the above evidence that simple stone roundhouses were in use in the LBA and into the Early Iron Age (Fig. 4-22). The dates from House B at Tulloch Field, Enochdhu (27582/NO06SE20) and House 2 at Badyo (26422/NN96SE27) do indicate that there was some activity on these sites into the LIA. This could have taken the form of permanent settlement (perhaps unlikely given the evidence for climatic deterioration in the LBA, discussed in Chapter 3), reuse of old buildings, either on a casual basis or for transhumance activities or new builds which were nevertheless only used on a seasonal basis. Unfortunately, there is insufficient data to be able to tease out the more likely option. It is possible that these radiocarbon dates, which came from mixed samples, contained material from earlier and later activities and do not therefore date the occupation. Other excavated sites have produced no dating evidence whatsoever (i.e. Lub Chalan: 23965/NN43NE3, Turrerich Burn: 25538/NN83NE1, Bunrannoch House: 24573/NN65NE7).

4.5.1.1.2 Function

The discussion of transhumance versus permanent settlement leads towards the issue of function. All of the evidence from the study area suggests that the simple stone roundhouses were the main form of settlement in the Late Bronze Age. As will be shown below, other site types, traditionally thought to be LBA can be shown to be Iron Age in date. As Halliday (forthcoming) shows - and as has been demonstrated at Lairg in Sutherland (McCullagh and Tipping 1998) - the clustering of simple stone roundhouses may lead the archaeologist into assuming that they are, in essence, hamlets, the remains of groups of houses occupied contemporaneously. In fact, it is possible that the 'hut-circle settlements' represent the long history of one household, which moved around an area, abandoning each house as its 'life' came to an end. It may never be possible to tease out the reasons for this, whether it was related to hygiene, death, birth, cosmology, a combination of these or something else entirely.

There is evidence, discussed in Chapter 3, that cereal cultivation was going on in the uplands, as observed at Badyo (26422/NN96SE27), in addition to animal husbandry. Although it has been suggested by Boardman (1995, 178) that grain on these sites

was brought in from elsewhere (presumably the lowlands - see 3.4.2), it is unclear where this Bronze Age arable landscape was located. So far, there is no evidence for LBA settlement - despite some from the Neolithic (Atkinson 2002b; Barclay *et al.* 2002) - in the lowland zone and precious little evidence even for ancient field systems. It is, of course, possible that they have just not been found yet, or that they have been misidentified. As will be discussed below, the dating of an open settlement at Chapelfield, Cowie (Atkinson 2002b) to the Neolithic has important implications for treatment of the aerial photographic evidence for cropmark unenclosed settlement.

In the meantime, however, it is argued on balance that the simple stone roundhouses represent the tangible remains of later prehistoric mixed farming communities. They reared stock, they harvested cereals and they exploited the natural resources around them. Although the artefacts left behind are meagre and apparently prosaic, they suggest self-sufficient communities who relied on the land. Their interactions with other such communities will be discussed in Chapter Five.

Only Dalnaglar (29381/NO16SE2) was the subject of a phosphate survey and this indicated relatively high levels just outside the roundhouses, perhaps suggesting that domestic animals were tethered outside the house, rather than inside the structure. This is a rather small sample but the results are not dissimilar to those from Bannockburn (4.5.4.1.2 below). They do, however, contrast with evidence from other sites in Britain, which suggest animals may have been tethered around the periphery of roundhouse interiors (Pope 2003, 269). The cobbled platforms immediately outside several upland stone roundhouse sites may provide support for this idea. In the case of Lub Chalan (23965/NN43NE3), this 'yard' was around 3m wide. Inside the roundhouse was a large (1.2m x 0.9m) stone built oval hearth, which provides support for the idea that the human occupation was on the ground floor.

It is worth noting the angled banks at Dalnaglar (29381/NO16SE2), which on artefactual evidence date to the same period as the roundhouses. Pottery, two stone discs (probably pot-lids) and a rubber were found on the excavated bank although they need not relate to the primary use. Stewart (1964) makes no suggestion as to

their function, although RCAHMS (1990) refers to them as field-banks and Harris suggests they may be remnant field walls (Harris 1984, 203). Many such sites are surrounded by field systems, which may in many cases be contemporary. However, since numerous upland stone roundhouse sites also include sub-rectangular Pitcarmick-type buildings dating to the Early Historic period (Barrett and Downes 1993; 1996), many of these field boundaries may date to more recent times. The fact that there seems to be some size variation amongst these field enclosures may support the idea that such sites had a mixed economy, with some field banks acting as boundaries for grazing and others, crops. Indeed, in a mixed economy there is a need to ensure that domestic animals do not trample or eat crops.

Data on entrance orientation was available for only six simple stone roundhouses, representing just three sites. A preference is evident for orientations between south-east to south-west, through south. Although this is a rather small sample, it ties in reasonably well with the preference for south-east to south noted for mostly unexcavated stone roundhouses in an area of upland north-east Perthshire chosen as a case study (see 7.2.1.4).

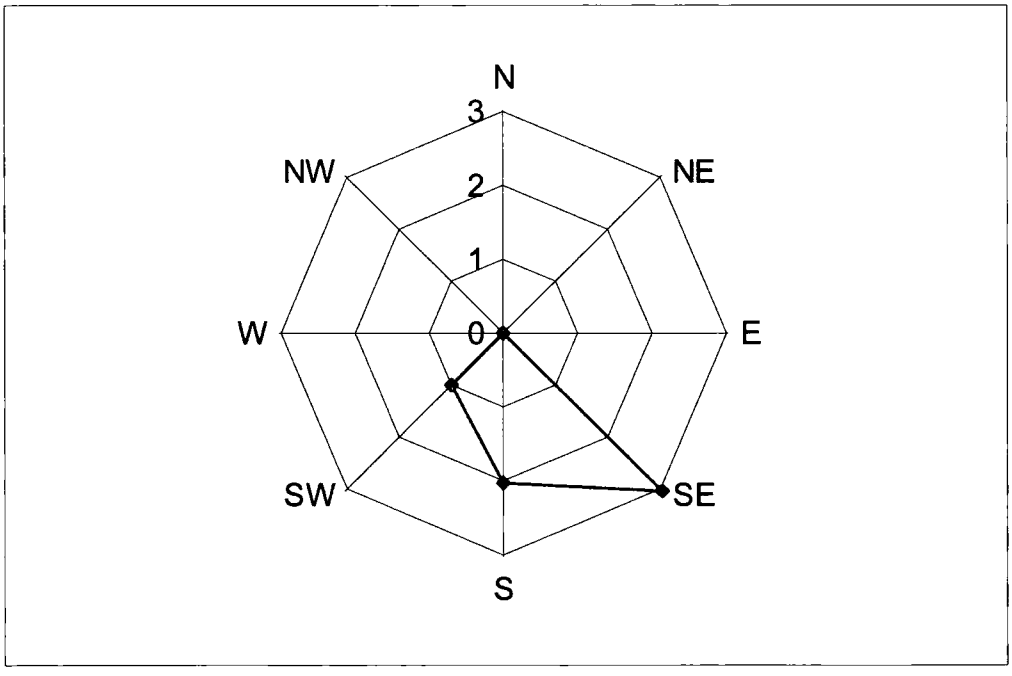

Fig. 4-24 Entrance orientation of excavated simple stone roundhouses, showing a preference for orientations from SE to SW.

4.5.1.2 Substantial Stone Roundhouses (SuSRHs)

4.5.1.2.1 Dating

Substantial stone roundhouses, like square barrows, could potentially span the LBA, IA and Early Historic periods. This may, however, be an illusion, created by the paucity of datable finds and radiocarbon dates from appropriate contexts. The ranges for the radiocarbon dates that are available are shown in Fig. 4-22 above.

Charcoal from a hearth deposit in House 1 at Badyo (26422/NN96SE27, Fig. 4-23) yielded a date range of 1260BC-940BC (GU-2427), placing it firmly in the LBA. The dating of House 2 is rather more complicated. Although it was interpreted by Rideout (1995) as Iron Age, a close look at the contextual information indicates that the charcoal came from a context which could be related to either House 2 or House 8 (the hearth of which produced a radiocarbon date in the Early Historic period). The relevant section is shown in Fig. 4-25. The radiocarbon date of 770BC-380BC (GU-2429) came from charcoal from a plank (marked 14 in Fig. 4-25), which might have been burnt *in situ.* If the plank formed part of the paved surface that overlay an earlier cobbled surface, it could date the refurbishment of House 2. It could therefore provide a *terminus ante quem* for the first phase of cobbling. Owing to the flat point in the radiocarbon calibration curve, this covers the entire EIA. This being the case, it is quite possible that House 2 was actually built in the LBA, although one cannot dismiss the possibility that it is EIA. However, it is by no means certain that the plank *was* associated with the flagstone layer; the section drawing indicates that there is stratigraphic ambiguity on this point. No artefacts were recovered from House 2 and the dating of it must therefore remain dubious. House 4 produced nothing datable other than a saddle quern re-used as a doorway paving stone; its secondary context means it is not helpful but is consistent with either a Bronze or Iron Age date. House 4 did, however, underlie House 5, which on evidence discussed above dates to the LBA. Charcoal from the floor of House 6 produced a radiocarbon date of 920BC-760BC (GU-2431), putting it in the Late Bronze Age or very early Iron Age.

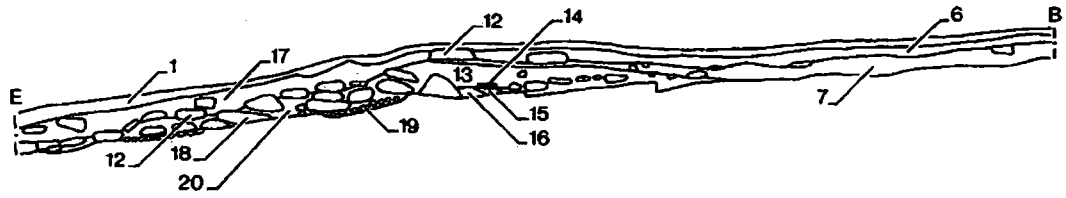

Fig. 4-25 Section through Houses 2 and 8 at Badyo. The plank referred to in the text is labelled 14 (after J. Rideout 1995).

Taylor (1990) has argued, on the basis of the excavated evidence from Litigan (24945/NN74NE6) and Queen's View (25844/NN86SE3) that the circular homesteads are essentially Pictish dwellings, dating to the late first millennium AD. He cites the presence of the stone lamp at Queen's View as evidence for a seventh or eighth century date. This is based upon Stevenson's (1966, 28) doubt that any stone lamps could be dated to the pre-Roman Iron Age, and upon the excavated parallel from a seventh to eighth century AD context at a Crossnacreevy rath, Co. Down, Ireland. As discussed in 4.3.3.2, however, the stone lamp has a broad chronological currency and even if it is assumed that the Queen's View one is a relatively late example (on the basis of the perforated handle), it could still be Iron Age. A close parallel was found at Buchlyvie, Fairy Knowe (44651/NS59SE3), in Phase 3, which was interpreted as pre-Antonine in date. Indeed, Stevenson's (1966) argument in favour of a late date was partly based on the fact that stone lamps were generally found in souterrains and brochs, monuments that are now known to have pre-Roman origins.

Taylor (1990) also suggests a late date for Litigan (24945/NN74NE6) of *c.* AD 1000 based on one radiocarbon date of AD 780 - AD 1220 obtained from charcoal and Tylecote's assessment of the metalworking debris. Neither the charcoal nor the slag came from contexts that inspire confidence, however, and given that the coarse stone artefacts would not be out of place on an Iron Age site, it would seem unwise to overstress the radiometric dating evidence. Certainly the charcoal sample would not today be deemed suitable for dating. Taylor has obviously chosen the date of 1000AD as being the mid-point of the calibrated range but there is no statistical reason why this should be more likely than any other date within this range.

Excavations at Kettlehill (44508/NS57SE9), by Scott (1958), were even less successful in ascertaining the date of the site, the only artefact recovered being a stone spindle whorl; this is not inconsistent, however, with an Iron Age date. Kettlehill is certainly not a chambered cairn, as implied by Stewart in her distribution map (Stewart 1959, 59), and there seems to be nothing in the published evidence to justify Powell *et al*'s (1969, 327) assertion that the site is Mediaeval. RCAHMS (1963, 447) erred on the side of caution by asserting that the site could only be dated following further excavation. However, given the striking resemblance of the site to Keir Hill of Gargunnock (46294/NS79SW4), it has been classified here as a substantial stone roundhouse, albeit an unusual one, with earthen outworks.

Despite its similarity to Kettlehill (and its earthen outworks), Keir Hill of Gargunnock (46294/NS79SW4) is classified in the NMRS as a homestead. MacLaren (1958) argued for an Early Iron Age date, although the small finds from this site indicate at least some activity in the Roman period. Small finds included a sherd of samian, fragments of Roman glass and a blue glass melon bead with parallels from Newstead. Guido (1978, 100), however, argues that such beads have a long currency, originating in the Roman period, dying out and then reappearing in the post-Roman period and continuing into Viking times. The bead therefore, poses the same problems as the stone lamp from Queen's View (25844/NN86SE3). Nevertheless, Guido (ibid., 230) does not seem to have a problem with the site being dated to the pre-Roman Iron Age, despite the fact that all these finds, being situated *below* the burnt layer (compare Buchlyvie, 'Fairy Knowe': 44651/NS59SE3), could be related to the main occupation of the site. The stone loom weight and the jet armlet, however, are types that have a much longer currency and could represent occupation prior to the Roman invasion. Wallstale (46232/NS79SE48) produced only coarse stone tools, including both a saddle and a rotary quern; the querns were found in wall tumble and are therefore not helpful in dating the site even in the broadest terms (see 4.3.3.2.1 above).

Watson (1915, 32), lacking dating evidence, suggested that Borenich (25880/NN86SW6) was built by the *Verturiones*, occupying the ancient province between the Forth and the Tay. The artefactual evidence, which is similar to that from Kettlehill (44508/NS57SE9), contradicts neither an Iron Age nor Mediaeval

date for Borenich. The best dating for a 'homestead' site comes from Aldclune (25822/NN86SE1), which unfortunately is somewhat atypical, by virtue of the external defences and the 'close pairing' of the two roundhouses. Site Two at Aldclune was apparently built in the first or second century BC although its occupation appears to overlap with that of Site One, built between the late first century AD and the early third century AD (Ashmore 1997). The earlier dates obtained from more secure contexts at Aldclune therefore indicate a far earlier origin for these sites than had previously been anticipated. Further study of circular homesteads is essential for a greater understanding of the first millennium AD and possibly even the late first millennium BC. Only one site so far excavated (Aldclune) has produced an anywhere near adequate series of radiocarbon dates.

Buchlyvie, 'Fairy Knowe' (44651/NS59SE3) produced over 500 artefacts, many of which appear to date to the Roman Iron Age. Given the radiocarbon dates obtained from the underlying timber roundhouse remains and the artefactual evidence, there does not seem to be any reason to suggest that the broch was constructed much before the beginning of the first millennium AD. This is also suggested by the fact that the broch seems to have directly replaced the timber house. It seems likely that the origins of broch architecture in this region are far later than in the Western and Northern Isles (see Armit 1992). Unfortunately, only four radiocarbon dates were obtained from this site. When calibrated the broch contexts span the first half of the first millennium AD and in one case, also most of the latter half of the first millennium BC (1870±180 (GU-1107)) (Main 1998, 406-407). Single entity AMS dates from lowland sites of this type are desperately needed. The profile of excavated artefacts implies, however, that the broch is pre-Antonine, since only Flavian artefacts in the destruction deposit.

The dating of Leckie (45379/NS69SE12) cannot be fully assessed, owing to the lack of a final excavation report. Again, the radiocarbon dates available indicate an occupation in the early centuries of the first millennium AD, which is supported by the artefactual evidence. However, there is a limit to the significance that can be attached to such a small sequence of radiocarbon dates (see Table 3-3). Recalibration also shows them to represent date ranges so wide that they are unhelpful. Numerous items of native jewellery were uncovered, including what

MacKie describes as Meare spiral beads (MacKie 1987, 4), which could date to the third century BC or later. MacKie also mentions ten glass armlets, suggesting that some from the broch floor must have arrived on the site very soon after its construction. This explanation is only necessary because he has dated the site to the Flavian occupation on the basis of the Roman artefacts. Mackie's (1987, 2) assertion that Leckie was built in the 80s AD seems overly precise. If one relies on Roman artefacts for dating it is inevitable that one will then date the site to the period of the Roman occupation of the area. The dating of the samian sherds suggests that the site was occupied in both the Flavian and Antonine periods, in contrast to Buchlyvie, Fairy Knowe (44651/NS59SE3). Many of the artefacts so far mentioned in print, such as the lamps, wooden vessels, pottery, stone weights, whorls, querns, spindle and beads have a longer currency than this and could represent pre- or post-Roman occupation. Further assessment will have to await the publication of detailed contextual information.

It is clear that some of the substantial stone roundhouses (Leckie: 45379/NS69SE12, Buchlyvie, 'Fairy Knowe': 44651/NS59SE3, Castlehill Wood: 46233/NS79SE49) were occupied in the Roman period. It is, of course, possible that some of those that produced no Roman artefacts were also in use in this period. There is no evidence from the current study to suggest that such architecture appeared in the east of Scotland before the first century AD, despite the revision of broch chronology in the Western and Northern Isles (Armit 1991; 1992). The two examples – Leckie and Fairy Knowe, Buchlyvie - excavated to modern standards both indicate that it was at this stage that a timber roundhouse was replaced by a broch. The extent to which substantial stone roundhouses were also being constructed and used in the first millennium BC, remains unclear, although there is certainly evidence for this from Aldclune (25822/NN86SE1).

4.5.1.2.2 Function

Taylor (1990) has argued that the sites usually known as circular homesteads represent the remains of farms or homesteads. Hingley (1997) concurs, suggesting that they incorporated domestic space and a variety of other activity areas. Certainly, artefactual evidence from these sites would do nothing to challenge this. As

discussed in Chapter 3, there is evidence from the excavated sites for the processing of grain, in the form of quernstones and also indirect artefactual evidence for other agricultural activities, such as spindle whorls. The limited plant macrofossil and animal bone evidence also indicates a mixed agricultural economy on these sites. Other artefacts recovered are prosaic but there are hints that even these could have been used to express individual identity. Needle sharpener pendants were found at the Torwood, The Tappoch (47004/NS88SW1) and at Doghillock (47047/NS88SW49: Aitchison 1981b).

On many of these sites, the interiors seem to have been kept exceptionally clean, to the extent that Stewart and Taylor (1990) were not able to identify any intervening contexts between the natural subsoil and the topsoil on either Queen's View (25844/NN86SE3) or Litigan (24945/NN74NE6). This is also reflected in the low numbers of artefacts. At Queen's View, the small yellow annular bead is likely to represent an accidental loss. A similar accidental loss could be represented by the bone bodkin from Borenich (25880/NN86SW6). Other finds were just as prosaic, such as the stone discs from Borenich, which were probably used as pot-lids (although no pottery was recovered). Although Watson (1915) does not provide a section drawing, his description suggests the accumulation of some trampled debris with patches of charcoal, in the down-slope side of the interior. Watson also describes three hearths although it is possible that these do not belong to the main phase of occupation. It would be unwise to take the Borenich evidence further, as it is unclear which contexts are related to occupation and which to abandonment or post-abandonment.

There is no real reason to doubt that these substantial stone roundhouses were roofed. This is contrary to Triscott, who argued that the walls on both Aldclune (25822/NN86SE1) sites enclosed activity areas (Hingley *et al.* 1997, 426). Hingley *et al.* (1997, 446) refute this, arguing instead that both buildings were originally fully roofed. Whilst concurring with Hingley *et al.* (1997), Pope (2003, 104) has argued on the basis of several repairs and rebuilds, that the Aldclune roundhouses were so big that they suffered serious structural problems during their use. At Litigan (24945/NN74NE6), which is 15.5m in internal and 21.5m in external diameter, the structural features for roof support are very clear, with a central double ring of evenly

spaced postholes evident in the interior, as shown in Fig. 4-26. The evidence from Queen's View (25844/NN86SE3), which is 16.5m in internal and 21m in external diameter, is not as clear, but there was a shallow groove on the north side of the interior, which is likely to have been structural, as well as numerous postholes that could have served a similar role to the ones at Litigan. Unfortunately, Watson did not record any negative features at Borenich (25880/NN86SW6) but his excavation did little more than clear out the interior and sieve the spoil produced. The broch evidence also points firmly to fully roofed structures, with central post-rings being identified at Leckie (45379/NS69SE12) and Buchlyvie, Fairy Knowe (44651/NS59SE3). Unfortunately, Torwood, The Tappoch (47004/NS88SW1) and Coldoch (45356/NS69NE6) were both cleared out in the nineteenth century and no record survives of any interior features that might have been evident.

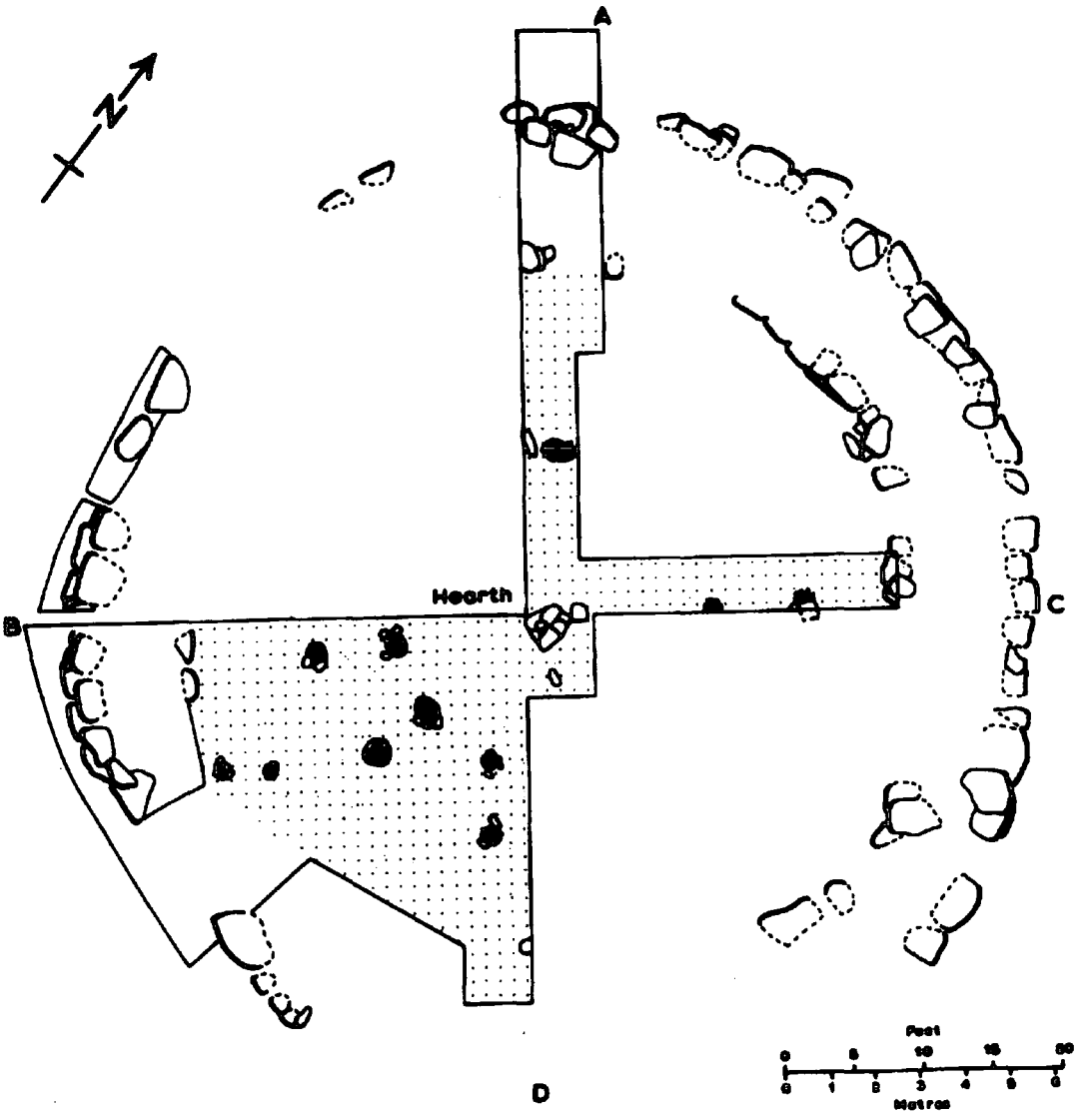

Fig. 4-26 Excavation plan of the substantial stone roundhouses at Litigan, after Taylor (1990). Note the double ring of postholes, that could have been used to support a roof.

There is some variation in the entrance orientation of substantial stone roundhouses, with north-east (two structures), east (one), south-east (five), south (three) and west (three) all represented. While orientations from east to south, through south-east reflect the norm for northern and central Britain as a whole, the western orientations are highly unusual, and recall the subversion of orientation that has been noted for some brochs in the Western Isles; Parker Pearson *et al* (Parker Pearson 1999, 44-46; Parker Pearson *et al.* 1996, 61) have suggested that this was a demonstration of social difference and power over nature, in houses occupied by an élite. The roundhouses orientated west are at Borenich, Aldclune and Queen's View. These are all sites previously classified as circular homesteads; Hingley (1997a, 461-462) has already noted that most such sites have entrances to the south-west or west. This

contrasts to those previously classified as brochs; while Torwood, the Tappoch is orientated south-east, Coldoch faces east and Leckie is orientated east.

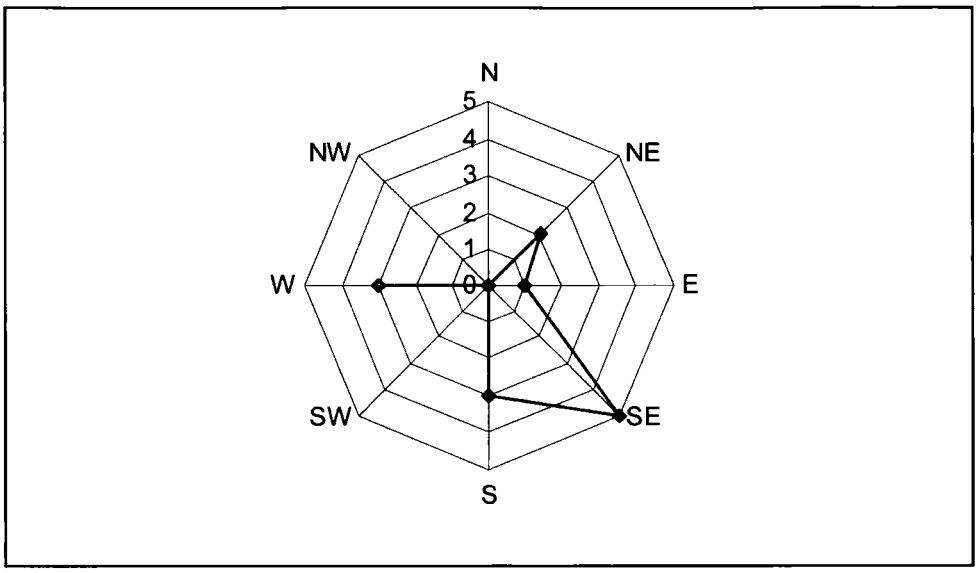

Fig. 4-27 Entrance orientation of substantial stone roundhouses, showing a general preference for the south-eastern quadrant.

There was a change in the use of space during this period, which exhibited itself as a trend towards monumental architecture. The Late Iron Age substantial stone roundhouses, and particularly the complex ones, do show influence from the architectural styles of the north and west of Scotland, but this is a local adaptation. The origins of substantial stone architecture can be found in the Late Bronze Age, in the upland settlement. The complex SuSRHs have solid bases. The animals that were once allowed to roam within the palisaded site are now housed in the ground floor of the roundhouse. They provide heating for a tall structure, which would otherwise be difficult to keep warm, and the animals are protected from cattle-rustlers and the like; this is a reaction to social tension. The substantial stone roundhouse is a statement to those around. The occupants are then masters/mistresses of all they survey; in Maclagan's words, the statement is "This land is ours, and we will hold it" (Maclagan 1872, 37). Despite what Mackie has argued in relation to Leckie (45379/NS69SE12), these structures are not that defendable, particularly for long periods of time; there was no water supply within the broch. But there is ostentation here, as well as defiance; these structures are highly visible within the landscape in a way that only upland enclosures were in the past. From Coldoch (45356/NS69NE6) and East Coldoch (46081/NS79NW34), one

can see Leckie, directly opposite, on the other side of the valley, although it is 4km away. These issues are explored further in Chapter Five.

4.5.1.2.3 Patterns of Deposition

Despite having standing masonry, the circular homesteads, with the noticeable exception of Aldclune (25822/NN86SE1), have very limited artefactual assemblages. In this respect they are much like many of the cropmark sites of the region and contrast sharply with other upstanding sites, such as brochs, which seem to be particularly artefact-rich. It is, however, the profusion of artefacts on some sites which requires explanation, rather than the absence or near-absence from others. As Hill (1995, 4) has pointed out, the archaeologist should expect to find nothing on rural settlement sites and be surprised when they do; this means that *all* finds are special, not just the decorative ones. While people undoubtedly dumped or abandoned defunct, broken or unwanted goods, it is clear that preservation of such items on settlement sites is the exception, not the rule. Taphonomy must therefore be given detailed consideration in any interpretation of the significance of deposits of artefacts and other waste.

Hunter (1998b) has suggested that many of the artefacts found on sites such as Buchlyvie, Fairy Knowe (44651/NS59SE3) and Leckie (45379/NS69SE12) may have been deposited there after the site ceased to be used for its original purpose, perhaps as an act of closure. The Evenk of Siberia, for instance, take the floor with them when they abandon a site but deliberately deposit valuables there when they do so. The Evenk themselves understand these abandoned sites with structured deposits to be territorial markers; the sites retain significance in the landscape through artefact deposition, even though the objects can no longer be seen (Grøn and Kuznetsov 2003). The other possibility is that following the conflagration episodes at Buchlyvie, 'Fairy Knowe' and Leckie, it was not thought appropriate to retrieve artefacts that had been left in the building, either within the living space or stored in the roof. This might have been a particular issue if the inhabitants had died in the fire; a modern parallel might be the traditional Scottish aversion to disturbing the final resting place of those 'buried at sea' (Pollard 1999, 39). Abandoning a house *and its contents* when someone has died in it is a well-documented phenomenon

amongst the Navajo of North America (Haley 1999, 3 & 6). It is, of course, impossible to ascertain whether the fire was fatal for those involved, but it should be borne in mind as a possibility.

4.5.1.2.3.1 Quernstones

Aldclune (25822/NN86SE1) had extensive evidence for the incorporation of quernstones into architectural features within the building (Hingley *et al.* 1997). Given the strength of the evidence for structured deposition on this site, the contexts of quern stone finds from other substantial stone roundhouses were examined in detail. However, the querns at Litigan (24945/NN74NE6) were unstratified, as were those recovered from Queen's View (25844/NN86SE3) and Borenich (25880/NN86SW6). At Wallstale (46232/NS79SE48), the saddle and rotary quern were found amongst the rubble on the slope to the north of the building. It is tempting to suggest that this represents tumble and that the querns were originally incorporated in the wall, although this cannot be demonstrated. A similar context was recorded for an unfinished upper stone of a rotary quern from Castlehill Wood univallate enclosure (46233/NS79SE49). The context of the saddle quern from Castlehill Wood was more intriguing, however, since it was found at the base of the inner north cornerstone of the entrance. As the other querns found on this site were rotary querns, it is likely that this saddle quern was obsolete when it was built into the roundhouse wall; this does not mean, however, that the action was not significant. It has echoes of the clusters of quernstones at the entrances of the Aldclune examples.

The contexts of querns from Leckie (45379/NS69SE12) have not yet been published but at least one came from the Phase 3 destruction deposit and could, as with SF126 at Buchlyvie, Fairy Knowe (44651/NS59SE3), be part of a closure deposit. At Buchlyvie, Fairy Knowe, another complete stone was set into the primary paving within the roundhouse in Phase 2 whilst another (SF266) was found above an extra-mural feature which seems most likely to have been a drain. Whilst the quern contexts from Aldclune (25822/NN86SE1), Castlehill Wood (46233/NS79SE49) and Buchlyvie, 'Fairy Knowe' in particular are intriguing, the lack of good quality contextual information from many of the other substantial stone houses frustrates

attempts to identify patterns. An open mind should be retained when considering the significance of potentially structured deposits. Indeed, it is possible that the incorporation of quernstones into architectural features represents nothing more than pragmatic reuse. For this reason, little more can be said about the ritual aspects of quern deposition in substantial stone roundhouses until more have been excavated. Counting against the interpretation of pragmatic reuse would be the favouring of entrance locations for deposition (although one would have to discount as a factor a tendency for excavators to concentrate on the entrance area), and the deposition of unfinished (as at Castlehill Wood) or unused quernstones.

4.5.1.3 Crannogs

The only crannog that has actually been excavated in the Study Area is Loch Tay, Oakbank (25024/NN74SW16), which has been subject to a programme of research spanning more than twenty years. Unfortunately, much of this has not been published. Nevertheless, the available evidence, including a decent suite of radiocarbon dates is below used to build up a picture of the dating and function of crannogs in this area.

4.5.1.3.1 Dating

The dates obtained from Loch Tay, Oakbank (see Fig. 4-28) are promising, inasmuch as they are derived from single entities (*in situ* structural timbers) and, therefore, provide a firm basis for assessing the date of the crannog. The dates are very consistent and lie between 830BC and 200BC. This raises the possibility that the site may just have its origins in the LBA and may continue in use into the LIA. However, the 1-sigma date ranges all point to the EIA and unfortunately cannot be drawn out, owing to the flat point on the calibration curve. A date from the adjacent site of Loch Tay, Fearnan Hotel (25035/NN74SW3) produced a similar range, of 780BC-400BC, which is chronologically indistinguishable from the Loch Tay, Oakbank date. Oakbank produced little pottery but other artefacts may eventually enable refined dating of these sites. That said, the date from "a large array of timbers exposed at the base of the mound" at Loch Tay, Firbush (24515/NN63SW5) produced a rather later date range of 360BC-40BC (GU-1234: Dixon 1981b, 347). Although this date does not carry as much weight as dates from excavated material,

for which the context can be evaluated, it indicates that crannogs in Loch Tay may have been a phenomenon that survived into the first millennium AD.

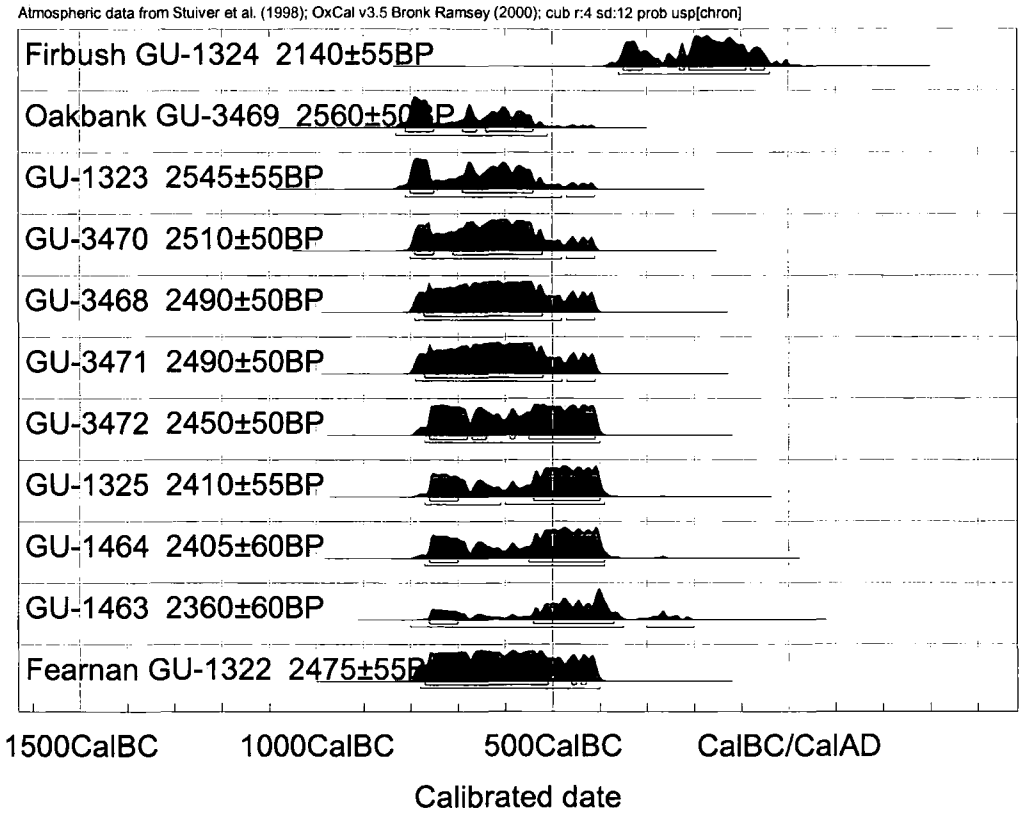

Fig. 4-28 Radiocarbon dates from crannogs in Loch Tay

This evidence tallies well with Henderson's (1998b) contention that, *pace* Morrison (1981) and Dixon (1981b), crannogs may be solely an Iron Age phenomenon, with a floruit in the latter half of the first millennium AD. Certainly the dates from the Loch Tay sites correspond well with those from sites in the south-west and elsewhere. Nevertheless, these come from a very small sample of crannog sites in the study area and, given the slightly later dates indicated by the later phases at Buiston (Crone 2000) and Milton Loch (Piggott 1953), it would be unwise to assume that the crannogs of the few lochs in the study area are solely an EIA phenomenon. Dixon has suggested that crannogs "came in with the Iron Age", based on the evidence from Oakbank but this is a misinterpretation of the radiocarbon dates. Given the position of the date ranges, on the flat point on the calibration curve, it is possible that the site was built in or shortly after 800BC but it is just as likely that it was built in 500BC or even later.

4.5.1.3.2 Function

As discussed in Chapter 3, Oakbank (25024/NN74SW16) has produced evidence to support the idea that the inhabitants sustained a mixed economy, drawing not only on cereals and the products of domesticated animals but also on the abundant wild resources in the area. The presence of sheep dung on the site suggests that animals were being kept on the crannog itself and this has important implications for the use of space within the crannog. The absence of pig remains is notable. Numerous other paraphernalia represents the remains of everyday life; wooden vessels seem to have been used in preference to pottery and a wooden spoon has also been found. There is evidence for on-site weaving activities; spindle whorls of wood and stone were found as well as cloth of a 2:1 twill. The paddle found at Oakbank indicates water transport and it seems likely that people also ate fish, as net-weights have also been found. While this may seem obvious, the lack of seafood remains from any of the other sites in the study area means that it could not be assumed, even on a site located in a loch[43]. A multitude of uses can be imagined for the whistle made from dog-rose wood.

Although it does not explain the fact that such sites generally survive as boulder mounds sealing organic deposits, the excavator of Oakbank (25024/NN74SW16) has argued consistently that the crannog was essentially a roundhouse built on stilts (oak posts embedded in the loch bed) (see Fig. 4-29).

[43] Absence of evidence for seafood consumption is typical of the British Iron Age in most areas and suggests an active avoidance of this food group (Dobney and Ervynck forthcoming).

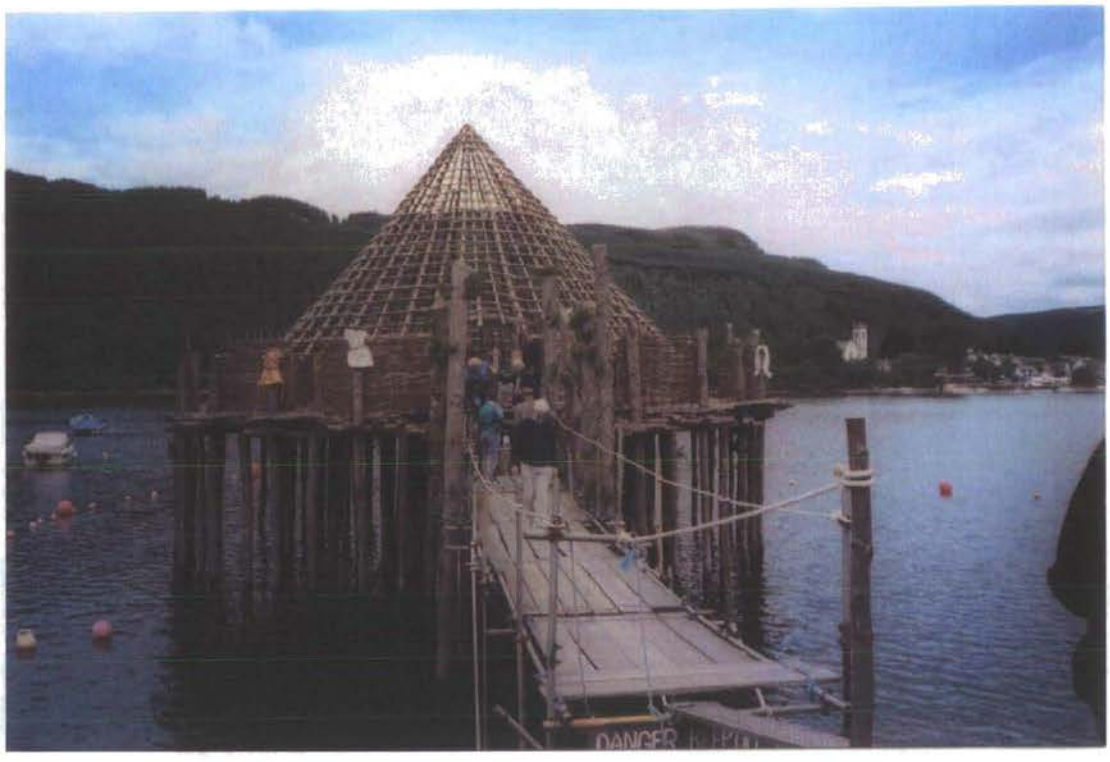

Fig. 4-29 Dixon's crannog reconstruction on Loch Tay, prior to thatching, summer 1996 (M.H.Davies)

Layers of timbers were apparently laid down to form the floor, although Dixon has not explained why such remains are exactly in place. If the site was built on stilts, the floor must have fallen in to have been preserved and if it was, why was the material not swept away, rather than ending up forming part of a very discrete area? In particular, Holley (2000, 31) has pointed out that sawdust, ferns and straw have been preserved on site, whereas one would expect them to float away. Harding (2000) has suggested that Dixon has misinterpreted the evidence and that, in fact, the site was originally situated on a spur protruding into the loch and it was subsequently submerged by rising water levels; the site is only 25m away from the present shoreline. Indeed, it is noticeable that crannog sites in Loch Tay are invariably situated near the shore, although this may simply be because in a deep loch, sites must be situated on the shallow shelf, which by its very nature is near the shore (Morrison 1985, 64-65). As yet, no one has established the loch depth at any period so this must remain an open question. Neither of the explanations seems to quite fit the evidence although it is difficult to evaluate without access to all the site plans. No one has yet satisfactorily explained the significance of the upper layer of boulders found on these sites (pace Dixon 2003). If they provided extra support at the base of piles, or played any other structural role, they would not have ended up *on top* of the

organic remains and especially not the floor. There is an intriguing possibility that the boulder deposit represents some kind of closure deposit, although the site would have had to have been at least partially dismantled before this took place.

The community or family living at Oakbank (25024/NN74SW16) was not exclusively made up of farmers, however, as slag was found on the site, too. Evidence of on-site metalworking is only found on 17% of roundhouse sites in northern and central Britain (Pope 2003, 268) and in this study area only at Moncrieffe House stone circle (28012/NO11NW11), Buchlyvie, Fairy Knowe (44651/NS59SE3), Leckie (45379/NS69SE12) and East Coldoch (46081/NS79NW34). Heald (forthcoming) has suggested that metalworking is an activity associated with status in the Iron Age. However, there is also the possibility that most metalworking activity was excluded from the social sphere (perhaps because of the poisonous fumes: Harper 1987) and that therefore the evidence has been rendered archaeologically invisible. Hingley (1999, 238) has suggested that Moncrieffe House stone circle was chosen as a metalworking area because of its association with the past and the ancestors, but other reasons could include that it provided a sheltered spot, away from settlement and with good light.

Other small finds at Oakbank (25024/NN74SW16) include beads and other artefacts that could have been personal items. Dixon and others have suggested high status for the Oakbank site, following numerous previous researchers in the past, on the basis of the metalworking, the range of foodstuffs in evidence (Miller 2002, 43) and the quality of the cloth (Dixon 2000, 27). This may be an erroneous assumption, since the exceptional preservation conditions could equally well explain the wealth of artefacts and environmental evidence present. It is all very well saying that the crannog was high status because of the fine cloth found but there is not a single other excavated site in the area where cloth has been preserved. It is possible that everyone wore cloth of that quality. If it is assumed that crannogs are the remains of the houses of the élite, the reasons for the élite choosing to dwell on the loch must be considered, as well as where, at that time, the populace dwelt. This must also be reconciled to the large number of crannogs in Loch Tay, especially given the remarkable consistency in radiocarbon dates obtained. These issues will be discussed in more detail in section 8.4.2.

4.5.2 Timber Roundhouses

The mean diameter of the 26 excavated timber roundhouses in the study area is 9.85m, reflecting the fact that most are simple roundhouses of diameter less than 15m. Indeed, only three roundhouses (from two sites) were substantial, within the terms of the current definition. The timber roundhouses are listed in Table 4-5[44].

[44] See also Table 6-6 in Appendix Six.

Table 4-5 Basic data for timber roundhouses in the study area.

NUMLINK	MAPNO	SITE	SUB	Structure No	NMRSNAME	Construction	Entrance orientation	Max Diameter (m)	Hearth
27007	NO03SE	13	1	1	Newmill, Bankfoot	Post-ring	unknown	6.6	No
46898	NS88NW	5		2	West Plean	Post/groove	E	11.6	Yes
46081	NS79NW	34		1	East Coldoch	unknown	E	11.9	No
46081	NS79NW	34		2	East Coldoch	Ring-groove	NE	6	No
46081	NS79NW	34		3	East Coldoch	Ring-groove	unknown	4	No
25295	NN81NE	19		1	Cuiltburn	Ring-groove	unknown	4.5	No
25295	NN81NE	19		2	Cuiltburn	Ring-groove	unknown	4.5	No
25295	NN81NE	19		3	Cuiltburn	Ring-groove	unknown	4.5	No
30081	NO21NW	24	0	1	Carpow	Ring-groove	unknown	11.4	No
47816	NS97NE	37		1	Myrehead	Post-ring	SE	5	No
47816	NS97NE	37		2	Myrehead	Post-ring	SE	6.2	No
46898	NS88NW	5		1	West Plean	Post-ring	unknown	7	Yes
47816	NS97NE	37		4	Myrehead	Ring-groove	unknown	8.5	No
47244	NS89SW	12		4	Lower Greenyards, Bannockburn	Post/groove	SE	9.8	No
27007	NO03SE	13	1	2	Newmill, Bankfoot	Post-ring	unknown	12.5	No
27007	NO03SE	13	1	3	Newmill, Bankfoot	Post-ring	unknown	17.6	No
44651	NS59SE	3		1	Buchlyvie, 'Fairy Knowe'	Post/groove	E	8	Yes
46922	NS88SE	24		1	Falkirk, Camelon	Ring-groove	N	14	Yes
46922	NS88SE	24		2	Falkirk, Camelon	Ring-groove	S	14.6	Yes
26000	NN91NW	12		1	North Mains, Strathallan	Ring-groove	NE	8	No
47254	NS89SW	21		1	Bannockburn	Post/groove	unknown	18.6	No
47254	NS89SW	21		2	Bannockburn	Post/groove	unknown	15.8	No
47244	NS89SW	12		1	Lower Greenyards, Bannockburn	Post/groove	E	14.4	No
47244	NS89SW	12		2	Lower Greenyards, Bannockburn	Post/groove	unknown	14.4	No
47244	NS89SW	12		3	Lower Greenyards, Bannockburn	Post/groove	SE	9.8	No
47816	NS97NE	37		3	Myrehead	Post-ring	SE	6.9	No

4.5.2.1 Simple Timber Roundhouses (SiTRHs)

4.5.2.1.1 Dating

The artefactual evidence (a rotary quern, a stone lamp, a cannel coal bracelet fragment and iron slag) from West Plean (46898/NS88NW5) would suggest that it is Iron Age (see also 4.5.4.2.1). Two phases are evident to the circular structure, one consisting of a post-ring, the other a larger one consisting of a stone-chocked ring-groove and a central post-ring. The latter included a cobbled area on the northern edge of the interior and the foundations of a porch. The stone-set hearth could belong to either phase. Finds from a floor deposit in the house at East Coldoch (46081/ NS79NW34) indicate that this building was at least in use partially in the Roman period. As the earliest contexts in this structure have not yet been excavated, the method of construction is unclear. This site also included remains of perhaps three ring-groove buildings, one of which measured *c.* 5m in diameter. This ring-groove structure was cut by the main enclosure ditch and is therefore likely to be pre-Roman in date. Three similar ring-grooves were also noted underlying the sleeper-beam foundations within the enigmatic square enclosure of Cuiltburn (25295/NN81NE19). The only dating evidence came from a sherd of Flavian samian in the bottom of a beam slot, although this was not one of those cutting a ring-groove. The best-preserved example would, if complete, have been 4.5m in diameter. Within the Roman fort of Carpow (30081/NO21NW24) was a ring-groove house, referred to by the excavators as a hut-circle. It was 11.4m in diameter and neither entrance nor interior features were noted. No section of the ring-groove is provided and no dating evidence available, although two sherds of 'local pottery' were found nearby. A similar shallow arc of 8-8.5m in diameter (Structure IV) was also noted within the palisaded site at Myrehead (47816/NS97NE37). It cannot be dated directly, but if it relates to the occupation of the homestead it could date to the late first millennium BC.

Myrehead (47816/NS97NE37) also included two circular settings of postholes that could be the remains of post-ring structures, Feature Group 1 being 5m and Group 2 5.9m-6.2m in diameter. Group 1 was not directly datable but one of the posts in the Group 2 ring cut the fill of Pit 2/1, which produced a radiocarbon date of 1190BC-

830BC (GU-1609). This pit also contained saddle querns, which support a first millennium BC date for the pit. Group 3 was dated to the early to mid first millennium BC on the basis of the small finds (pottery and part of a shale bracelet).

The remains of similar post-ring structures were also found at Newmill, Bankfoot (27007/NO03SE13.1). The clearest was 6.6m in diameter and two postholes yielded dates of AD 1-AD 330 (GU-1024) and AD 1-AD 250 (GU-1025). Two arcs of smaller postholes, which suggest two further circular structures, suggest somewhat larger structures, one of which was 12.5m and another that is discussed in 4.5.2.2 below. As Watkins (1980a) noted, these arcs of postholes are concentric and could actually represent a larger double-walled structure. Interestingly, the smallest post-ring is also the latest in the sequence, suggesting a trend on this site away from monumentality, or perhaps a change in function.

A combination of these two structural techniques is found at Buchlyvie, Fairy Knowe (44651/NS59SE3), where a ring-groove connected a circle of 10 postholes. This might suggest a building of posts and connecting hurdles. A short section of ring-groove, 1.1-1.5m away from this arrangement, on the north-west of the site, suggests that this may represent either an outer face of what was originally a double-walled structure, or an earlier or later phase which has largely been obliterated by the construction of the subsequent substantial stone roundhouse. Main (1998) has suggested that it is an eaves-drip gully. It is, however, much narrower than the deliberately made drainage gullies Pope (2003, 179) describes, so it is interpreted here as a structural ring-groove. A much smaller ring-groove arc within the structure probably represents the remains of a screen on one side of the hearth.

4.5.2.1.2 Function

As the discussion of dating above indicates, there is a distinct lack of material culture in the simple timber roundhouse. This may partly be due to the fact that some of the timber roundhouses, notably Buchlyvie, 'Fairy Knowe' (44651/NS59SE3), were superseded by other structures and were truncated in the process. There is also the possibility that they were deliberately kept scrupulously clean, during their use period or possibly as part of the process of abandonment, but identifying either poses problems. Of the 23 simple timber roundhouses, just four had evidence for a hearth.

This need not, however, mean that the others did not serve a domestic function. A hearth on a stone slab (Pope 2003, 252), which was removed when the house was abandoned, or one suspended, for instance, might leave no trace. Entrance orientation was observable on only thirteen of the structures; all were aligned between north and south, with peaks at east and south-east (

Fig. 4-30).

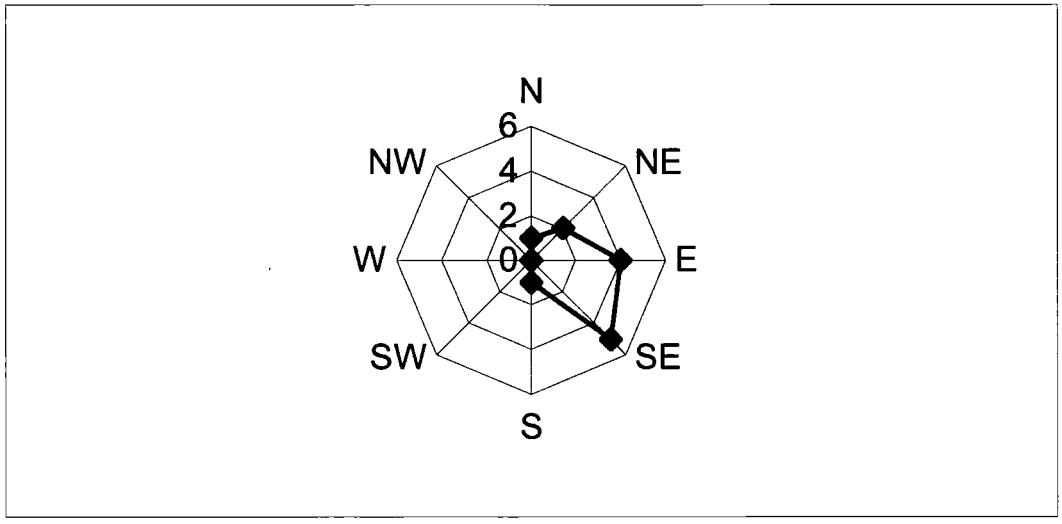

Fig. 4-30 Entrance orientation of Simple Timber Roundhouses, showing a preference for orientations from north-east to south-east, through east.

Admittedly, this is a small sample[45] but it ties in well with Pope's (2003; forthcoming) observations that roundhouses in Northern and Central Britain show a preference for entrances from north-east through south-east, maximising daylight and shelter against prevailing winds. All of the structures were either of post-ring, ring-groove construction or a combination of the two. Buchlyvie, Fairy Knowe (44651/NS59SE3) is unique in that what appears to have been the main supporting wall included a post-ring and ring-groove, indicating perhaps the use of prefabricated hurdles.

4.5.2.2 Substantial Timber Roundhouses (SuTRHs)

Despite the emphasis laid on the substantial timber roundhouse in Hingley's (1992) synthesis of society in eastern Scotland, there is remarkably little in the way of excavated evidence for substantial timber roundhouses in the Study Area. Indeed,

[45] This study includes some structures not considered by Pope, namely those at East Coldoch, Carpow and Cuiltburn.

only three have been identified, two from Lower Greenyards, Bannockburn (47244/NS89SW12) and one at Newmill, Bankfoot (27007/NO03SE13.1). This may well be a result of biases in excavation strategy, especially given the instances of substantial timber roundhouse in adjacent counties, such as Culhawk Hill (Rees 1998) and Scotstarvit Covert (Bersu 1948a)[46]. At Buchlyvie, 'Fairy Knowe' (44651/NS59SE3), however, where there was a complex substantial stone roundhouse, the underlying timber roundhouse was somewhat smaller. Even a structure like the one at East Coldoch (46081/NS79NW34: 11.9m diameter) cannot compare in size to the stone roundhouse of Coldoch (45356/NS69NE6) nearby. The implications of this are discussed below.

4.5.2.2.1 Dating

As indicated by the discussion of dating of Newmill, Bankfoot souterrain (27007/NO03SE13.1: 4.5.3.1 below) and the sites at Bannockburn (47244/NS89SW12 and 47254/NS89SW21: 4.5.4.1.1 below), there appears to be no discernible chronological significance in the variant techniques used in substantial timber roundhouse construction in this area, bar the observation that they span the Iron Age.

4.5.2.2.2 Function

Entrance orientation was not discernible for any of the substantial timber roundhouses listed above. Neither were hearths noted. However, as yet there seems little evidence to refute that the function of such structures was primarily domestic.

4.5.3 Souterrains

4.5.3.1 Dating

It was originally thought, on the basis of Roman goods recovered from the fills of such monuments, that souterrains were a phenomenon of the Roman and post-Roman period and perhaps even represented a response to the Roman presence (Anderson 1883). Many of the sites were excavated before the adoption of modern methods and

[46] Although see Pope (2003), who argues that Bersu misinterpreted the evidence and that the roundhouse was somewhat smaller than is commonly believed.

therefore artefactual detail is often missing. Barnhill (28436/NO12SW67), for instance, produced only bone and flint (Hutcheson 1904; 1905). No artefacts are recorded from Maxwell's (1987, 37 & 40) excavations at Glencarse (30488/NO22SW12) or The Welton (28896/NO14SE29) or Wainwright's (1956) at Longforgan (31710/NO32NW1). However, the dating of souterrains was revolutionised by the excavation of Newmill, Bankfoot (27007/NO03SE13.1) in Perthshire. Here, wood charcoal retrieved from below the floor of the souterrain chamber produced a date of 60BC- AD 320 (GU-1021) and wood from below the ramp of the axial entrance a date of 350BC- AD 250 (GU-1022). Charcoal from the chamber fill provided a TAQ of AD130-AD410. Dates from the associated roundhouse suggested a date in the first or second century (see below). These dates suggest that the souterrain could have been constructed before the Roman occupation although the ranges are too wide to be absolutely certain about this.

Fig. 4-31 The souterrain and associated post-built roundhouse at Newmill, Bankfoot. Radicarbon dates from this site confirmed a date in the late first millennium BC (see Fig. 4-32 for details). The damage to the souterrain was caused during the gravel extraction that resulted in its discovery. Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Scotland.

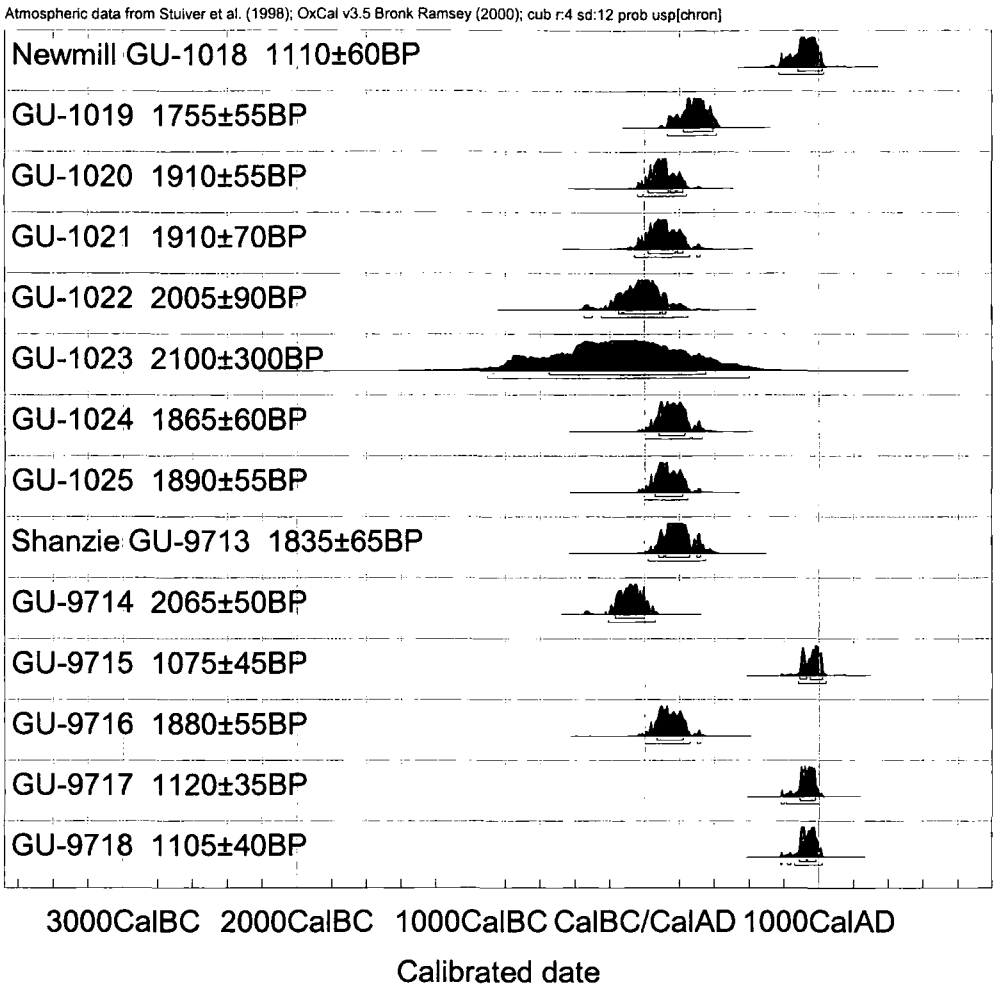

Fig. 4-32Radiocarbon dates from souterrains in Perthshire.

A coin of Hadrian came from the vicinity of the souterrain at Blairgowrie, Greenbank Cottage (28897/NO14SE3: Hall 1995b). If the group of Roman coins described by Small and Bateson (1995) really did come from Shanzie souterrain (183018/NO25SE55), as they suggest, this would suggest a *terminus ante quem* of the mid-second century AD. Shanzie was excavated completely to modern standards in 2000 and produced an assemblage rich even for a souterrain (Fig. 4-4). Of these, the tweezers, a fragment of Roman architectural moulding and a sherd of samian all indicate some activity on or near the site during or after the Roman occupation. Four radiocarbon dates from a single context from the lowest fill together span a period of more than 1000 years, suggesting that this deposit was heavily mixed. Three of these do, however, indicate activity in the first few centuries of the first millennium AD. The secondary reuse of the souterrain seems to have taken place in the early historic

period, with radiocarbon dates spanning the last couple of centuries of the first millennium AD. Some intrusion of later material is suggested by the fact that the range of the latest date from Context 5 almost exactly matches those from Context 19. The presence of a bun quern as well as a disc quern may have chronological implications but at the present time, it is unclear what these are. Without stratigraphic information, it is impossible to assess the chronological significance to the souterrain of the fragment of Roman moulding. The amber finger ring came from Context Five and is accepted by Hunter and Coleman (2002) as Iron Age, although they comment that as a stray find it would have been assumed to be Norse. The leaded bronze tweezers found in a primary deposit of a side chamber are of a typical Iron Age alloy (*not* reused Roman brass) and if they are 'Roman-inspired' as Hunter and Coleman (ibid., 93) suggest, they could date to the period of Roman occupation or beyond. A sherd of Flavian South Gaulish samian, dating to the late first century AD, was recovered from the same context. The crucible, native pottery and leaded bronze artefacts are all consistent with an Iron Age date. The annular yellow glass bead is of Guido's (1978) Class 6 and could be either later prehistoric or early historic. Thus the dating evidence from Shanzie indicates that the souterrain may have been constructed and been in use in either the Roman Iron Age or the LPRIA (Coleman and Hunter 2002).

Further south, excavation at the cropmark souterrain at Easter Moss (46860/NS88NE49), yielded a samian sherd, later prehistoric pottery and a probable ring-headed pin (Strachan 1998). The dating of the pottery and ring-headed pin are difficult to refine but the samian[47] would suggest a date entirely compatible with the Perthshire souterrain sites discussed above. The radiocarbon dates from this site have not yet been published.

All of this dating evidence for souterrains in the study area is entirely consistent with dating evidence obtained from sites in Angus (Table 4-6), including both stone examples such as Carlungie I, Ardestie (Wainwright 1963), Carlungie II (Wainwright 1953a), Ardownie (Rees 2002a) and Auchlishie (Anderson 2001a; b; Dick 1998; 1999a; 2000; 2001, A. Dick pers. comm.) and timber-lined ones such as Redcastle (Alexander 1999) and Dalladies, Kincardineshire (Watkins 1980b).

Table 4-6 Select dating evidence from souterrains in Angus and Kincardineshire

Site name	Dating evidence
Ardestie	Roman amphora bung, glass fragment (prob. Roman), rotary querns
Ardownie	Roman patera handle from fill, upper stone of rotary quern blocking entrance.
Auchlishie	Radiocarbon samples from souterrain dated to 1st century BC/AD;
Carlungie I	Roman amphora, rotary querns, oval bronze ring
Carlungie II	Bronze brooch, upper stone of rotary quern
Redcastle	Roman glass sherds from souterrain fill
Dalladies	samian sherd; radiocarbon samples dated from third century BC to sixth/seventh century AD

4.5.3.2 Function

The function of the souterrains, and those of southern Pictland in particular, has been the subject of continued debate ever since Wainwright (1963, 9-14) contested the assumption that they were underground dwellings, the equivalent of the supposed pit-dwellings of Southern England. Wainwright (1963, 16-19 & 122-124) came to the conclusion that souterrains were byres, although the dynamics of getting even 'Celtic' cattle into a dark, underground confined space (and indeed getting them out again) makes this explanation somewhat unlikely. On the basis of what he found at Newmill, Bankfoot (27007/NO03SE13.1) Watkins (1980a, 197-198) argued that souterrains were grain stores and equivalent to the timber four-posters found elsewhere. There has been continued suggestion, most recently by Armit (1999a), that the souterrains of this area are so large because they have been designed to carry a surplus of grain which was eventually sold to the occupying Roman army. However, this explanation ignores the evidence from Newmill, Bankfoot that such sites were under construction well before the Romans set foot in the area (Watkins 1980a, 199). While the grain theory is attractive in some ways, there is no positive evidence for it and the possibility of a damp environment underground might count against it. Indeed, one souterrain at Ardestie, Angus had at one point had a drain added to cope with this problem (Wainwright 1963, 58-61). Damp conditions are, of course, entirely unsuitable for storing grain. Nevertheless, there is evidence that in

[47] No specialist report on the samian is available (R Strachan pers. comm.)

the modern period, a souterrain at Auchterhouse I, Angus was used for storing potatoes (Wainwright 1963, 167). Potatoes (like grain: see Fenton 1983) need to be stored in a cool, dark and dry place and in such a way that vermin cannot access them. The latter factor could have been averted if the grain was stored in pots or wooden containers rather than sacks. If storing potatoes in such a way was successful, it might provide support for the grain theory.

As discussed in Chapter 3, dairying is known to have taken place at this period and souterrains could potentially have provided the constant temperature required for the storage of dairy products and meat (Barclay 1980, 206). Butter and cured meat will keep for months if stored correctly (Seymour 1976, 100 & 116-117), as will hard cheese, if wrapped in cloth and stored at a constant temperature, between 13 and 16°C[48] (ibid., 105). Some cheeses (such as Stilton) actually require humidity during storage (ibid., 104), so the potentially damp conditions of souterrains mentioned above might actually be advantageous. Another possibility is that souterrains were used to store ale. In contrast, MacLean (1992) has argued that souterrains were refuges during times of trouble, on the basis of her work on the fogous of Cornwall. Although this interpretation was once a common one for the Scottish souterrains, it fell into disfavour on the grounds that souterrains would provide a most impractical means of hiding from an adversary, especially if they were as commonplace as is now apparent. Many must have had roofs which were visible from the surface (Wainwright 1963, 14; Watkins 1980a, 197).

The finds from souterrains are never related to the actual use of the structure; they invariably come from the fill, which, as will be discussed in Chapter Eight, may contain items that had been deposited some time after the structure fell out of use. Even at Redcastle, Angus (Alexander 1998a; Alexander and Rees 1997b) and Shanzie (183018/NO25SE55: Coleman and Hunter 2002), where extensive systematic sampling of the souterrain fills was carried out, little light on the function could be derived. True, Redcastle included two dumps of burnt grain, one at either end, but this cannot be positively linked to the primary use of the structure (Alexander 1998a; b; Alexander and Rees 1997b). Finds such as a sword and stone axe from an unconfirmed souterrain at Monzie (Wainwright 1963, 197) indicate the

possibility of ritual deposition in these structures, something which has been discussed by Hingley (1992, 29 & 38-39) with regard to quernstones. The argument that souterrains served as ritual, rather than domestic structures has been touched on in the past (e.g. Armit 1999a, 583; Barclay 1980, 206; Hingley 1992, 583) but never fully explored. Cooke (1993) has noted that Cornish fogous are consistently aligned with the midsummer sun and suggested a ritual connection both with fertility and the mining of ores. However, his theories cannot be transposed to the Scottish evidence, since no such shared orientation can be observed. While there may have been a ritualised aspect to the activities that took place within souterrains (Armit 1999a, 583; Barclay 1980, 206), there is as yet no firm evidence to prove such a function.

4.5.4 Enclosures

What has not been appreciated in the past, despite the admirable publication on South East Perth by RCAHMS (RCAHMS 1994c), is the number of cropmark enclosures, many of them multivallate, recorded in this area of lowland Scotland. RCAHMS has discovered most as a result of aerial survey, over the past twenty-five years.

4.5.4.1 Palisades

4.5.4.1.1 Dating

In previous work, palisades in this area have been assumed to be Late Bronze Age or Early Iron Age. This supposition was based of excavated parallels in East Lothian, e.g. Dryburn Bridge (Triscott 1982), the Borders e.g. Glenachan Rig (Feachem 1959), Dumfriesshire and Renfrewshire, the Hownam sequence (Piggott 1948), and an application of the early radiocarbon dates Jobey obtained from palisaded phases on sites such as Huckhoe, Northumberland (Jobey 1959; 1968) to areas north of the Forth. However, the issue has been clouded by a failure to recognise that most dated sites seem to indicate an occupation in the second half of the first millennium BC (Fig. 4-33). Only four of these sites in the study produced radiocarbon dates.

[48] Ideal temperature depends on the type of cheese; the range quoted is for hard cheese in general.

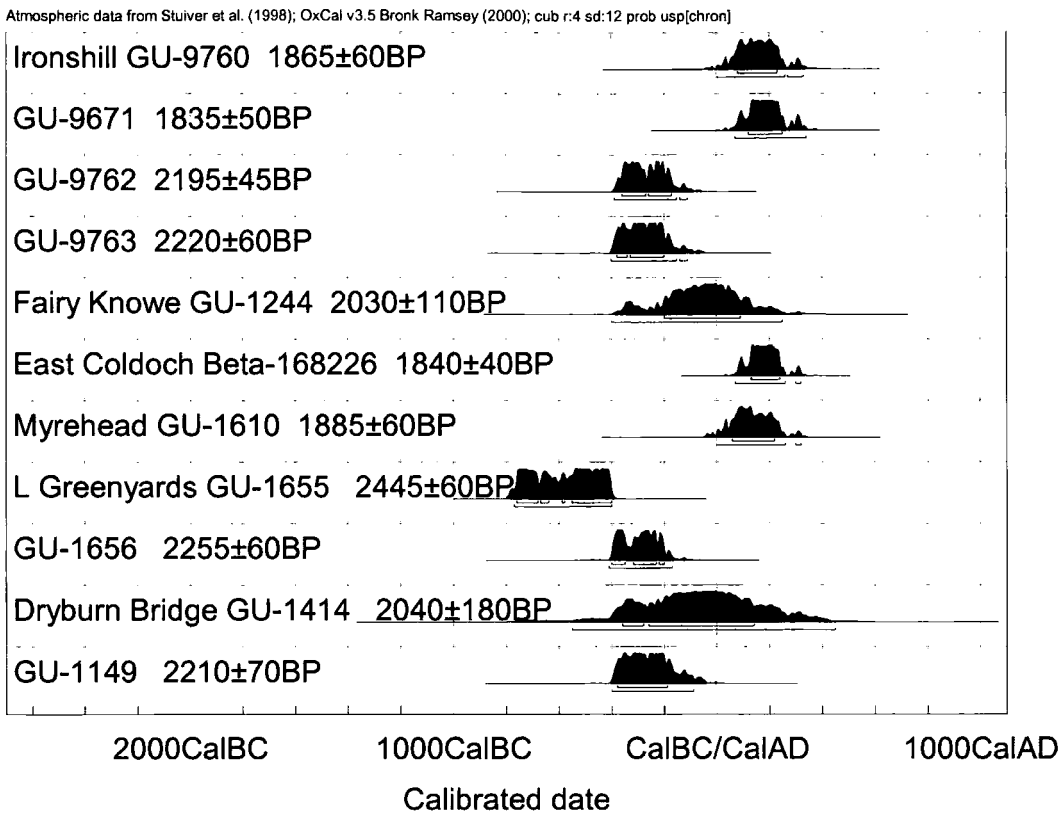

Fig. 4-33 Radiocarbon dates from palisades in Angus (Ironshill), Perthshire, Stirlingshire and East Lothian (Dryburn Bridge).

As can be seen in Table 4-7, there is no absolute dating evidence from the study area for use or construction of these sites earlier than the fifth or sixth centuries BC. Macinnes' (1983) dating is based on calibrated ranges that can now be shown to be too narrow. A better understanding of the implications of these dates is now possible, based on their context and source material. Some of these sites have been excavated and, though few have yielded adequate dating evidence, those that have all indicated Iron Age occupation. Of the ten palisades excavated in Perthshire and Stirlingshire, just three produced direct dating evidence.

Table 4-7 Dating of Palisades

Site Name NMRS Number	County	Date Claimed by Author	Direct Dating Evidence	Indirect Dating Evidence	Diameter (Approx.)	Diameter of central structure (if known)
West Plean (possible) 46898/NS88NW5	Stirlingshire	Early Iron Age or earlier	None	Earlier than ditched homestead which had no Roman material	28m	6.1m
Easterton of Argaty 24728/NN70SE65	Perthshire	Late Bronze Age/Early Iron Age	None	None	48m	?
Myrehead 47816/NS97NE37	Stirlingshire	mid/late first millennium bc	None	Post-dates early/mid first millennium bc phase; Pre-dates late first millennium bc/early first millennium ad phase	40m	?Ring-groove in south: 8-8.5m
Methven Wood (possible) 26752/NO02NE41	Perthshire	None	None	None	?	?
East Coldoch (2, possibly 3) 46081/NS79NW34	Perthshire	Late Bronze Age/Early Iron Age	None	Predate context with charcoal dated 70AD-320AD	Feature B: 43m X 36m Feature D: ? Enclosure under Feature A: 22.5m	Feature A: 12m
Bannockburn 47254/NS89SW21	Stirlingshire	Iron Age	'Iron Age' pottery from palisade slot and pit cutting house wall; spindle whorl		46m	14.5-18.6m
Lower Greenyards, Bannockburn (Homestead 2-under fort) 47244/NS89SW12	Stirlingshire	Fifth/sixth centuries BC	C14 dating, IA pottery, similarities to Homestead 1, Hownam paradigm	Predates late first millennium BC fort	?	14.4m
Buchlyvie, Fairy	Stirlingshire	First century BC	Charcoal (Quercus)	Predates broch; close relationship between	21m	8-9.5m

Knowe 44651/NS59SE3		to first century AD	from posthole F93 in rh interior 2σ 400BC-250AD	ground plans of timber roundhouse and broch implies remains visible when broch built.		

A review of the dating from Dryburn Bridge, East Lothian shows that the dating of the palisaded phase is not as secure as one might assume. It is based on the *terminus ante quem* provided by two burials stratigraphically later than the palisade. Human bone from one burial (DB79 SB/12) was dated to 550BC- AD 450 at 2σ (2040±180 GU-1414) while bone from another (DB79 SB/1) was dated to 400BC-90BC at 2σ (2210±70 GU-1149) (Ashmore *et al.* 2001). This does not, of course, mean that the palisaded phase must have been built or been in use before 550BC. The ranges are so wide (and even wider if one uses the adjustments recommended by Ashmore) that they allow for the possibility that the palisaded phase might belong to any point between the Bronze Age and the early first millennium AD. So, the discrepancy between the dating of palisades north and south of the Forth may be more apparent than real. It is likely a much wider geographical as well as chronological distribution of this settlement type is evident than has previously been suspected. Parallels to the Perthshire and Stirlingshire examples have recently been excavated as far west as Glasgow (Rees 2002c) and Stranraer (Cook 2002).

4.5.4.1.2 Function

There seems no reason to believe that these palisades, with their central round buildings, were not domestic establishments. This does not, of course, preclude a parallel ritual or religious function; ritual is inherent in the everyday (Hill 1989). All of the artefacts thus far recovered from palisades in this area have been prosaic; coarse utilitarian pottery (Myrehead: 47816/NS97NE37; Lower Greenyards, Bannockburn: 47244/NS89SW12), a spindle whorl (Lower Greenyards, Bannockburn), saddle querns (Myrehead), coarse stone tools (Myrehead), chipped stone (Lower Greenyards, Bannockburn) a possible sheath suspension strap (Myrehead) and possibly a fragment of lead (Buchlyvie, Fairy Knowe). The only possible exception is a bronze dagger pommel from a pit at Myrehead. In the one instance where Roman pottery was found, it was coarseware, rather than the Samian which predominates on other native sites (Hunter 2001a, 299). A decorated, handled stone lamp (NN82SW14) found on Lochlane farm may well have come from the palisade (25519/NN82SW25) since discovered from the air, the handle perhaps suggesting an LIA date. At Ironshill, a parallel in Angus, finds from the enclosure were limited to pottery and a bone pin from an insecure context (McGill 2003).

That said, a biased picture is likely; the apparent clean-ness of these sites may simply be a function of the fact that they are situated on high quality land which has been heavily ploughed, particularly during the past fifty years. In the case of these sites discovered under upstanding monuments, much may have been removed in preparation for the new structure. Many of the features on these sites are relatively shallow and fragile, and would not act as reservoirs for material in the way that for instance, substantial stone roundhouses do (Hunter 1998b). The fact that the lamp mentioned above ended up in the topsoil is witness to this process. Then again, the people who lived and worked on these sites may not have been in the habit of depositing objects in such a way that they would be recovered during excavation, even if the site had not been ploughed. Support for the latter hypothesis might come from the excavated parallels in the Borders and Northumbria, which exhibited surface traces, having never been ploughed. Glenachan Rig in Peebleshire, for instance, produced only a flint flake, two utilised pebbles and a fire-cracked stone despite a substantial area being investigated (Feachem 1959, 22). Similarly, High Knowes A, Northumberland, produced no small finds at all, "...despite the fact that all areas were trowelled down to rock level and all post-holes and construction trenches emptied." (Jobey and Tait 1966, 16). At High Knowes B, a bi-palisaded enclosure, finds were restricted to 'numerous' (apparently around 26) sherds of later prehistoric pottery (Jobey and Tait 1966).

The size differences in these enclosures, whether or not they have chronological significance, may also have implications for function. It is tempting to see the larger ones as enclosing land for keeping animals and/or a kitchen garden, while the smaller ones might function more as 'home' than 'homestead' with agricultural activities taking place largely outwith the confines of the enclosure. Phosphate analysis is a technique that could shed light on this use of space but unfortunately has only been carried out a Lower Greenyards, Bannockburn (47244/NS89SW12). Intriguingly, although limited to the house and three lines running across the enclosure, the analysis indicated high levels of phosphate around the probable cooking pit and the palisade on the northern line. The excavator noticed that the phosphate level increased in the house vicinity and was especially high between the wall trench and

the outer ring. This may provide support for the idea that animals were tethered around the outside of the house.

4.5.4.2 Univallate Enclosures

4.5.4.2.1 Dating

In the south of the Study Area there appears to be a very localised tradition of small circular ditched homesteads, the classic example being West Plean (46898/NS88NW5: south of the Forth), excavated in 1956 (Steer 1956). The enclosures are of a similar size to the brochs and duns of the area, and may have served a similar purpose as rather ostentatious dwellings in the Late Iron Age (cf. Macinnes 1984a). Although West Plean did not produce any closely dateable artefacts, a similar site at East Coldoch (46081/NS79NW34: north of the Forth), which is the subject of ongoing excavation, has produced some Roman glass from a roundhouse floor deposit. A charcoal sample from a roundhouse destruction deposit produced a date firmly situated in the early first millennium AD (Woolliscroft and Hoffmann 2003b) (see Fig. 4-34). There is a possible parallel to these ditched homesteads at Inverdunning House in Perthshire (26618/NO01NW19), although their superficial resemblance to Class I mini-henges (Harding and Lee 1987) means that they may be overlooked in the record.

A small number of univallate enclosures can best be compared to Harding's (1997) dun enclosures. Castlehill Wood (46233/NS79SE49), for instance, exhibits architectural complexity but at 35m across is rather too big to have been roofed. Activity in the Roman period is indicated at Castlehill Wood by a sherd of pottery described as being 'probably Roman' and three sherds of Roman glass, one of which, from a pillar-moulded bowl, was dated by Harden to the first century AD and the other two being sherds of first or second century AD bottles (Feachem 1957, 35). The most plentiful artefact type on this site was the coarse stone tool, which again is not closely datable. There was also a whorl, whetstone, stone lamp and several rotary quern stones, as well as native pottery.

4.5.4.2.2 Function

As discussed in 4.5.2.1.2, there seems no reason to believe that the ditched enclosures of East Coldoch (46081/NS79NW34) and West Plean (46898/NS88NW5) were not domestic establishments, although this does not, of course, preclude a parallel ritual function. The finds from West Plean and East Coldoch are all prosaic and all the available economic evidence (see Chapter 3) also points to everyday farming activities. Unfortunately, the phosphate survey carried out at East Coldoch failed to produce results. The people at East Coldoch did, however, have access to Roman goods, although it is far from clear that this indicates high status during the Roman period, especially in an area so close to the frontier.

4.5.4.3 Multivallate Enclosures

4.5.4.3.1 Dating

Although radiocarbon dating has, in general allowed the back-dating of hillforts, sometimes even into the Bronze Age, almost all of the radiocarbon dates from the Study Area indicate construction and/or activity in the Iron Age or the Early Historic period, as is evident in Fig. 4-34 below. Although a substantial number of upstanding forts have been excavated in this county, the vast majority of them were investigated before radiocarbon dating was introduced, or at least before it became possible to date small samples such as burnt seeds. AMS dating has the potential to greatly enhance understanding of these sites and should in the future enable extensive series of dates from sites yet to be excavated, with the minimum of taphonomic complications associated with their interpretation. The calibrated ranges of radiocarbon dates discussed here are shown in Fig. 4-34.

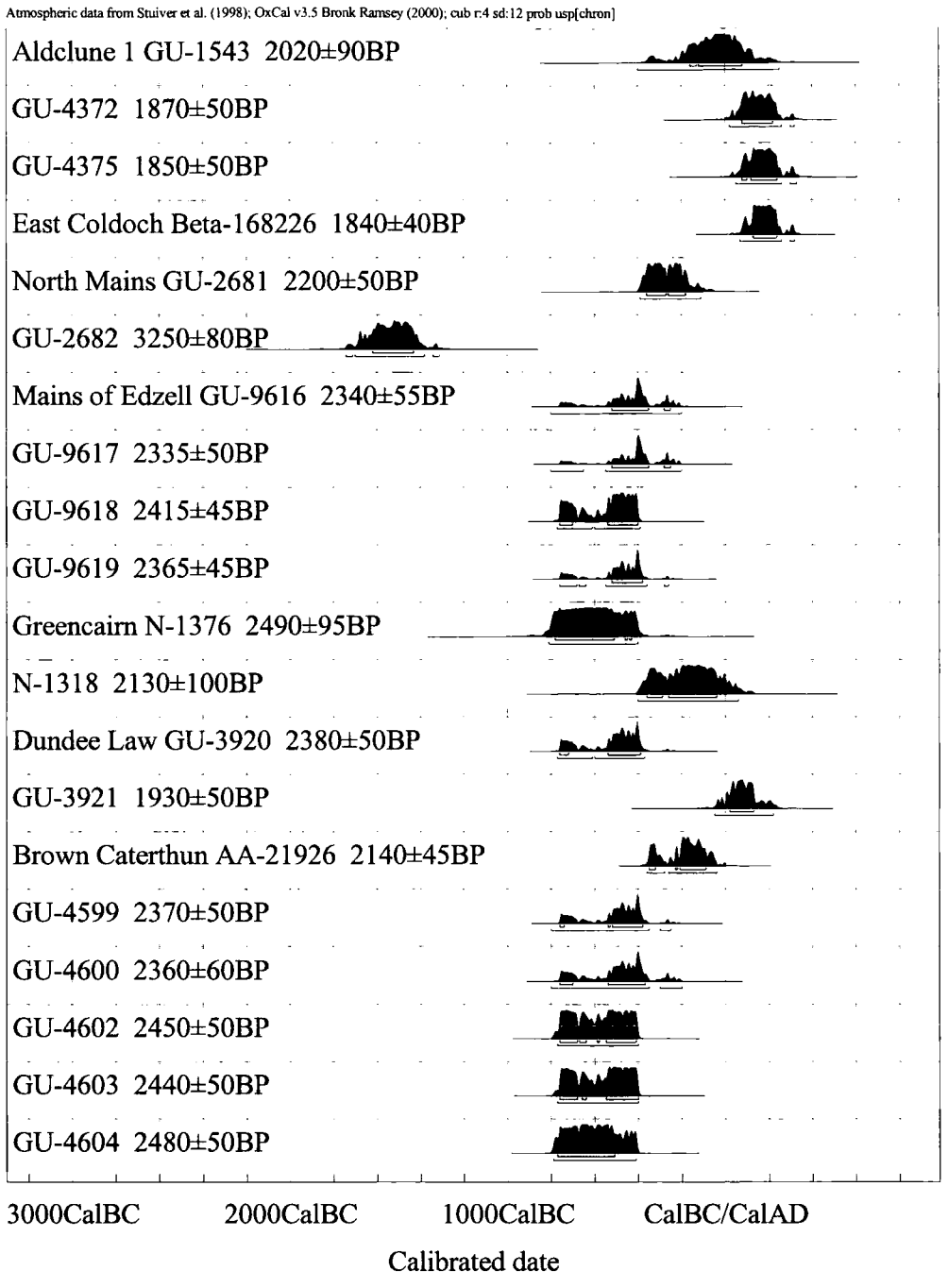

Fig. 4-34 Radiocarbon dates from the ditched enclosures of Aldclune (25822/NN86SE1), East Coldoch (46081/NS79NW34) and North Mains, Strathallan (26000/NN91NW12) in Perthshire, compared to those from Angus, including Mains of Edzell (R. J. Strachan *et al.* 2003), Greencairn (Wedderburn 1973), Dundee Law (Driscoll 1995) and Brown Caterthun (Dunwell and Strachan forthcoming).

The sole exception is a rogue date from the surface of a paved surface in the upper fill of the inner ditch of the bivallate enclosure at North Mains, Strathallan (26000/NN91NW12) with a range of 1740BC-1310BC. A date in the Iron Age, of 390BC-110BC (GU-2681), was obtained from material from a posthole within the

enclosure. Having said that, the function of this post and its place in the sequence is unclear and as there were some modern roots in the sample contamination cannot be ruled out. The earlier date was obtained from a mixed sample and could have been contaminated by older material. The excavator (Barclay 1983b) argues that the enclosure was initially constructed in the Bronze Age, and then reoccupied in the Iron Age but this interpretation perhaps lays too much stress on the significance of the site's proximity to the North Mains henge and barrow (26006/NN91NW18 and 26005/NN91NW17). The enclosure produced no artefacts and with only two radiocarbon dates obtained, both of which are problematic, the date of the actual use and occupation of this site must remain in doubt. The ring-groove within the enclosure, however, is likely to be Iron Age (4.4.3.1).

Not dissimilar to North Mains, Strathallan (26000/NN91NW12) is Falkirk, Camelon (46922/NS88SE24), which also included a (in this case, two phased) ring-groove house in its interior (4.5.2.1 above). A penannular brooch of Fowler type A3 was retrieved from the surface of a posthole but the relationship of this feature to others is entirely unclear. Fowler (1960) has argued that this brooch is of native origin, dating to the first or second century AD, although she did not have the benefit of radiocarbon dating. The Roman period date is supported, however, by the late first to second century AD glass phial fragment from Feature 1, a pit. However, this pit cannot be positively related to any other feature on the site. Roman and native pottery was found in various contexts and vitreous paste gaming pieces and a thong tag were found in the house floor. Although the excavator favoured a Roman Iron Age date for Falkirk, Camelon and argues that the site was not occupied for long, the contexts of the datable artefacts allow for the possibility that it could have been founded before the Roman invasion. There is nothing in the excavated evidence to disprove the possibility that Falkirk, Camelon saw some use in the first millennium BC, and the close proximity of the site to Camelon Roman fort (46920/NS88SE23) proves nothing.

The last cropmark enclosure to be discussed in detail here is that of Lower Greenyards, Bannockburn (47244/NS89SW12) a site with multiple phases and, again, a ring-groove structure. The excavator identified five phases, with Phase 1 being a palisade (see 4.5.4.1.1), phase 2 a bivallate fort, phase 3 a multivallate fort,

phase 4 a univallate fort and phase 5 an antenna that cut across some, but not all, of the earlier defensive circuits. The small finds, which include coarse pottery and a shale ring, can do no more than confirm an Iron Age date but the five radiocarbon dates can assist in dating the five phases. The palisade was followed by a bivallate fort which cannot be dated absolutely but is obviously later than ditches 1 & 2 which form part of the multivallate fort of Phase 3. The dating of House 1 is discussed in 4.5.2.1.1 but certainly indicates occupation in the fifth and sixth centuries BC. The other radiocarbon dates came from features within the enclosure; Pit F35 produced dates of AD 990-1 AD 220 (GU-1654) and AD 970-AD 1220 (GU-1657) and Firepit F30 produced a date of 410BC-170BC (GU-1656), indicating the main activity in the Iron Age and further activity in the Mediaeval period, which is also indicated by Mediaeval pottery.

Some of the upstanding enclosures of the Study Area have produced material indicating only occupation or activity in the Early Historic period, as noted by Alcock (2003, 179-180). Nuclear forts, in particular, seem to be a major site-type of what was once referred to as the Dark Age (Alcock *et al.* 1989, 206-214; Stevenson 1949). Dundurn (24873/NN72SW3), for instance, has long been thought to date to the Early Historic period (Feachem 1955b, 82-83). The dating was confirmed when it produced radiocarbon dates spanning the fifth to ninth centuries AD, which match historical records relating to the site and the known date-ranges of glass (second to eighth/early ninth centuries AD), E-ware (seventh to eighth centuries AD) and fine metalwork (early seventh century AD or later) found there. An Early Historic date has also been argued for Carnac, Moredun[49] (28025/NO11NW23) on the basis of its nuclear character and possible correlation with the battle of *Monad Croib* of AD 729 (Feachem 1955b, 79-80). Here, however, the presence of roundhouse foundations on the site might point to an earlier origin. Minor excavations associated with the laying of a lighting cable at the fort of Abbey Craig (47113/NS89NW10) produced charcoal which was radiocarbon dated to the sixth to eighth centuries AD (B. Glendinning pers. comm.). Again, given the small excavated area, it is quite possible that there was later prehistoric activity on the site. The hoard of weaponry found on this site in the eighteenth century (Nimmo 1777, 373) has been lost and is undated. Although the most recent plan of the site (RCAHMS 1963) records only one rampart at this

site, Maclagan (1872, 39-40; 1875, pl. 35; 1884, 24) noted a second, apparently badly damaged by the construction of a path leading up to the Wallace Monument. This second rampart was rediscovered by Aitchison (1981a) over one hundred years later.

Inchtuthil (28598/NO13NW6), excavated during the Society of Antiquaries of Scotland's campaign of work on Roman sites, is a relatively large promontory fort with five ramparts, situated right next to the legionary fortress. Although it is impossible to tell whether it remained in use *during* the Roman occupation, the masonry reused in one rampart suggests that it was certainly in use following the Roman occupation (RCAHMS 1994c, 55). The only other broadly datable artefact from this site is the upper stone of a rotary quern, although the exact context of this is not given.

Other upstanding enclosures in the area have, however, produced strong evidence for occupation in the later prehistoric period. Castle Law, Forgandenny (26583/NO01NE5) was excavated long before the introduction of radiometric dating but the jet ring/bracelet, stone lamp and coarse pottery are consistent with Iron Age activity. While the felstone axe recovered from Castle Law, Abernethy (27917/NO11NE12) is probably early prehistoric, the other finds point very firmly to an Iron Age date. The two stone lamps are without handles or perforations and may therefore be PRIA in date (see 4.3.3.2). An intact jet/cannel coal ring is also later prehistoric; this kind of artefact did not continue in use into the Early Historic period. The bronze spiral ring is an Iron Age type and can be compared to others found in the area, e.g. at Dunsinane Hill (30660/NO23SW1.1). A La Tène Ic fibula was also found on the site and it is a shame that the context is unknown, as this is a highly chronologically diagnostic type. In southern English contexts this would be dated to the fourth or third century BC, probably third century BC (Haselgrove 1997, pers. comm.) but lack of familiarity with the mechanisms by which such 'exotic' items entered the record in Scotland inhibits use of it for dating. The coarse pottery, metal objects, wooden vessels and coarse stone tools are not out of place on an Iron Age site.

[49] Otherwise known as Moncrieffe Hill.

The pottery from Meikle Reive (45194/NS67NW6) would appear to have been lost (C. McGill pers. comm.), but a resemblance to that from Bishop Loch Crannog, Glasgow (Scott 1966, 58) and Dunagoil, Argyll (a nuclear fort that nevertheless has yielded evidence for LBA and IA occupation (Mann 1915; 1925; Marshall 1915; 1964)) was noted by Scott and Stevenson (Fairhurst 1956). The black shale ring and stone ball, which may be a slingshot, are likely to be Iron Age in date. A stone lamp, without handle or perforation, may indicate a PRIA date. However, this is not supported by the single radiocarbon date obtained from the site. The full date was never published but the range quoted by Fairhurst (1960) is AD 350-AD 450, from an unstated context from the earlier phase. This dating evidence seems to have been overlooked by RCAHMS (1963, 78-79), which states that there was no evidence that the site was not entirely pre-Roman in date. Part of what seems to have been a jet ring or bracelet was found in a pit at Castle Craig (26048/NN91SE11), which, along with the possible lamp and single potsherd are consistent with a date in the Iron Age. A similar conclusion can be drawn from the surface finds of a jet armlet fragment and an object which has been variously described as a stone cup or mortar but which could also be a lamp. If the latter, it might indicate an earlier date, as there is no handle.

Finally, a small-scale excavation at Gillies Hill (46246/NS79SE60) indicates Iron Age activity and also produced a stone armlet, although this time in the same context as a beaker sherd. The context seems to have derived from erosion of the rampart, so the armlet can indicate no more than activity in later prehistory. Sherds of three Iron Age vessels were also found; the excavator (Rideout 1992) draws parallels with pottery from Broxmouth, East Lothian and argued for a date between the fifth and second centuries BC for one and second century BC to first century AD for another. The radiocarbon dates from this site indicate construction in the EIA and further activity in the LIA, with a date of 800BC-350BC (GU-1909) from the core of rampart 2, 519BC-210BC (GU-1910) from the facing of the same rampart and 370BC-AD80 (GU-1911) from what is described as an 'occupation layer'.

At the multivallate terrace-edge enclosure of North Mains, Strathallan (26000/NN91NW12), only three samples were taken, all for charcoal. The first was from an oak post, apparently burnt *in situ*. It was radiocarbon dated to 390BC-

110BC (GU-2681). Even if the oak post had been reused, this still suggests a date in the last few centuries BC. The second sample, also oak, from the surface of the paved area in the upper fill of the inner ditch gave an anomalous early date of 1740BC-1310BC (GU-2682) (Mills 1990). This could be explained by its being derived from bog-oak (Barclay and Tolan 1990, 51) or being residual, but given that only two radiocarbon dates were obtained from the site, it would be unwise to worry unduly about its incongruity. No other dates from excavated cropmark multivallate enclosures in Perthshire are yet available.

These dates are consistent with those from Angus; recent excavations at Mains of Edzell on a trivallate enclosure indicated an occupation in the first millennium BC. The only deposits that produced material suitable for dating were secondary ditch fills, however, and their wide ranges are decidedly unhelpful in determining when the site was actually constructed, although the excavator argues it was before 400BC (R. J. Strachan *et al.* 2003). A bivallate enclosure at Hawkhill is undated, no suitable material having been recovered (R. J. Strachan *et al.* 2003). The upstanding lowland multivallate enclosure at Cairnton of Belbegno, Kincardineshire, was excavated by James Strachan, Sir Walter Scott (in 1796) , L Maclagan Wedderburn in 1973 (Wedderburn 1973) and W Watt in 1983. A date from a timber beam resting on the rampart foundation calibrates to 810BC-400BC (N-1376), coinciding with the plateau on the radiocarbon curve. Another date (400BC-60AD (N-1318)) from the same context covered most of the Late Iron Age but was from a mixed sample (twigs from a destruction deposit) (Wedderburn 1973). A trivallate promontory fort at West Mains of Ethie yielded Roman period finds, although it could have been constructed at a much earlier date (Wilson 1980). On current evidence, multivallate enclosures can be assigned broadly to the period 800BC-400BC. However, there is no statistical reason why they should all be placed in the earlier part of this range. Indeed the results from sites such as Dundee Law indicate that they could have continued in use into, or been reoccupied in, the Roman period (Driscoll 1995).

4.5.4.3.2 Function

It is very difficult to ascertain function for the multivallate forts of this area given that so many of the excavations have concentrated on the defences and not on the

interior or indeed the area immediately outside the defences. There has not been a single open area excavation of a hillfort in the Study Area and this may at least partly explain why few sites have yielded evidence of internal structures. Sites such as Lower Greenyards, Bannockburn (47244/NS89SW12) and Falkirk, Camelon (46922/NS88SE24), though, do seem to have some evidence for occupation, demonstrating arable and pastoral production and consumption (see Chapter 3). While some upstanding sites have yielded relatively rich animal bone assemblages, the date of excavation and, therefore, the lack of detailed contextual information, hampers interpretation of the evidence. Within the native fort at Inchtuthil (28598/NO13NW6), Abercromby *et al.* (1902) uncovered the remains of what they interpreted as a hearth, an area of paving just over three metres across, covered with charcoal, with an arc of walling on one side. The description and photograph provided (Fig. 4-35), however, suggest that what they actually uncovered was the remains of a simple stone roundhouse. Although no internal features are today visible on the surface, Roy's plan of 1793 (Roy 1793, pl XVIII), shown in Fig. 4-36, shows five circular structures of up to 6.1m diameter within the interior. This evidence together might suggest that during at least one phase of its use, the site was a settlement. The other possibility is that the circular features are round barrows of the sort found adjacent to and overlying the legionary fortress; Roy mentions five barrows being found on the site of the fortress. It is not clear from his plan whether what he shows are ring-ditches or the footings of circular buildings.

Fig. 4-35 The Society of Antiquaries of Scotland's excavation of the 'hearth' feature at Inchtuthil multivallate enclosure (Abercromby *et al.* 1902).

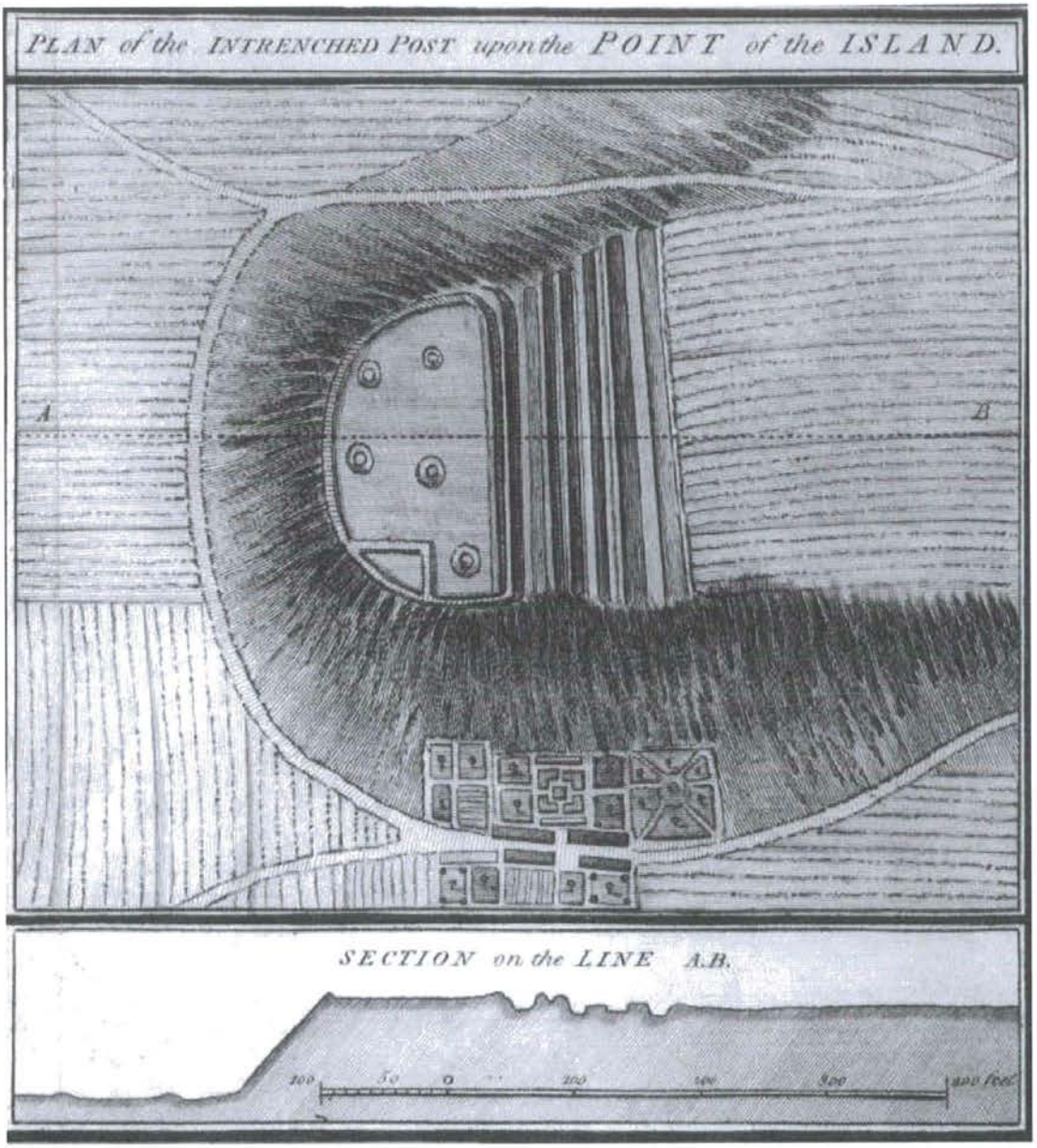

Fig. 4-36 Roy's (1793) plan of the multivallate enclosure at Inchtuthil, adjacent to the Roman legionary fortress.

It is still possible that many of the bi- or multivallate enclosures in the study area were not settlements; at least some, perhaps the ones most visually prominent in the landscape (e.g. Carnac, Moredun: 28025/NO11NW23 and Barry Hill in Perthshire: 31061/NO25SE23, Abbey Craig in the Forth Valley: 47113/NS89NW10, Fig. 4-37, or perhaps Dumyat: 47117/NS89NW14, situated on the hill behind, which Feachem (1955b, 78) suggested was the principal centre of the *Maeatae*), may have acted as central places. These could have been the social focus of what otherwise might have been a fragmentary community, where people from the surrounding area went to celebrate festivals and rites of passage, trade goods made by specialists and in the

process meet prospective marriage partners etc. At other times, they may have acted as places for ritual deposition; the hoard of weaponry from Abbey Craig (Nimmo 1777) mentioned above raises the possibility that it may once have been the focus of LBA ritual or religious activity, similar to that indicated at Traprain Law, East Lothian. Hilltops, like wetlands (Bradley 1998a), have been places where one might communicate with the gods or the ancestors.

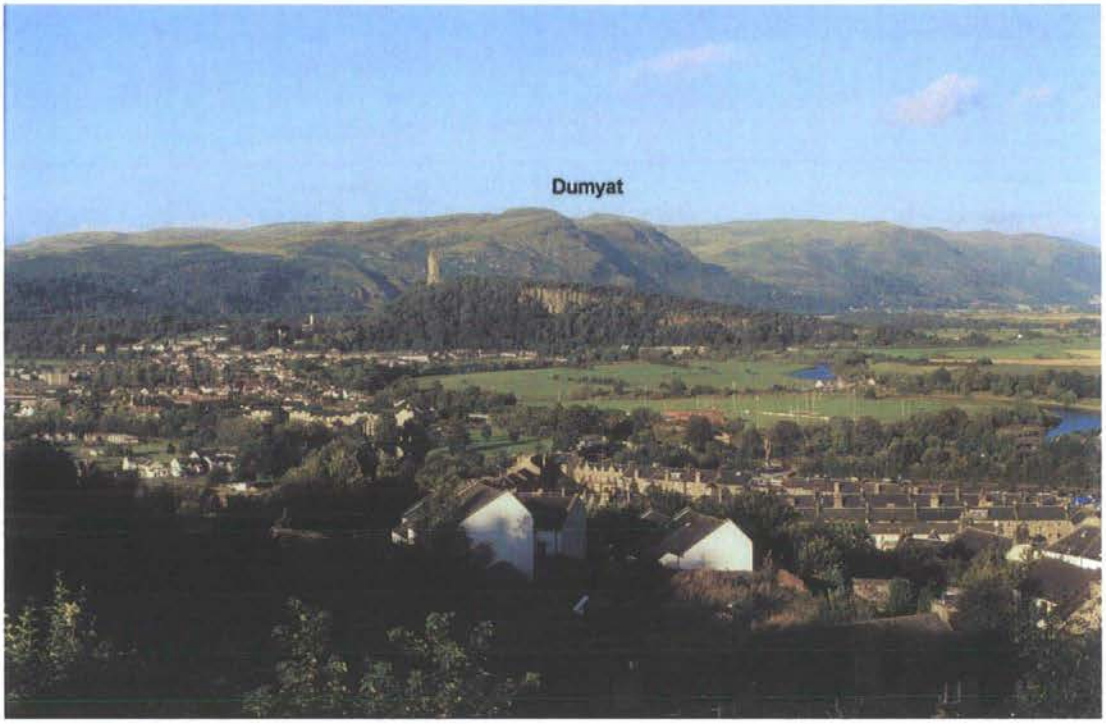

Fig. 4-37 Abbey Craig (47113/NS89NW10, surmounted by the Wallace Monument), from St Mary's Wynd, Stirling, 2002. The River Forth is on the right and Dumyat multivallate enclosure (47117/NS89NW14) is on the hill behind (M.H. Davies).

4.5.4.3.3 Patterns of Deposition

What is noticeable in multivallate enclosures is the ubiquity of the stone ring. Examples in various materials (shale, cannel coal, serpentinite and jet) were recovered from Castle Craig, Gillies Hill, Lower Greenyards, Bannockburn, Castle Law Forgandenny, Castle Law Abernethy, Meikle Reive, Myrehead, Alclune, Keir Hill, Deuchny Wood and Buchlyvie, Fairy Knowe (Table 4-8). This requires explanation on sites where finds in general are not particularly common. The rings might be classified as rubbish, in much the same way as the stone lamps, pottery and stone tools were, were it not for the fact that not all those recovered were broken. If they had not necessarily reached the end of their useful life when they were deposited on site, the possibility of structured deposition must be considered.

However, there is not contextual information from enough sites to draw confident conclusions. It is possible, judging from known contexts, that they represent part of closure deposits; the details are given in the Table 4-8.

Table 4-8 Contexts of Stone Rings

Site	Stone Ring Type	Context
Lower Greenyards, Bannockburn (47244/NS89SW12)	Penannular shale ring (complete)	Ditch
Gillies Hill (46246/NS79SE60)	3 fragments of 1 stone armlet (incomplete)	Material eroded from ramparts
Castle Craig (26048/NN91SE11)	1/7 of a jet 'hoop' (incomplete)	Pit 1
Castle Law, Forgandenny (26583/NO01NE5)	Jet or cannel-coal ring (complete) Portion of jet or cannel-coal ring (incomplete)	Contexts not stated
Castle Law, Abernethy (27917/NO11NE12)	Jet ring/bracelet (incomplete)	Context not stated
Meikle Reive (45194/NS67NW6)	Quarter of black stone ring (incomplete)	Upper cobbled pavement
Myrehead (47816/NS97NE37)	Fragment of shale bracelet (incomplete)	Feature Group 3/Stony Layer (evidence of mixing)
Aldclune (25822/NN86SE1)	Fragment of shale bracelet (incomplete)	Site 1, Phase 2-3
Keir Hill, Gargunnock (46294/NS79SW4)	Segment of jet armlet (incomplete)	Near post-hole 23 (roundhouse interior)
Buchlyvie, Fairy Knowe (44651/NS59SE3)	Ring/pendant of inorganic shale (complete)	Phase 2: intra-mural chamber
	2 Rings/pendants of bleached serpentinite (complete)	Phase 3: 1 from extra-mural drain infill; 1 from broch wall core
	Cannel-coal bracelet fragment (incomplete)	Phase 3: Broch floor/steps to intramural chamber
Deuchny Wood (28217/NO12SE3)	Jet armlet fragment (incomplete)	Surface find, beside a hearth on North Wall

4.5.4.4 Square Enclosures

This category includes what RCAHMS refers to in CANMORE as 'barrows: square'. None of the square enclosures with actual burials evident have been excavated in the study area. However, two peculiar sites have been excavated in part and these are discussed further below.

4.5.4.4.1 Dating

Although no classic square barrows from eastern Scotland have been excavated in the study area, the excavation at Boysack Mills, Angus (Murray and Ralston 1997) indicates that at least some may be Iron Age. Others, however, such as Redcastle, Angus (Alexander 1998a; Alexander and Rees 1997b) and Thornybank, Midlothian (Rees 2002b) are Early Historic in date.

Hallhole (28475/NO13NE10) was excavated by Abercromby (1904a), who was under the impression at the time that he was investigating the remains of a Roman fort. He quickly realised that this was not the case and guessed that it was actually some kind of burial mound, noting the lack of an actual inhumation but stressing the significance of the burnt bone he did find. The only artefacts recovered seem to have been modern rubbish. A trial excavation by J K St Joseph on a cropmark enclosure at Wester Denhead (30958/NO24SW46), again with breaks at each corner, concentrated solely on a single section and therefore the inferences must necessarily be limited. However, a single Roman amphora sherd was recovered, albeit from the upper fill of the outer ditch. Multiple scenarios can be imagined for the taphonomy of this single artefact, though, and little can be concluded from it.

4.5.4.4.2 Function

This excavation also revealed that two palisade lines existed within the Wester Denhead (30958/NO24SW46) enclosure. RCAHMS (1994c) has suggested that both these sites are mortuary enclosure of some kind; this interpretation is largely based on the fact that both include breaks at all four ditch corners. This is a feature that is unique to square barrows and has been noted on some cropmark examples and also in some of the upstanding examples from further north. Without further excavation,

however, no absolute conclusion can be reached. These sites should be seen as a priority for further excavation.

4.6 Conclusion

The date ranges of the site types discussed above are summarised in Fig. 4-38. This shows clearly the mutually exclusive ranges of simple stone roundhouses and crannogs. The majority of multivallate enclosures can be placed in the Early Iron Age, contemporary with some crannogs but certainly in this area, later than the upland settlement. This, however, may be misleading; the occasional radiocarbon dates indicating activity later in the Iron Age may suggest that, in fact, multivallate enclosures were in use throughout the Iron Age.

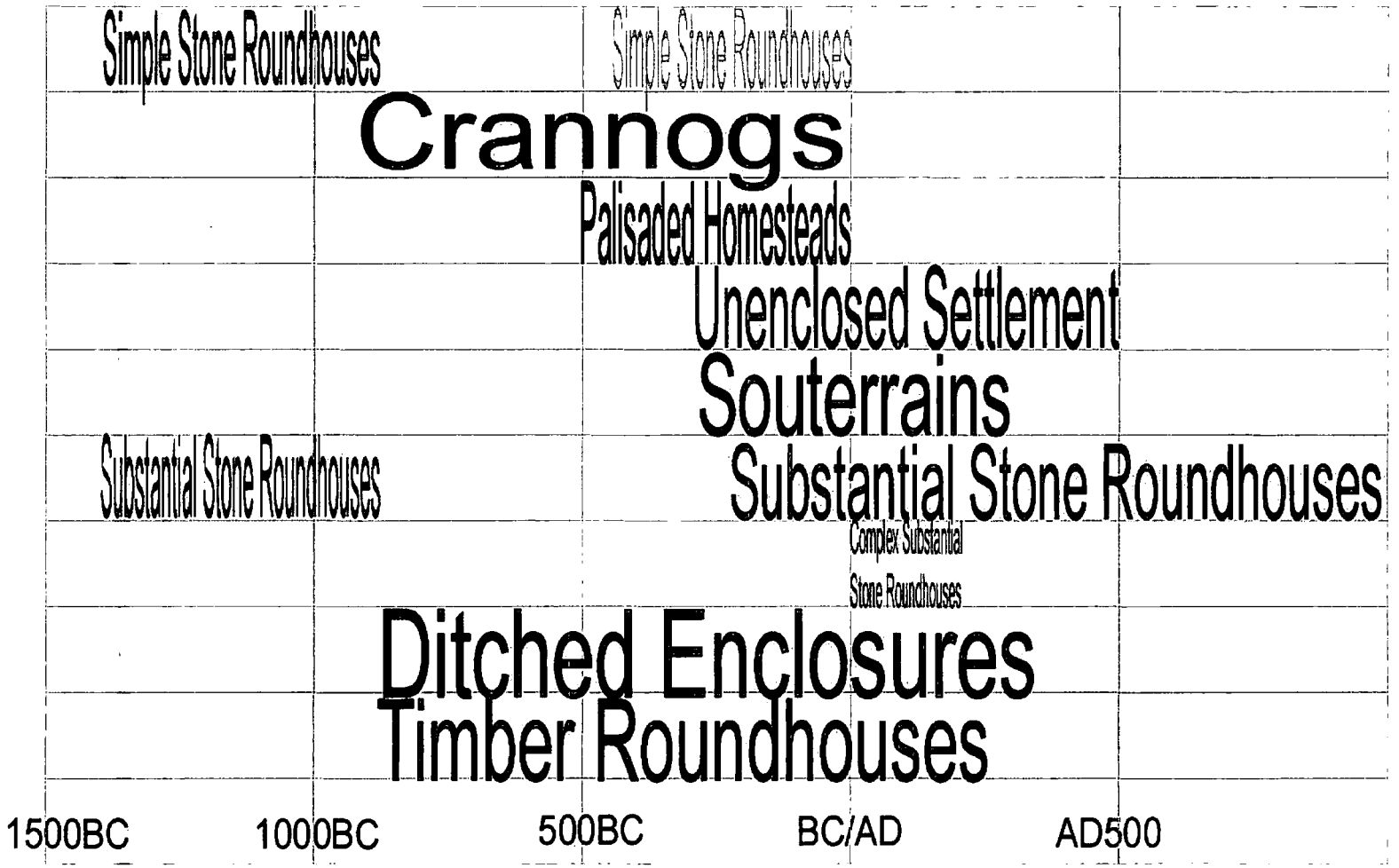

Fig. 4-38 Summary of dating of site types in the study area

Stone roundhouses were ubiquitous in the Late Bronze Age but seem to have been replaced by timber roundhouses when people moved into the lowlands. This is likely to have been a pragmatic choice, based on the most readily available materials[53]. Upland stone roundhouses were still in use during the Iron Age, but it is unclear whether these represent permanent or seasonal settlement. Stone construction is also in use late in the first millennium BC, with the substantial stone roundhouses and, as a subset of these, the complex substantial stone roundhouses, coming in the early years of the first millennium AD. This form of architecture is rooted in local traditions, but influence from other parts of Scotland and in particular, as MacKie (1987) has noted, from the Northern (and perhaps Western) Isles, is evident in the presence of mural staircases, cells and guardchambers. The lack of double-walled construction (the major defining characteristic of Armit's (1992) complex Atlantic roundhouses) in these structures may be due mostly to the fact that the local stone was not suitable for building particularly tall structures. Double-walled construction was, however, a feature of four excavated Late Bronze Age roundhouses (three at Badyo: 26422/NN96SE27, and one at Dalrulzion: 29060/NO15NW15) and is evident at numerous unexcavated sites in upland Perthshire (RCAHMS 1990). Significantly, it seems that people were using the intramural space in these roundhouses; it was not just stuffed with insulating material as has in the past been assumed (J. Rideout 1995).

For much of the Iron Age, it would seem that timber roundhouses were the norm. Excavated examples, listed in Table 4-5, show the use of ring-grooves, post-rings, or a combination of these, although there were undoubtedly ring-ditch houses in use, too. Examples of these at Culhawk Hill (Rees 1998) and Douglasmuir (Kendrick 1995) in Angus indicate use in the first millennium BC. Souterrains were in use in the late first millennium BC and first few centuries AD and were probably used to store the agricultural surplus, whether arable or pastoral, resulting from a successful economy and stable social structure.

[53] Having said that, it should be borne in mind that ploughed-out simple stone roundhouses might leave no trace in the cropmark record. Thus, any phase of LBA open settlement in the lowlands, whether contemporaneous with or later than that in the uplands, may be masked (RCAHMS 1994c, 43-44).

Palisades were common throughout the study area in the second half of the first millennium BC, as indicated by the radiocarbon date ranges for such sites (Table 4-7), and the large numbers now known across both counties (for instance, they represent 13% of later prehistoric sites in the Stirlingshire case study-see Chapter 5). This has been masked in the past by failure rigorously to distinguish between palisaded phases or elements of ditched enclosures and the free-standing oval or circular enclosures discussed here. It is argued here that these can be seen to form a separate class, whilst it has become clear that palisaded works in general are not culturally or chronological diagnostic. The palisades were contemporaneous with some of the residual upland settlement, which included some crannogs and possibly some seasonal occupation of the simple stone roundhouses. There was some activity on the ditched enclosures outside the main period of activity; some of the smaller ones (e.g. Lower Greenyards, Bannockburn: 47244/NS89SW12) may actually have been domestic sites although the larger ones seem more likely to have functioned as focal points in communities where the basic social unit was the isolated homestead housing an extended family. This function became less important as communities started to cluster together more; by the early years of the first millennium AD people no longer saw the need to enclose their personal land although some felt the need to express their identity in the form of outwardly imposing substantial stone roundhouses and in extreme cases, complex substantial stone roundhouses. In Perthshire, lowland unenclosed settlement became the norm, with little evidence for field-systems in the surrounding landscape. This would appear to coincide with the woodland clearance episodes of 200BC to AD400 (see Chapter 3, 3.4), which may have been a reaction to increased population pressure on the land.

During the Roman occupation of the area, people were certainly gaining access to imported goods, such as samian ware, although for some this may not have been direct exchange. Relatively large quantities of Roman goods were found at Buchlyvie, Fairy Knowe (44651/NS59SE3) and Leckie (45379/NS69SE12). However, it is worth noting that neither Torwood, The Tappoch (47004/NS88SW1) nor Coldoch (45356/NS69NE6) produced much in the way of Roman goods. It would be simplistic to view CSuSRHs in terms of a reaction to the Roman occupation, particularly since the available dating evidence leaves the possibility that such sites were built before the Roman occupation of the area. The contexts of the

Roman finds at Buchlyvie, Fairy Knowe leave the possibility that they were deliberately deposited or left following destruction or abandonment. They are not, therefore, necessarily representative of daily life at Buchlyvie, Fairy Knowe, or other such sites. Although MacKie (1982; 1987) sees the owner of Leckie as a laird, with authority over subservient peasants living outwith the CSuSRH, there is little evidence for other domestic site types in this area in this period. On its own, the archaeological evidence might suggest that the Forth Valley did not have a particularly high population at this time and that the resultant wealth of individual homesteads was expressed partially in the use of an outwardly exotic and ostentatious house form. However, the evidence from pollen analyses seems to be at odds with this; the extent of forest clearance and the rise in cereal pollen indicated from pollen analyses in this area have been discussed in Chapter Three. These trends may indicate a rise in population in the last two centuries BC and the first few centuries AD; the implications of this for understanding of the settlement pattern in Stirlingshire are discussed in Chapter Five.

Chapter 5 Stirlingshire Case Study

5.1 Introduction

The Stirlingshire case study area consists of the whole of the old county of Stirlingshire, plus the NS grid letter area of Perthshire (Fig. 5-1). This contains 101 sites thought to be of later prehistoric date (Appendix Three); the locations of those directly referred to in the text are indicated in Fig. 5-2. This area was, in the later prehistoric period, dominated by extensive peat-bog and also for a period in the Iron Age by the sea, in the bottom of the Forth Valley (see Chapter 3). In this chapter, structural analysis of roundhouses and morphological analysis of enclosure sites (5.2) is followed by detailed locational analysis of all sites (5.3). The results are then discussed in section 5.4, prior to comparison with other areas in Chapter Eight.

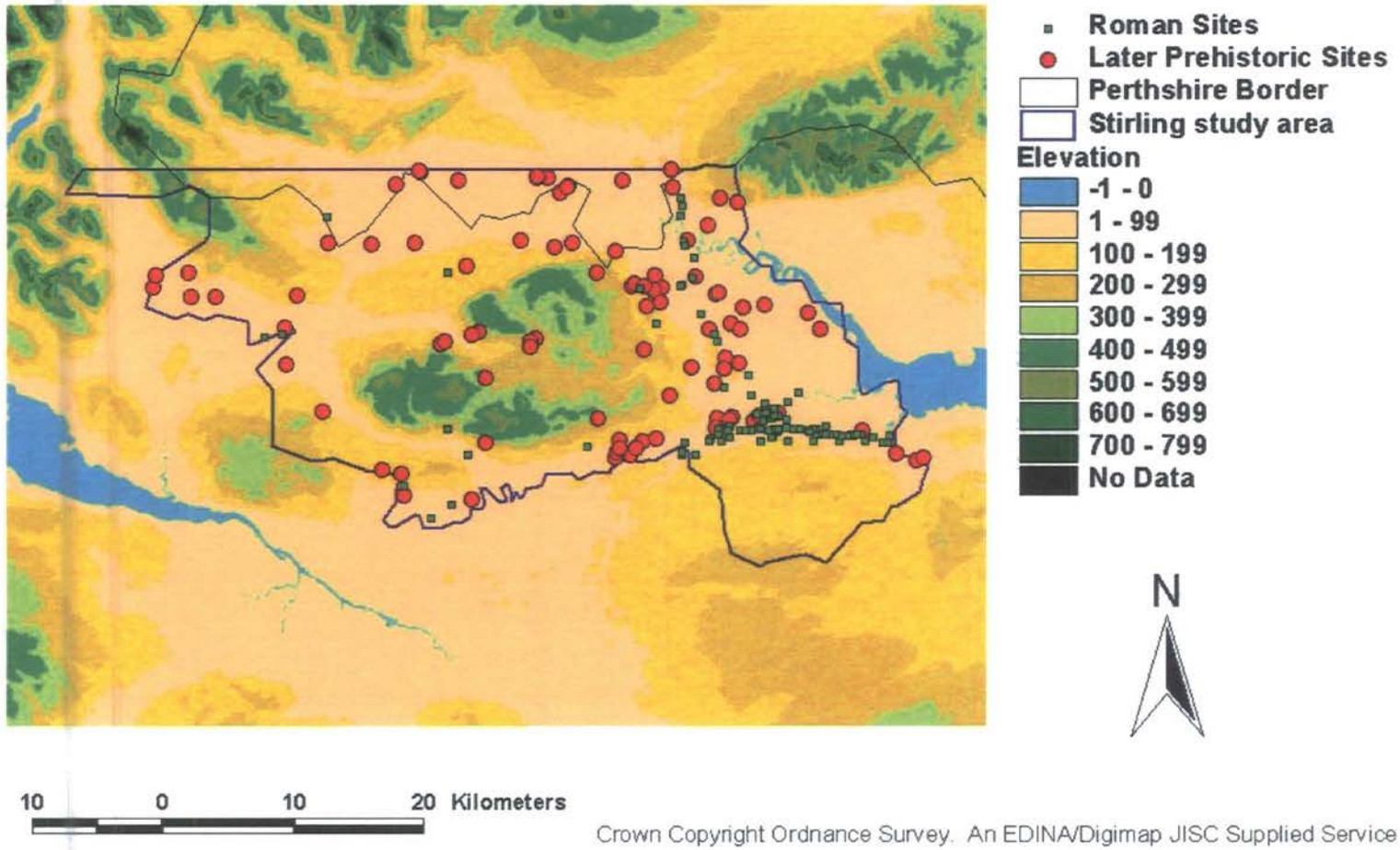

Fig. 5-1 Distribution of Later Prehistoric Sites in Stirlingshire Case Study

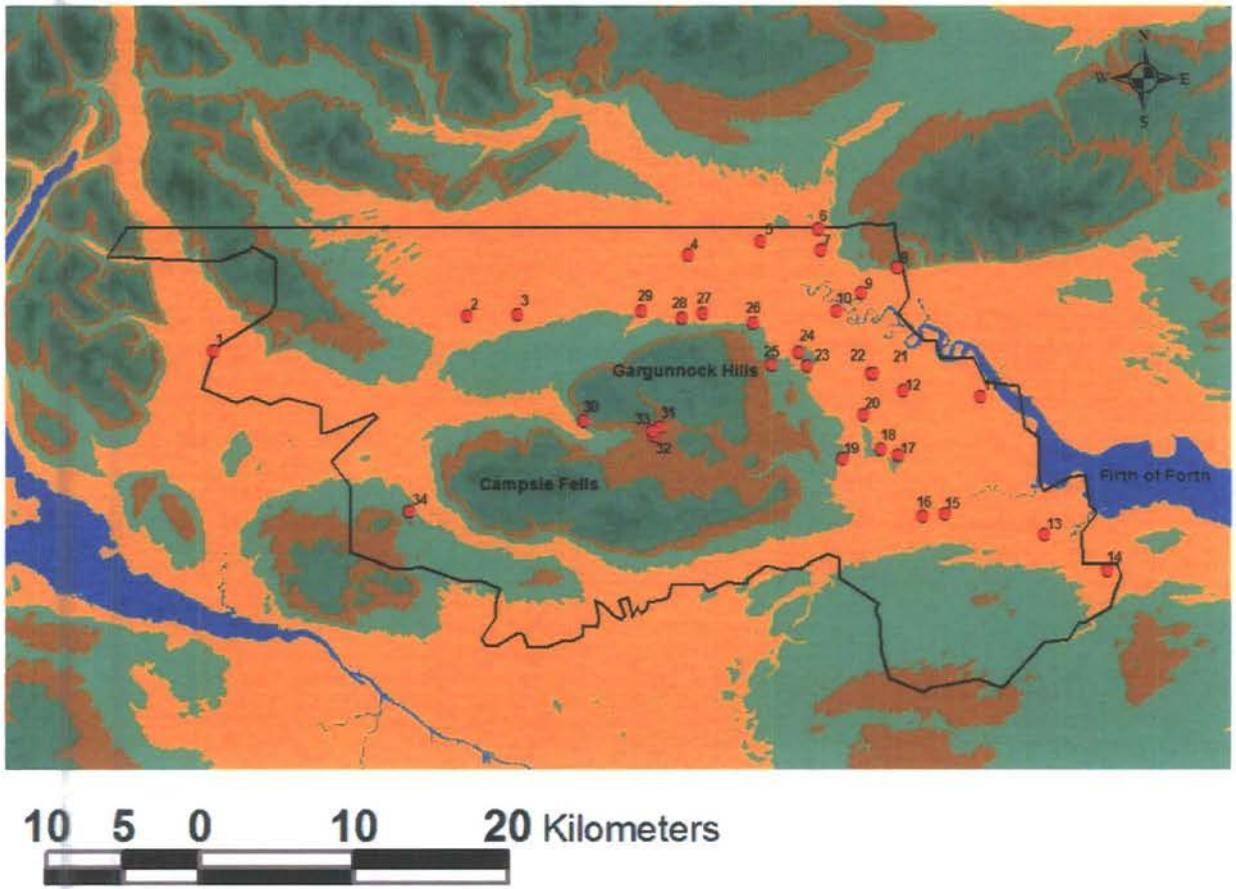

Fig. 5-2 The Stirlingshire case study area, with sites mentioned in the text marked as follows: 1. Buchinch; 2. Over Kepdowrie; 3. Buchlyvie, 'Fairy Knowe'; 4. Coldoch; 5. Easter Row; 6. Kippenross; Gallow Hill, Bridge of Allan; 8. Dumyat; 9. Abbey Craig; 10. Stirling, Mote Hill; 11. Hill of Dunmore; 12. Cowie; 13. Bowhouse; 14. Myrehead; 15. Falkirk, Camelon; 16. Wester Carmuirs; 17. Torwood, The Tappoch; 18. Langlands; 19. Braes; 20. West Plean; 21. Bannockburn; 22. Lower Greenyards, Bannockburn; 23. Wallstale; 24. Gillies Hill; 25. Castlehill Wood; 26. Baston Burn; 27. Keir Hill of Gargunnock; 28. Leckie; 29. Brokencastle; 30. Craigton; 31-33 Todholes; 24. Kinloch Muir

5.2 Structural Analysis

5.2.1 Stone Roundhouses

There are 29 stone roundhouses (22 substantial and seven simple) in the case study area, although basic measurements are unavailable for nine of these[54]. Of the remaining 20, seven have been excavated, all of which are substantial.

[54]See Table 6-9 in Appendix Six for data discussed in this section.

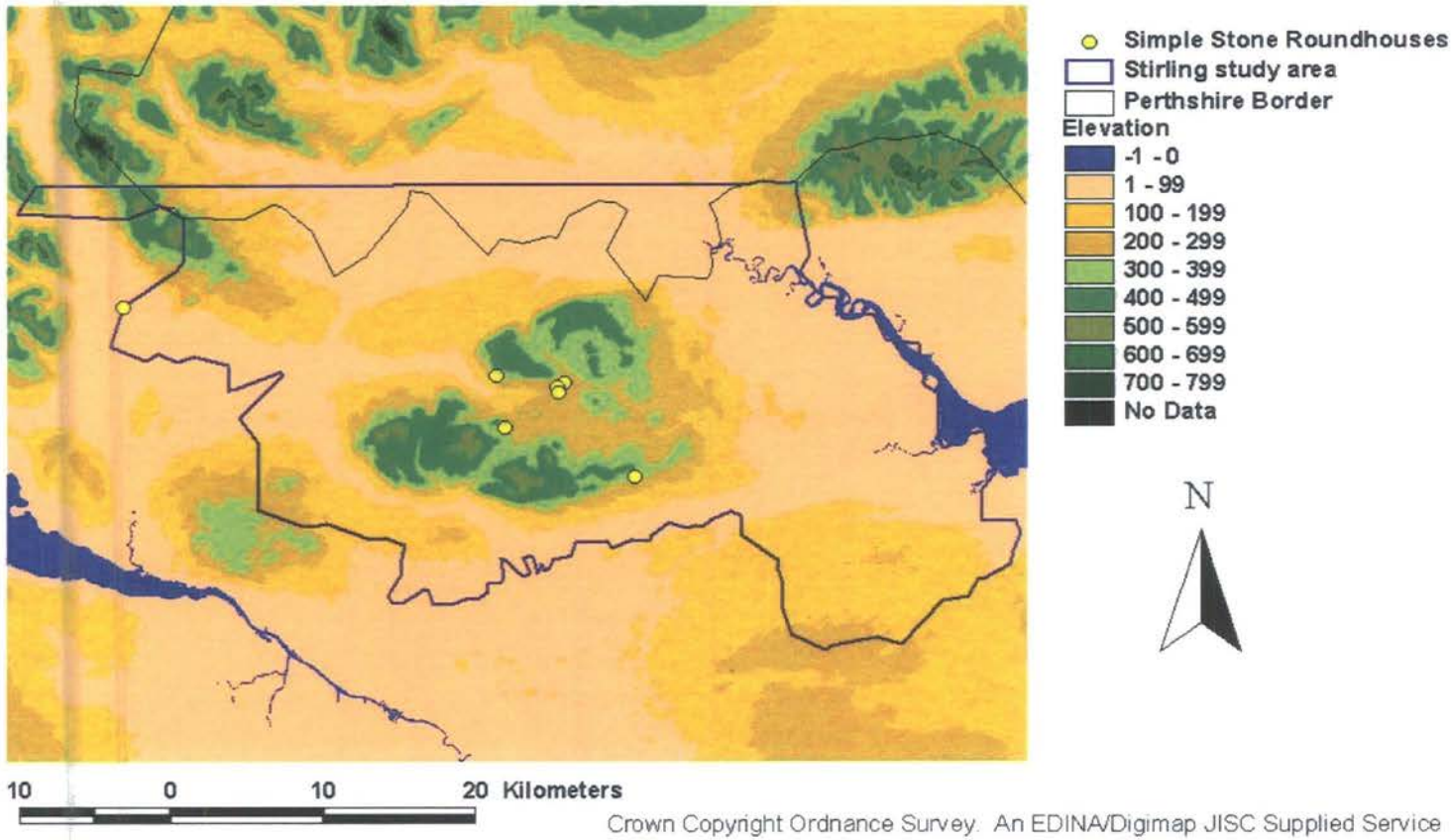

Fig. 5-3 Distribution of Simple Stone Roundhouses in Stirlingshire Case Study

5.2.1.1 External Diameter

Fig. 5-4 shows the external diameters of the stone roundhouses. Simple Stone Roundhouses range from 7m to 12m. Substantial Stone Roundhouses range from 15.2m to 23m. The mean is 16.4m. Only three of these sites exhibit complexity, but there seems to be no direct connection with diameter, the diameters of these sites being spread between 15.2m and 22.8m. Whether one considers all stone roundhouses, or just the substantial ones, the broad range in diameters is striking. This exercise also serves to confirm the division of the simple and substantial roundhouses, since there are no stone roundhouses in the range 12.1m-14m.

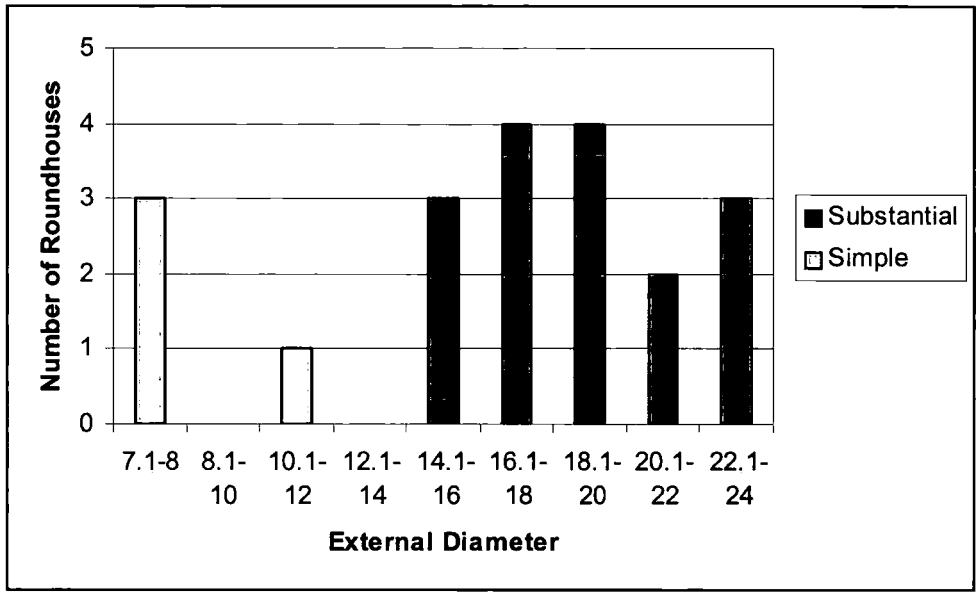

Fig. 5-4 External Diameters of Stone Roundhouses

5.2.1.2 Internal Area

As Fig. 5-5 shows, only 20 sites had internal diameter measurements available, of which 14 are substantial stone roundhouses. Internal area was calculated under the assumption of circularity, with mean dimensions being used for sub-circular or oval houses. Where mural cells were evident, their areas were *not* included in the calculation. The mean internal area was 98.06m^2 for stone roundhouses in general, 36.8m^2 for simple stone roundhouses and 122.4m^2 for substantial stone roundhouses. Substantial roundhouses fall in the 51-200m^2 range with a definite peak at 51-100m^2. Again, complex sites are not clustered in one particular range and it would seem unwise therefore to assume that they represent a single class. It should, of course, be

borne in mind that some (although probably very few: see 5.2.1.3 below) of the complex sites may also have had an upper floor, which would near-double the available space. Given the wide variation in internal area, even just within the SuSRH class, it seems that there was differential use of space, whether this is related to size of family or social group, function, or some other reason.

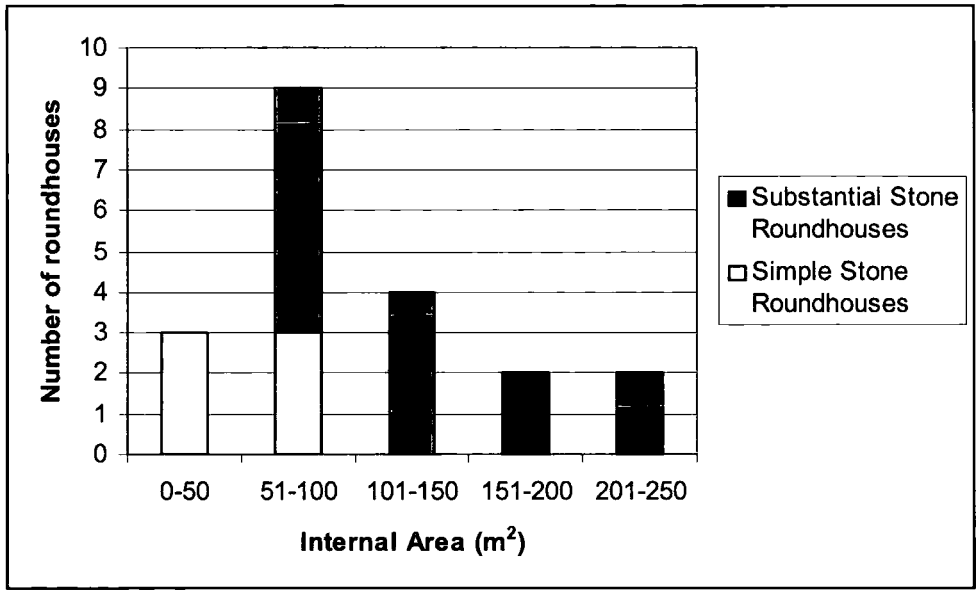

Fig. 5-5 Internal Areas of Stone Roundhouses

5.2.1.3 Percentage Wall Base

Percentage wall base was calculated for all substantial stone roundhouses (where possible); the relationship between this, diameter and wall base is given in Fig. 5-6.

ED External diameter at base (mean value)
ID Internal diameter at base (mean value)
WT Wall thickness at base (mean value)
PWB Percentage of overall diameter taken up by wall-base

These are inter-related thus:
ED-ID = 2 X WT

$$PWB = \frac{(ED - ID)}{ED} \times 100$$

Fig. 5-6 Relationship between diameter and wall thickness (Fojut 1981)

As is evident in Fig. 5-8, of these, four (Buchlyvie, Fairy Knowe: 44651/NS59SE3; Torwood, The Tappoch: 47004/NS88SW1; Coldoch: 45356/NS69NE6 and Keir Hill of Gargunnock: 46294/NS79SW4) have PWB figures which fit into the range for the

Shetland brochs (and the Caithness group), as given by Fojut (1981), although none are as high as Mousa's. PWB is directly related to structural stability and therefore potential height (ibid, 222). This does not, however, prove that the three sites mentioned above *were* as tall as, for instance Dun Telve, Inverness. What is perhaps slightly surprising is the low percentage wall base figure (of 38%) for Leckie (45379/NS69SE12), which is comparable with the lower values from the Atlantic roundhouses of the Western Isles (Armit 1992, 104). However, this is consistent with Armit's (2003, 122) argument that the irregular plan indicates that it never reached any great height. Indeed, Leckie (45379/NS69SE12) only just qualifies as a substantial stone roundhouse, with an external diameter of 15.2m. Its PWB is in the same range as Castlehill Wood (46233/NS79SE49), Wallstale (46232/NS79SE48) and Craigton (45310/NS68NW9) (all NMRS 'duns'), of which only the former exhibits complexity (and is arguably too large to be roofed). Evidently, as in the Western Isles, complexity is *not* directly related to PWB (compare Armit 1992, 104)[55]. In this respect, Castlehill Wood, classifed here as a univallate enclosure bears comparison to the 'broch' at Edin's Hall (compare Dunwell 1999). There are only perhaps four or five known substantial stone roundhouses in Stirlingshire that *could* have been as physically imposing as the stereotypical brochs, although owing to the quality of the local stone (Fig. 5-7), which is noticeably inferior to that available in the Northern and Western Isles and the northern mainland, it is unlikely that they were quite so high. Indeed, the thickness of the walls in the Stirlingshire examples may have been necessary owing to the poor stone, which did not lend itself so easily to the building of substantial structures.

[55] Although note that complexity is likely to be under-recorded at unexcavated sites.

Fig. 5-7 The relatively poor stone quality of the complex substantial stone roundhouses of the Stirlingshire case study, as exemplified at Coldoch (45356/NS69NE6) (M.H. Davies)

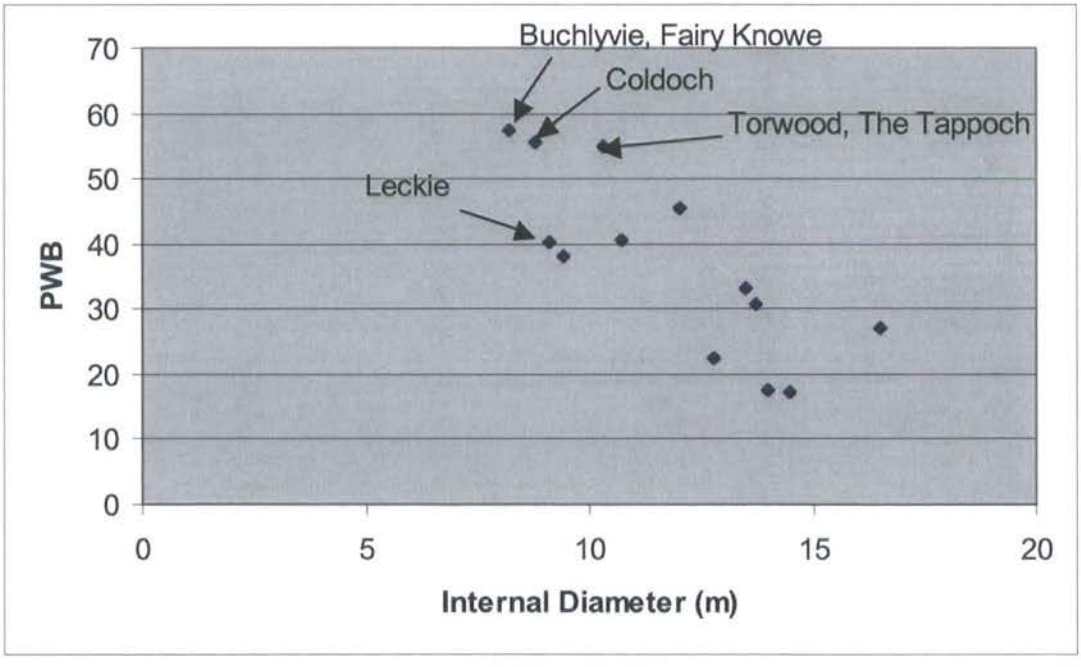

Fig. 5-8 Percentage Wall Base of Substantial Stone Roundhouses

5.2.1.4 Entrance Orientation

Entrance orientation of SuSRHs varies (Fig. 5-9), with most being situated between north-east and south-east with a peak (of five sites) at east. Information on entrance

orientation was only available for two SiSRH sites, both of which are orientated south.

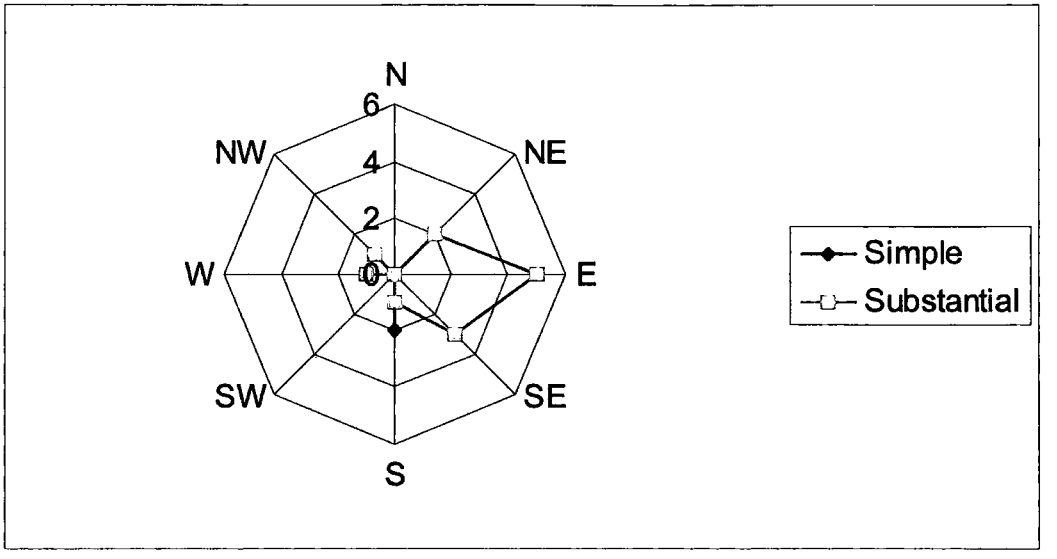

Fig. 5-9 Entrance Orientations of Stone Roundhouses

5.2.2 Timber Roundhouses

Structural analysis of timber roundhouses was carried out only on excavated examples. There are fifteen timber roundhouses within the study area, although these represent only six sites, so there may be a distortion compared with the stone roundhouse data.[56]

5.2.2.1 Diameters

The mean diameter is 10.7m, with all but one of the structures falling between 2m and 16m (Fig. 5-10). There is an overlap with diameter ranges for stone roundhouses, but in general the timber roundhouses are smaller.

[56] See Table 6-6 in Appendix Six.

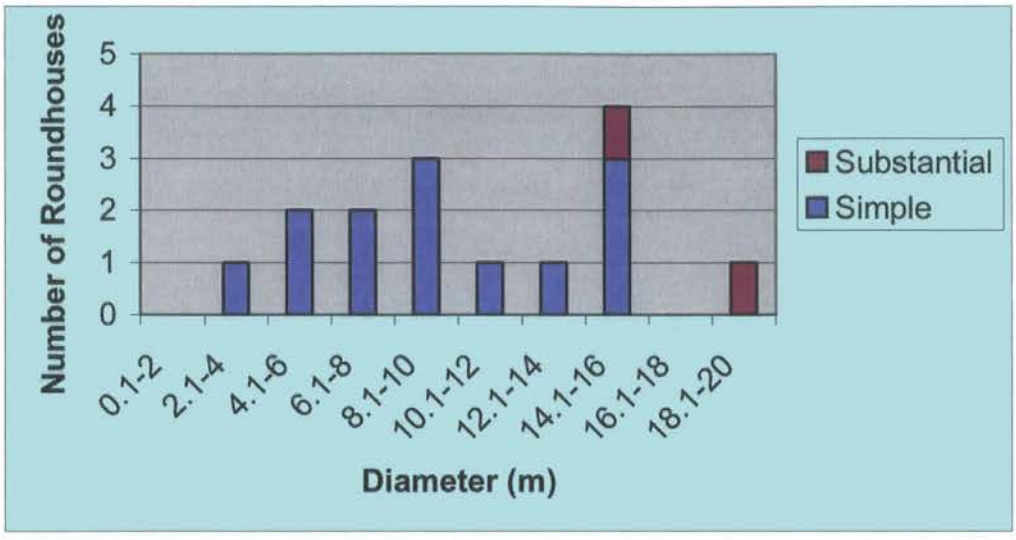

Fig. 5-10 Diameters of Timber Roundhouses

5.2.2.2 Internal Area

Fig. 5-11 shows that most of the timber roundhouses had internal areas of between 0 and 200m^2; within this there are peaks at 0 to 50m^2 and 150m^2 to 200m^2. There is no corresponding peak in the 150m to 200m bracket for stone roundhouses; indeed the opposite is true.

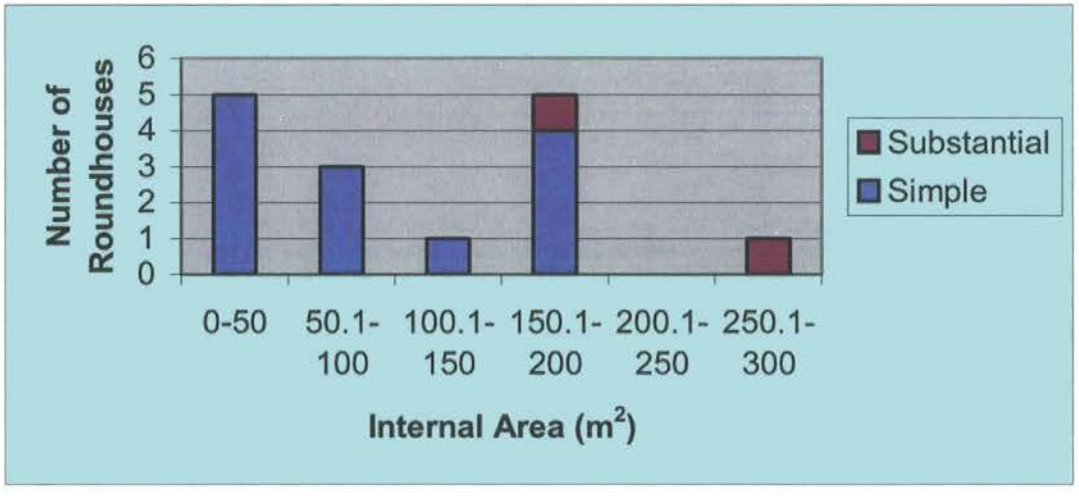

Fig. 5-11 Internal Areas of Timber Roundhouses

5.2.2.3 Entrance Orientation

The entrances of these structures are distributed at all compass points from north through to south, with a peak at south-east (Fig. 5-12). Entrance orientations for the SuSRHs were not available.

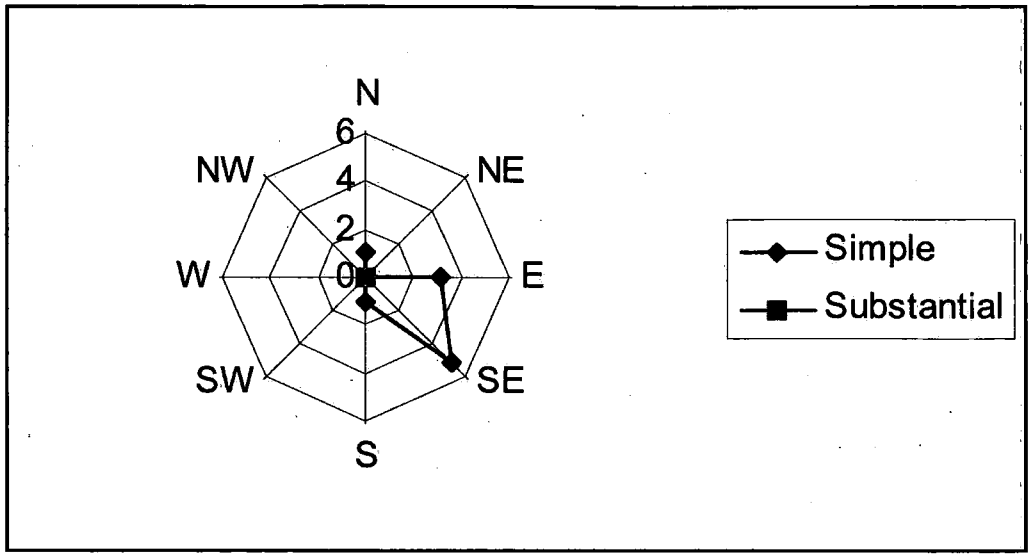

Fig. 5-12 Entrance Orientation of Timber Roundhouses

5.2.3 Enclosures

What is immediately apparent is that the enclosures of this area are almost exclusively curvilinear, most being oval. This is true whether they survive as upstanding monuments[57] or cropmarks[58]. The one triangular example (Gillies Hill: 46246/NS79SE60) and the one polygonal example (Falkirk, Camelon: 46922/NS88SE24) are only such because of the natural shape of the escarpment-edge areas they enclose. Whether formerly classified as hillforts or not, in terms of the British Iron Age these enclosures are small, with none enclosing an area of more than 0.6ha. Indeed, as can be seen in Fig. 5-13, the majority fall into the 0-2000m^2 bracket.

[57] Table 6-9 in Appendix Six
[58] Table 6-10 in Appendix Six.

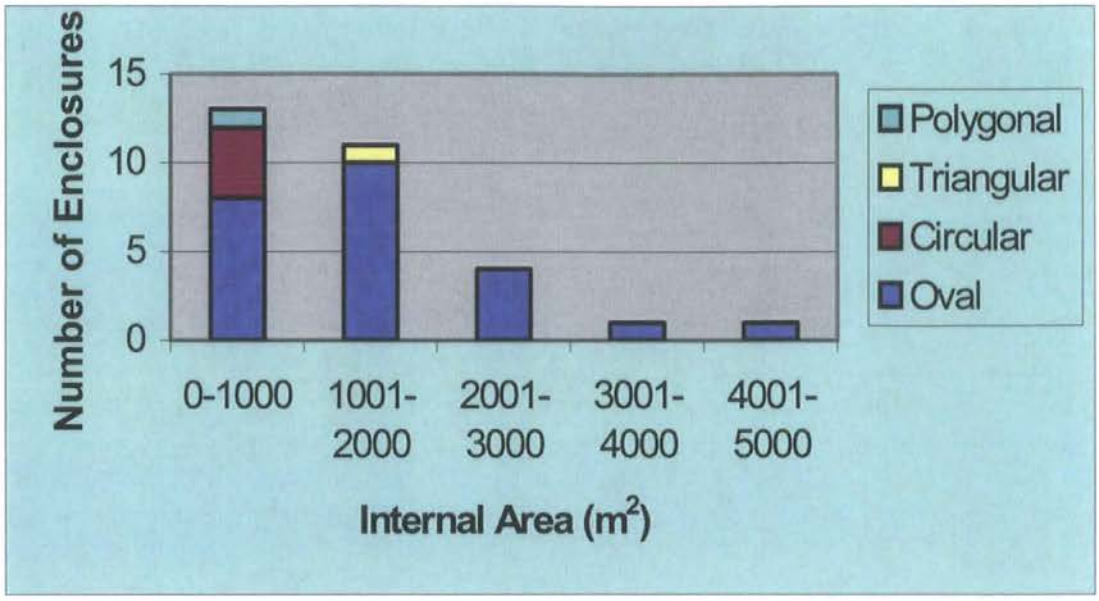

Fig. 5-13 Internal Areas of Enclosures

As shown in Fig. 5-14, the vast majority of enclosures have between one and three visible circuits (including palisade lines). Where there are more, this is because more than one phase is evident, either by excavation or by deduction from the plan. This is obviously the case at Wester Carmuirs (47023/NS88SW27: Fig. 5-21) and also at Lower Greenyards, Bannockburn (47244/NS89SW12). Seven enclosures have evidence of vitrification, three more than are listed by Nisbet (1975) and MacKie (1976). These are Abbey Craig (47113/NS89NW10), Braes (45973/NS78SE4), Dumyat (47117/NS89NW14), Stirling Mote Hill (46206/NS79SE3), Easter Row (46080/NS79NW33), Torwood, The Tappoch (47004/NS88SW1) and Quinloch Muir (44607/NS58SW5) i.e. three univallate and two multivallate enclosures. The latter three were all first recorded in print in 1979 (RCAHMS 1979). Altitudes of these sites range from ten to 195m OD.

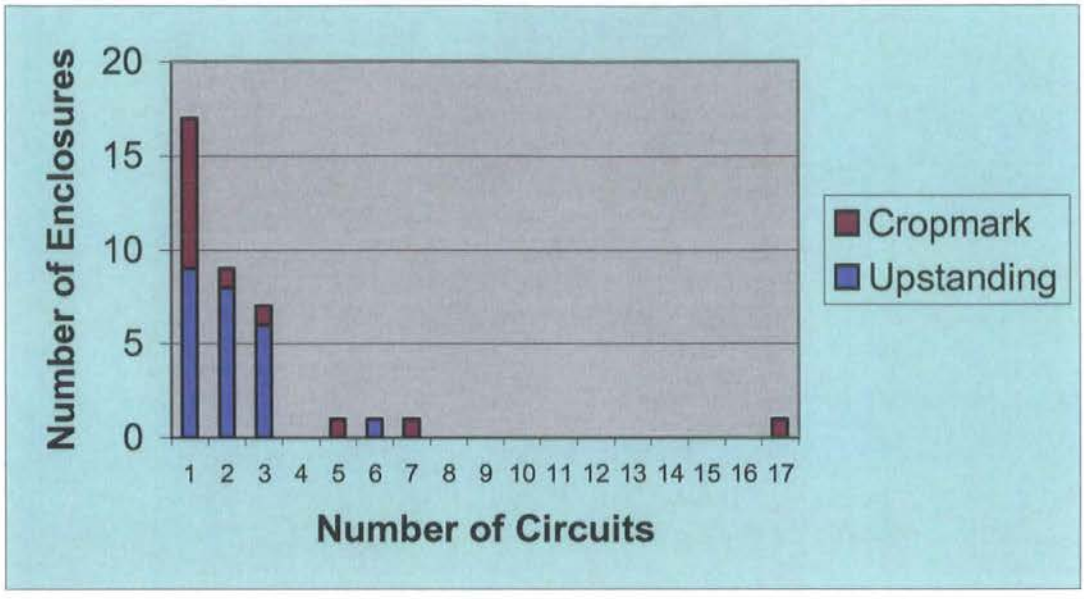

Fig. 5-14 Enclosure Circuits

Enclosure entrances are almost invariably terminal-defined and simple. There are only three enclosures in the area that deviate from this general rule, showing some elaboration of the terminals, namely Cowie (46868/NS88NW10: inturned), Bowhouse (47880/NS97NW2: antennae/funnel) and Over Kepdowrie (132133/NS59SE18: pit-defined). Entrance orientation (Fig. 5-15) shows much more variation than that for roundhouses (Fig. 5-9 and Fig. 5-12), with all compass points except north represented. However, east and south-east are still most popular. This probably reflects the fact that, for enclosure entrances, maximising on light is far less important, although it is still most practical to avoid facing into the prevailing wind. In some cases, choice of entrance position was evidently restricted by site situation. Dumyat (47117/NS89NW14), for instance, could only have had an entrance in the west, owing to the site's topography.

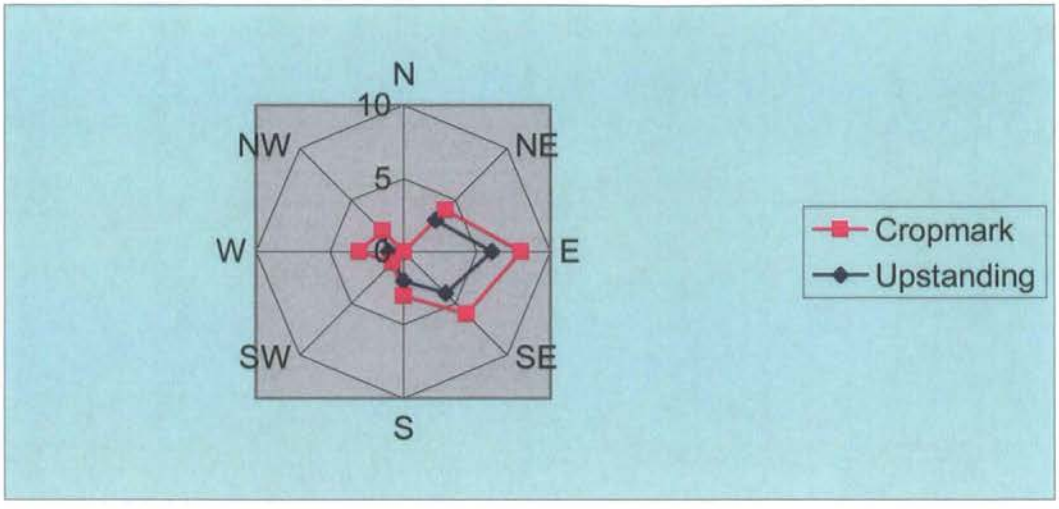

Fig. 5-15 Entrance Orientations of Enclosures

5.2.3.1 Palisades

All of the thirteen palisades in this area are known either as cropmarks (e.g. Flanders Hill: 45361/NS69NW10, Fig. 5-16) or were discovered during excavation[59]. By definition, each has a single palisade line. Eight of these homesteads have been excavated (Buchlyvie, Fairy Knowe: 44651/NS59SE3; West Plean: 46898/NS88NW5; Myrehead: 47816/NS97NE37; Bannockburn: 47254/NS89SW21, Lower Greenyards, Bannockburn: 47244/NS89SW12 and three at East Coldoch: 46081/NS79NW34). There are none of the 'upstanding' palisades one sees in the Scottish Borders. Two examples (West Plean and Buchlyvie, Fairy Knowe) were only discovered when the overlying upstanding structures were excavated, and it is quite possible that others exist but are masked by later features. At East Coldoch, for instance, a third was uncovered, cut by and preceding a univallate enclosure phase. Since the one at West Plean was not recognised at the time and at any rate was all but obliterated by the subsequent ditch digging, the exact measurements are unknown. However, the palisade falls within the same size range as the ones at Buchlyvie, Fairy Knowe and East Coldoch. Given the rather ephemeral nature of the cropmarks associated with such sites, the numbers are probably an underestimate. The known internal areas range from 398m^2 to 1963m^2, with most falling into the 1001m^2 to 2000m^2 bracket (Fig. 5-17), indicating that their size is entirely typical for enclosures in this area.

[59] See Table 6-7 in Appendix Six.

Fig. 5-16 Flanders Hill palisade, Perthshire (45361/NS69NW10), located at 30m OD, just to the north of Flanders Moss. The site is classified by RCAHMS as a Homestead. A central roundhouse is indicated by a curvilinear cropmark within the enclosure, and there are hints of pits, which may be contemporary. Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Scotland.

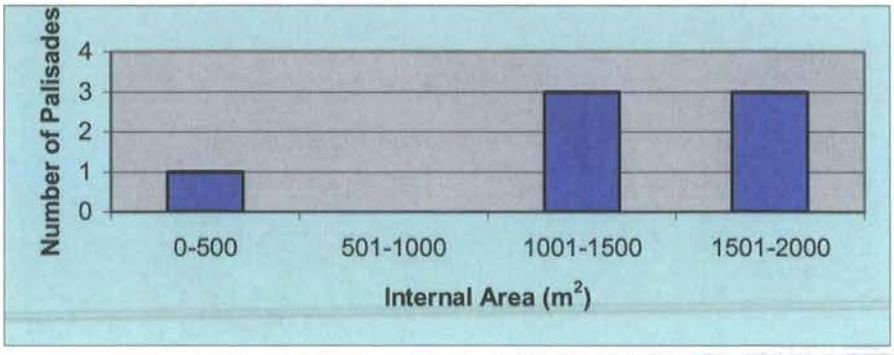

Fig. 5-17 Internal Areas of Palisades

In this sample, there is little consistency in orientation; six homesteads have no entrance orientation information and the remaining sites are spread from south-east through to west.

5.2.3.2 Univallate Enclosures

There are only eleven univallate enclosures in this area, of which two are associated with substantial stone roundhouses (Keir Hill of Gargunnock: 46294/NS79SW4 and Langlands: 46900/NS88NW7)[60]. The internal areas range from 135m^2 to 2105m^2, although most fall in the 0-1000m^2 bracket, as shown in Fig. 5-18.

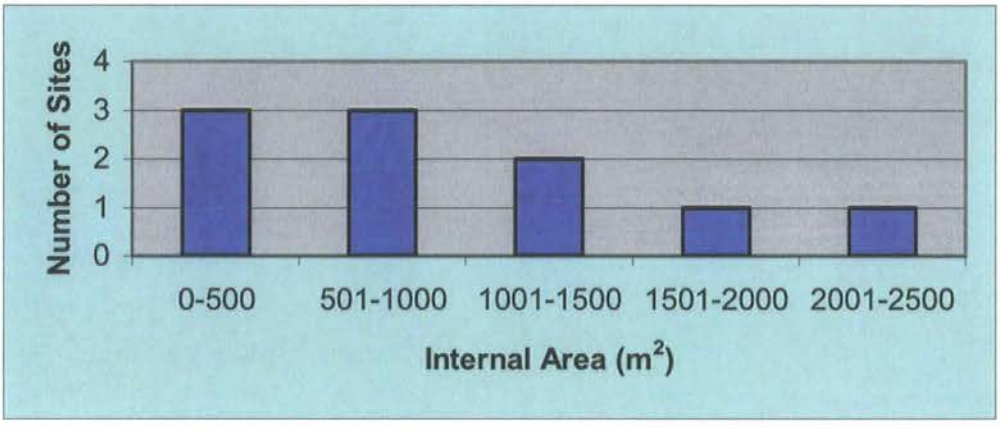

Fig. 5-18 Internal Areas of Univallate Enclosures

There is no consistency in entrance orientations, with all cardinal points except north and west represented (Fig. 5-19).

[60] Although MacKie has argued for a post-broch promontory fort phase to Leckie, it in unclear how a rampart built over the roundhouse and incorporating part of its wall could provide a usable internal space. Without a published section, it is impossible to assess MacKie's interpretation and the "promontory fort" has not therefore been included in the analysis of univallate enclosures.

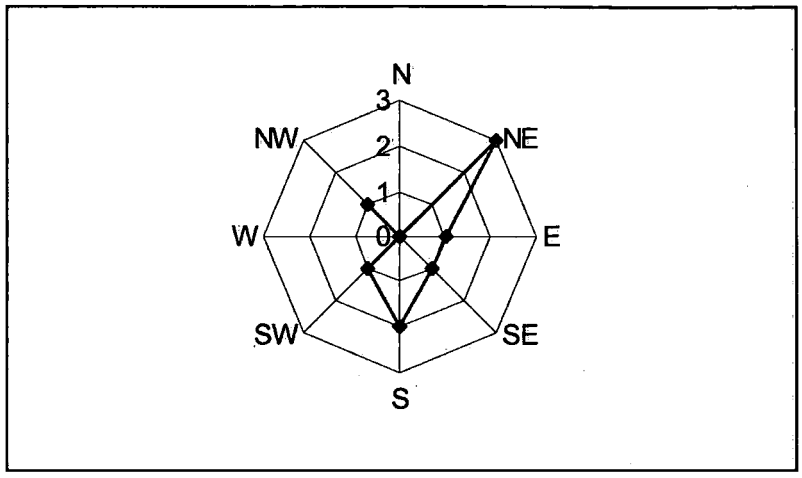

Fig. 5-19 Entrance Orientations of Univallate Enclosures

5.2.3.3 Multivallate Enclosures

Multivallate Enclosures, the most plentiful site type in the area, range in internal area from 0 to 6000m^2, although the vast majority enclose under 3000m^2. The sites that stick out as being particularly large are Wester Carmuirs (47023/NS88SW27, which also has the most elaborate 'defences'; Fig. 5-20 and Fig. 5-21), Hill of Dunmore (46824/NS88NE16) and Kippenross (45994/NS79NE17).

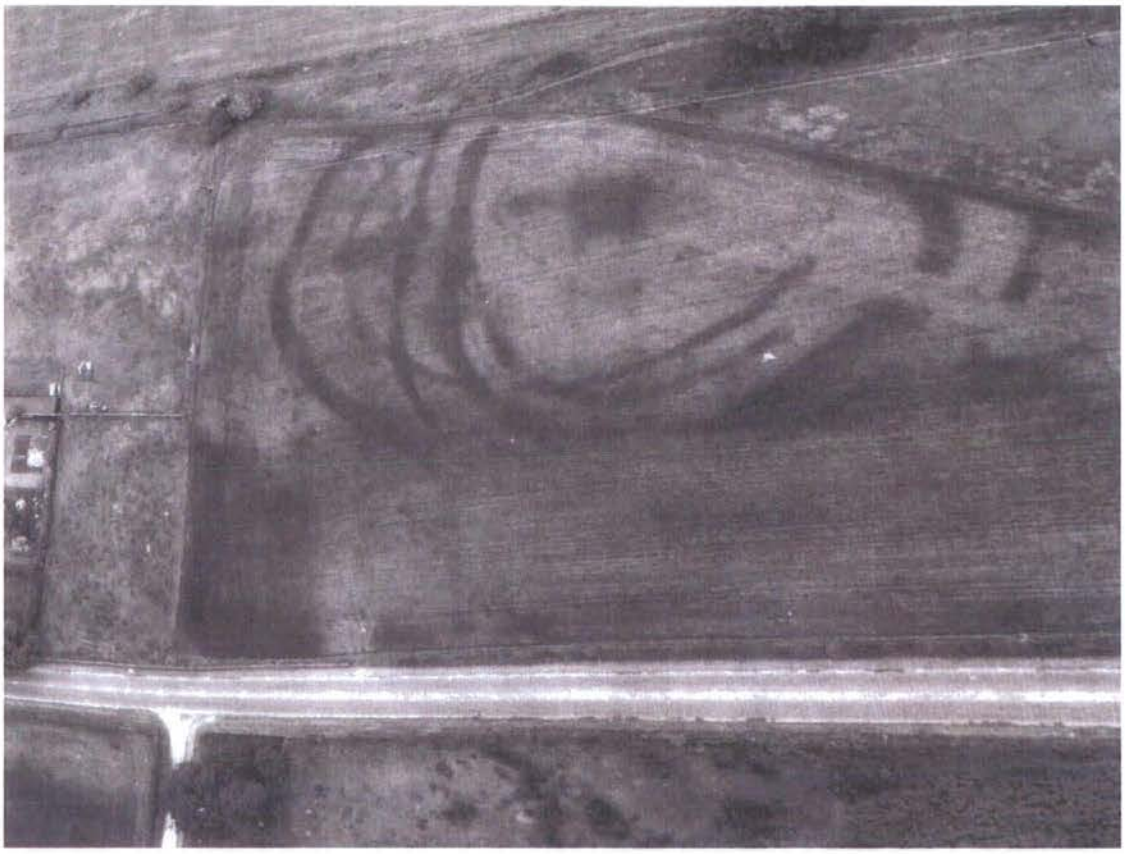

Fig. 5-20 Wester Carmuirs, Falkirk, multivallate enclosure rectified from the oblique to the vertical by the author. Original photograph Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Scotland.

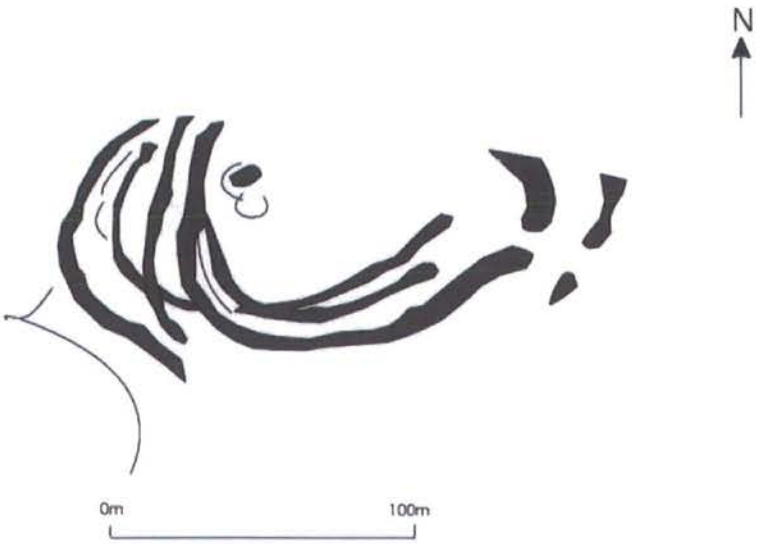

Fig. 5-21 Wester Carmuirs, Falkirk: 47023/NS88SW27 and 76356/NS88SW50. The cropmarks only show in one field. (transcription by the author, from the photograph shown in Fig. 5-20)

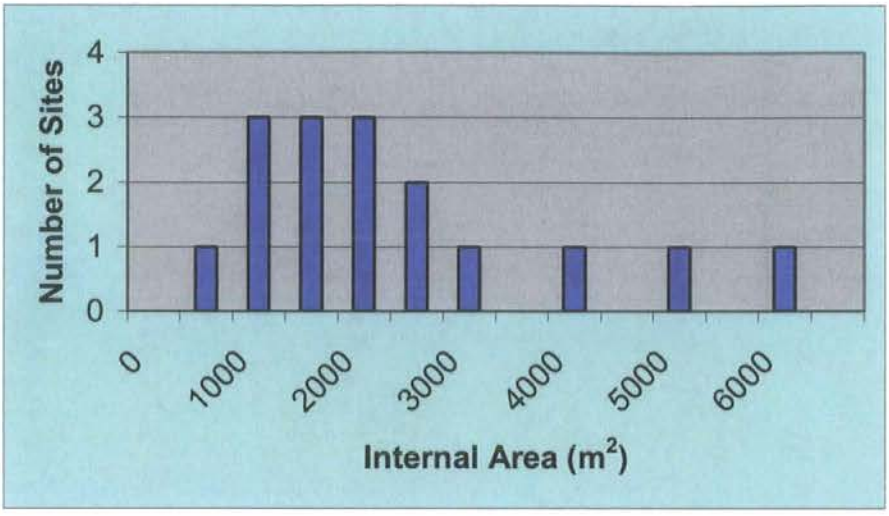

Fig. 5-22 Internal Areas of Multivallate Enclosures

As can be seen in Fig. 5-23, there is wide variation in entrance orientation of multivallate enclosures, although most sites appear to have been orientated to the east or south-east. Constraints of topography can account for most exceptions to this rule; the entrance to the enclosure at Lower Greenyards, Bannockburn (47244/NS89SW12) is on the south side, reflecting the position of the enclosure on a promontory only accessible from the south. The position of the entrance at Dumyat (47117/NS89NW14) is not clear, but may have been in the west, and its topographic position would certainly make it inaccessible from the south-east or north-east quadrants. The enclosure at Bowhouse (47880/NS97NW2), with its elaborate entrance in the west, is harder to explain, since it situated on flat carse-land within the modern town of Grangemouth. Morphologically, Bowhouse bears most similarity to West Plean (46898/NS88NW5), which has an entrance in the east-north-east and East Coldoch, which has an entrance in the north-east. The subversion of the norm at Bowhouse (46081/NS79NW34) may hint that its function was not primarily domestic.

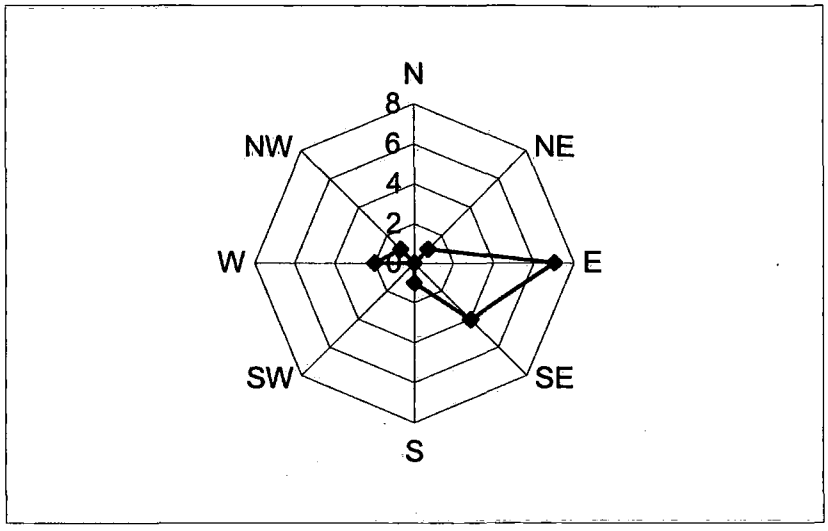

Fig. 5-23 Entrance Orientations of Multivallate Enclosures

5.3 Locational Analysis[61]

5.3.1 General Distribution

The distribution of known or suspected later prehistoric sites in the Stirlingshire study area is shown in Fig. 5-1. Fig. 5-24 shows the same distribution against the raised sea level suggested by Smith *et al* (see Chapter 3) for the later prehistoric period. This shows that the settlement distribution and the waterlogged area are mutually exclusive; the distribution does not disprove Smith *et al*'s (2000) hypothesis, although it does not prove it either. Even if the sea had retreated by the later prehistoric period, much of the land devoid of settlement would have been unsuitable for building, being made up of peat bog. The Roman site distribution also supports the idea that this area was uninhabited at the time, as the only finds in this zone are single coins (a *sestertius* of Antoninus Pius from the bank of the Allan Water and a worn bronze coin of the late fourth century AD and worn Republican *As* from Bridge of Allan). The two latter coins were not new when deposited and presumably they represent votive offerings (perhaps stray finds from what were originally hoards) or casual losses. Given that the locations seem to follow a roughly straight line running north/south, between Mote Hill (46206/NS79SE3) and Gallow Hill, Bridge of Allan (45987/NS79NE10), it is tempting to hypothesise that they indicate the position of a trackway at one of the shortest routes across the Mosses.

[61] See Table 6-4 in Appendix Six.

This may have been part of the Roman Road, the course of which is uncertain in this area.

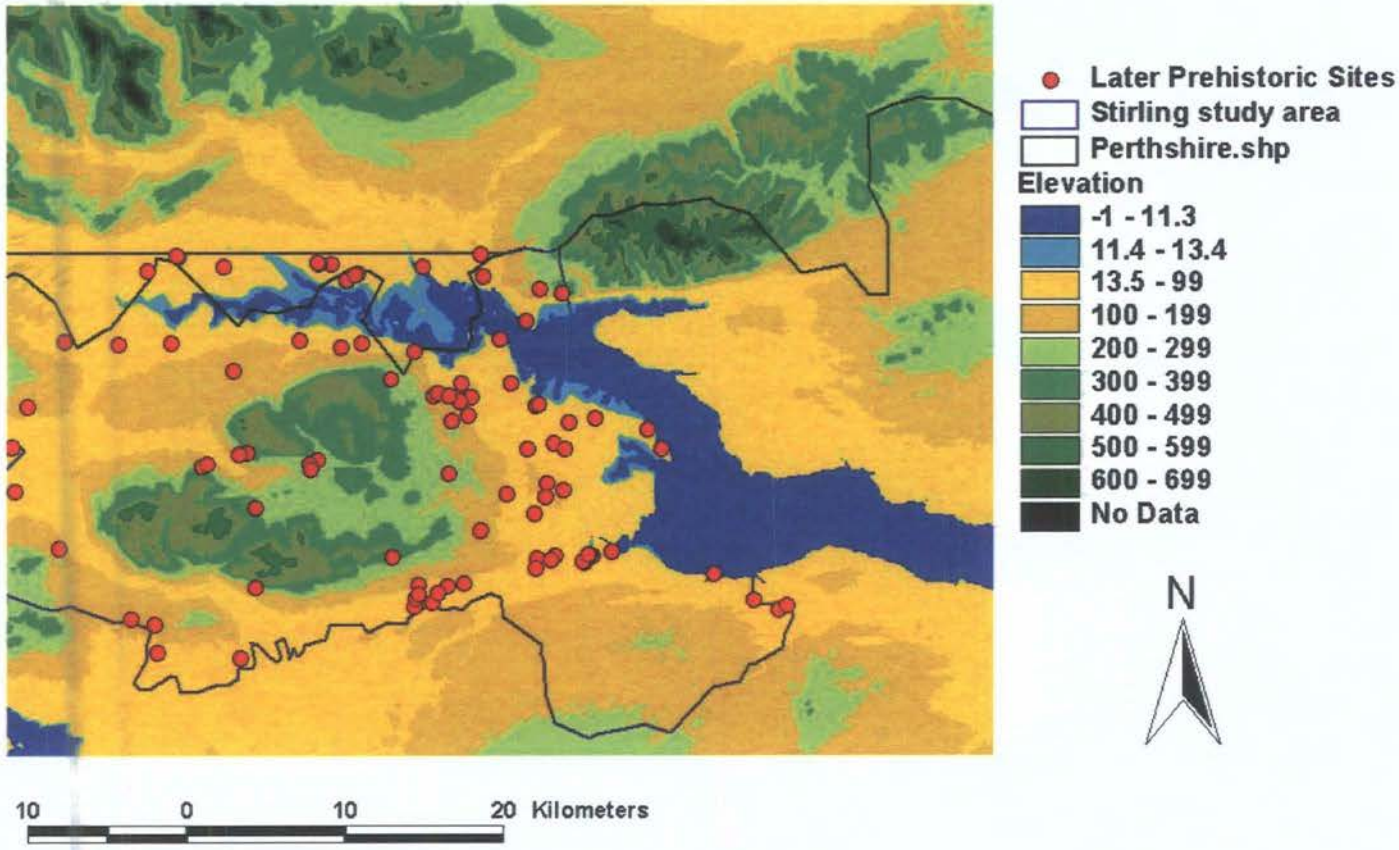

Fig. 5-24 Later Prehistoric Site Distribution against Blairdrummond Shoreline

There is a near-total lack of open settlement in this area. There are only two souterrain sites (Castlecary: 45850/NS77NE43 and Easter Moss: 46860/NS88NE49), of which only Easter Moss has been confirmed by excavation. The Late Bronze Age settlement of this area appears to be sparse and is concentrated on what is now relatively poor land along the Endrick Water, between the Campsie Fells and the Fintry Hills. With a more clement climate, it may have been more attractive in the Late Bronze Age than today. There are only six simple stone roundhouses. Elsewhere, such buildings tend to occur in clusters but in Stirlingshire half are apparently very isolated. None has been excavated so it is hard to say whether this is because they were maintained and/or rebuilt over long periods, were only used for transhumance activities or were abandoned relatively rapidly. The hut-circle on an island in Loch Lomond is unique (Buchinch: 131244/NS39SE157), certainly in this area. Its small size raises the possibility that it is actually a more recent building, perhaps a shieling. The cairns close to the main cluster at Todholes (45287/NS68NE4; 45288/NS68NE5; 45290/NS68NE7) may be related to the settlements, although it is unclear whether they are simply clearance cairns or served some mortuary purpose. Given the biases in data recovery discussed here, it would seem to be reasonable to assume that the known simple stone roundhouses represent a small fraction of the original number of such sites and possibly even just a fraction of what is actually there. Turning to Iron Age settlement, cropmark souterrains are usually thought to be indicative of open settlements, but there is no evidence of such at either of these sites.

It is immediately apparent from the distribution maps that most substantial stone roundhouses are isolated from similar sites. The notable exception is the small cluster of six situated just above the 100m contour on the north-east edge of the Touch Hills. All but one of these were listed in the 1963 Inventory. Two were excavated in the 1950s and it is possible that the reason for the density is that the archaeologists involved became familiar with the immediate area in the course of fieldwork. The numbers are probably an underestimate of surviving sites. Sites such as Coldoch (45356/NS69NE6) and Buchlyvie, Fairy Knowe (44651/NS59SE3) were only visible as stony mounds prior to excavation; other examples may have been mis-interpreted as earlier burial mounds. Even taking into account the fact that there has been no major ground survey in this area since the 1963 inventory, this distribution is sparse.

The afforestable land survey results from the Braes of Doune, Perthshire (RCAHMS 1994a), however, raise the possibility that more substantial stone roundhouses survive unrecorded under woodland cover.

There is only a sparse distribution of palisades but this may well reflect biases both in preservation and in detection. In contrast, the distribution of multivallate enclosures is the densest of all the site types and apparently the most adaptable, with examples in the uplands as well as the lowlands. The distribution of crannogs indicates that where there are lochs, there are crannogs; the low numbers in this area are apparently only due to the low number of lochs, the larger freshwater bodies typically being artificial reservoirs. Iron Age burials have been identified in this area. However, there are still very few known and certainly not enough to draw conclusions as to the significance of their distribution.

5.3.1.1 The Antonine Wall

There appears to be a strong correlation between the most heavily flown area and the Antonine Wall (Fig. 5-26), although only half of the Iron Age sites in the vicinity of this section of the Wall were discovered as crop-marks. This is probably due to the fact that the area has become familiar and well-traversed by both the amateur and professional archaeologists since the dawn of interest in the Roman Frontier.

5.3.1.2 Investigating the gaps in settlement distribution

The gaps in settlement distribution are highlighted in Fig. 5-25 and discussed below.

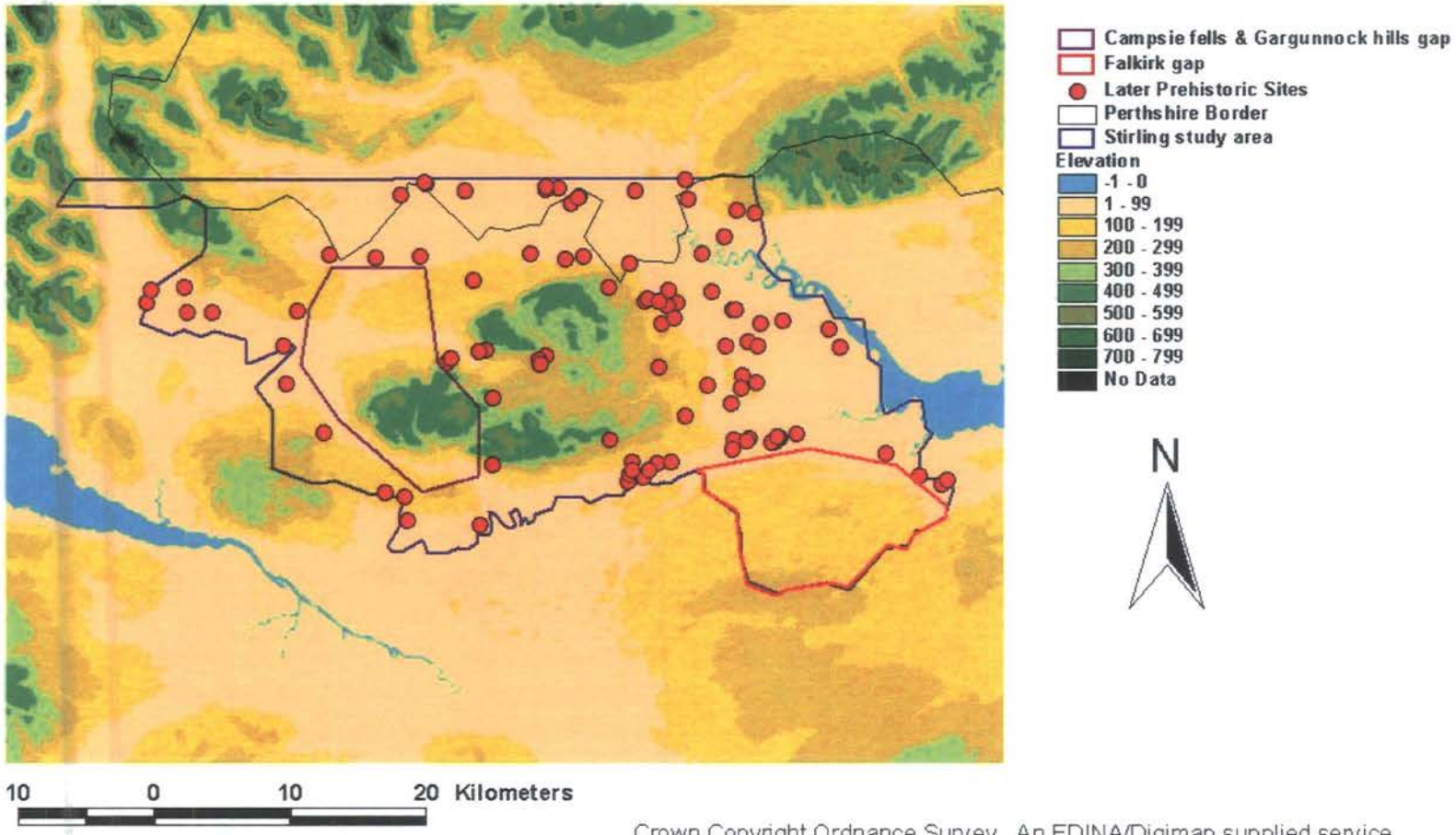

Fig. 5-25 Gaps in Settlement Distribution observed in Stirling case study

5.3.1.2.1 The Falkirk Gap

The blank area immediately to the north-east of the Antonine Wall is likely to be caused largely by the towns of Falkirk and Grangemouth and the adjacent motorways (Fig. 5-36), the building of which will have masked or destroyed any later prehistoric remains. However, there is also a possibility that this area is blank because it was uninhabitable during part of the later prehistoric period. Most of the area lies below 13.4m OD and therefore would have been affected by any rise in relative sea-level of the magnitude proposed by Smith *et al* (2000) and discussed in Chapter Three (Fig. 5-24). Only one later prehistoric site in this area lies below the Blairdrummond Shoreline, at 10m OD. This is Bowhouse (47880/NS97NW2), a circular univallate enclosure that was included in the study owing to its similarity to West Plean (46898/NS88NW5) and East Coldoch (46081/NS79NW34). Bowhouse's location does not disprove the theory that there was a late period of high relative sea level; the duration of this is unknown and even if Bowhouse is an Iron Age site, it might have been in use before or after the Blairdrummond phase. The possibility that later prehistoric sites have been masked by sediments should not be disregarded. Indeed, the altitudes of some Roman sites around the Antonine Wall indicates that the sea-level cannot have been as high as 13.4m OD in the Antonine period; it must have retreated by this time.

The blank area immediately to the south of the Antonine Wall (Fig. 5-25) is much harder to explain. It is made up of relatively low-lying land, with good river coverage. The roads are all B-roads or minor roads (Fig. 5-36). The blank area is irregularly shaped (owing to the boundary of the study area) and measures a maximum of 18.4km east/west by 9.4km north/south. Virtually all of it is between 100-200m OD and is classified as suitable for a narrow range of crops or improved grassland by the Soil Survey of Scotland. There are a number of possible reasons for the gap. First, and most obvious, is the possibility that the sites are there but have not been found because no-one has looked. The flight-path data suggests that this area is virtually never flown by RCAHMS and when it is, it is purely flown over on the way to somewhere else (Fig. 5-26). It is also a possibility that some sites are known but have not been recognised for what they are. Some of the cultivation remains known

could be later prehistoric, but there are no candidates for over-looked roundhouses or enclosures. There is some woodland in this area that could serve to mask surviving remains, although this represents a very small proportion of the total area.

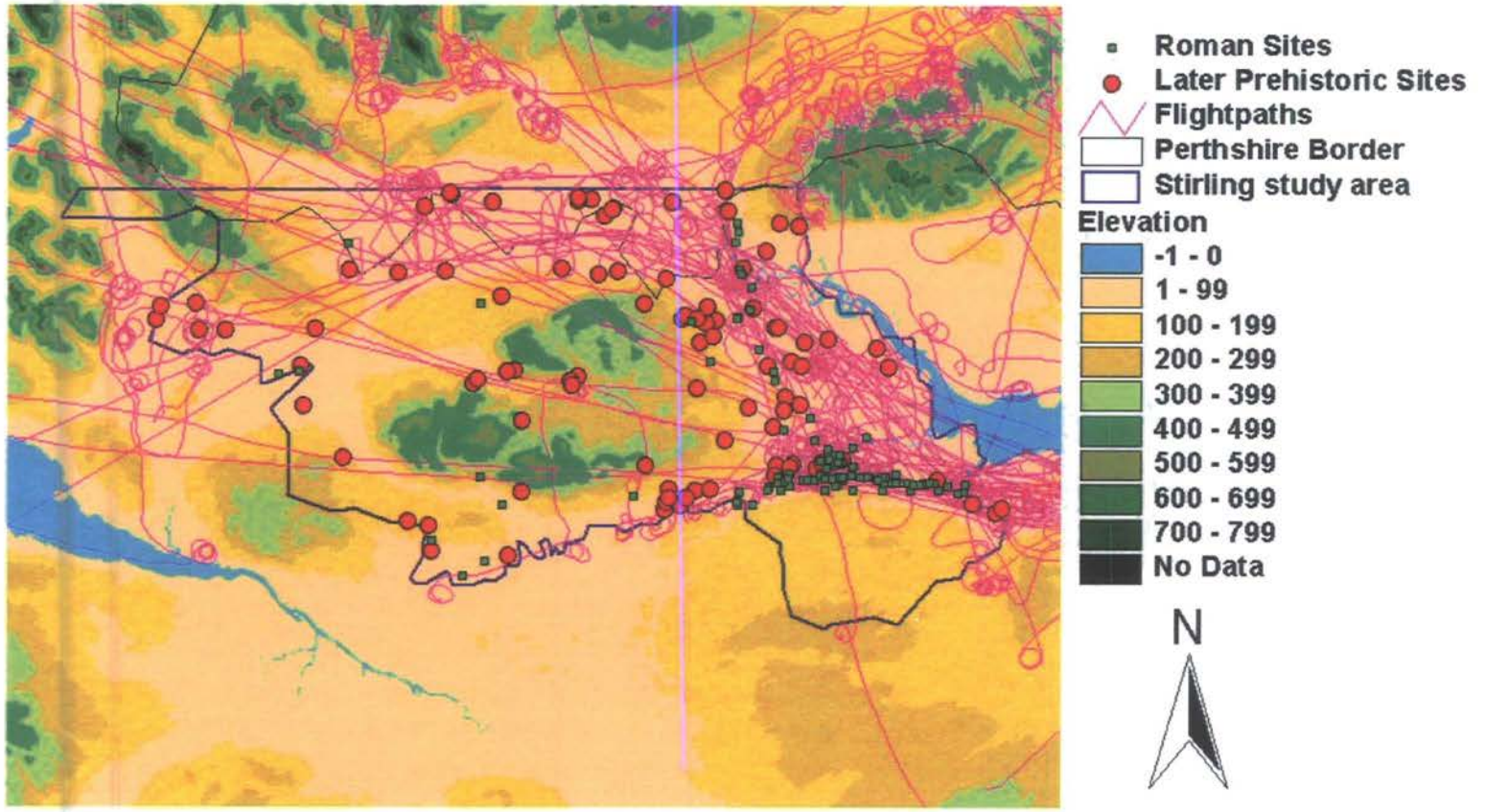

Fig. 5-26 Recent RCAHMS flight paths over Stirling case study

Given that the area in question lies immediately to the south of the Eastern end of the Antonine Wall, it is possible that at the time of the occupation, the Romans enforced (or the natives established) a buffer zone between the frontier and the land to the south, in order to control traffic and communication between the two. This would not, of course, explain the absence of evidence for settlement in the Late Bronze Age or the rest of the Iron Age. Another possibility is that people did not feel it worthwhile or appropriate to live in the area above 100m OD, perhaps because there was sufficient usable land below 100m OD to support the population of the time. Most of the land in the Falkirk Gap is classified now as capable of producing a narrow range of crops (Class 4) or use as improved grassland (Class 5), compared to the area immediately to the north, which is capable of producing a moderate (Class 3) to wide (Class 2) range of crops. While this may mean that the Falkirk gap was avoided by later prehistoric peoples, it is possible that the area was only used for summer pasturing of sheep and cattle, the archaeological remains of which were too ephemeral to have survived or been detected. It is also possible that there was an open pattern of settlement in this area, which might be less susceptible to detection through aerial photography.

However, the fact that the land now falls within Class 4 or 5 also means that cropmarks may not form as readily as elsewhere. Such a situation has had a negative effect on cropmark visibility in the South-West of Scotland (Cowley and Brophy 2001). Indeed, the process of improvement may have led to the destruction of upstanding remains such as stone walls (RCAHMS 1990, 1; Stevenson 1975). However, there is a small but significant number of later prehistoric (mostly LBA) sites in the 100m-300m OD zone of the foothills of the Campsie Fells, the Gargunnock Hills and the Touch Hills (especially around the village of Fintry), in land of similar quality. This indicates that any upstanding later prehistoric settlement sites may have been overlooked rather than non-existent.

The final possibility is that the sites have all been destroyed; this is unlikely given that many later monuments survive, although conversely the later sites could be masking the earlier ones. Given that there are only a handful of early prehistoric sites known in this area and that the vast majority are modern, the first option is probably the most

likely. It can be concluded that this area, which corresponds roughly to the modern Falkirk district, has been neglected in terms of archaeological survey and investigation, doubtless because of the 'honey-pot' effect of the Antonine Wall, immediately to the north. The issue can only be resolved by an archaeological survey of the area in question, although it remains a possibility that people did not settle there in the later prehistoric period.

5.3.1.2.2 The Campsie Fells/Gargunnock Hills Gap

Most of the land above 100m in the study area has an extremely sparse distribution of upstanding monuments (Fig. 5-25). Most of the sites that are known in this gap area are clustered along the Endrick Water. Whilst a masking effect may be in place owing to tracts of forest and modern reservoirs, there are still areas measuring more than 10km across within which no Iron Age sites are known. In contrast to the Falkirk gap, however, parts of these blank areas do have sites from earlier periods, such as cairns, standing stones and cist burials, suggesting that the problem is not simply lack of detection. However, areas over 400m may be genuinely devoid of sites of any period; if settlement in this area was restricted to land at or below 300m, this would be entirely consistent with data from Perthshire.

As can be seen from Fig. 5-26, this hilly area of Stirlingshire has rarely been flown by RCAHMS over the last decade and the fact that all of the known sites are upstanding suggests that this may also have been the case in the past. This is confirmed by the details given in pre-1992 RCAHMS catalogues. Like the Falkirk gap (Fig. 5-25), this area is made up of Class Four and Five land, which is not conducive to arable cultivation or the appearance of cropmarks. However, given that climate in the LBA was somewhat more clement than today, the near-absence of simple stone roundhouses of this period is perhaps puzzling, especially given that even today, this area is suited to the grazing of stock. As in the Falkirk gap, the explanation may lie in the very fact that the land is improved grassland; upstanding remains may have been destroyed or denuded during the improvement process (RCAHMS 1990, 1; Stevenson 1975), but the subsequent landuse has not been conducive to the appearance of cropmarks. Again, systematic ground survey is required to determine whether the sparse distribution of later prehistoric settlement remains is real or apparent.

5.3.1.3 Site Situation

There is striking uniformity in the situations of enclosures within the study area (Fig. 5-27)[62], with the majority being on knolls (31%), escarpment edges (16%) or ridges (12%). The majority (42%) of upstanding enclosures are situated on knolls. This is a slight underestimate, as many of the 19% situated on escarpment edges also took advantage of natural knolls.

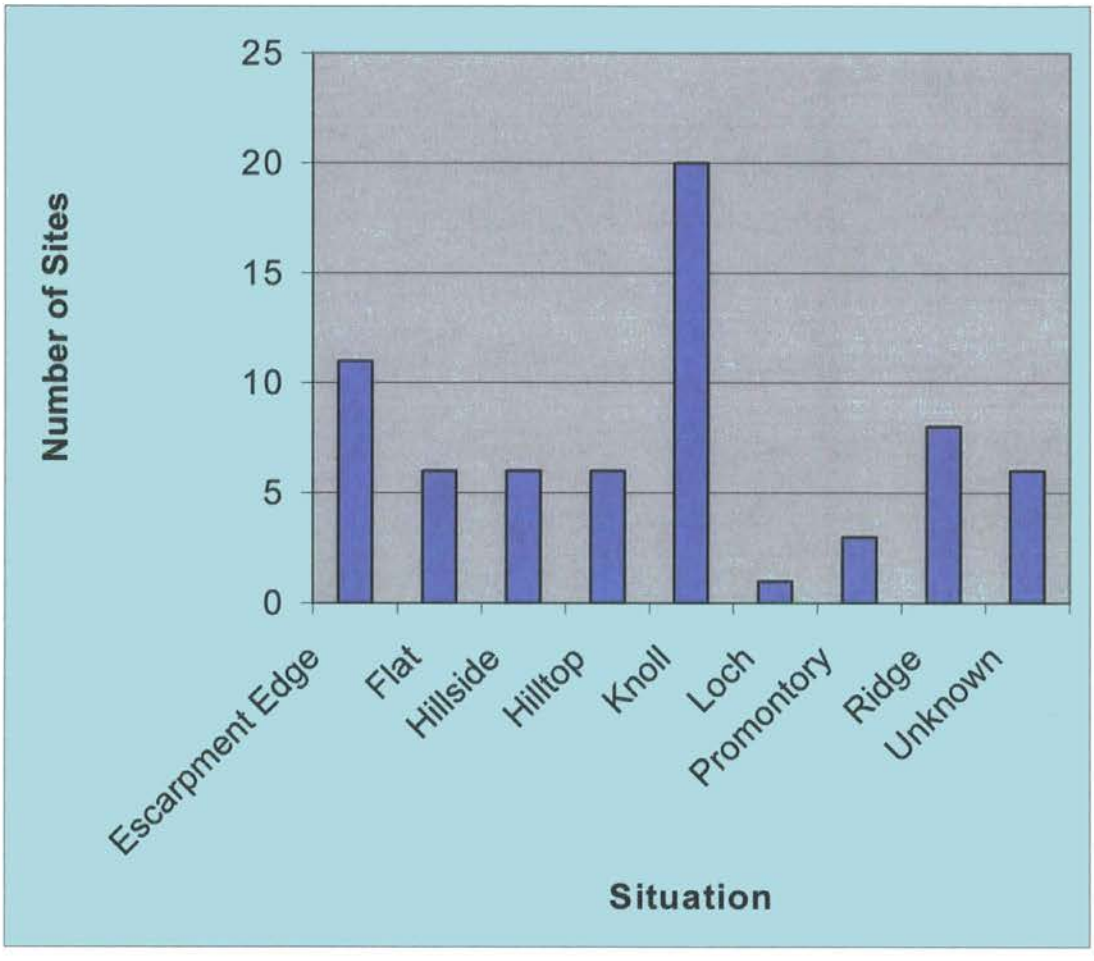

Fig. 5-27 Situation of Enclosures and Stone Roundhouses

Most multivallate enclosures are situated on escarpment edges, followed by knolls and hilltops. Most cropmark enclosures are situated on the flat (34%), although this is likely to be a function of detection methods. Indeed, it is likely that these sites are actually situated to take advantage of local microtopography. The remaining possible situations of hillside, hilltop, promontory[63] or ridge appear to be far less favoured.

[62] Tables 6-9 and 6-10 in Appendix Six.
[63] The supposed post-broch promontory fort at Leckie has not been included.

There are just six enclosure sites, representing 9% of the total, which occupy the hilltop location one might expect for forts. Univallate Enclosures were mostly in ridge locations, perhaps reflecting the natural defensibility of such situations. There is no correlation between situation and enclosure area. There is no consistency in palisade situation, at least within this sample.

Knolls seem to have been the favoured location for substantial stone roundhouses (63%), followed by escarpment edges (17%). Most simple stone roundhouses are situated on hillsides, with two of these on knolls. One is in a unique location, on an islet in a loch; all other loch-sites are crannogs. The choice of knolls for most domestic sites would seem to be a practical one, based on the fact that they are likely to be well-drained, with good views over adjacent land, which was presumably farmed by the inhabitants. The knolls are often not the most defensible situations within the landscape and it can be inferred that other factors were of more importance to the people who built them.

The positions of many of the substantial stone roundhouses are particularly significant. Buchlyvie, Fairy Knowe (44651/NS59SE3), Brokencastle (45387/NS69SE5), Leckie (45379/NS69SE12), Keir Hill of Gargunnock (46294/NS79SW4), Coldoch (45356/NS69NE6) and Baston Burn (46295/NS79SW5) are all situated on escarpment edges or promontories at the very edge of inhabitable land, perched above the mosses (or the sea), with superb views across and along the Forth Valley. Indeed, Coldoch and Leckie are situated directly opposite each other and are intervisible, as demonstrated by line-of-sight analysis using *ArcView*'s *3D Analyst*. All but Coldoch are on the *South* side of the River Forth. There are now no views from Coldoch, owing to its situation in a relatively modern wood. However, without the current obstructions, it would have quite exceptional views across and along the Forth Valley, towards Stirling. Assuming an observer height of 1.5m (which could, however, have been up to 9m depending on the height of the structure), all of the sites on the south side, with the exception of Baston Burn, are visible from Coldoch. Abbey Craig would be in sight, as would Dumyat and also Castle Rock, whether or not it was once a later prehistoric site. In contrast, Leckie has a much more restricted view; from it, only one SuSRH (Coldoch) could have been seen. This would be the case even if it was 9m tall and the observer was standing on the top.

Clearly a good general view was not a priority for the people who built Leckie, although a good view of Coldoch (and the land between these two sites) may have been. It seems more than coincidental that these two sites are almost directly opposite each other; perhaps together one of their functions was controlling passage across Blairdrummond Moss. Although the nearest known timber trackway is 5km to the East (NS79NW79), there may well have been others and it is not known whether this one is later prehistoric or not. Incidentally, the sites at East Coldoch (Fig. 5-28) - some of which may have been contemporary with the SuSRHs - could have been seen from Leckie, which is 5km away, but not from Coldoch, which is less than 1km away. Leckie therefore fills a gap in Coldoch's visibility range. It may be no coincidence that it is the substantial roundhouses overlooking the carselands that have produced Roman goods. At Buchlyvie, Fairy Knowe and Leckie there were pre-'broch' phases, and the introduction of monumental broch architecture need not indicate a change in function. A role in controlling traffic across the mosses could have begun before the Romans arrived. However, the Roman army could have exploited the existing system to their benefit, ensuring control over traffic into and from the Empire. The Roman goods could represent the rewards of a mutually beneficial relationship, although as discussed in Chapter Four, the reasons for the material having been left on the site may be an entirely different story[64].

[64] There is no record of Roman finds from Coldoch but all records (A Martin pers. comm.) and finds (F. Hunter pers. comm.) have been lost. The only contemporary account is by Maclagan, who habitually fails to mention small finds, having been primarily interested in structural remains.

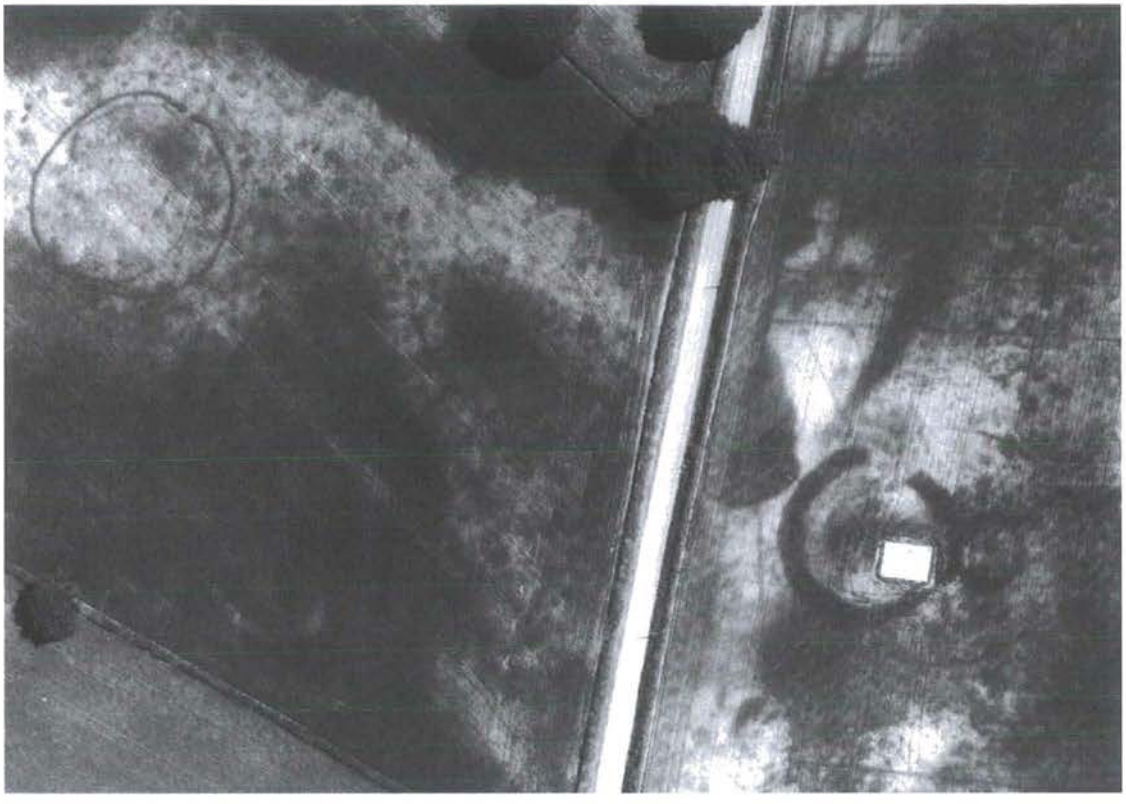

Fig. 5-28 Oblique aerial view of East Coldoch. Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Scotland

5.3.1.4 Solid Geology

The solid geology of the lowlands of this area consists of Carboniferous sandstones, shales, grits and limestones but these are overlain by gravels and sands left by retreating glaciers. There is an area of Old Red Sandstone in the north-west corner and smaller areas of basalts and andesites in the uplands of the Midland Valley. The Campsie Fells, Kilsyth Hills and Gargunnock Hills consist of these volcanic rocks. In the Iron Age, as is evident below, these hills were largely avoided (at least beyond the 150m contour) for settlement. However, quite the opposite is true for the known Bronze Age settlement, which seems to have been focussed on such land. The small area of Old Red Sandstone in the case study is devoid of later prehistoric sites. Later prehistoric people in this area seem largely to have favoured the areas of Carboniferous sandstones, shales, grits and limestones. It is likely that the glacial gravels and sands would have been attractive for settlement, as they would have allowed good drainage. These tills also contribute to the make-up of the overlying soil.

5.3.1.5 Slope/Drainage

As noted above, knolls seem to have been the preferred situation for settlement sites of all types but especially substantial stone roundhouses. This renders the factor of slope largely irrelevant, since knolls would, of course, offer the best drainage. The greater flexibility in location for ditched enclosures may be related to drainage function for ditches on some sites.

5.3.1.6 Land Quality

The land of this area is all Class 2, 3, 4, 5, 6 or 7, i.e. ranging from land capable of producing a wide range of crops to that of very limited agricultural value (Illus. 5.12)[65]. A large portion of the Class 3 land of the Forth Valley is reclaimed and may not have been available for cultivation by later prehistoric people, although low levels of stock could have been set to graze on them. Since Land-Use Capability is partly based on climate and topography, it is heavily influenced by altitude. It is not surprising, therefore that settlement sites in this area are largely concentrated on Class 3 (42%) and 4 (26%) land, there being only very small patches of Class 2 land in this area (Fig. 5-29). A handful of substantial stone roundhouses, including the cluster on the edge of the Touch Hills, are situated on Class 4 land (42%), which is now only capable of producing a narrow range of crops. Nearly as many (38%) are situated on Class 3 land with the remainder on Class 5, 6 or 7. All of the simple stone roundhouses are situated on Class 5 (71%) or 6 (29%) land, which is now suitable only for grassland and rough grazing. Univallate enclosures are mostly situated on Class 3 (45.5%) or 4 (36.4%) land, with a handful on Class 6. Palisades are all on Class 2 (18%) or 3 (82%), reflecting the preference for lowland locations for these sites. Multivallate enclosures are mostly situated on Class 3 land (57.1%) with most of the remainder on Class 4 (28.6%).

[65] See Table 6-4 in Appendix Six.

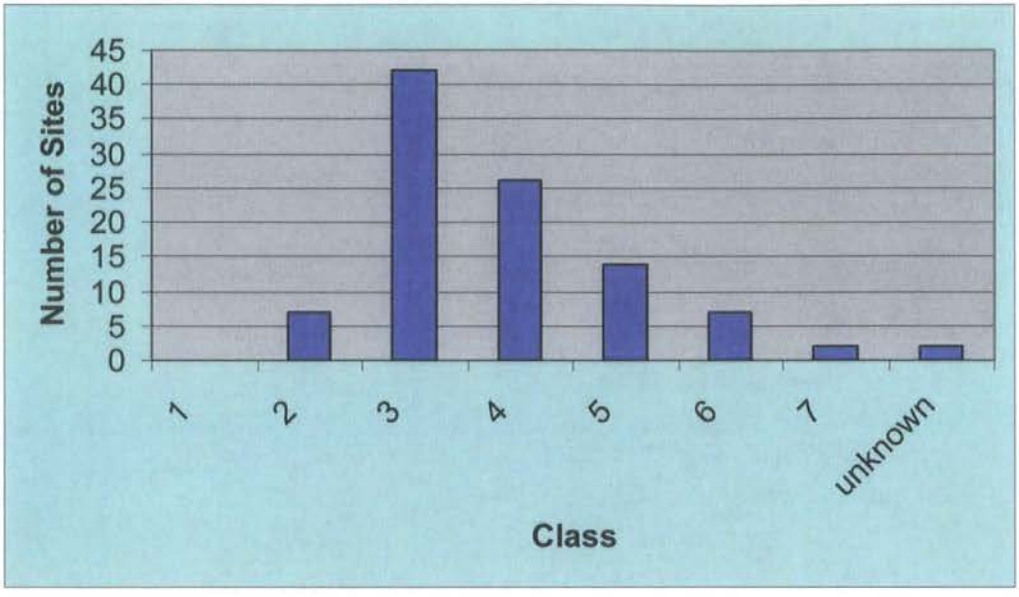

Fig. 5-29 Land Capability of Site Situations

5.3.1.7 Distance to Water

There are few, if any, places in this area where one could go which would take one more than one kilometre away from a source of fresh water, so it is perhaps unlikely that this would have had a major effect on the situation of settlement sites. It may not, however, be coincidence that the substantial stone roundhouses are all situated very close to minor rivers. Coldoch (45356/NS69NE6) is just 150m from an un-named burn, Leckie (45379/NS69SE12) is situated at the junction of Leckie Burn and another which is un-named. Buchlyvie, Fairy Knowe (44651/NS59SE3) is right next to an un-named burn and Keir Hill of Gargunnock (46294/NS79SW4) is next to Gargunnock Burn. The same can be said of the cluster in the Touch Hills, with none being more than 200m away from a river. The ten crannogs, by their very nature, would have had plentiful supplies of fresh water.

5.3.1.8 Altitude

As Fig. 5-30 shows, the vast majority of substantial stone roundhouses are situated at or below 150m OD, with a peak at 51m to 100m[66]. This contrasts with the simple stone roundhouses, which are mostly situated at altitudes of greater than 200m (Fig. 5-30). The single exception is the unique site of Bucinch (131244/NS39SE157), which is on an island in a loch. In the LBA, the preference was clearly for upland

settlement. One of the few SuSRHs situated above the 200m contour is also the largest and in retrospect, they may not have been roofed.

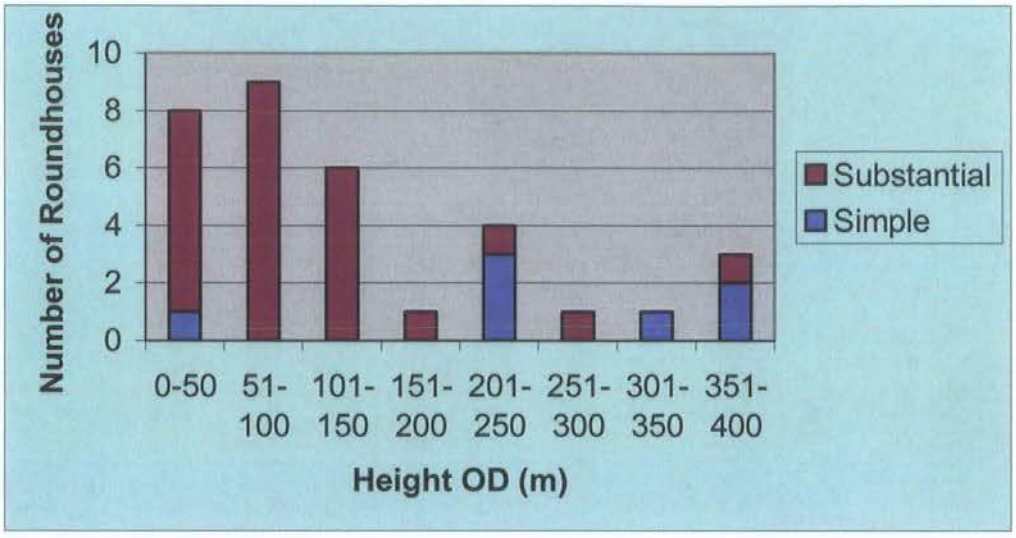

Fig. 5-30 Altitude of Stone Roundhouses

[66] See Table 6-4 in Appendix Six.

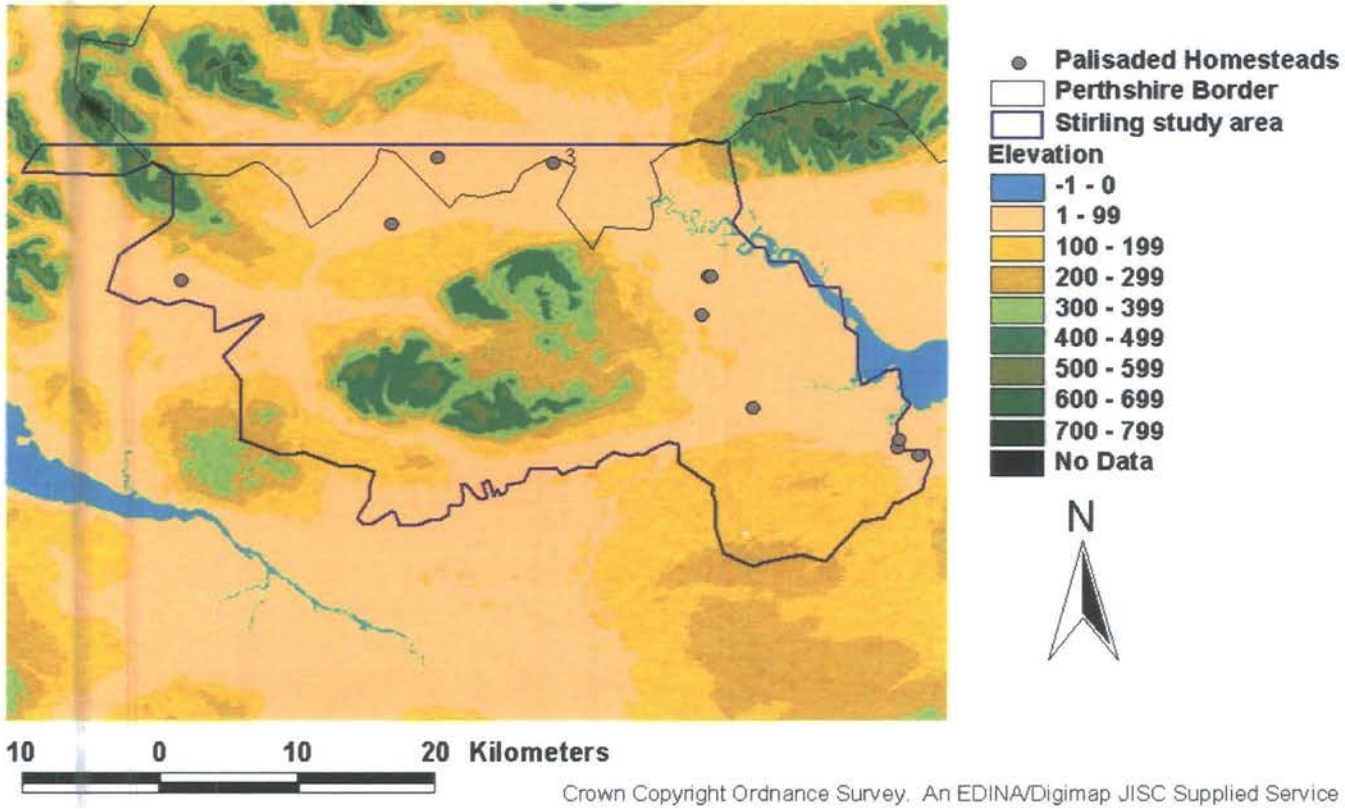

Fig. 5-31 Distribution of Palisades in Stirling Case Study

As can be observed from Fig. 5-32 below, the altitudes preferred for multivallate enclosures are similar to those for SuSRHs, with the majority situated at or below 150m OD. This suggests a preference for lowland locations. The altitudes of univallate enclosures (Fig. 5-33) are broadly similar to these, with *all* situated within the range 0-200m OD. Similarly, all palisaded homesteads are situated below 150m (Fig. 5-34), with a preference for locations below 50m evident, echoing the evidence for multivallate enclosures.

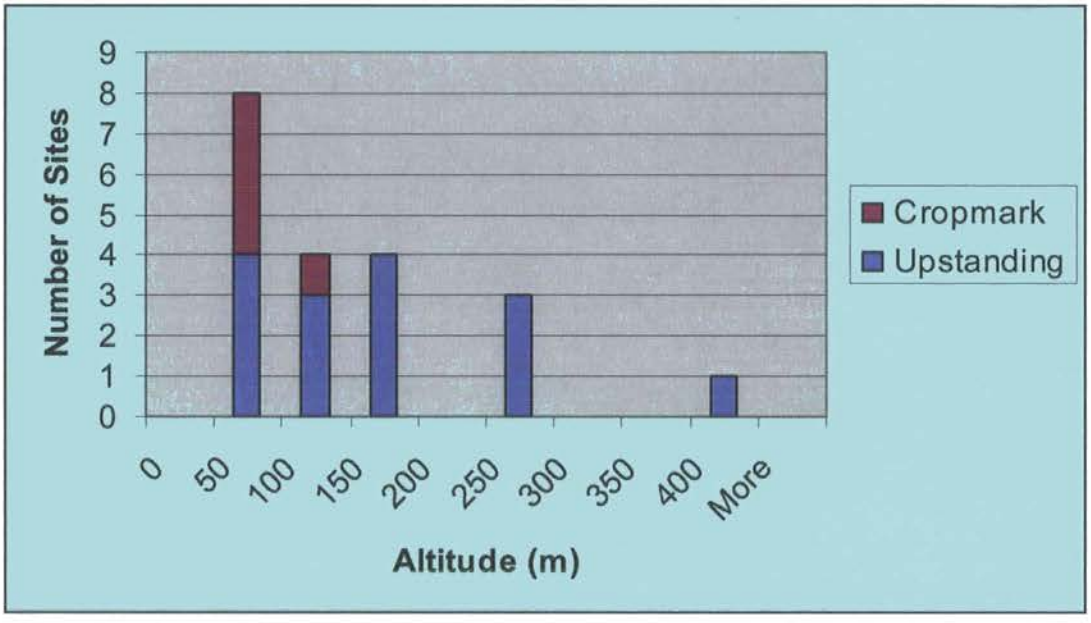

Fig. 5-32 Altitude of Multivallate Enclosures

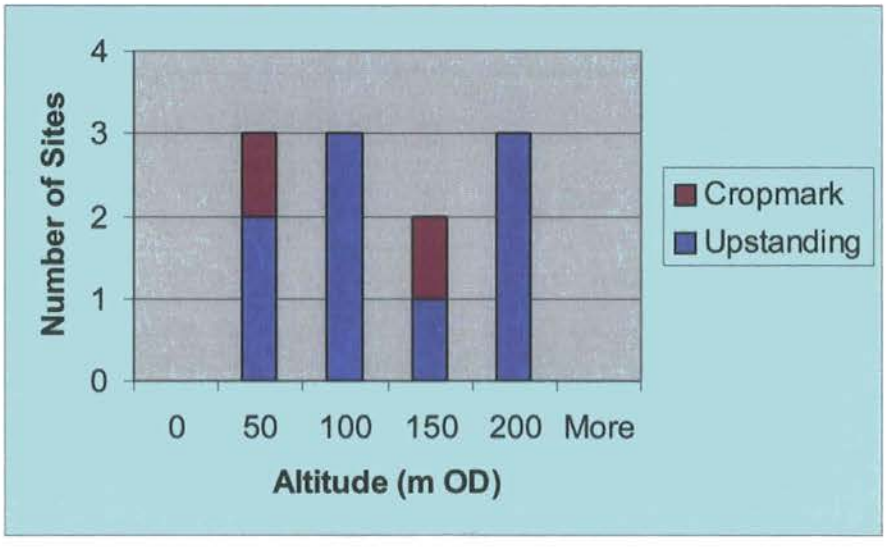

Fig. 5-33 Altitude of Univallate Enclosures

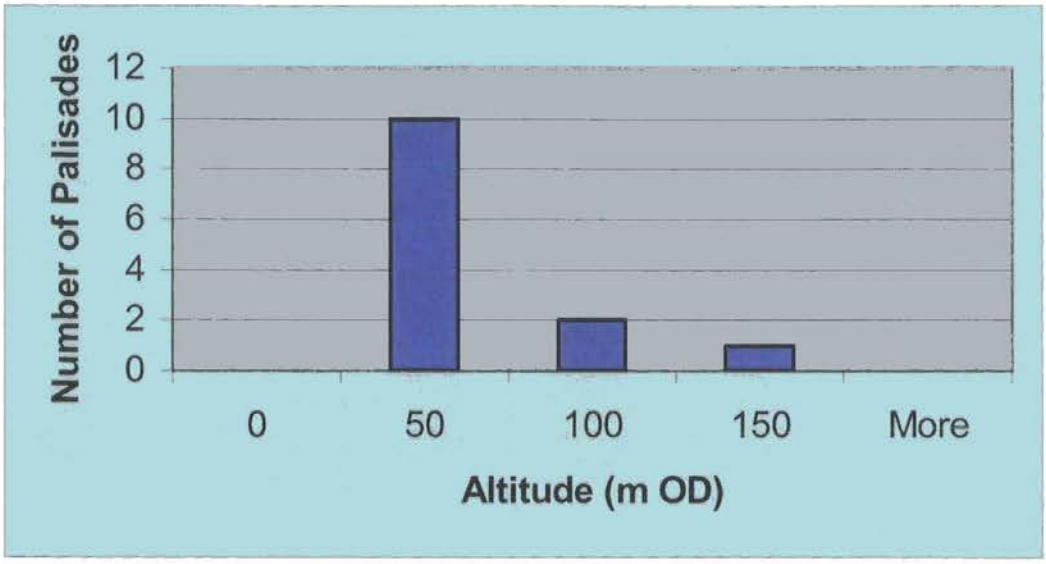

Fig. 5-34 Altitude of Palisades

Together, this evidence suggests a distinct bias towards lowland locations for settlement, with most sites (66%) being situated below 100m OD (Fig. 5-35). 81% of sites are situated at or below 150m OD. Generally speaking, the higher one goes, the sparser the settlement distribution becomes. This ties in well with the evidence presented above, suggesting that locations with access to the best arable land were preferred. The slight fluctuation in this trend, between 200m and 250m, reflects the concentration of SiSRHs at this altitude.

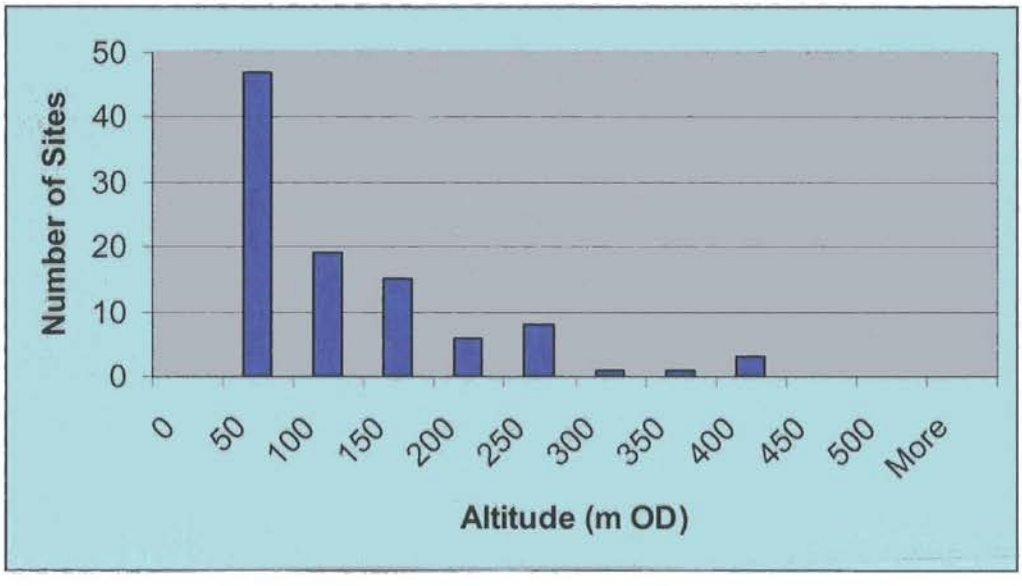

Fig. 5-35 Altitude of Later Prehistoric Sites

5.3.1.9 Survey Patterns

There is a very strong correlation between major modern roads, motorways and later prehistoric settlement (Fig. 5-36). It seems, however, that this is not a result of sites being discovered during road construction, as many of the sites were only discovered as crop-marks. All of the sites that are not near roads or on flight paths are upstanding sites that were discovered or recorded as a result of ground survey. Most of the sorties took place in the summer months, indicating that their primary purpose was survey of cropmark sites; given this, it is hardly surprising that they are concentrated on the land most suitable for arable cultivation.

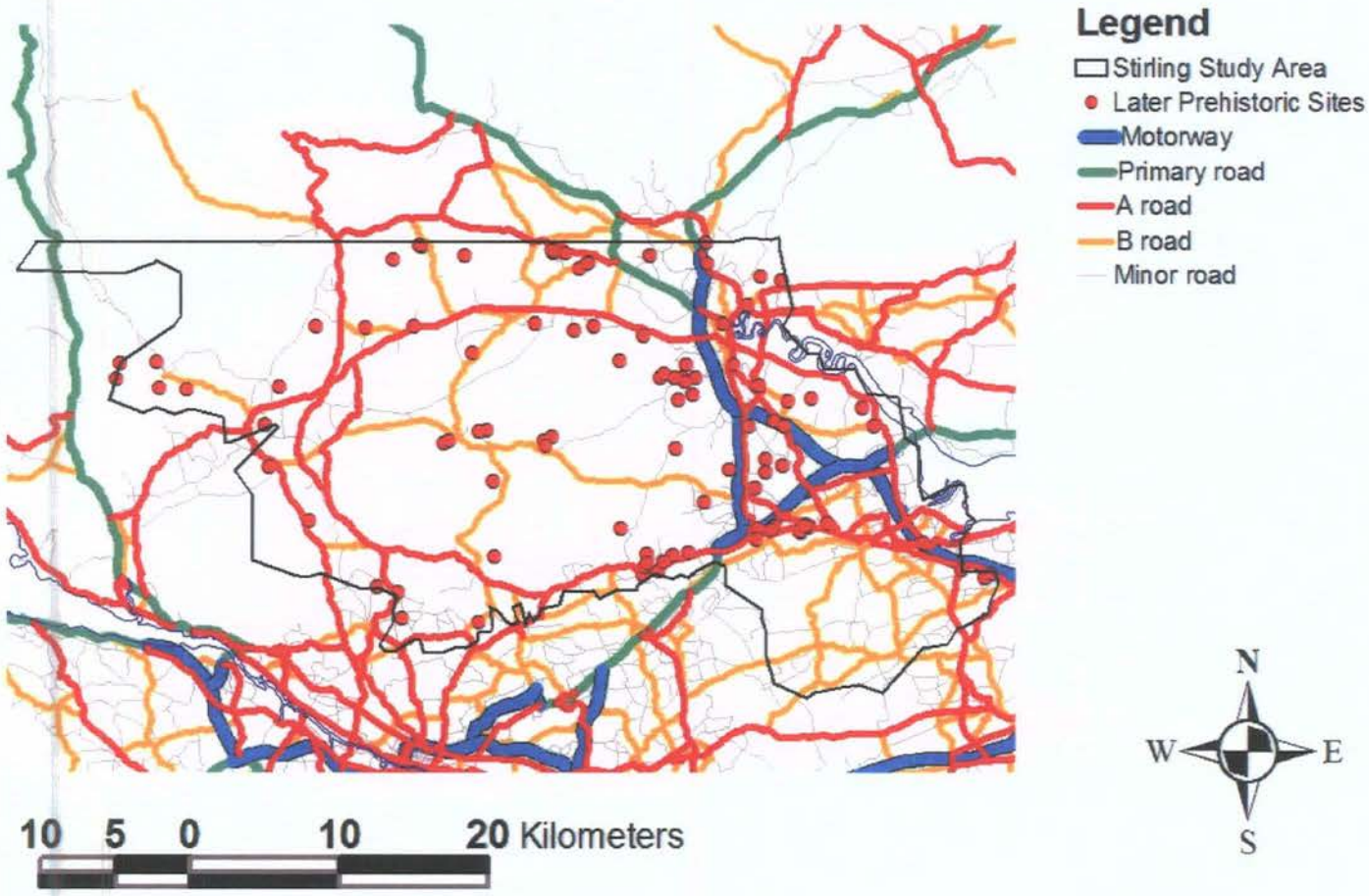

Fig. 5-36 The Stirlingshire case study area, showing the settlement distribution against modern roads.

5.4 Discussion

The structural analysis of the roundhouses indicates that, as a general rule, in the Iron Age, the simple roundhouses of this area are made of timber, whilst the substantial ones are made of stone. Pope (2003) has shown that 99% of excavated structures in Northern and Central Britain had diameters of less than 15m. However, Pope deliberately excluded from her study the developed architectural forms of Atlantic Scotland – the duns, brochs and wheelhouses, arguing that the substantial nature of their features would confuse analysis. Many of the roundhouses under consideration here exhibit similarities with these Atlantic roundhouses, and the findings here do not therefore contradict Pope's findings. The Substantial Stone Roundhouses in the study area all have diameters of 15m or more. This indicates that use of stone is one expression of monumentality. Comparison of internal areas for the timber and stone roundhouses indicates, however, that the internal areas of these buildings are remarkably similar. This may be partly due to the fact that the stone walls needed to be thicker in order to support a roof, given the lack of mortar. However, it is evident from this data that building a substantial stone roundhouse is *not* primarily about providing extra space for the family or social unit that used it. Few of these stone roundhouses could have supported an extra floor (although the larger timber ones may have done), despite the size of the structure. The evidence in Chapter Four suggests that the substantial stone roundhouses are a phenomenon of the later first millennium BC and the early first millennium AD. Timber roundhouses, on the other hand, were built throughout the period. There is little difference in the entrance orientations of these structures, suggesting that whatever social changes led to a trend toward monumental architecture are not manifest in this architectural trait. The one example pointing west has a very large diameter and in retrospect in unlikely to have been roofed.

The Stirlingshire Case Study Area is characterised by monumentality, from the Early Iron Age onwards if the presence of multivallate enclosures is taken to be indicative of such. While evidence for settlement in the LBA is sparse, it is possible that, whether by omission or misinterpretation, the LBA cropmark sites are simply not being recognised. The recent discovery of cropmark Neolithic roundhouses (Atkinson 2002b) and a Neolithic longhouse (Barclay *et al.* 2002) in this area (where there was

previously no known Neolithic settlement) should serve to highlight this. The stone roundhouses of the Iron Age, which on evidence presented in Chapter Four most likely date to the late first millennium BC and early first millennium AD are, in comparison to the (mostly timber) structures elsewhere, huge.

RCAHMS (1963) once described prehistoric Stirlingshire as "...virtually a no-man's land, sparsely inhabited by peripheral groups of peoples from the surrounding regions.". Henderson (1998a) reiterates this, although the number of known sites had grown in the interim. Despite this, it remains the case that the density of sites is low when compared to the other case study areas. This is despite the fact that the Forth Valley area in particular has been heavily flown, not just by the RCAHMS but also by researchers primarily interested in the Roman occupation and its effect on native populations (e.g. W .S. Hanson). The pattern cannot be fully explained by the presence of the Roman frontier and its supposed negative effects on the landscape; the pattern represents the remains of a millennium and a half of occupation, with the Roman occupation being just a 'brief interlude' (Hanson 2003). Even if one takes into account the areas that must have been unavailable for settlement at the time, such as the peat-bogs and the sea, there are still gaps in the settlement distribution. Some of this can be explained by the presence of modern forests (e.g. Carron Valley Forest), which means large tracts of land which might have been available for later prehistoric settlement are masked, at least to the aerial archaeologist. The gaps in the record in areas of more than 200m OD may well represent a real absence of evidence, however, as it is evident in the case studies from further north that upland settlement tends to cluster around and not reach much higher than 300m OD.

Much of the past interpretation of the southern brochs (and indeed of crannogs) has focussed on their supposed exceptionally high status (Macinnes 1984a, 237-242). For example, Leckie (45379/NS69SE12) is described as having belonged to members of a "...a high status group...a minor tribal aristocracy...the Iron Age laird...a person of high status" (MacKie 1987, 1 & 15-16). Buchlyvie, Fairy Knowe (44651/NS59SE3), too, has been described as "the abode of people of some status" (Hunter 1998b, 395), a view supported by the excavator. Indeed, Macinnes (1984a, 242) and Main (1998, 409) have both argued, using the evidence from Buchlyvie, Fairy Knowe and other sites, for the existence of a native élite occupying brochs, crannogs and duns.

However, there is little evidence of a settlement hierarchy in this area and there is little else to judge status by here. There are few if any of the Iron Age open settlement sites one encounters further north. The excavated evidence suggests that the substantial stone roundhouses of the area are broadly contemporary and Roman finds are not restricted to the complex ones or indeed to the stone roundhouses. It is true that the assemblages from Buchlyvie, Fairy Knowe and Leckie are exceptional, but in both cases, this can be explained in terms of depositional practice (Hunter 1998b, 394). Hunter (1998b) has hinted strongly that the Flavian artefacts from Buchlyvie, Fairy Knowe may actually come from a post-abandonment context rather than a destruction deposit (see 4.5.1.2.3). Neither are substantial stone roundhouses particularly uncommon when compared to other later prehistoric site types. Most of the stone roundhouses are unlikely to have supported an additional floor and their internal diameters and areas are very similar to those of timber roundhouses. There is little variation in size of ditched enclosure, whatever the number of circuits.

The analysis of the settlement evidence undertaken here does not indicate a hugely stratified society, with a great gulf between the rich and the poor. Rather, it suggests one of a prosperous area in which the people were reaping the rewards of being situated on prime agricultural land with easy access to major watercourses. Stirling has been described as the buckle of the central belt and is in a unique position is being caught between east and west, north and south and Highland and Lowland. It is possible that the inhabitants profited from controlling access between any of these, but most likely in controlling passage across the Forth Valley, whether this was across the mosses or the sea. There is little evidence of strife upon the arrival of the Romans, although detecting this archaeologically will always be problematic. While MacKie (1982, 66; 2004) has argued for the violent destruction of Leckie (45379/NS69SE12) at the hands of the Roman army - despite asserting that the broch was constructed by a warrior-farmer aristocracy with the agreement of the Roman army, in the 80s AD - there is minimal archaeological evidence to support this culture-historical interpretation of the final deposit (see 4.5.1.2.1 and Macinnes (1984a, 237))[67]. Perhaps the wide range of Roman goods evidently obtained by the inhabitants of

[67] Macinnes (1984a, 238) and Armit (2003, 121) also argued against MacKie's theory, citing the lack of Roman artillary weapons, such as ballista bolts. MacKie (2004) has since countered this, noting the post-excavation discovery of a ballista bolt.

Leckie and Buchlyvie, Fairy Knowe (44651/NS59SE3) represented payment for controlling traffic from outside the Empire during the Antonine period. If this were the case, one might expect similar assemblages from the other SuSRHs that line the sides of the Forth Valley.

However, the dominant domestic site type in the Iron Age of this area is the Multivallate Enclosure, not the lowland broch. Few of these have been excavated but the evidence from Camelon, adjacent to the Roman fort of the same name indicates that, although their core usage was in the first millennium BC, some at least may have still been occupied when the Romans arrived. It might be suggested that the society was characterised by relatively small communal units. The largest enclosures are also the ones at particularly strategic points in the landscape and it is tempting to see them as focal points, special places where people met on particular occasions, whether for trade, political negotiation, seasonal festivals or any combination of these. It is of course, possible that these large enclosures also served a defensive function and may have provided refuge during times of unrest. The suite of evidence - the roundhouses, the crannogs, the palisades, the enclosures- suggests a later prehistoric period characterised by variety but dominated by the assertion of the individuality of the communities and households that made up its whole. The settlement distribution may seem sparse but this may partly also be due to the permanence of such domestic sites, with the communities who lived there asserting their claim to the land by remaining on the same sites for generations and even centuries. Whilst bearing the preservational and survey biases in mind, and the practical concerns of later prehistoric peoples, there still seems room to interpret certain aspects of the settlement pattern in social terms.

Chapter 6 The South-East Perthshire Case Study

6.1 Introduction

The south-east Perthshire Case Study (Fig. 6-1) consists of OS map squares NO12 and NO22, an area measuring 20km east-west by 10km north-south and incorporating both high quality arable land and urban development. There is only one known site within the boundaries of Perth itself. Any others that did exist are likely to have been destroyed by building activity since, with Perth a major centre from the Mediaeval period onward. Having said that, Perth is very vulnerable to flooding, owing to the huge catchment of the Tay (which discharges up to 7 million tonnes an hour during a thaw) and the low-lying nature of the land (Bowler 2000). Indeed, the geomorphology indicates that, pre-reclamation, Perth was almost entirely surrounded by water, with the Inches completely submerged. During "disastrous, exceptional" flooding (when waters rose up to 7m OD) it would have been an island (ibid.).

If high sea levels persisted in this study area as late as they perhaps did in the Forth Valley (see Chapters Three and Five), then this would have had a big effect on the amount of land available for settlement and cultivation around Perth. This is, however, a small number of apparently later prehistoric sites that lie below 15m OD. Even if sea level was significantly higher than today, this need not preclude settlement in the later prehistoric period. The area on which the Mediaeval town was built would have been unavailable for settlement during the Blairdrummond phase, but may have used before or after. Bowler (2000, 62) argues that during 'early times' the centre of Perth would have been an island with waterlogged margins, but that this would have made it 'comparatively secure and defensible', comparing it to the impregnable castle rocks of Edinburgh, Stirling and Dumbarton[68]. Having said that, there is no record of Perth being a major centre before the establishment of the burgh in the twelfth century. Before that, the major royal and ecclesiastical centre in

[68] There is no actual evidence that Castle Rock, Stirling (first historical mention cAD 654) or Castle Rock, Dumbarton (first historical mention AD 731 but archaeological evidence points to activity from fifth century AD at the latest) (Alcock 1976b) were used in the later prehistoric period, but Castle Rock, Edinburgh certainly was (Driscoll and Yeoman 1997)

this area was apparently at Scone[69] (now just a village), two km up-river, but navigable from the sea. As will be discussed below, Scone is perhaps more likely to have been a focal point for settlement (and burial) in later prehistory; fifteen of the sites in this case study are in the parish of Scone. The saddle quern found "near the Roman Road" at Sheriffton (28148/NO12NW25) suggests domestic activity there in the first millennium BC or earlier and may have been ploughed up from the apparent later prehistoric settlement there. Although Driscoll has argued that the square barrows are the remains of a Pictish royal cemetery, it is possible that some are Iron Age. As at Forteviot, there is a juxtaposition with early prehistoric monuments and it is tempting to see evidence of ritual and religious activity centred on Scone from the Neolithic period onwards. As Armit and Ralston (2003, 230) have pointed out in the case of Forteviot, the cropmark Neolithic enclosures would have been upstanding monuments at this time and the site may have been chosen for this very reason. The following provides structural, morphological and locational analysis of elements of the later prehistoric settlement in the area.

[69] RCAHMS have urged caution here, however. They argue that much of what has been said about Scone in the past is mere speculation; the documentary sources are very limited and Scone bears more comparison with Forteviot (see Alcock and Alcock 1992) than the citadels mentioned in Footnote 68. Scone was, however, where Kenneth mac Alpin established his court in AD 843.

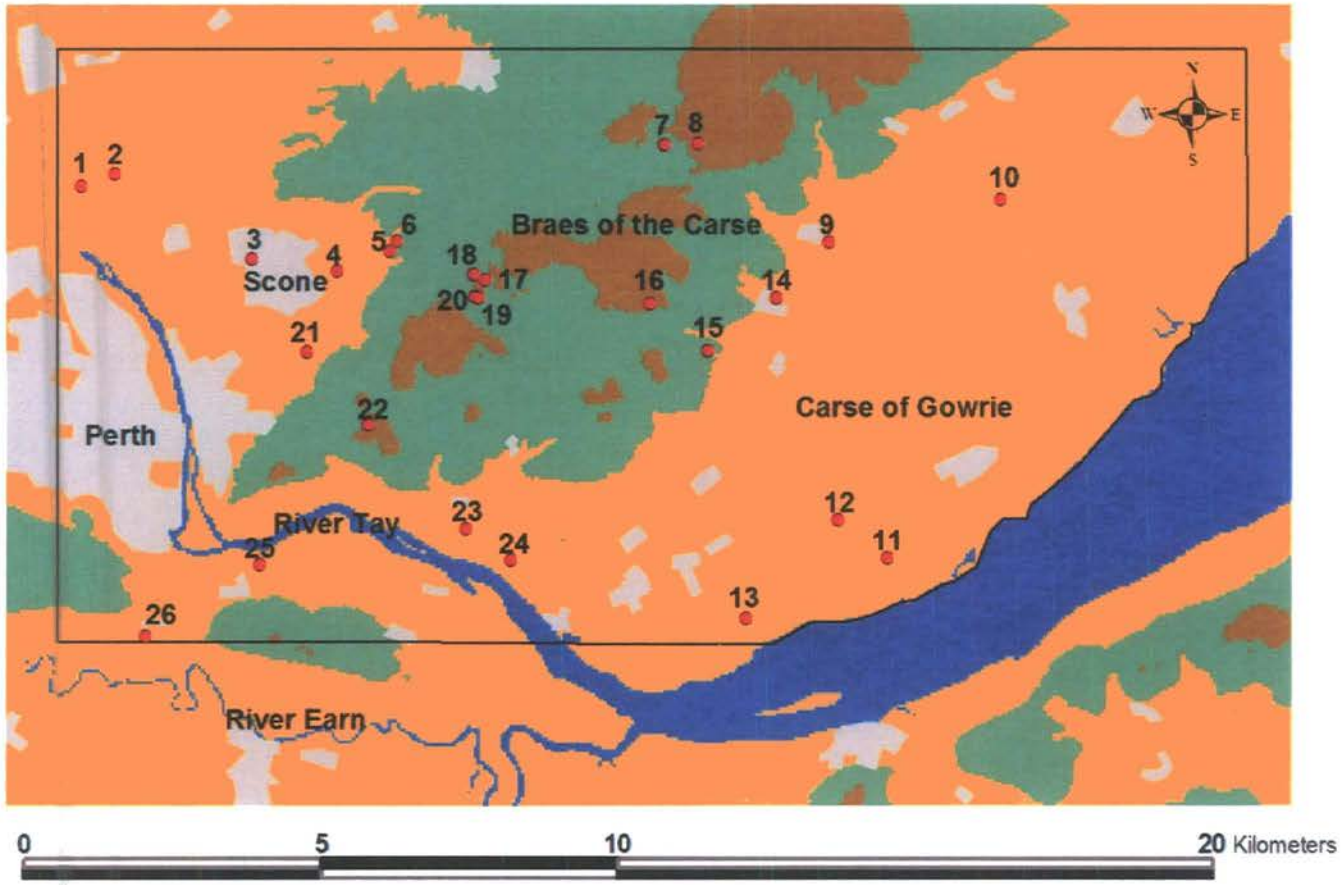

Fig. 6-1 The south-east Perthshire case study area, with urban areas marked in grey. Sites mentioned in the text are marked as follows: 1-2. Sheriffton; 3. Sandy Road, Scone; 4. Balgarvie; 5. Bonhard Park; 6. Wester Bonhard; 7.-8. Whitemyre; 9. Rait; 10. Middlebank; 11. Mains of Errol; 12. Mains of Murie; 13. Paddockmuir Wood; 14. Kilspindie; 15. Over Durdie; 16. Evelick; 17. Law Hill; 18-20 Law Hill, Arnbathie; 21 Muirhall Farm; 22. Deuchny Wood; 23. Kinfauns, Keiters Loch; 24 Tofthill; 25. Easter Tarsappie; 26. Hilton House

6.2 Structural Analysis

6.2.1 Stone Roundhouses

There are eleven known stone roundhouses in the case study area[70], nine of which are on Law Hill, Arnbathie (28110/NO12NE14; 28116/NO12NE2; 68085/NO12NE38). The remaining two are at Whitemyre (30440/NO22NW28; 72088/NO22NW50), four km to the north-east. All of these have been surveyed or resurveyed in the past fifteen years, so basic data are available for all of them. One has been partially excavated, revealing a roughly paved surface and a possible hearth (28116/NO12NE2: Law Hill, Arnbathie, Fig. 1-10). A later cremation in a stone setting at the entrance may represent one of the few known later prehistoric burials in the area.

6.2.1.1 External Diameter

Fig. 6-2 shows the external diameters of the stone roundhouses. The seven Simple Stone Roundhouses range from 8.2m to 13.6m, with a mean value of 12.2m. Substantial Stone Roundhouses, of which there are four, range from 15.5m to 20.3m, with a mean of 17.8m. Here, the use of the generic term 'hut-circle' has served to mask the wide variation in size, which means that some sites are on the small side even for simple stone roundhouses whilst others bear comparison in size with the brochs and duns found elsewhere. None, however, exhibit signs of complexity.

[70] See Table 6-12 in Appendix Six.

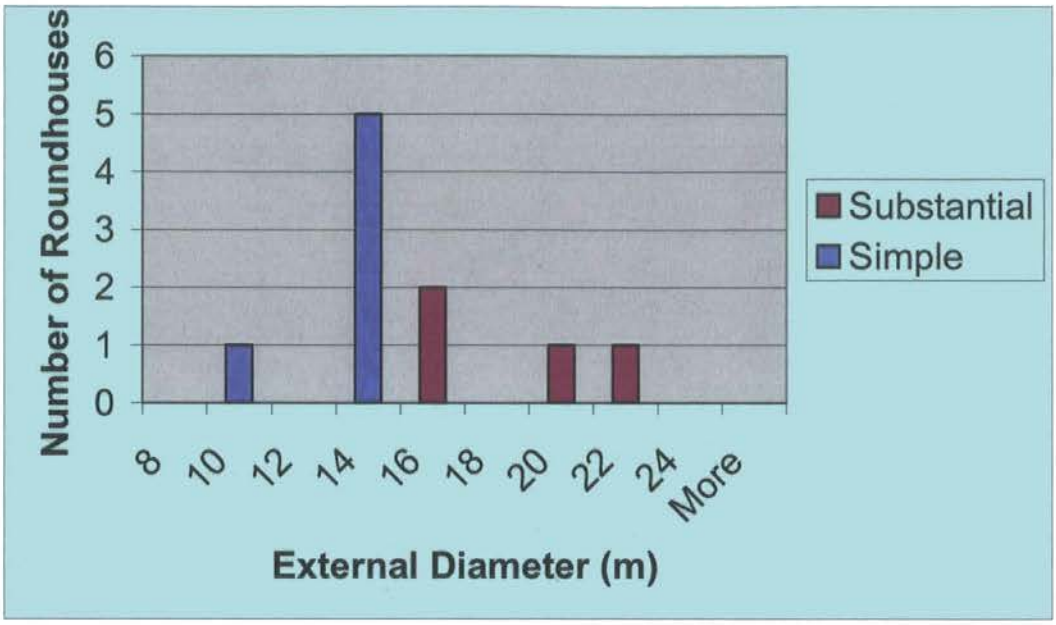

Fig. 6-2 External Diameters of Stone Roundhouses

6.2.1.2 Internal Area

Internal area of Simple Stone Roundhouses ranged from 28.3m^2 to 83.3m^2, with a mean of 60.9m^2. That of Substantial Stone Roundhouses ranged from 103.9m^2 to 159.5m^2 with a mean of 124m^2. In all, the internal areas of the stone roundhouses of this region, shown in Fig. 6-3, fall at the lower end of the scale in terms of internal area, especially when compared to the substantial stone roundhouses of the Stirlingshire Case Study (Chapter 5).

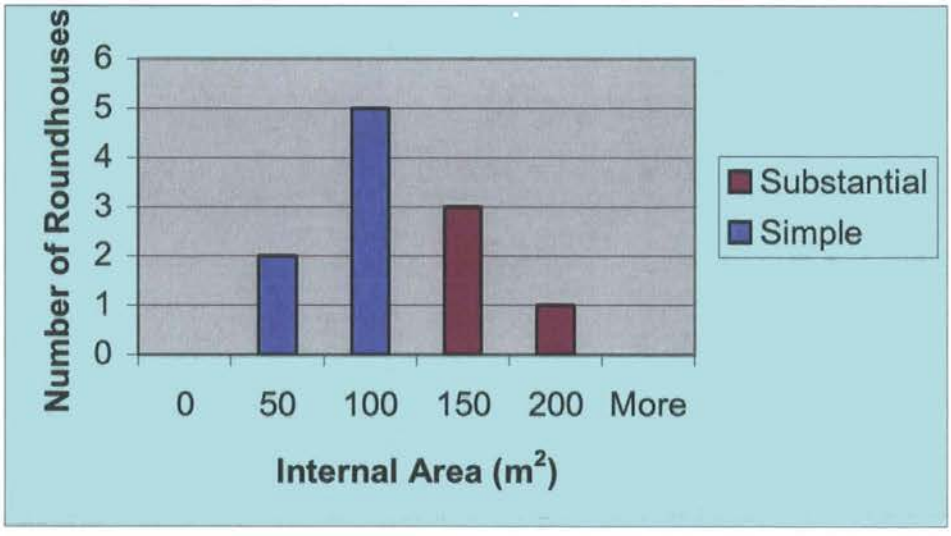

Fig. 6-3 Internal Areas of Stone Roundhouses

6.2.1.3 Percentage Wall Base

Percentage wall base was calculated for substantial stone roundhouses, where possible. Lack of data on internal diameter meant that this could only be done for four structures (one at Whitemyre – 30440/NO22NW28 - and three at Law Hill, Arnbathie, namely 'Hutcircles' 1, 4 and 5 – 28110/NO12NE14).

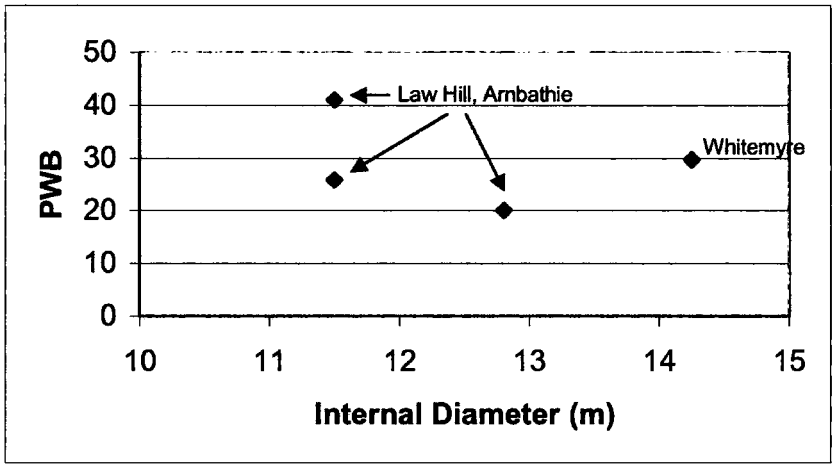

Fig. 6-4 Percentage Wall Base of Substantial Stone Roundhouses

PWB figures are comparable to those for *complex* substantial stone roundhouses, including Little Dunsinane (72098/NO23SW35) further north, which RCAHMS classified as a (solid-walled) broch. Indeed 'Hut-circle 4' at Law Hill, Arnbathie (28110/NO12NE14) has a higher PWB value than Leckie 'broch' in Stirlingshire (45379/NS69SE12). At 41% it is roughly the same as Kettlehill broch (44508/NS57SE9) or Castlehill dun in Stirlingshire (46233/NS79SE49). What can be drawn from this is the fact that there is variation here that is ill-served by the term 'hut-circle', especially given the apparent monumentality of some of the structures. In scale, they also bear comparison with the 'circular homesteads' and 'duns' of Stirlingshire and Perthshire. The chronological significance of this is unclear, however, since no dating evidence is available for the Law Hill, Arnbathie group (28110/NO12NE14; 28116/NO12NE2; 68085/NO12NE38).

6.2.1.4 Entrance Orientation

Entrance Orientation information was discernible for only two SiSRHs (one north-west and one east) and two SuSRHs (one south-east and one north-west). Little more can be said about such a small sample other than to draw attention to the fact that the SiSRH orientations do *not* match the functional optimum for year-round occupation at these altitudes, as provided by Pope (2003, 177). This might indicate a wider chronological range than expected for these buildings but drawing such a conclusion would be treading into the realms of speculation. Indeed, north-west is not a practical orientation at any time of year (ibid.).

6.2.2 Timber Roundhouses

Aside from a single extant ring-ditch house at Pole Hill (72052/NO12NE41), all of the timber roundhouses in this area are known solely as cropmarks visible on aerial photographs. None have been excavated. Identifying cropmark ring-ditches that might indicate the remains of timber roundhouses is a minefield, since they can easily be confused with round barrows and mini-henges. Forty-five were identified by RCAHMS (1994c) for the South-East Perth Inventory. There are 17 ring-ditches in the current study area that have been interpreted as representing the remains of prehistoric sites. The criterion was the presence of an entrance break (although this may not be an infallible definition); the juxtaposition of some of these sites with souterrains, for example at Mains of Errol (30492/NO22SW16), perhaps strengthens the case. However, a note of caution should be taken from the case of The Welton (28907/NO14SE39; 28903/NO14SE35; 28896/NO14SE29), further north, where a multivallate enclosure, souterrains and roundhouses are juxtaposed with round and square barrows. Proximity to souterrains does not prove the definition as roundhouse. Indeed, as will be discussed further below, some of the round barrows may be 'Pictish' or even Iron Age.

6.2.3 Crannogs

There are only two known crannogs in this area, again reflecting the low numbers of lochs. One was supposedly in a lochan on Law Hill (28106/NO12NE10: Watson

1929b), the other at Kinfauns, Keiter's Loch (28205/NO12SE19); neither are extant. RCAHMS considers the former to be a misidentified natural feature. The antiquarian account of the latter is muddled and includes a tantalising reference to "several old antiquities" found on the site when the loch was drained around 1840 (Ordnance Survey 1860, 31). The existence of crannogs in this case study area is therefore debatable, although given their prevalence wherever there are lochs in the Perthshire area, it does not seem unreasonable to argue that they did make up part of the settlement pattern in the first millennium BC.

6.2.4 Enclosures[71]

No ditched enclosure in this area has more than five ditch lines (see Fig. 6-5). Most of the cropmark enclosures are univallate. In general, the larger the enclosed area, the more elaborate the vallation. Law Hill, Arnbathie (28116/NO12NE2), Hilton House (28352/NO12SW189) and Evelick (28108/NO12NE12) all have five lines of defence, whilst Over Durdie (30511/NO22SW33) has four, Rait (30457/NO22NW6) three and Deuchny Wood (28217/NO12SE3: 0.25ha) only one. In the case of Law Hill, Arnbathie, there are at least two phases evident in the ramparts. The initial enclosure may have been bivallate, but it is also possible that it started off as a univallate fort, like Deuchny Wood, with a second circuit being added at a later date. Evelick may have started off with three ramparts, as an early entrance has been blocked by the two outer lines of defence.

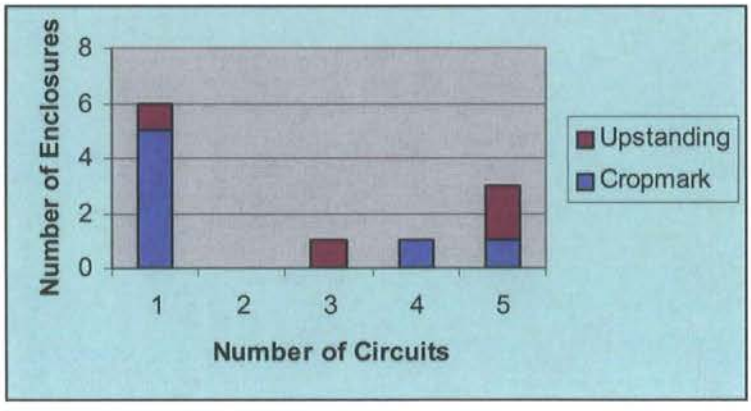

Fig. 6-5 Ditched Enclosure Circuits

[71] See Tables 6-11 and 6-10 in Appendix Six.

Law Hill, Arnbathie (28116/NO12NE2) has evidence inside of at least three circular buildings in the interior as well as the numerous stone roundhouses outside the enclosure. The stratigraphic relationship with the ramparts cannot be ascertained without excavation, however. Evelick (28108/NO12NE12) encloses the remains of at least five circular structures (including one ring-ditch house: see above) as well as a Pitcarmick-type building post-dating one of the ramparts.

Although Christison (1900b) describes the ramparts of Rait (30457/NO22NW6) as 'massive', they are less than half the height of the rampart at the coastal promontory fort of Maiden Castle, Angus. This may be due in part to erosion caused by cultivation, rig and furrow of uncertain age having been noted just outside the fort (Cachart 2001). However, similar size ramparts have been found at West Mains of Ethie in Angus and Inchtuthil (28598/NO13NW6) promontory fort and these provide better parallels.

In general the ditched enclosures of South-East Perth present a steady progression from small to very large (RCAHMS 1994c), and those in this case study reflect this. There are six univallate enclosures - of which only one is upstanding - plus five multivallate enclosures, three of which are upstanding. The cropmark record includes one circular and one rectangular enclosure, the rest being oval. In contrast, all the upstanding examples are oval. Three are well under a hectare in area. Another, highly unusual and decidedly complex enclosure at Inchture (30419/NO22NE9: RCAHMS 1994c, 69) could be Iron Age (there is a souterrain-like cropmark inside it) but may alternatively be related to the Pictish–looking buildings in the same field. The fort at Law Hill, Arnbathie encloses just under a hectare (0.96ha), making it one of the largest in Perthshire. The only upstanding promontory enclosure, Rait (30457/NO22NW6, a corruption of the Gaelic *Rath*, meaning fortification), encloses, in comparison, a tiny area (0.05ha), although this may be partly due to the sand and gravel quarrying noted by Christison (1900b, 58-59). Of the cropmark enclosures for which measurements are available, one (Tofthill: 28226/NO12SE37) is relatively small (2810m^2), whilst Over Durdie (30511/NO22SW33) is much larger, at 0.7ha. The only enclosure in South-East Perth to exceed the scale of Law Hill is Dunsinane Hill (30660/NO23SW1.1), just outside this case study area. This is the site associated with Macbeth, on the basis of

the similarity of the site's name to *Dunsion*, mentioned in the Pictish King Lists. It may indeed have been in use in the early historic period but given the multiple phases evident, it may well be partly contemporaneous with Law Hill, Arnbathie (28116/NO12NE2).

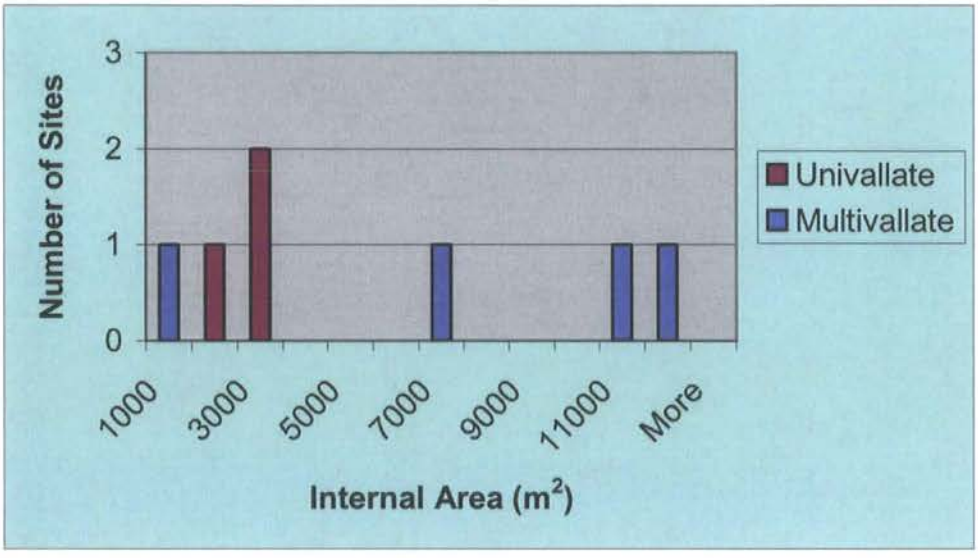

Fig. 6-6 Internal Areas of Ditched Enclosures

Univallate Enclosures are on the small end of the scale whilst most multivallate ones (with up to five lines of defence, bearing in mind that these may represent multiple phases) are much larger. RCAHMS (1994c, 74) has suggested that Law Hill, Arnbathie (28116/NO12NE2) was the regional centre for this area "for a long period of time", comparing it to Dunsinane Hill (30660/NO23SW1.1) and Barry Hill (31061/NO25SE23). However, morphological analysis highlights the fact that Over Durdie (30511/NO22SW33), a cropmark enclosure, is of a similar scale. Although aerial photography has not yet revealed the full extent of its defences, projection of those that are visible shows a particularly large enclosure with no visible internal features. It is situated on the edge of the Braes of the Carse, at 124m OD, overlooking the Carse of Gowrie, around four km ESE of Law Hill and one km south-east of Evelick (28108/NO12NE12), the next largest multivallate enclosure. It is tempting to suggest that, if not regional centres as such, these sites formed a focal point for the surrounding community and has an entirely separate use from the much smaller univallate enclosures which, evidence from sites such as Tofthill (28226/NO12SE37) mentioned, are far more likely to have been domestic in nature.

Evidence of later prehistoric activity at Scone is not restricted to the barrows that make the place so reminiscent of Forteviot. Aerial photographs reveal the presence of an open settlement, complete with souterrain (28174/NO12NW42). A "stray" find of a saddle quern (28148/NO12NW2), found on the land of the same farm may well have come from this site. Although saddle querns seem to have been superseded by rotary querns by the time souterrains came into use, it is possible (although unprovable prior to excavation) that this settlement was long-lived. Alternatively, the quern may have been brought from another site and reused.

There is only one site with evidence of vitrification in this case study, namely Deuchny Wood (28217/NO12SE3: not listed by Nisbet (1975) or MacKie (1976), vitrification not mentioned by RCAHMS (1994c)) although this amounts to just a few lumps of vitrified material. This is significant; many sites in Perthshire either have only small amounts of vitrification visible in the ramparts or (as at Deuchny Wood) surface finds of vitrified material. Localised vitrification, with a few notable exceptions (e.g. Tap o' Noth, Aberdeenshire), is the norm for vitrified sites throughout Scotland (MacKie 1976, 208-209; Nisbet 1975, 3) and apparently provides support for the contention that it was the act of firing the site, rather than the end result of vitrification, which was important to those who did it. Experiments have shown that to produce even a small amount of vitrification requires many days of person-power and huge quantities of fuel on top of any timber-lacing already on site (Ralston 1986b), so small amounts (as at Deuchny Wood) does not imply that no effort was involved. Vitrifed andesite and basalt recovered from Dun Knock, Perthshire (26688/NO01SW18: Fig. 6-7), must have been exposed to temperatures exceeding 1170°C (Donaldson 2002). MacKie (1976) has shown that the firing invariably happened at the end of a site's occupation and the vitrification can thus be seen as an act of closure, whether by the site's occupants or users or their adversaries.

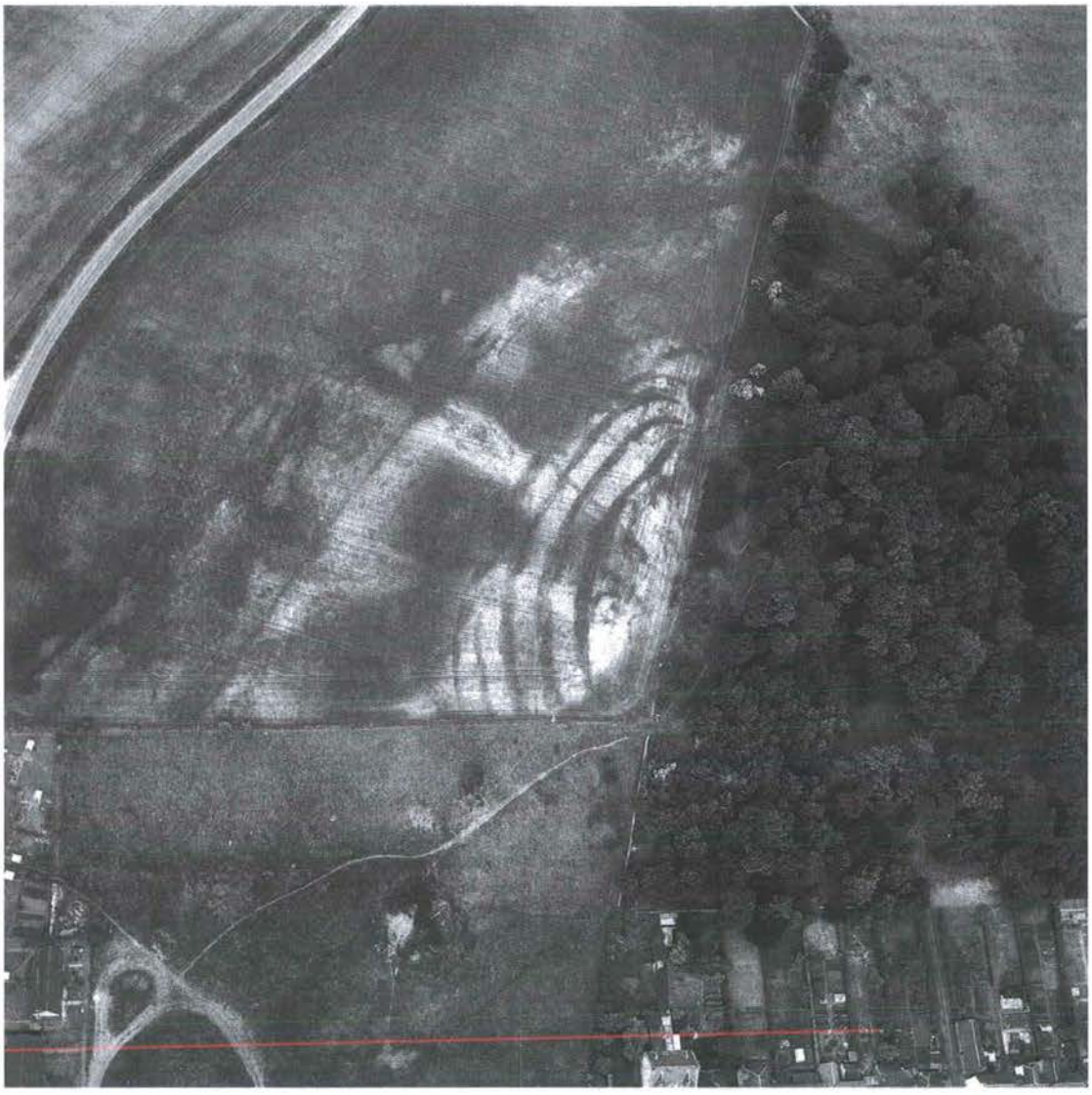

Fig. 6-7 Oblique aerial photograph of the cropmark multivallate enclosure of Dun Knock, which has produced evidence for vitrification (Donaldson *et al.* 2004). A pre-afforestation survey located only a single escarpment in the wooded part (Lowe and Dalland 1998); it is likely that the ramparts and ditches had also been ploughed flat in this area. Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Scotland.

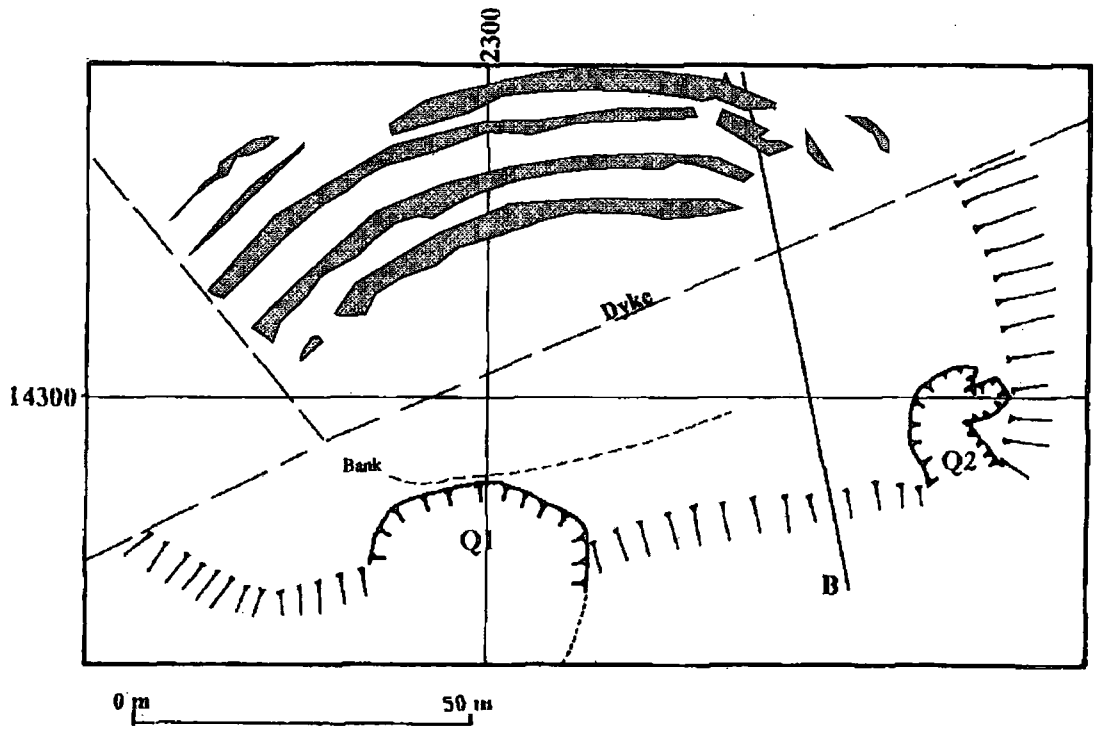

Fig. 6-8 Author's transcription of the cropmarks visible on the photograph above, superimposed onto the pre-afforestation survey of part of the site, after Lowe and Dalland (1998). The bank marked on the survey plan may represent the remains of the inner rampart. Q1 and Q2 are later quarries.

6.2.4.1 Palisades

There are only three known palisades within this area, all discovered as cropmarks. The ones that are visible (Mains of Murie: 30495/NO22SW19; Middlebank: 77184/NO22NE14; Sheriffton: 28174/NO12NW42.1) are in some cases so faint that it is likely that this is a serious underestimate of actual numbers. In addition, all are juxtaposed with what appear to be the remains of slightly later, unenclosed settlements. If such continuity is the norm, other palisades may be completely masked or indeed obliterated by the destructive aspect of new building on the site. The three that are known are of very similar size, around 20m in diameter and therefore enclosing an area of 1260m^2, comparable in internal area of the smallest of the ditched enclosures. The remains of roundhouses within (termed 'crescents' by RCAHMS) indicate structures of 12m in diameter (450m^2 internal area). This makes the timber buildings of typical size for the region; the houses at Newmill, Bankfoot (27007/NO03SE13.1), East Coldoch (46081/NS79NW34) and West Plean (46898/NS88NW5) had similar dimensions. The homestead enclosures are directly comparable with the smaller Stirlingshire ones above (e.g. West Plean and East

Coldoch), a point that will be returned to. The entrances of these sites are not clearly defined, the full features being masked. Middlebank, however, seems to have had an entrance in the South sector.

6.2.4.2 Univallate Enclosures

There are five cropmark univallate enclosures but only one upstanding one (listed in Table 6-1). Of those for which measurements are available, the internal areas range from 780m^2 to 2813m^2. With some rectilinear enclosures known in this area it was necessary to identify the later prehistoric ones on the basis of analogy with examples in East Lothian, such as East Bearford. This is risky, given the lack of excavation on rectilinear enclosure sites but no more unrealistic than excluding rectilinear sites altogether. Again, there is no consistency in entrance orientation, with west, north-east, south-west and east all represented.

Table 6-1 Univallate enclosures in the South-East Perth case study area

NUMLINK	MAPNO	SITE	SUB	NMRSNAME	Shape	Entrance Position
28172	NO12NW	40		Ardgilzean	Circular	Unknown
30443	NO22NW	30		Plaistow	Oval	Unknown
30494	NO22SW	18		Mains Of Murie	Rectangular	W
28226	NO12SE	37	1	Tofthill	Oval	NE
30390	NO22NE	10		Inchture	Square	SW
28217	NO12SE	3		Deuchny Wood	Oval	E

6.2.4.3 Multivallate Enclosures

There are only two cropmark multivallate enclosures and even these are situated at relatively high altitudes. There are three upstanding multivallate enclosures. Only two of these were included in Christison's (1900b) survey (Evelick: 28108/NO12NE12 and Rait: 30457/NO22NW6). Internal areas range from 525m^2 (Rait) to 11138m^2 (Over Durdie: 30511/NO22SW33). Again there is no consistency in entrance orientation. In the case of Rait, it has probably been dictated by the topography of the promontory. Law Hill, Arnbathie (28116/NO12NE2) and Evelick (28108/NO12NE12) are notable in that they have multiple entrances (Fig. 6-9). In contrast, the other multivallate enclosure in South-East Perth, Dunsinane Hill (30660/NO23SW1.1) restricts far more the directions from which one can approach the site.

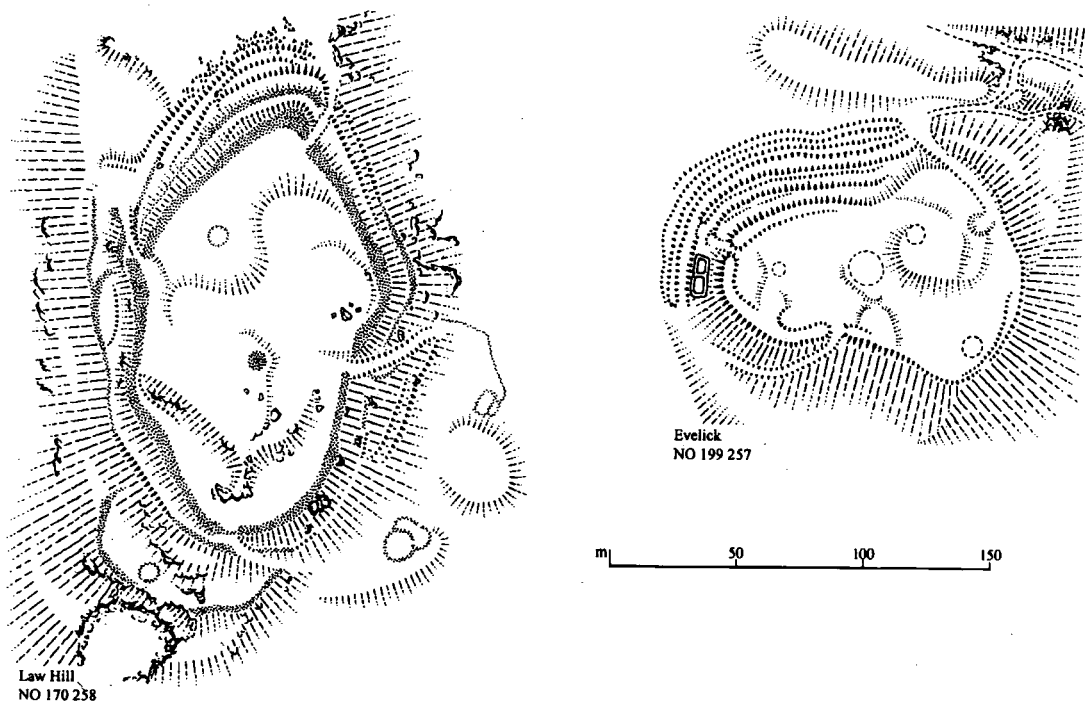

Fig. 6-9 Law Hill and Evelick Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Scotland.

6.2.5 Souterrains and Unenclosed Settlement

There is only one extant souterrain in this case study. It is rather unusual to find souterrains within enclosures (the only other one in South East Perth is Old Mains of Rattray (30789/NO24NW42.1: RCAHMS 1994c, 67-68) and the cropmark example supposedly found within the cropmark univallate enclosure at Tofthill (28226/NO12SE37, Fig. 6-10) should be treated with caution. Hingley (1992, 30) lists only two souterrains associated with enclosed sites (Castlelaw, Midlothian and Hurly Hawkin, Angus), and both of these were built into the enclosing ditch and therefore secondary to it. The putative souterrain at West Mains, Angus, need not be contemporary with the enclosing ditch (Alexander 2000b). The Tofthill 'souterrain' may, rather, be the foundations of a roundhouse, remarkably similar to the other within the enclosure. If they were houses, they would both be relatively large, having diameters of around 15m. The other possibility (other than the souterrain is associated directly with the enclosure) is that we are seeing the collected phases of a long occupation (not necessarily continuous) of the same site. There are twenty-five cropmark unenclosed settlements in this area but only six recorded souterrains. The

settlements take a variety of forms and it is quite possible that souterrains are in some cases masked by the circular maculae of the roundhouses.

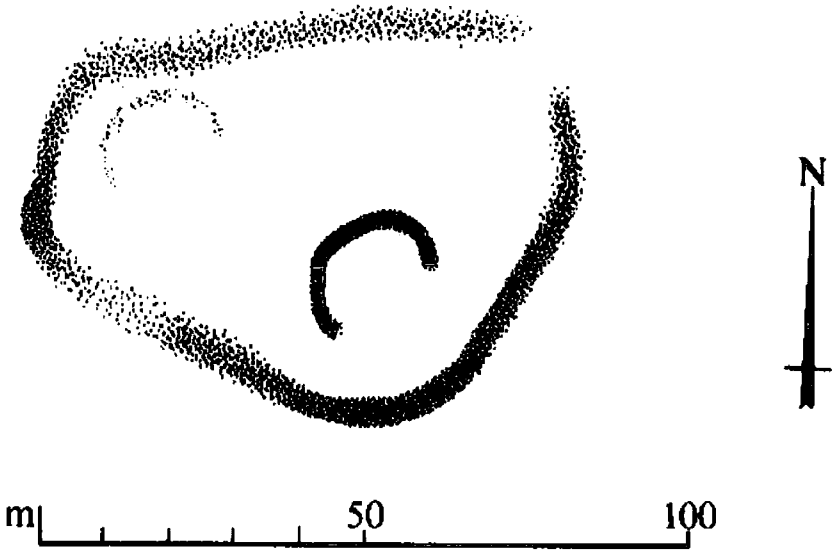

Fig. 6-10 Tofthill, a possible souterrain within a univallate enclosure Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Scotland

Some of the roundhouses at Bonhard Park (28128/NO12NE30) and Balgarvie (28184/NO12NW51) seem to be slightly angular, as RCAHMS (1994c) has pointed out. These may be compared with Easter Kinnear (Driscoll 1997), an unenclosed settlement of 'sub-rectangular' houses[72] in Fife which produced a series of early Mediaeval radiocarbon dates. These may even be cases where settlement started in the Iron Age and continued into the Pictish period. That said, few roundhouses have perfectly circular plans and more precise dating would have to await excavation. The open settlements also suggest variety in constructional technique with very narrow circular cropmarks indicating walls at Paddockmuir Wood (30489/NO22SW13), compared to circular maculae at most other sites, indicating perhaps sunken floors, at other sites, including Glencarse (30488/NO22SW12). These can be compared to the houses with sunken floors at East Coldoch, Stirlingshire (46081/NS79NW34: Woolliscroft and Hoffmann 2003b), Hawkhill, Angus (Strachan 1999b), Birnie, Moray (Hunter 2002) and Easter Kinnear, Fife

[72] It is revealing to note that if dated to the Iron Age, the buildings at Easter Kinnear would probably have been termed "round-houses". Although not actually circular, they are certainly no less round than numerous "circular structures" of later prehistory.

(Driscoll 1997). Some of the 'unenclosed settlements' in the case study seem to have been classified as such on the basis of the presence of souterrains, rather than the actual presence of cropmarks that could be interpreted as being the remains of circular buildings. Since some excavated souterrains have produced no evidence of associated roundhouses, this is a rather risky, if not unreasonable assumption.

Unenclosed sites are generally either nucleated (i.e. clustered) or scattered settlements, although there are some examples of isolated roundhouses, such as the one associated with Glencarse souterrain (30488/NO22SW12). In some cases the settlement is so dense, with house following house on a similar spot, that it is impossible to estimate the number of maculae or to obtain measurements of houses. This somewhat hampered an investigation of size but what the study did reveal was that of the sites that could be measured, most consisted of simple timber houses, with just a few falling into the substantial bracket. The settlements of large houses – at Kilspindie (30449/NO22SW36) and Wester Bonhard (28129/NO12NE31)- ought to be mentioned in particular as they represent the best evidence for substantial timber roundhouses in this area.

While most are round a significant minority are either slightly angular or share a site with rectangular cropmarks which may or may not be related. Untangling the chronology would be impossible without excavation but we may be witnessing the result of continuity into the Pictish period, or later re-occupation of what had been a prehistoric site, whether intentional or not. This is worth noting following Driscoll's (1998) consideration of Pictish 'cultural resource management'. Driscoll presented a convincing case that the Pictish royal centres at Forteviot (26615/NO01NW16) and Scone were deliberately sited at early prehistoric centres, arguing that this helped legitimize the reigns of early kings. While now ploughed flat and only visible from the air, in cropmarks, the Neolithic cursuses would still have been upstanding and visually impressive during Early Historic times. Crucially, Driscoll (ibid., 143) argued that this worked because a linear concept of time had been adopted through the introduction of literacy and Christianity. Driscoll (ibid., 153) extends the argument less convincingly to Aberdeenshire, stating that the symbol stone at Broomend of Crichie is evidence of early mediaeval interest in the monument. In fact, it is clear that the symbol stone was moved to the prehistoric site during the

nineteenth century, when its original site was quarried away (Ritchie 1920, 171). Driscoll's consideration of the relationship between the Early Historic period and prehistoric sites concentrated on Neolithic ritual monuments, but the correlation between domestic sites of the later prehistoric and Early Historic periods should not be overlooked. Without excavation, it is impossible to tell whether there were breaks in occupation, but it remains possible that ancestral claims to the land were reinforced by the reuse of earlier settlement sites.

6.2.6 Burials and Ritual/Religious Sites

The only square enclosures in this area are at Sheriffton (68811/NO12NW53, Fig. 6-10), aside from a possible example at Easter Tarsappie (70802/NO12SW234) a few km west of Perth, where there is also evidence for unenclosed settlement of Later Iron Age date. Other examples in south-east Perthshire occur at Rossie (30628/NO23SE21), Rossie Priory (30639/NO23SE31) and The Welton (28907/NO14SE39). In every one of these cases, the square enclosures are juxtaposed with round barrows (including the rather large upstanding example at Hallhole-28475/NO13NE10, which has an adjacent cropmark round barrow). Going on evidence from Red Castle in Angus these may well be roughly contemporaneous; in that case, a suggestion has been made that there was a gender division evident (Alexander 1999). All of the square enclosures so far excavated at Red Castle contained female burials and it is tempting to link this to the matrilineal (but not matriarchal) nature of Pictish society, evident from the King Lists (ibid.). The round-barrows at Inchtuthil (28599/NO13NW7.0; 79585/NO13NW7.2) were certainly post-Roman but there are no square enclosures at this site. At any rate the numbers of square enclosures visible at Sherrifton (68811/NO12NW53, Fig. 6-11) represent the graves of only perhaps eight individuals (assuming one per barrow, six square enclosures and two round barrows), and therefore cannot possibly be seen to be representative. Even if there are many more at Sheriffton which have not yet been spotted from the air, there is a gap in the burial record. Similarly, only a scattering of burials is evident at Rossie and The Welton. As can be seen in Fig. 6-11, square enclosures at Sheriffton are not all the same size; sides range from 3m to 7m, leading to internal areas ranging from $9m^2$ to $49m^2$. Some are clustered in frog-spawn fashion; the three smallest in a line and another built onto the side of one of the larger

ones. This is reminiscent of Garbeg, Inverness (Wedderburn and Grime 1984)[73] and the much larger square barrow cemeteries of Yorkshire, such as Wetwang Slack (Dent 1983), Rudston and Carnaby (Stead 1991). The variation in size could potentially be linked to status but there is insufficient excavated evidence to explore this idea. There is a possibility that the two round barrows at Sheriffton are actually the remains of round houses; neither unequivocally show central burials. Both have terminal defined entrances and the larger has a 'comma' in it that could be interpreted as a souterrain. However, a similar 'comma' can be seen juxtaposed with one of the larger square enclosures. The commas may be interpreted as something other than souterrains, although the square enclosures could have been built on top of the remains of an unenclosed settlement with multiple souterrains. The 'commas' are, however, somewhat slighter than one might expect for Southern Pictland souterrains (cf. Wainwright 1963).

[73] None of the square barrows so far identified in South-West Scotland appear to be arranged in frog-spawn fashion (Cowley 1996).

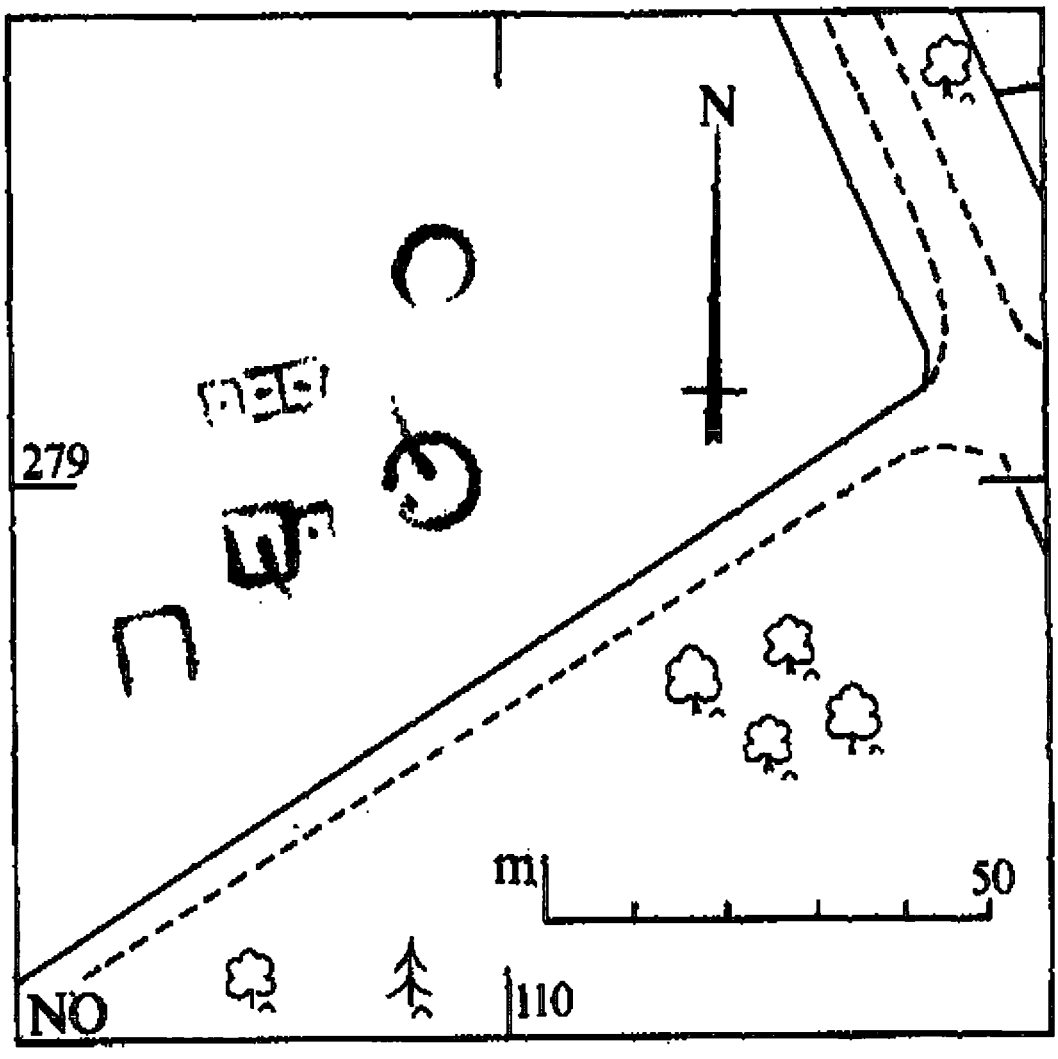

Fig. 6-11 Transcription of aerial photograph of Sherrifton (68811/NO12NW53) barrow cemetery. Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Scotland.

The only other known later prehistoric burials are the possible Late Bronze Age ones at Sandy Road, Scone (28157/NO12NW28) and Law Hill, Arnbathie (28116/NO12NE2; see below). It is perhaps worth mentioning at this juncture that a 'Celtic' Stone Head was recovered from a modern clearance cairn at Muirton, Perth (Ross 1965, NMRS No. NO12NW33), just across the River Tay from Scone (Fig. 6-12). This was dated to the second century AD by Anne Ross (1965), on the basis of excavated parallels from the Continent. She suggested that it may have been ploughed up from one of the pits nearby, which have shown on aerial photographs, but this is entirely speculative. Two parallels have been found in Couper Angus (Both in PMAG (Accession Nos 1992, 503; 2000, 376): only one is listed in the

NMRS (NO24SW77: King 1992) but both were found during gardening and their contexts are therefore insecure. A stylistic link might also be suggested to a sculptured stone from a rubble garden wall at Gowrie Cottage, Glenfoot, Abernethy (PMAG 1997, 432: NMRS No. NO11NE70, Proudfoot 1997, 58-59). This consists of a seven-faceted piece of sandstone carved with a least three human faces, with striations between them that might represent hair (Proudfoot 1997, 59). The three-head motif (*tricephalos*) can be paralleled in a sculpture from Sutherland (Ross 1958, 10-11 & pl. 3, NMS Accession Number X.IA 46), as well as sculptures elsewhere in Britain and Ireland.

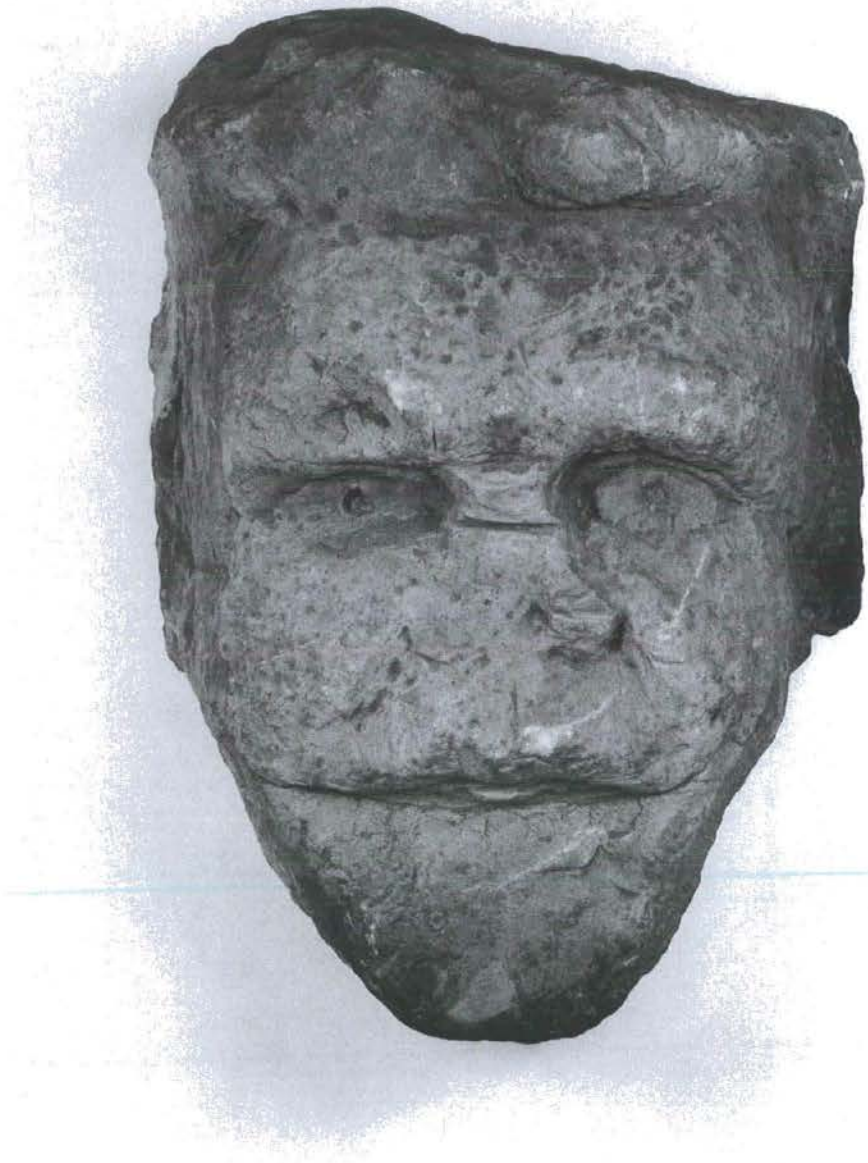

Fig. 6-12 The horned carved stone head from Muirton, Perth, not far from Scone. It was found in 1965 by boys playing on a field clearance cairn and was presumably ploughed up from that field. Ross (1965, 34-36) interpreted the sculpture as a representation of a ram-horned god, which Green (1997, 195-199) refers to as Cernunnos. The style of sculpture here is more sophisticated that that exhibited on the other stone heads from Perthshire. Courtesy of Perth Museum and Art Gallery, Perth and Kinross Council, Scotland.

The fact that three of the four sculptured stones were found in gardens suggests that they were acquired as decorative objects in the modern period. It cannot be assumed that they are of Iron Age date, particularly given the lack of contextual and chronological information. However, there are similarities; all appear to be male,

show eyes, nose and mouth and exhibit traces of moustaches. Only half have ears. The example from Beech Hill, Coupar Angus is the only one to show traces of a torc around the neck and only the Muirton head is horned. In some respects, the stone heads do bear a resemblance to the carved stone heads found elsewhere in Scotland, notably in Dumfriesshire (Dodds 1972), and also in Ireland (compare, for instance Raftery 1994, 185-186, pls 73-74). While Green (1997, 208-211 & 216-220) has argued that triplism and the human head possessed powerful symbolism for Celtic people, such putative pan-European traditions should be treated with caution (S. James 1999; Wells 2001). It is, however, hard not to come to the conclusion that the heads had some ritual or symbolic significance. All the Perthshire stone heads come from the south-east of that county, within 20km of Perth itself. In the case of the Abernethy sculptured stone, Proudfoot (1997, 60-61) has argued that it may have come from an Iron Age religious centre that existed before the Early Christian one was established. Indeed, it has been suggested (ibid.) that Abernethy was a Pictish royal centre before the move to Forteviot, 14km to the west. It may be no coincidence that all the sculptures discussed here were found close to sites that have been suggested as early historic royal centres (Abernethy; Scone; Coupar Angus). This could be used as evidence to support Driscoll's (1998) contention, discussed above, that in this area, power was legitimised by the deliberate siting of Early Historic centres on sites that were important in prehistory.

6.3 Locational Analysis

6.3.1 General Distribution

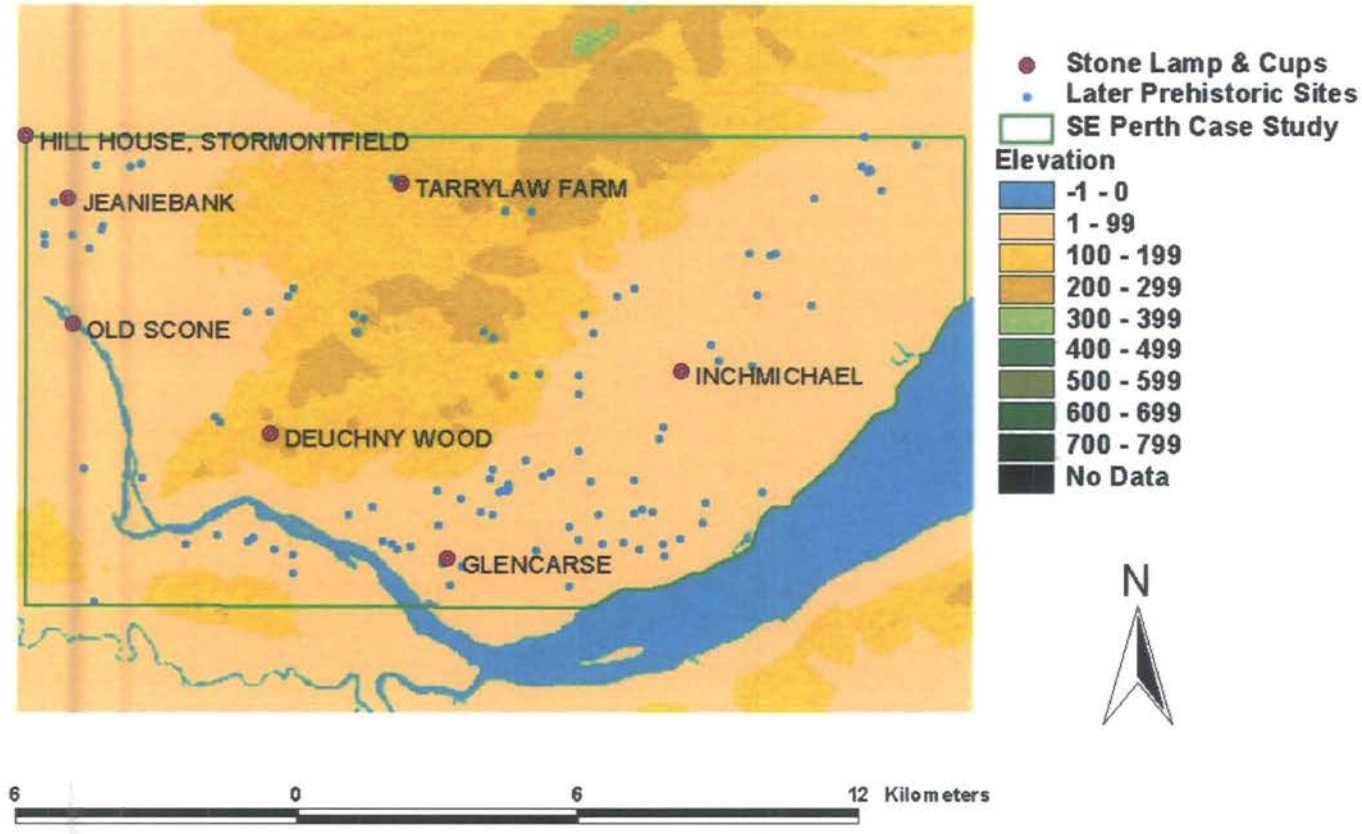

Fig. 6-13 Distribution of Later Prehistoric Sites In south-east Perthshire Case Study

The majority of sites in this area are concentrated in the south-west end of the Carse of Gowrie (especially at Glencarse) with a much less dense scattering up the Carse and across the Braes of the Carse into the Sidlaw Hills (Fig. 6-13). There is also a small concentration of sites just north-west of Old Scone. There appears to be a gap in distribution in the area between the Braes of the Carse and the Sheriffton sites, as well as the very low density in the city of Perth. The former seems to have been largely caused by the masking effect of the village of New Scone and Muirward Wood, a forest covering an area of c3km^2. The paucity of sites from Perth is likely to be mostly a result of the destructive nature of urban development over the past few hundred years, although some of the area may have been under water (see 3.2 and discussion of log boat evidence in 6.3.3 below).

There are only three known palisades in this case study. In this respect, it is not representative of south-east Perthshire as a whole. However, palisades in this area do seem to be concentrated north of the River Isla, between it and the foothills of the Grampians. It is tempting then to see the Isla as marking a cultural boundary but given the positions of the few palisades South of the Isla, this is probably more to do with the autocorrelation between freely draining soils and cropmarks in general (see RCAHMS 1994c, 7-9). In addition, some palisades may be masked in the cropmark record by multiple phases of later unenclosed settlement (Fig. 6-14); this is an important point, as there are several cropmark sites that may have been occupied and reoccupied throughout the second half of the first millennium BC and the first few centuries of the first millennium AD. Given the results of the 1994 RCAHMS survey, which greatly increased the known numbers of palisades (RCAHMS 1994c, 50-51), it seems likely that many more similar sites will be found in future. If the distribution of palisades were found to be significantly denser than previously suspected, it would alter somewhat the perception that open settlement dominates north of the Forth in the latter half of the first millennium BC.

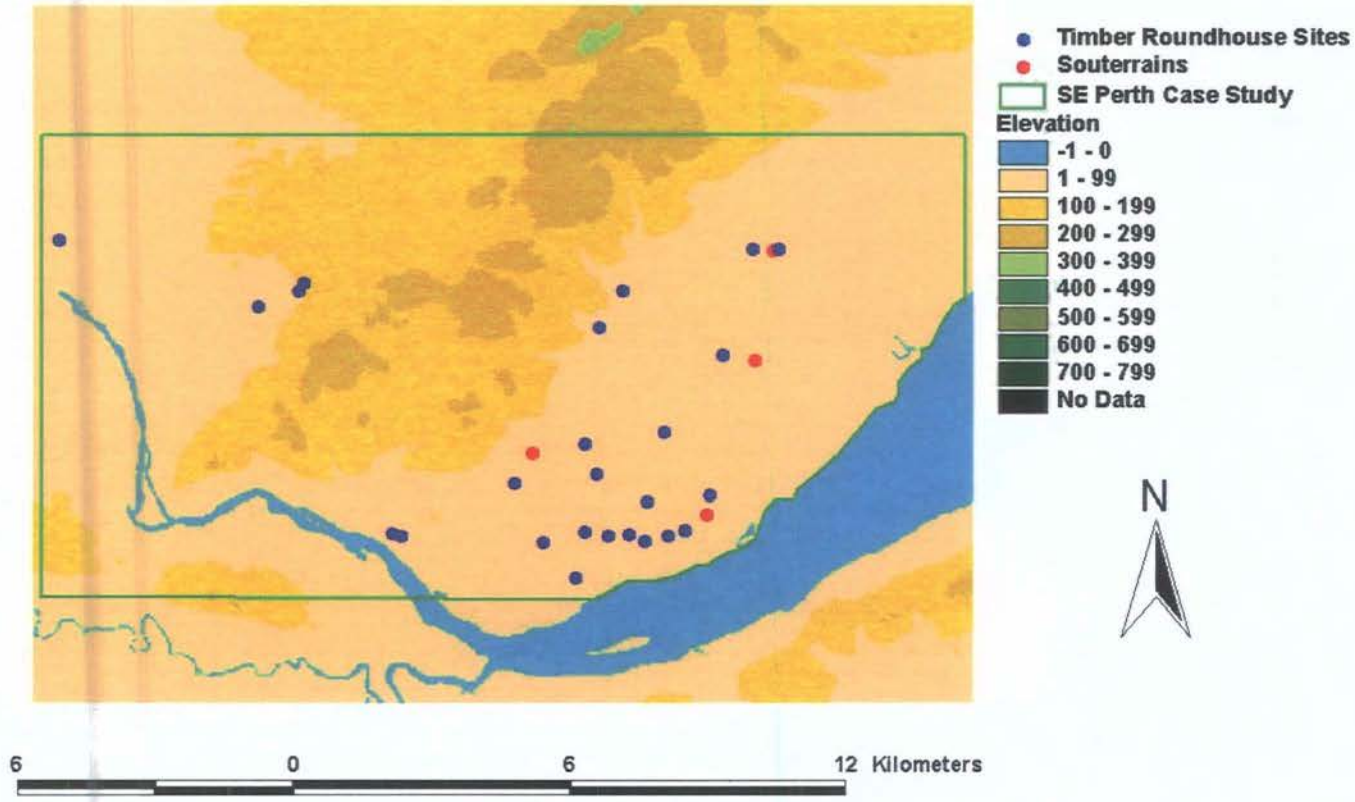

Fig. 6-14 Distribution of lowland unenclosed settlement in south-east Perthshire Case Study

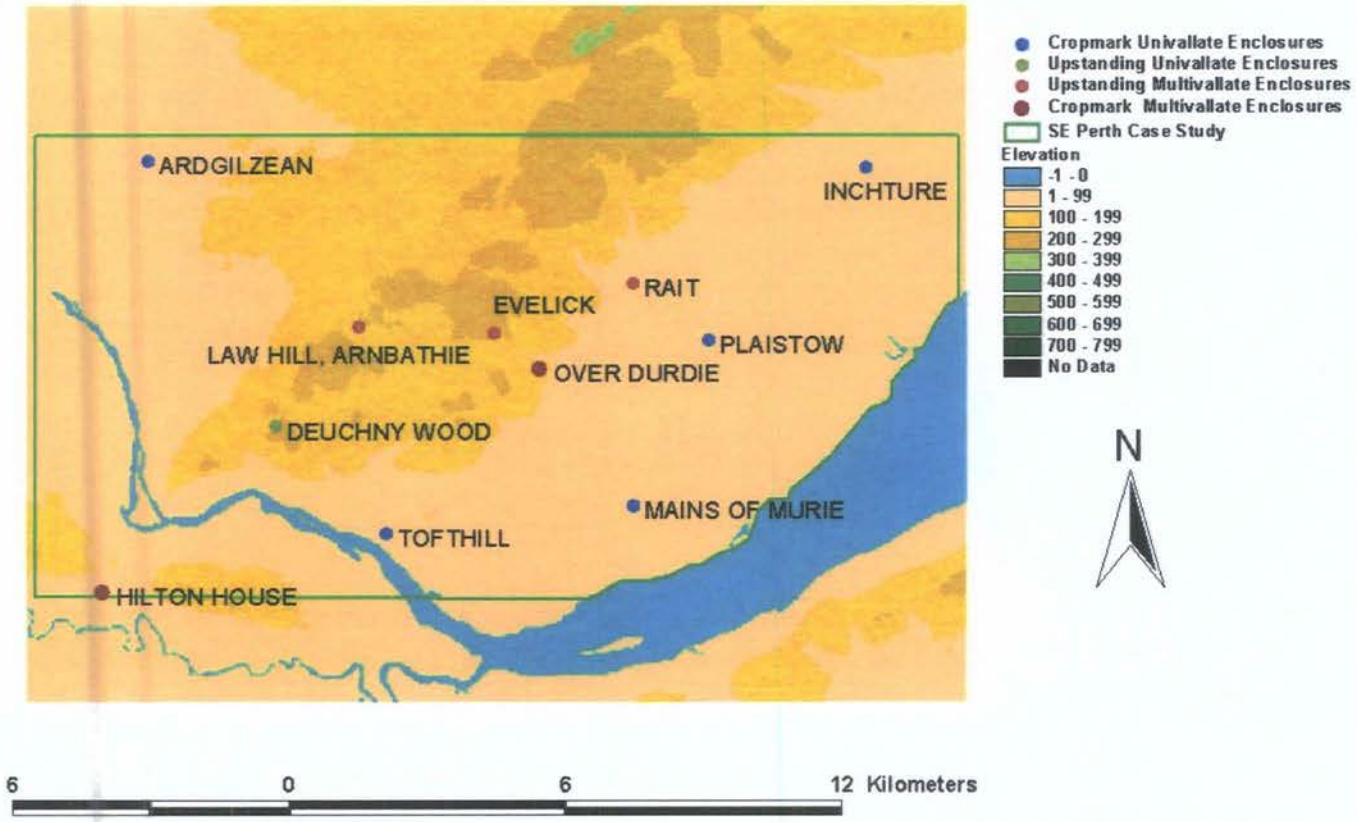

Fig. 6-15 Distribution of Ditched Enclosures in south-east Perthshire Case Study

Whatever the precise chronological position of ditched enclosures, there is a significant number in this area (Fig. 6-15), with occasional small finds that support an Iron Age date. If it is assumed, as seems to be suggested from the evidence from Perthshire and Stirlingshire as a whole, that these ditched enclosures flourished in the Early Iron Age and possibly continued in use (probably not continuously) until the post-Roman period, then we can present a rather different model for later prehistoric settlement in this region. Whilst not denying the importance of open settlement in the late first millennium BC and early first millennium AD, the possibility must be borne in mind that between the Late Bronze Age and then, ditched enclosures played a significant role in the settlement system. Indeed, there is surface evidence from within these enclosures of roundhouse foundations, something that is noticeably missing from many ditched enclosure sites in Stirlingshire (above). Exactly what purpose these sites served is unclear but perhaps some were settlements in the Early Iron Age (e.g. Rait: 30457/NO22NW6), given the evidence for an EIA origin and *floruit* for such monuments (see 4.5.4.3.1). Evelick (28108/NO12NE12) contains a ring-ditch house which can be dated to the Iron Age, on the basis of excavated parallels (pace Hill 1982b; Pope 2003, 255 but see discussion in Chapter 7). The largest multivallate enclosures, such as Law Hill, Arnbathie (28116/NO12NE2: as well as Dunsinane Hill: 30660/NO23SW1.1, just to the north of this Case Study, and Carnac, Moredun, otherwise known as Moncrieffe Hill: 28025/NO11NW23, just to the south) may have been regional centres, perhaps continuing as such into the Roman period and feasibly beyond. Certainly there is evidence for Roman period activity at large Iron Age sites, such as Traprain Law (Jobey 1976), Edinburgh Castle (Driscoll and Yeoman 1997) and Dundee Law (Driscoll 1995). RCAHMS' claim that the larger hillforts "almost certainly [controlled] the fortunes of many of the unenclosed settlements" (RCAHMS 1994c, 74) is somewhat overstating the case, however. There is, as yet, no positive evidence for contemporaneity and no evidence yet for placing the unenclosed settlements of timber roundhouses before the last couple of centuries BC.

6.3.2 Situation

All of the souterrains are situated on knolls or on flat ground, as are unenclosed settlements. Upstanding enclosures are all on ridges, hilltops or promontories,

including cropmark examples such as Over Durdie (30511/NO22SW33). Both Over Durdie and Rait (30457/NO22NW6) are perched atop the edge of the Braes of the Carse (Fig. 6-15)[74]

6.3.3 Geology

Most of the underlying geology of the lowland zone in this case study is Old Red Sandstone. However, much of the Carse of Gowrie is now covered by estuarine clays and was of little agricultural value until draining operations during the Improvements. The clay is still relatively difficult to work and would also have been unsuitable for the construction of souterrains and indeed other settlement sites, which presumably by their very nature would have needed dry or at least well-drained spots. This may be one reason why the unenclosed settlements and souterrains in this area are clustered on the smaller areas of freely draining soils, which would have been far more practical to cultivate. As RCAHMS (1994c) has pointed out, 'inch'[75] place names hint at locations which might once have been islands and it possible that relevant settlements might yet be found in such places. However, the only Iron Age island as such is the crannog mentioned in 6.2.3, at Kinfauns (28205/NO12SE19). It should be borne in mind that we do not yet know the extent of the Firth of Tay during the later prehistoric period. Given the recent proposition that the sea may not have retreated from the Forth and Tay Valleys until well into the Iron Age (see Chapter Three and 6.1), it ought to be borne in mind that some of the Carse may actually have still been underwater in the later prehistoric period, narrowing the available area of land for cultivation and settlement and somewhat altering the perception of the landscape at that time. Inland finds of logboats in waterlogged contexts could be indicators of this (see Table 3-4). A Bronze Age logboat recently unearthed at Carpow (Strachan 2001; Strachan and Glendinning 2002; D. Strachan *et al.* 2003) provides an example of the type of water transport which would have been available to these people. Mowat also lists a "prehistoric canoe found in the River Tay at Perth" (Mowat 1996, 78), two more logboats found at Errol, on the Habbiebank (a sandbank in the Tay Estuary) (ibid. , 28-30)[76], another found during clay-digging at Friarton, Perth (ibid., 34-35), two more found at Lindores, in the bed

[74] See Table 6-10-6-12

[75] *Inch* is Scots for "small island" (from Gaelic *innis*).

[76] The second Errol logboat has been radiocarbon dated, however, to the sixth century AD (Mowat 1996, 30).

of the Tay (ibid. 49-50), another at Sleepless Inch (ibid., 78) and finally a plank-built boat complete with a heather rope found *c.* 3m down during the excavation of building foundations in St John Street, Perth (ibid., 103). Of these, only two survive. While it is far from certain that all of these are later prehistoric in date, the radiocarbon-dated examples suggest that similar examples are likely to have been typical for the period in question. They would have been a practical means of local transport.

The Sidlaw Hills, on the other hand, are made up of andesites, basalts and tuff. From this is derived the freely draining soils which make it relatively conducive to agricultural use today, even at relatively high altitudes. As RCAHMS (1994c, 2) notes, many of the lower slopes are under intense cultivation even now. Given these good conditions and conducive parent soils, climate may be the major factor in determining whether it was sensible to exploit the hill-land. As far as we know, this area was deemed the most appropriate for the Late Bronze Age unenclosed settlements of stone roundhouses. For the most part, the multivallate enclosures are also found in this area.

6.3.4 Land Quality

Most (53%) of the later prehistoric sites of this area are situated in Class 3 land, with a further 35% on Class 2 land[77]. The lowland of this area is all Class 2 or 3, with higher ground being Class 5. The exception is the Class 7 land of the modern City of Perth, at the mouth of the River Tay. Aside from stone roundhouses, all unenclosed settlement is situated on either Class 2 or Class 3 land, which is not surprising given that these sites have all been detected as cropmarks. Souterrains are also on Class 2 or 3 land, with the exception of the possible example (perhaps dubious; see above) at Tofthill (28226/NO12SE37), which is on Class 5 land and Barnhill, Perth (28436/NO12SW67), which was destroyed during road construction in the early twentieth century (Hutcheson 1904; 1905) and is now inevitably on Class 7 land, being within the modern city of Perth. Multivallate Enclosures and Univallate Enclosures occur on Class 2, 3 or 5 land. All of the barrows are on Class 3 land.

[77] See Table 6-4 in Appendix Six.

6.3.5 Altitude

As shown in Fig. 6-16, the vast majority (73%) of later prehistoric sites in this area are situated at or below 50m OD with a further 9% in the 51m to 100m bracket.[78]

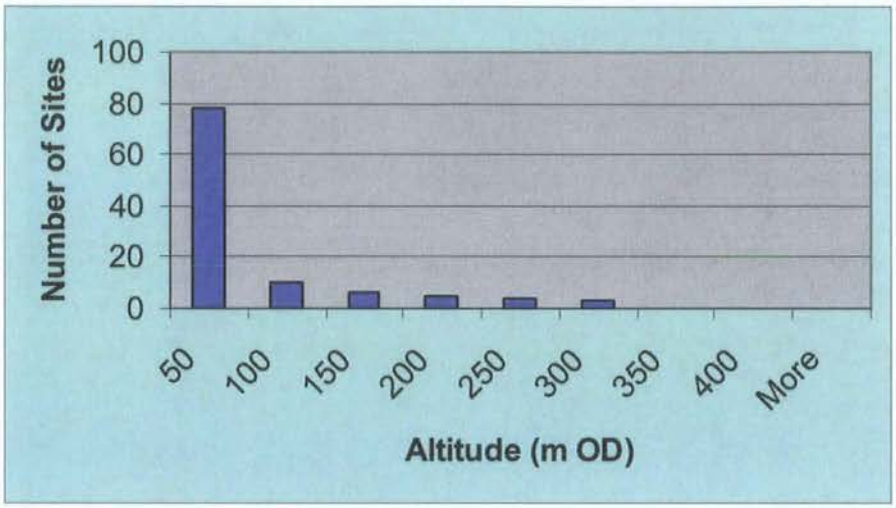

Fig. 6-16 Altitudes of Later Prehistoric Sites

As can be seen in Fig. 6-17, apart from hut-circles, all unenclosed settlements are situated below 150m OD and most (80%) are below 50m OD. This roughly mirrors the trend for later prehistoric sites in general. Souterrains are all at or below 50m OD, as are palisades.

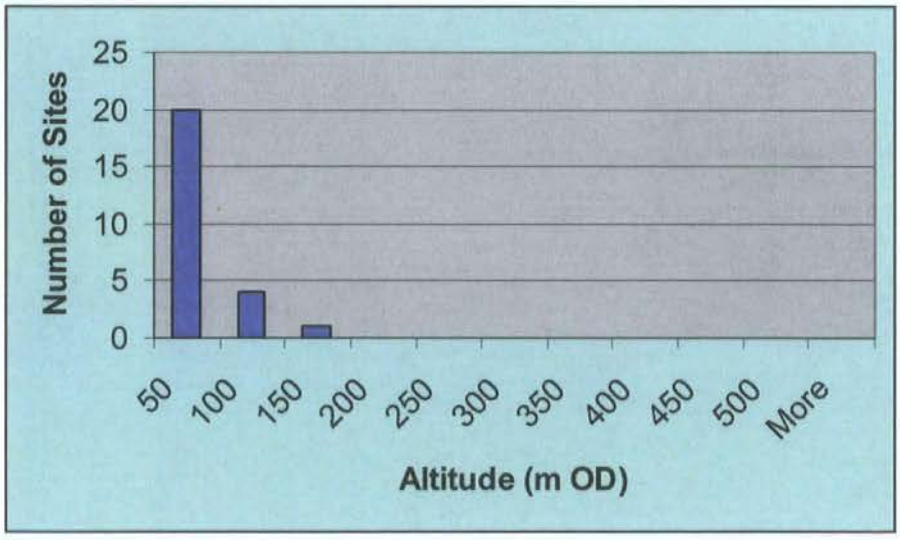

Fig. 6-17 Altitudes of Unenclosed Settlements

There is no observable pattern in the altitude of univallate or multivallate enclosures, beyond that they are all below 300m OD.

6.3.6 Survey Patterns

As can be seen in Fig. 6-18, aerial survey has concentrated largely on land at or below 100m OD, i.e. that of Class 2 or 3 land. The exceptions are forays to photograph upstanding monuments such as Law Hill, Arnbathie (28116/NO12NE2), which have been known since the 1930s at least.

[78] See Table 6-4 in Appendix Six.

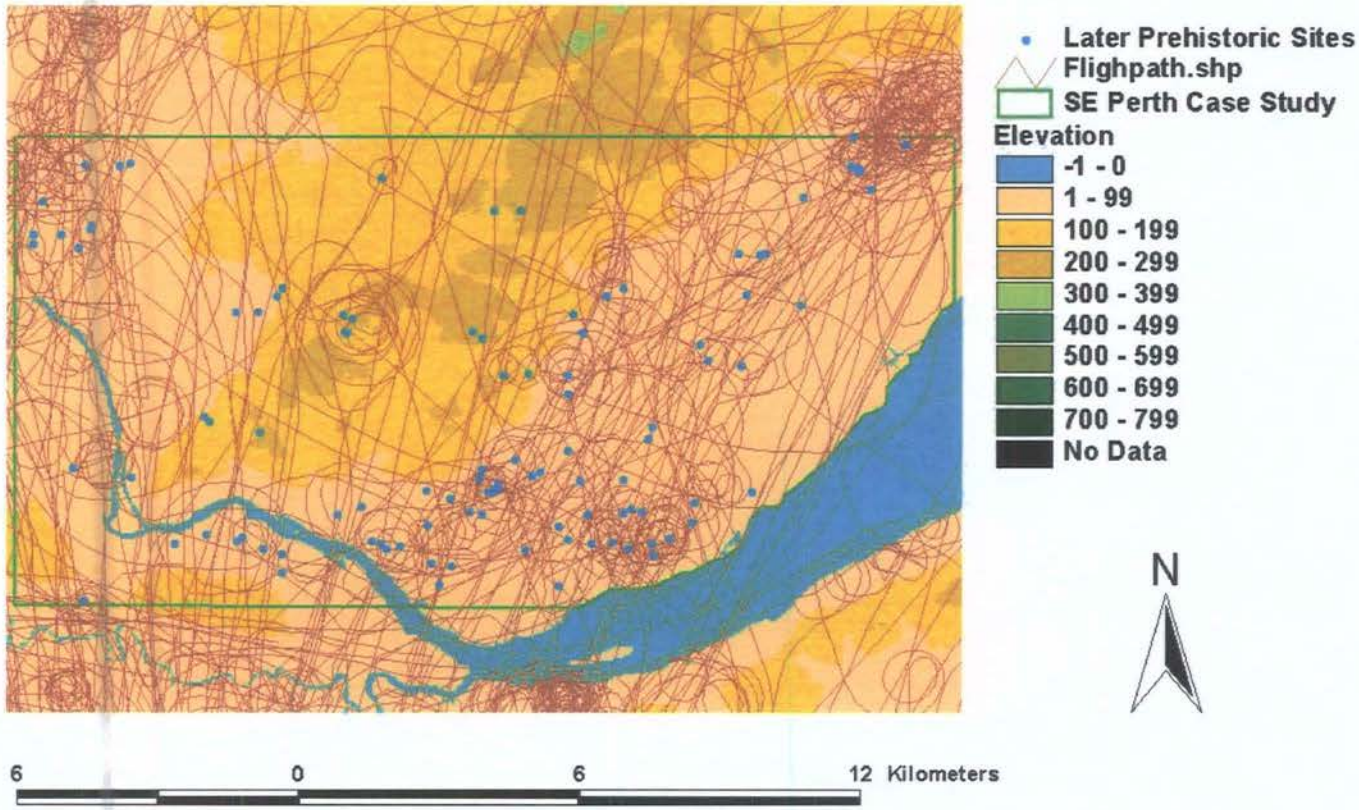

Fig. 6-18 Recent RCAHMS flight paths across south-east Perthshire Case Study

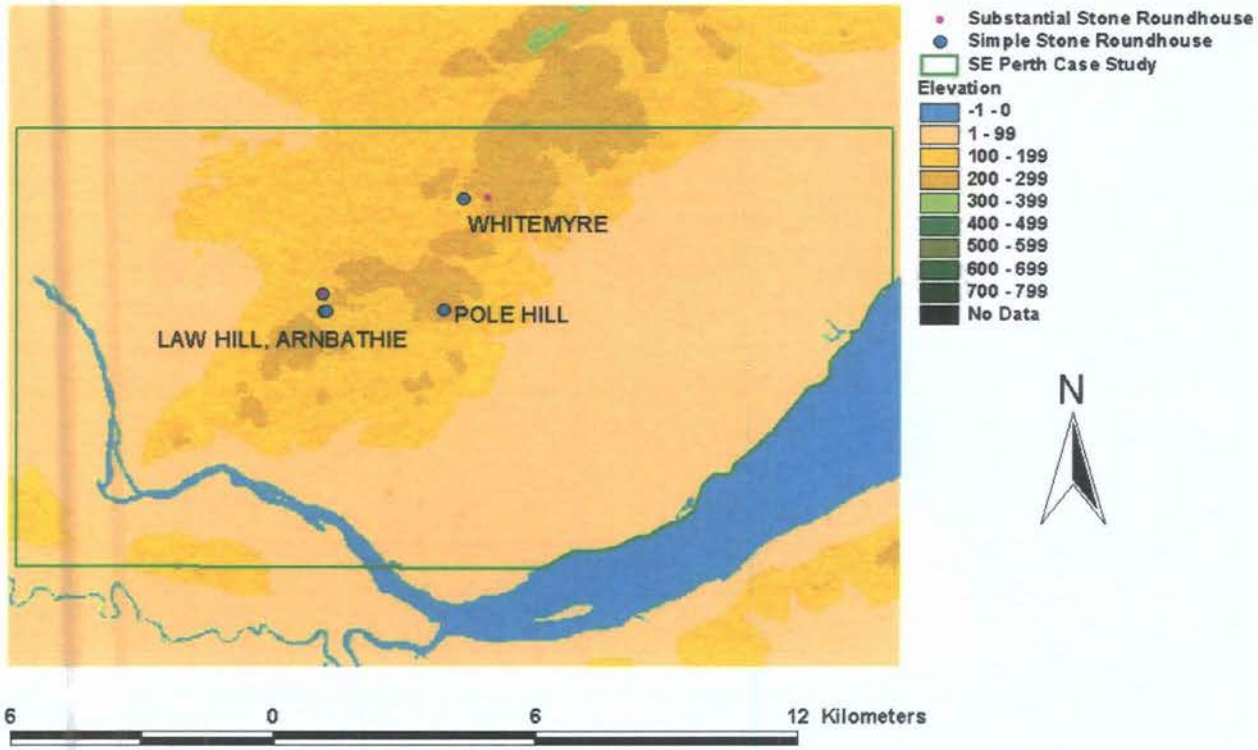

Fig. 6-19 Stone Roundhouses in south-east Perthshire Case Study

There are numerous stone roundhouses known around Law Hill Arnbathie (Fig. 6-19) but it is unclear whether this is a genuine concentration or whether it is a function of the archaeological attention that has been focussed on this monument. On balance, seems most likely that the upstanding roundhouses have survived here because the use of the land, as improved pasture, has not involved the heavy ploughing evident elsewhere in the case study area (RCAHMS 1994c, 9). Given, however, that the stone roundhouses at Whitemyre (30440/NO22NW28 and 72088/NO22NW50) were discovered during the RCAHMS survey of the late 1980s and early 1990s (RCAHMS 1994c, 43), we may be looking at a real pattern. While RCAHMS (ibid., 43-44) makes the very valid point that ploughed-out hut-circles may provide nothing for the aerial surveyor to see, the Whitemyre houses seem to have been set into scoops. If such houses were also present in the lowland zone, they might be indistinguishable without excavation from the sunken-floored timber houses that we tend to assume circular maculae represent. While it looks at the moment as though LBA settlement was concentrated in the uplands, some may yet be find in the lowlands.

6.4 Discussion

The density of unenclosed settlement in this area suggests that large tracts of forest were not a feature of the later prehistoric landscape, certainly in the Late Iron Age. It seems fair to suggest that Law Hill, Arnbathie (28116/NO12NE2) was a regional centre, certainly in the Iron Age and quite possibly in the Pictish period, too. At around a hectare in internal area, it is several times larger than most of the enclosures in the Stirling Case Study and indeed in Perthshire in general. It has entrances at north, east, south and west, a feature which on other sites (e.g. Brown Caterthun, Angus: Dunwell and Strachan forthcoming) has been interpreted as being an indication that the site welcomed traffic from all directions and was thus a communal centre. Multiple entrances would certainly weaken the defensibility of a fort. Demonstrating contemporaneity of entrances is, of course, impossible to prove without excavation. The site also has a *chevaux-de-frise* on the north side, a rare occurrence on a Scottish hillfort (RCAHMS 1994c, 74). This overlies the ramparts of the earliest phase but respects the north entrance of the later phases. Harbison (1971) lists only five *chevaux-de-frise* in Scotland, none of which are in Perthshire or

Stirlingshire. The corpus has since been added to, with another stone *chevaux-de-frise* having been noted at Deuchny Wood, Perthshire (28217/NO12SE3: Watson 1923) and a wooden example having been discovered at Lower Greenyards, Bannockburn (47244/NS89SW12: Rideout 1996). Such a feature is undeniably defensive although whether it was practical or symbolic is debatable. It need not indicate warfare, there being little evidence of sustained hostilities in the later prehistory of the area. More minor skirmishes, or raiding might be more consistent with other available evidence.

The interior of Law Hill, Arnbathie (28116/NO12NE2) has been cultivated in Mediaeval or early modern times, but there are hints of various features including the site of a possible pond or cistern (RCAHMS 1994c). There was a spring close by, known locally as the Butter Well (Watson 1923), which might be a feasible water source for any inhabitants. There is, however, also a (since artificially straightened) burn just 200m to the south.

Although RCAHMS interpreted the 'broch' and 'ring-forts' of south-east Perth as evidence of "the introduction of an exotic form of architecture into the area, possibly at much the same date" (RCAHMS 1994c, 74), it is evident that here, as in Stirlingshire, there is a tradition of substantial stone architecture. Four of the eleven stone roundhouses identified and classified by RCAHMS and others actually fall within the classification of substantial stone roundhouses of the present study.

There are few sites which might represent the later prehistoric burials, although given the relatively late (LBA rather than EBA) date for a Collared Urn from Sandy Road, New Scone, it is conceivable that we do know some of the Late Bronze Age burials. It is worth mentioning, without over-emphasising its significance, an apparent burial found on Law Hill, Arnbathie (28127/NO12NE3). This contained a so-far unparalleled pottery vessel, a tuyere and a flint scraper. The tuyere is listed by the RCAHMS (1994c, 155) in its gazetteer as 'later prehistoric'. Although it is assumed that these articles came from a burial, the provenance is vague. The vessel bears little similarity to the Bronze Age food vessels or beakers and there is a possibility that these finds actually came from the multivallate enclosure itself (28116/NO12NE2). A cist found set into the entrance of a hut-circle on Law Hill

during its excavation contained burnt bone, although later analysis could only confirm that it was the remains of an adult (Brash 1950). It seems possible that this was an Iron Age cremation burial. It is also worth mentioning at this juncture the undated cist at Muirhall (28456/NO12SW85), which contained a flint knife and pig bones. Pig bones are known from Iron Age burials elsewhere in Britain (e.g. Burnmouth, Berwickshire (Craw 1924) and some of the Yorkshire square barrow graves (Cunliffe 1991, 501)). Parker Pearson (1999, 46-47) has argued that this animal had totemic significance as a high status feasting food throughout the British Iron Age, although there is marked regionality in the treatment of pig remains. The flint knife, however, might support a rather earlier date for the Muirhall cist and it would be unwise to push the point further with such limited evidence.

What is very noticeable about this area is the almost total lack of any division of land that might be related to field systems or stock enclosure. Even where pit-alignments are visible, they are markedly less organised than in areas like East Lothian and may not even belong to the relevant period. While some of the outworks at Law Hill, Arnbathie (28116/NO12NE2) might feasibly be interpreted as indicating some sort of enclosure for crops or stock, there are no such features associated with the hut-circle settlements nearby, at Law Hill, Arnbathie and Whitemyre (30440/NO22NW28; 72088/NO22NW50).

Chapter 7 The North-East Perthshire Case Study

7.1 Introduction

Eastern Perth is the only region in Perthshire in which later prehistoric settlement has previously been subject to detailed structural and locational analysis. Judith Harris (1984) used the OS record cards, RCAMS information and her own fieldwork to undertake a detailed study of the 180 groups of hut-circles and 119 associated field systems in what she termed 'South-East Perth'. Since then, RCAHMS has undertaken a major field survey in eastern Perth, resulting in two inventory volumes (RCAHMS 1990; 1994c). The fieldwork for this was carried out between 1986 and 1990. The resulting increase in the number of known later prehistoric sites provides an opportunity, taken up here, to reassess the material and test whether this new data had any actual effect on understanding of settlement patterns, or simply strengthened existing perceptions. Since the CANMORE records include the text from the old record cards, as well as additional information gathered since, it was possible to quantify the increase since Harris' (1984) study. Using a case study area (with a particularly high density of sites), it was found that the survey work of the years 1984-2000 had resulted in a doubling of known sites (from 53 to 105). Together these sites include the remains of 330 stone roundhouses (a mean of 3.1 per site) and three ring-ditch houses. It was felt that such a substantial increase made a reassessment worthwhile. The present study, unlike that of Harris (1984), incorporates the evidence for all sites of later prehistoric date, including a hillfort, souterrains, ring-ditch houses etc. (listed in Appendix Five), with the aim of providing a more comprehensive understanding of later prehistory in this area. This case study also deliberately includes the margin between lowland and highland in order to examine whether the assumption that this zone is blank in settlement terms is apparent or 'real'.

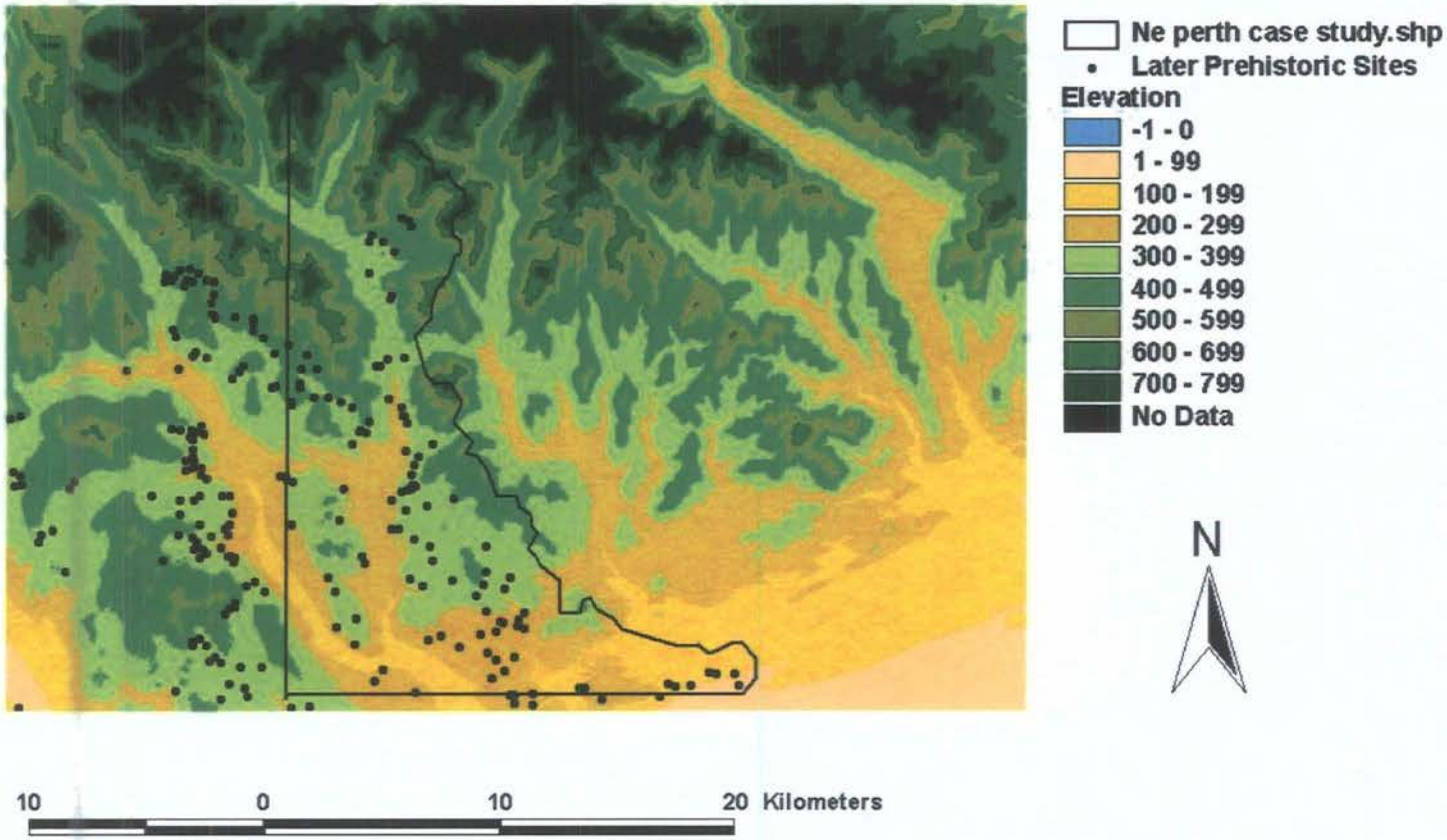

Fig. 7-1 Later Prehistoric Sites in north-east Perth Case Study

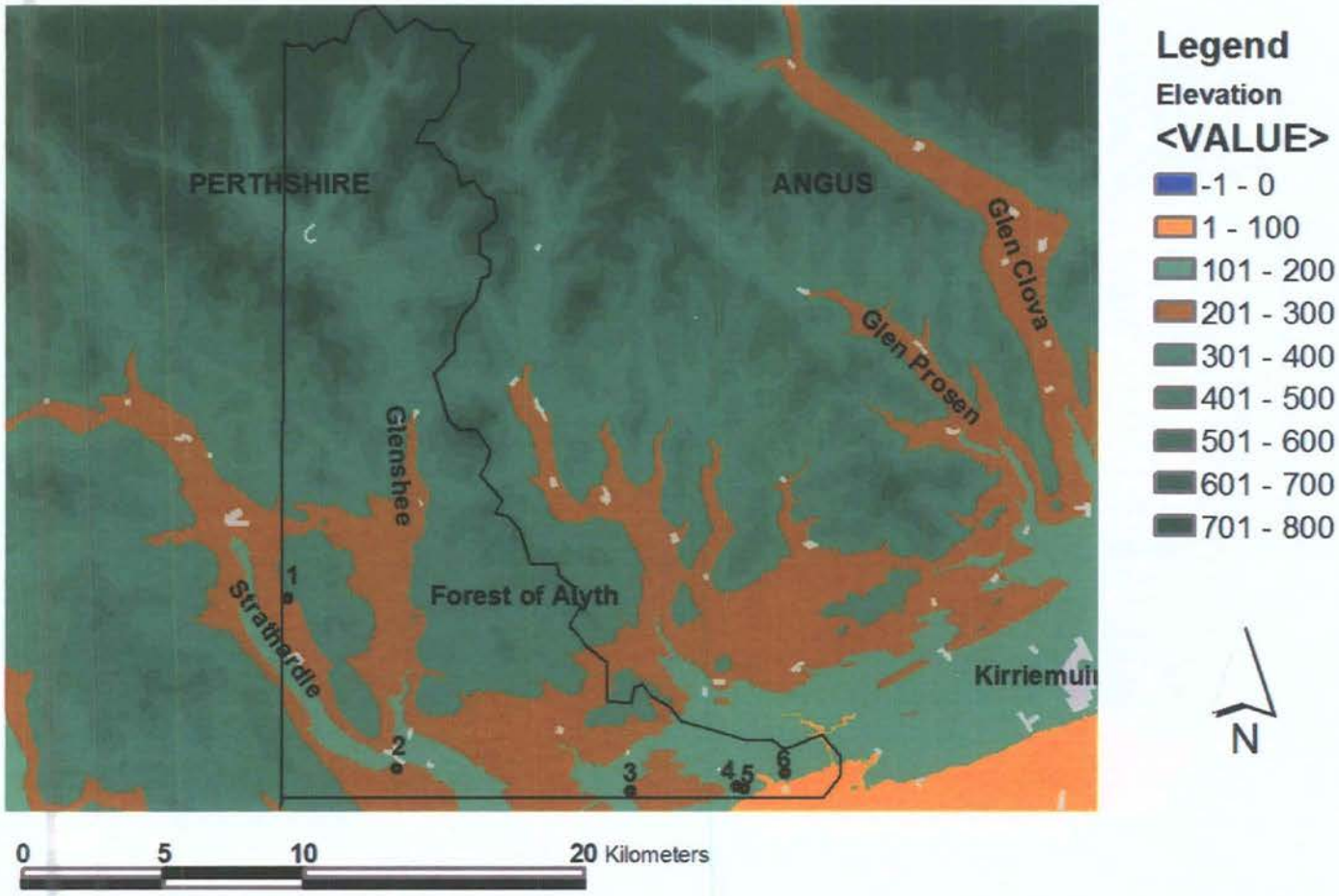

Fig. 7-2 The north-eastern Perthshire case study area, with sites mentioned in the text marked as follows: 1. Balnabroich; 2. Rochallie; 3. Hill of Alyth; 4.-5. Barry Hill; 6. Drumderrach. Crown Copyright Ordnance Survey. An EDINA/Digimap JOSC Supplied Service.

7.2 Structural Analysis[74]

7.2.1 Stone Roundhouses

7.2.1.1 External Diameter

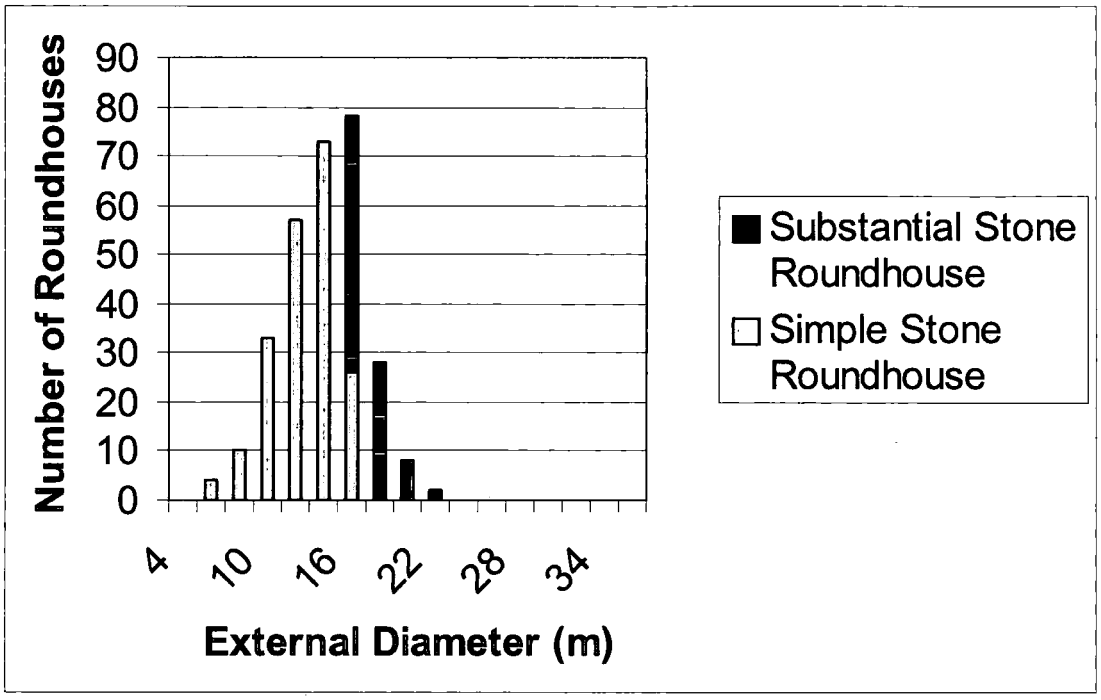

Fig. 7-3 External Diameters of Stone Roundhouses

Fig. 7-3 shows the external diameters of stone roundhouses. Simple Stone Roundhouses range from 4.9m to 14.9m while substantial stone roundhouses range from 15m to 20.6m. The mean is 13.1m and the majority (51%) fall between 12.1and 16m. As with stone roundhouses in the lowland zone, the broad range in diameters is striking, with a peak at 10.2-18m overall, a peak of 12.1-14m for simple stone roundhouses and 14.1-16m for substantial stone roundhouses.

Complexity (in the case of these sites demonstrated in double-walled construction) appears to have no direct relation to external diameter, with seventy-three houses, ranging from 7m to 20.6m being represented. Most double-walled houses, however, measure 14.1 to 18m in external diameter

[74] See Table 6-14 in Appendix Six for data.

7.2.1.2 Internal Area

297 houses had data available on internal diameter; for these, internal area was calculated (Fig. 7-5). This varied widely, from 4.7m^2 to 181.5m^2. The mean was 60.1m^2 for stone roundhouses in general, 53.1m^2 for simple stone roundhouses and 76.9m^2 for substantial stone roundhouses. The fact that many substantial roundhouses are also double walled is reflected in the range of internal diameters for such structures. As mentioned in Chapter 4, intra-mural spaces were actually used; if this were the case for all double-walled structures, some extra internal space would be available. However, an elaborate double wall does not seem to have been built in order to enable roofing of a larger central space, although there is always the possibility that a hollow wall enabled the structural stability to allow a first or mezzanine floor, thus utilising roof space. With present knowledge of the chronology of clusters of stone roundhouses, it would be unwise to lay emphasis on contemporaneity, particularly given Halliday's (forthcoming) suggestion that a 'hut-circle settlement' might in fact represent the accumulated remains of one social group moving around an area. The wide variation in internal space available could be due to differences in function, with smaller 'roundhouses' serving as toolsheds, smithies or workshops of some other kind, larger ones as 'homes' (with scale depending on size of family or social group), others functioning as grain-stores, byres or even shelters for wheeled vehicles. Some may even have been set aside as temples or sacred spaces of some kind; the function of any one building could have been used for a variety of activities that go beyond modern, western social and cultural experience.

Some of the doorways are very wide (sometimes more than two metres) compared to the mean for excavated mass-walled structures (1.35m) quoted by Pope (2003). This might support the idea that they were designed to accommodate animals with or instead of people. This may also be supported by the fact that many of the double-walled structures have elaborate entrances, sometimes even splaying out to form a 'funnel' (e.g. Balnabroich: 29054/NO15NW14, Fig. 7-4). In the case of enclosures, such an arrangement is generally taken to indicate a stock enclosure, since it assists in the rounding of cattle, sheep or goats. A similar arrangement might be envisioned here, although such an entrance would also serve to emphasise the boundary between

indoors and outdoors, something which may well have had symbolic significance, especially in a later prehistoric community where most of the daylight hours may well have been spent outside.

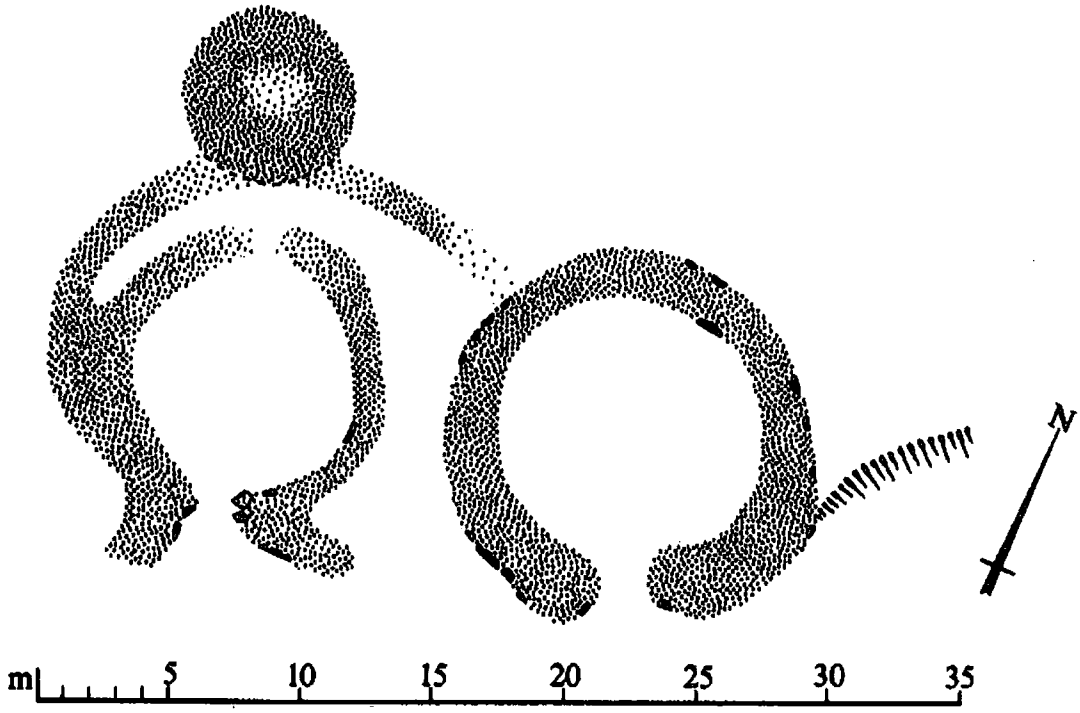

Fig. 7-4 Balnabroich Group G: note the the inter-mural space and splayed entrance. Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Scotland.

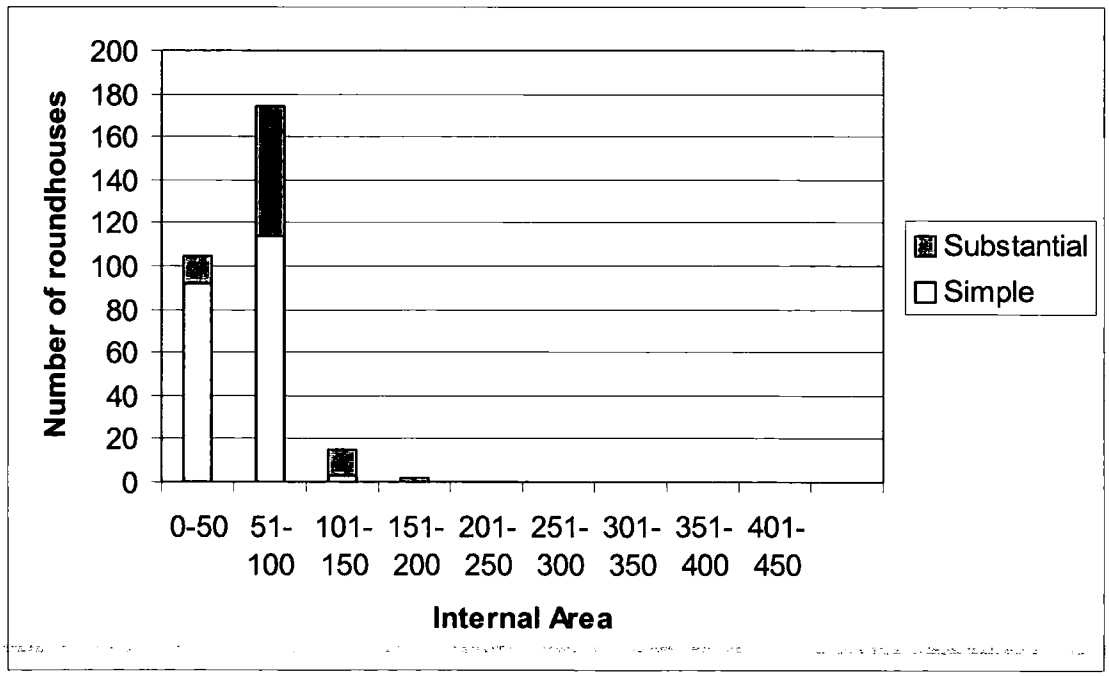

Fig. 7-5 Internal Areas of Stone Roundhouses

7.2.1.3 Percentage Wall Base

Data for both internal and external diameters was available for 263 structures had and Percentage Wall Base was calculated for these. Eighty-nine structures (34%) have PWB figures greater than or equal to 40% and therefore are comparable to those of the northern brochs. Although such a high PWB would indicate structural stability, even the best-preserved structures, with no evidence of stone-robbing, show walls not exceeding 1.5m in height. If we take an 'average' stone roundhouse with an external diameter of 13.1m and assume a timber superstructure with a roof pitched at the optimum of 45°, we can envisage a structure with roofspace adding 6.55m to the height of the building. Of the seventy-one double-walled structures, sixty-two have full data available. Of these, 50 (81%) show PWB values greater than 40%, indicating that complexity is related to PWB. This, however, is hardly surprising given that the width of the wall base in a double-walled structure includes the gap between the inner and outer walls.

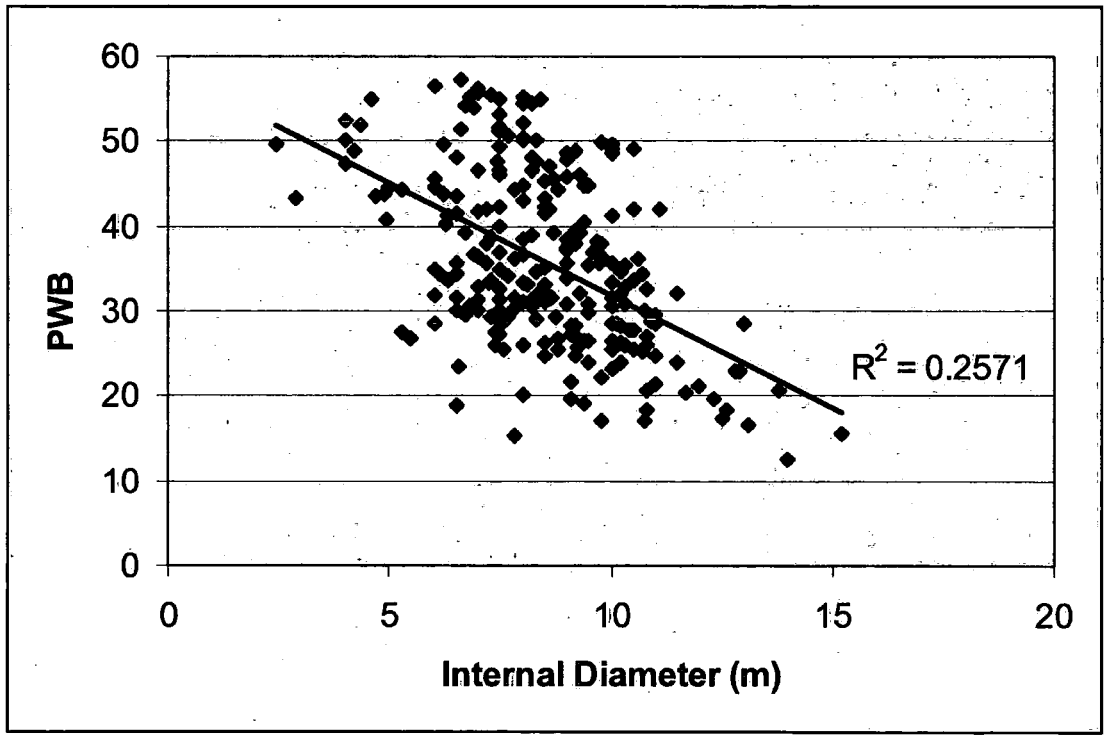

Fig. 7-6 Percentage Wall Base of Stone Roundhouses; note the relatively poor correlation between this and internal diameter, indicated by the low R^2 value assigned to the line of best fit.

7.2.1.4 Entrance Orientation

As this case study is based largely on unexcavated examples, entrance orientation is not available for all sites. In some cases the entrance was masked by heather, in others the wall appeared to form an unbroken circle. In these cases, it may be that there was a front step or threshold that cannot be discerned from a robbed wall without excavation. If we look first at the entrance orientation of stone roundhouses (available for 242 out of 330 structures: Fig. 7-6) in general, a strong preference can be seen for orientations of south-east (56 structures), south-south-east (63) and south (79). Together these represent 60% of the total. The next most popular is south-south-west (20: 6%), with only occasional examples of east-north-east (one), east (three), east-south-east (11), south-west (nine), west-south-west (one), west (two) and west-north-west (1). This corresponds well with the data from excavated stone roundhouses (see Chapter 4), although the west and west-north-west orientations are highly unusual.

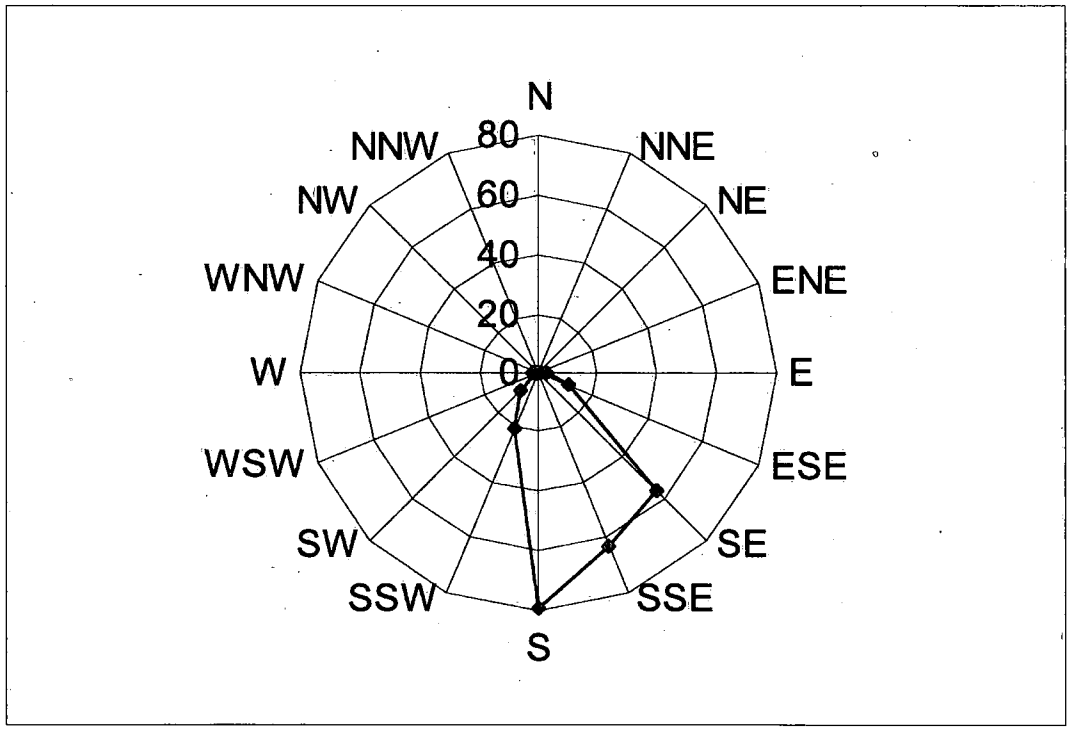

Fig. 7-7 Entrance Orientation of Stone Roundhouses

7.2.2 Timber Roundhouses

There are only three 'upstanding' simple timber roundhouses known, these being the remains of ring-ditch houses identified on the ground at two sites. Only at Rochallie

(29234/NO15SW30) were the ring-ditch houses juxtaposed with stone roundhouses but the chronological relationship between the house-types is unclear. Northern British ring-ditch houses in general have a wide chronological range (Pope 2003), although the nearest excavated sites, in Angus[75], apparently all date to the Iron Age (Fig. 7-8). The dates from Culhawk Hill, Angus, fell between the 4th century cal BC and the 2nd century cal AD (Rees 1998). A LIA date was also obtained from the ring-ditch house at Auchlishie, Angus; a relatively late date is supported by the rotary quern stone set into the ditch paving (Dick 1999a; b). A mid- to late first millennium BC date was obtained from the ring-ditch house at Ironshill (Pollock 1997) and EIA dates came from the group of ring-ditch houses at Douglasmuir (Kendrick 1995). Although no ring-ditch houses have been excavated in Perthshire, it would seem reasonable to assume that they are Iron Age and that they represent re-occupation of the uplands in that period. Given the evidence of Iron Age activity on excavated hut-circle sites, timber roundhouses may only have been erected where extra buildings were needed in addition to re-use of LBA structures.

[75] The only 'ring-ditch house' excavated in Perthshire turned out to be a natural feature (CFA 1993b)

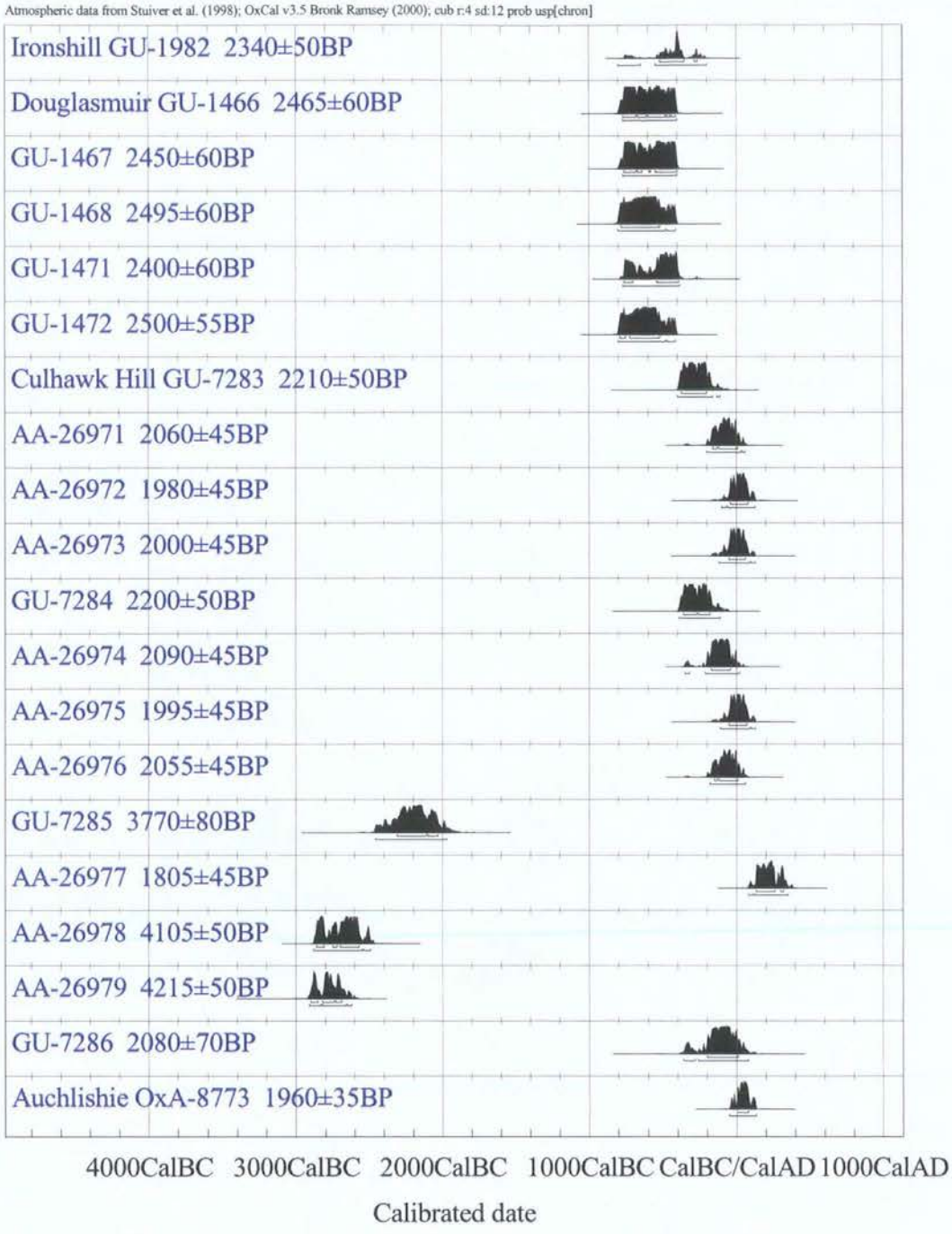

Fig. 7-8 Radiocarbon dates from ring-ditch houses in Angus

7.2.2.1 External Diameters and Internal Areas

External diameters range from 10.2m to 14.5m. If we assume that Kendrick's (1995) reconstruction of a ring-ditch house is correct, and the ring-ditch formed part of the interior, it becomes apparent that in terms of usable space, the ring-ditch houses fall within the lower end of the scale established for stone roundhouses (Fig. 7-5). The

examples at Hill of Alyth (31114/NO25SW29) have internal areas of 50.3m^2 (House 1) and 28.3m^2 (House 2) while the one at Rochallie (29234/NO15SW30) is somewhat smaller at 24.6m^2.

7.2.2.2 Entrance Orientation

Two of the structures (both at Hill of Alyth: 31114/NO25SW29) have entrances in the south-west, an odd orientation that is neither practical nor consistent with the vast majority of stone roundhouses (7.2.1.4 above). The orientation is, however, probably linked to the fact that these houses, in contrast to most others, were on a west-facing slope. In the Rochallie example (29234/NO15SW30), no entrance was apparent.

7.2.3 Enclosures

Only two ditched enclosures are included in this case study. The first is the huge multivallate enclosure on Barry Hill (31061/NO25SE23, Fig. 7-9). The system of defences is complicated but two main phases can be identified. Its original entrance was in the south-east, but this was later blocked and apparently replaced by one in the north-east. There may also be one on the south-west, leading through Rampart K into the annexe within which is a pond. Rampart K appears to abut Rampart G and if this is the case, it belongs to a late phase. This is intriguing, because it implies that at one time, the pond was outside the enclosure; rampart K certainly seems to have been built specifically to enclose it. The pond is very regular in shape and measures about 15m diameter and less than 1m in depth (Christison 1900b, 95); RCAHMS (1990) believe it to be at least partially artificial[76]. In this respect it bears comparison with the much smaller pond on Traprain Law, East Lothian, the north side of which is revetted with stone slabs (Armit *et al.* 1999). Although the Traprain pond has been subject to two excavations (Armit *et al.* 1999; Cree 1923), it has never provided conclusive evidence to support the hypothesis that it was a focus for ritual offerings. It could have been a source of drinking water for people or stock or a bathing place although we should not rule out the possibility that it served other functions. Offerings of food or other perishables may not have survived. It seems likely that

[76] On the days Christison (1900b, 95) and Wise (1857b, 71) visited it was completely dry and visible only as a grassy hollow. Wise somewhat bizarrely suggests it was pit for hiding cattle in. However, RCAHMS aerial photographs show it full of water and it is likely the antiquarians visited during dry spells.

the Barry Hill pond also has the potential to yield environmental information and is worthy of further investigation.

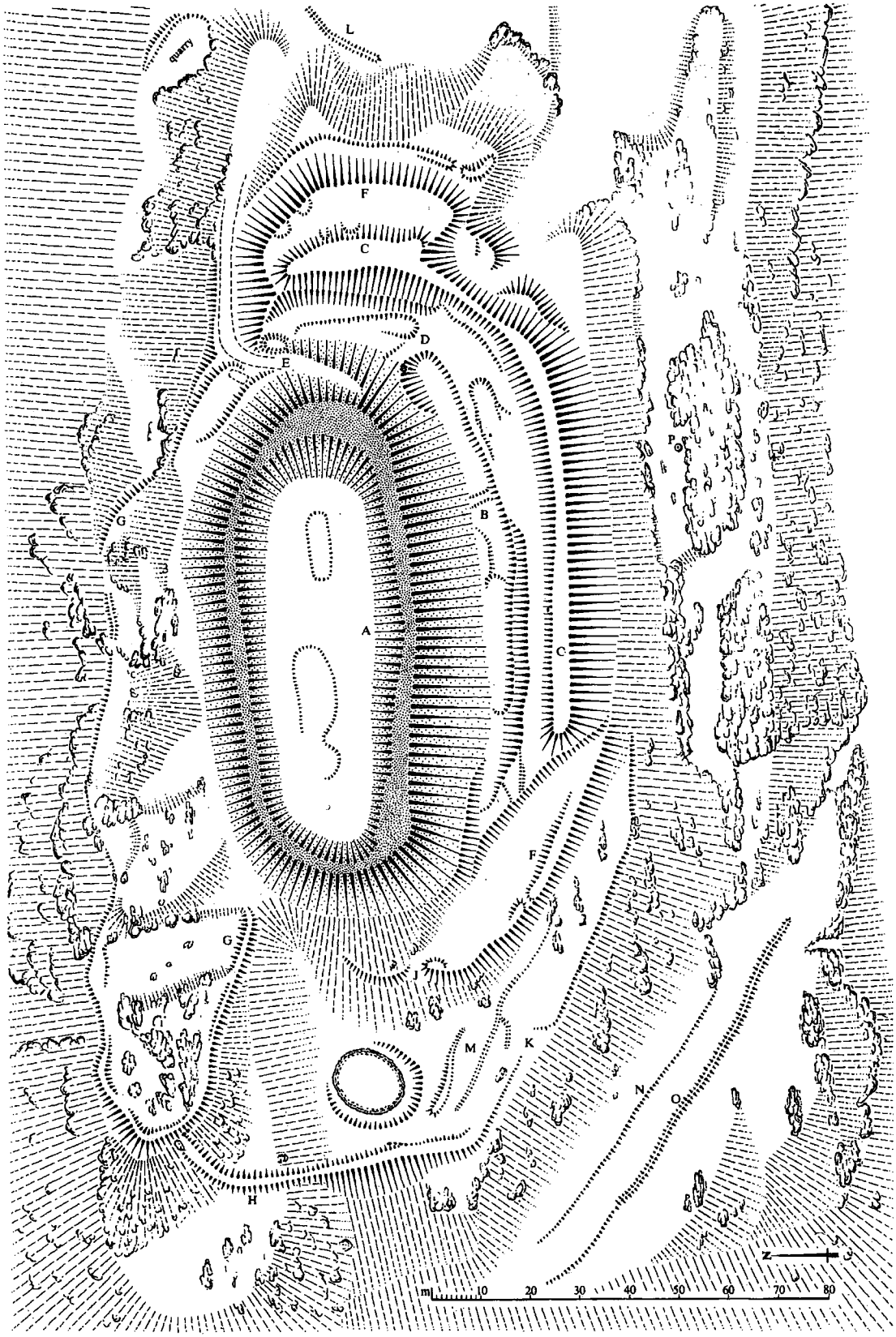

Fig. 7-9 Barry Hill. Crown Copyright: Royal Commission on the Ancient and Historical Monuments of Scotland

RCAHMS (1990, 29) argues that all the internal structures at Barry Hill (31061/NO25SE23) are relatively modern, since none are mentioned or illustrated by Christison (1900b, 93-96). This need not be conclusive, however; Christison was preoccupied with the 'defences' at such sites and where he does illustrate building foundations, they are invariably very substantial (e.g. Turin Hill, Angus, which has three substantial stone roundhouses on it). Barry Hill has a sub-rectangular structure within it and also several circular structures that are probably shielings. It is quite possible that people never actually lived on Barry Hill; it might instead have been a venue for seasonal fairs and meetings, serving a similar function to, for instance, that suggested in Chapter 6 for Law Hill, Arnbathie (28116/NO12NE2). Barry Hill is, however, significantly larger, the inner rampart enclosing an area of around 1.3ha. Without excavation the possibility cannot be entirely ruled out that this site was at least partly contemporaneous with the LBA settlement in the hills immediately to the north, although the evidence from excavated multivallate enclosures in the study area (and in Angus) suggests an Early Iron Age origin for these sites (see Chapter Four). It is quite possible that timber roundhouses were built on this site, although there is no evidence for ring-ditch houses, as there is at the White Caterthun, Angus and Evelick (28108/NO12NE12: see above).

It is worth noting here that a cup-marked stone was found on Barry Hill. A cup-marked stone was also found in the the multivallate enclosure on the White Caterthun, Angus (Dunwell and Strachan forthcoming). In both cases the stones were portable but we cannot know whether the Barry Hill (31061/NO25SE23) stone was placed on the site in the Early Bronze Age, or whether it was deliberately brought there from somewhere else, during the construction of the enclosure. It may once have been built into a rampart. Significant numbers of souterrains have cupmarked stones incorporated into them; examples include Ardestie, Carlungie, Letham Grange, Pitcur II, Ruthven (Sherriff 1999) and Tealing III (Wainwright 1963). Cupmarked stones were also found in the substantial stone roundhouse of Torwood, The Tappoch (47004/NS88SW23: Lefroy 1867, 42-43) and Aldclune (25822/NN86SE23: Hingley *et al.* 1997, 452-454). Lefroy (1867) interpreted the reuse of cup-marked stones in Torwood, The Tappoch as being disrespectful but alternatively this could be seen as curation, whether they were seen as remains of the

ancestors, as Hingley (1992, 29) has suggested, or rather something supernatural. They may even have been chosen for aesthetic reasons (Wainwright 1963, 121), although the lack of later prehistoric imitations of such objects might count against this theory. Having said that, it is unclear how an Iron Age cup-marked stone might be identified as such; Hingley (1992, 29) sees no reason why they should not have continued to be carved during the Iron Age. In this, these cup-marked stones bear comparison with flint, quartz and chert tools from later prehistoric contexts, which have only recently been taken seriously as Iron Age artefacts (Gleeson 1998, 242; Young and Humphrey 1999). Hingley (1992, 29) suggests that the souterrain cup-marked stones were associated with fertility (presumably because of their use in what he believes were grainstores) but this link becomes less clear in considering the stones found on hillforts. A more helpful concept may be the putative link between cup-marked stones and peripheral locations, as noted by Hingley (Hingley *et al.* 1997, 452) at Aldclune.

The Barry Hill site above should not be confused with nearby Barry Hill enclosure (31065/NO25SE26), which lies nearby. While Barry Hill (31061/NO25SE23) lies in a very impressive position, with views across Strathmore, Barry Hill enclosure is situated on a south-east-facing slope. Much of it was destroyed during nineteenth century quarrying operations but it seems to have comprised one circuit, enclosing an area of c.0.7ha. It had diametrically opposed entrances to the north and south, which in itself is highly unusual. There is some evidence of vitrification and finds made in 1854 include querns and a steatite cup (Wise 1857b). These finds would certainly do nothing to disprove an Iron Age date for the enclosure.

7.3 Locational Analysis

7.3.1 General Distribution

The distribution of later prehistoric sites in the north-east Perthshire case study is shown in Fig. 7-1; what is immediately apparent is a preference for relatively low altitudes in the upland zone, although valley floors are avoided.

7.3.2 Situation

The situations of sites in this case study reflect its largely upland nature; the vast majority are on hillsides (Fig. 7-10)[77].

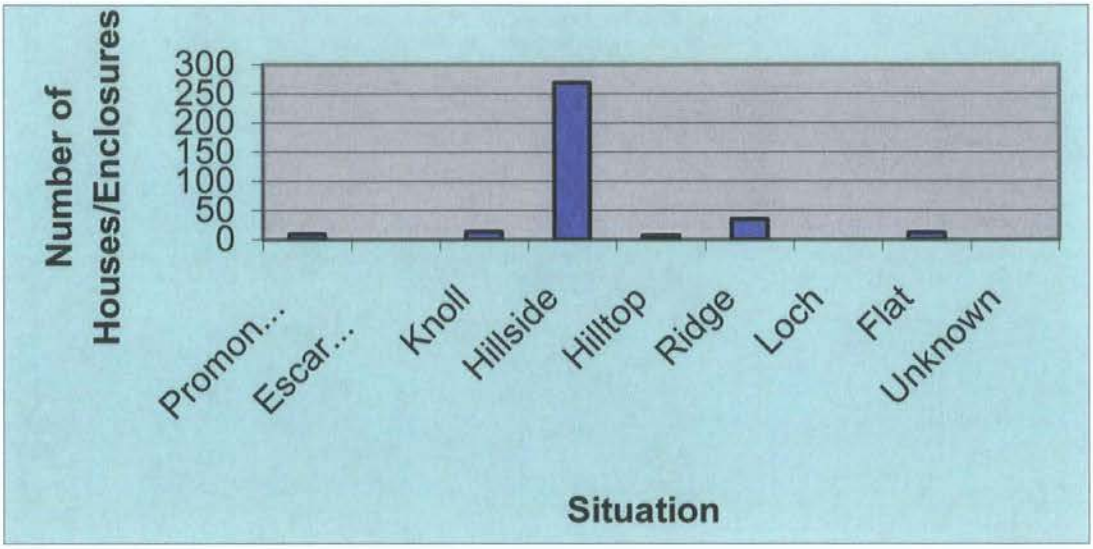

Fig. 7-10 Site Situations

The vast majority of stone roundhouses are situated on hillsides (Fig. 7-10, Fig. 7-11 and Fig. 7-12); valley floors are not popular. Generally, the builders of these structures favoured terraces, which provide natural areas of flat ground. Where this was not possible, the builders often levelled the houses into the slope, or in a handful of cases, built the house on a 'platform'. Some are situated on spurs, ridges or natural knolls.

[77] Table 6-14 in Appendix Six.

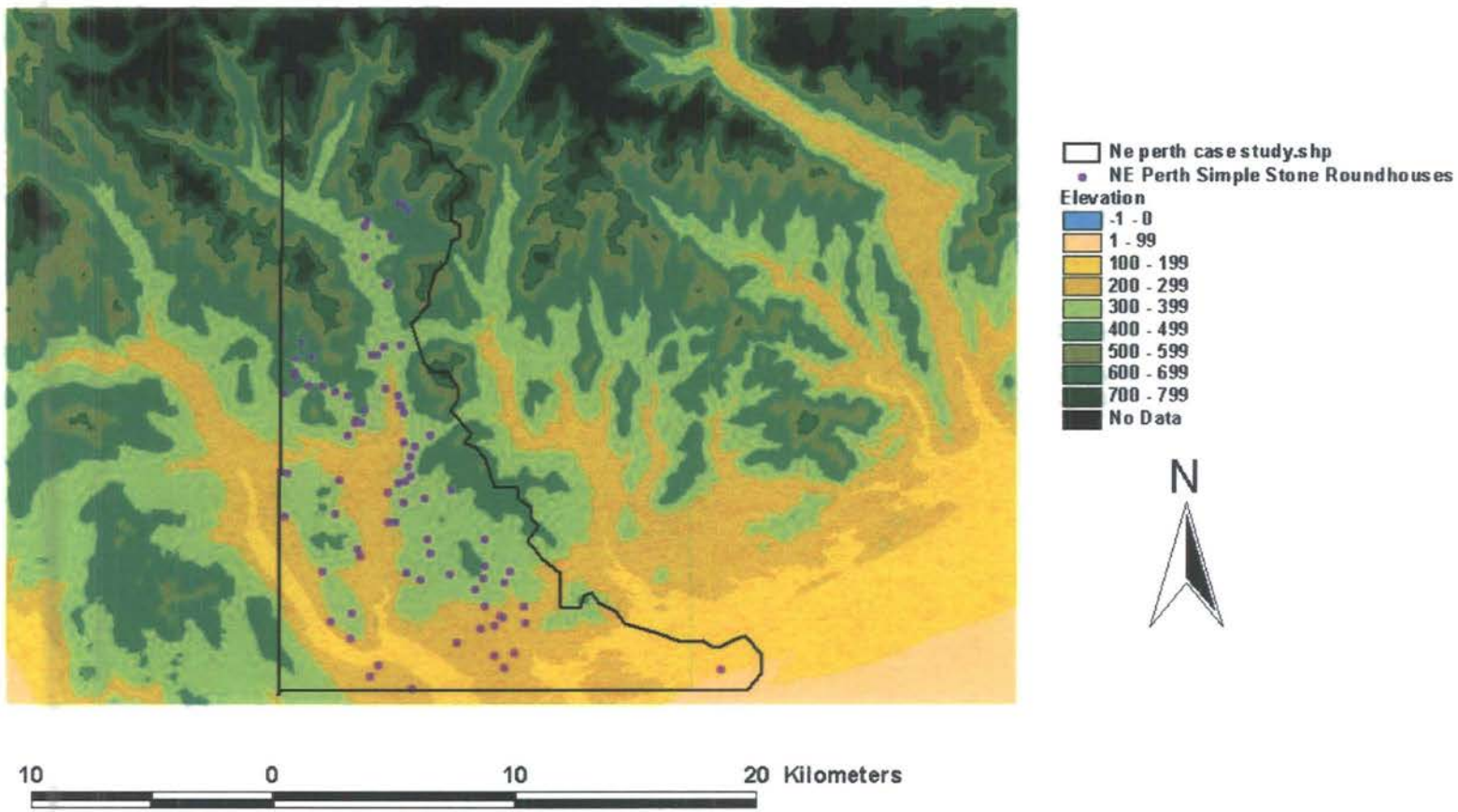

Fig. 7-11 Distribution of Simple Stone Roundhouses in north-east Perthshire Case Study

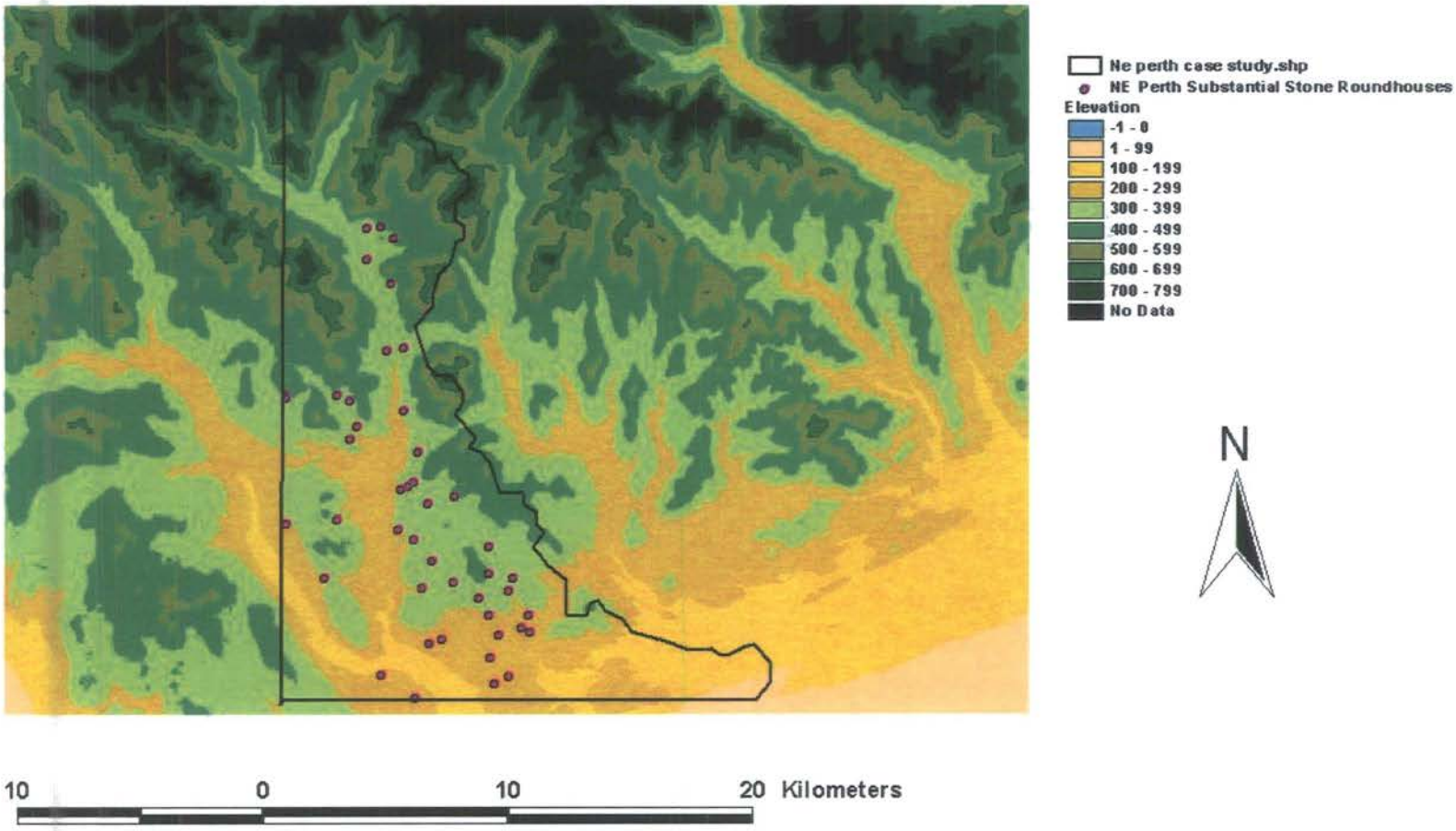

Fig. 7-12 Distribution of Substantial Stone Roundhouses in north-east Perthshire Case Study

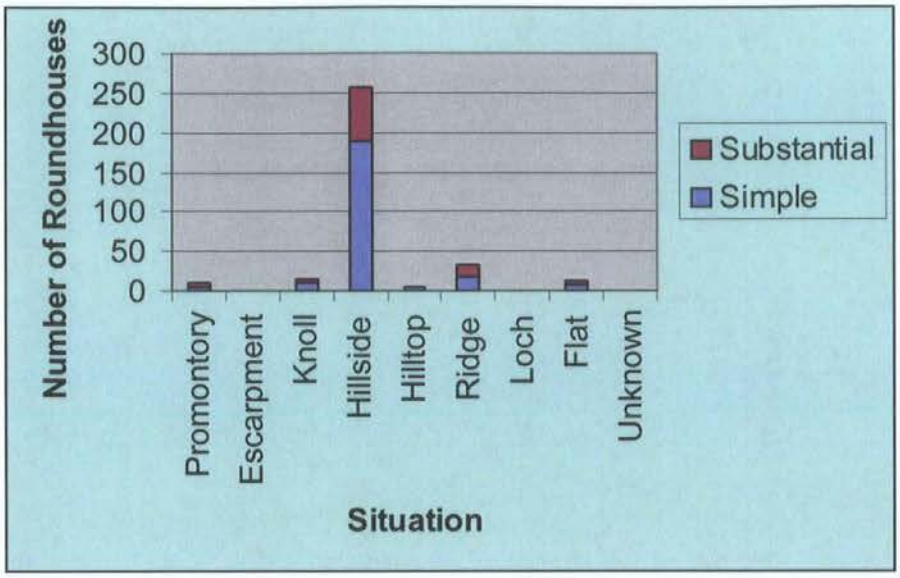

Fig. 7-13 Situations of Stone Roundhouses

7.3.3 Solid Geology

Solid geology is fairly uniform throughout the area of study and comprises Dalradian quartz-mic-schists, quartzites and grits. The case study straddles the Highland boundary fault and the small area included to the south of this is made up of Old Red Sandstone, albeit covered with glacial and alluvial till. These have made a large contribution to the make up of the overlying soils. The uniformity of the solid geology means that no correlation between this and settlement situation is discernible.

7.3.4 Aspect

An analysis of aspect for these sites is revealing. Both substantial and simple stone roundhouses show a strong preference for an aspect in the southern-western sector; 68% of SiSRHs and 78% of SuSRHs are situated on such slopes. Of these the vast majority are situated on south-west-facing slopes (47% of SUSRHs and 32% of SiSRHs). Of the other cardinal points, west is rather more popular for SiSRHs than SuSRHs; 17% (41) of SiSRHs are situated on west-facing slopes, compared to just 6% of SuSRHs. All three SiTRHs are situated on west-facing slopes. Fig. 7-14 shows aspect of slopes across the whole study area, highlighting the aspects avoided for settlement.

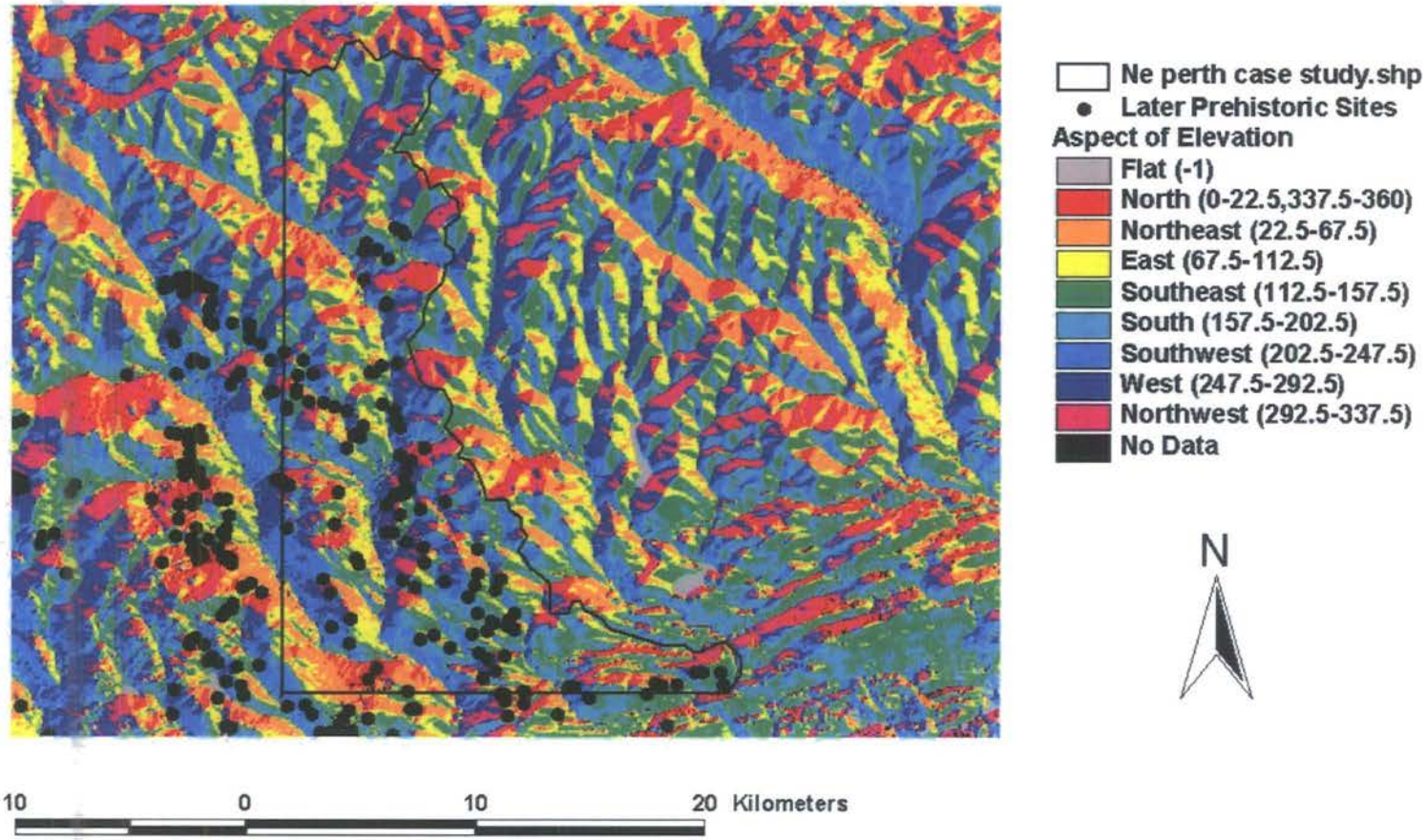

Fig. 7-14 Aspect of slopes in north-east Perthshire Case Study

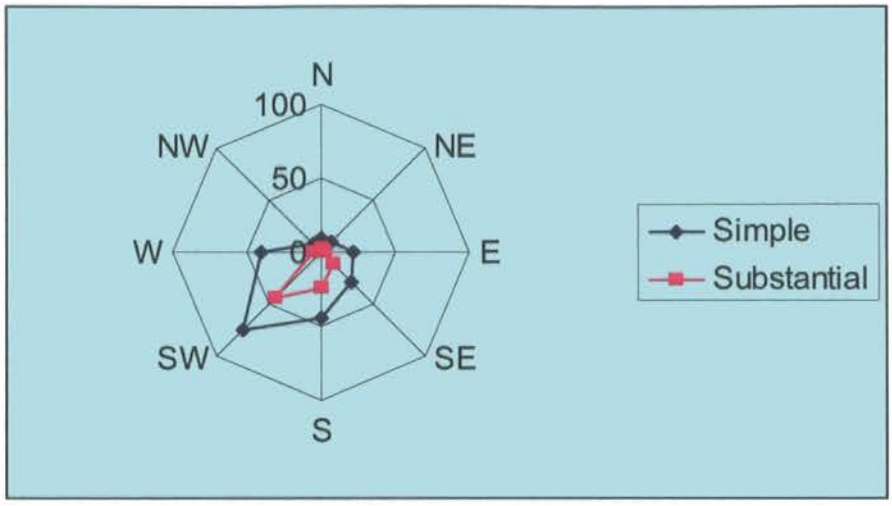

Fig. 7-15 Aspect of Stone Roundhouses

7.3.5 Land Quality[78]

Just over half (52%) of the stone roundhouses are situated on Class 5 land as are all of the simple timber roundhouses. The rest are situated on Class 4 (17%) or 6 (31%) land. There seems little variation between the substantial and simple houses. Stone roundhouses with evidence of complexity are also spread across Class 4, 5 and 6 land.

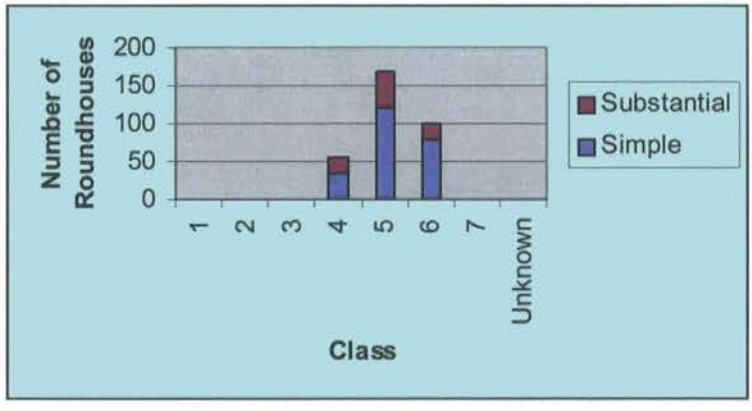

Fig. 7-16 Land Capability at Stone Roundhouse sites

7.3.6 Altitude

All stone roundhouses are situated at altitudes between 224m[79] and 453m[80] OD, with most situated between 301m and 400m; this general trend applies to both substantial

[78] See Table 6-4 in Appendix Six.
[79] Rochallie (NO15SW30.1)
[80] Invereddrie (NO16NE9.1)

and simple stone roundhouses. The Simple Timber Roundhouses, here of ring-ditch type, are all situated between 201m and 250m, rather lower than the majority of stone roundhouses. The stone roundhouses that have produced evidence of Iron Age activity are situated at somewhat higher altitudes but it is likely use of sites at altitudes greater than 300m OD was restricted to the summer months. In contrast, the two upstanding Iron Age enclosure sites (31065/NO25SE26 and 31061/NO25SE23) are in the 151-200m bracket, with the single unenclosed settlement and souterrain (Drumderrach: 31055/NO25SE18) at 105m OD. The total lack of later prehistoric settlement in the north of the study area (visible in Fig. 7-1) the fact that altitudes in this area exceed 500m OD.

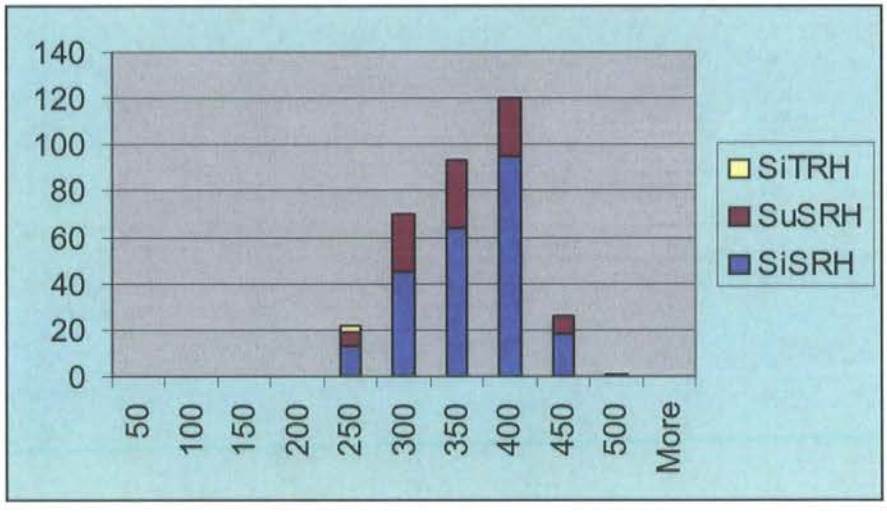

Fig. 7-17 Altitudes of Roundhouses

7.3.7 Survey Patterns

Fig. 7-18 shows the low level of aerial survey undertaken recently over the upland area under discussion, although it highlights the heavy flying that has taken place over lowland, cropmark sites. As mentioned above, though, the RCAHMS (1990) ground survey of the late 1980s has had a very positive effect on the number of sites known in this area.

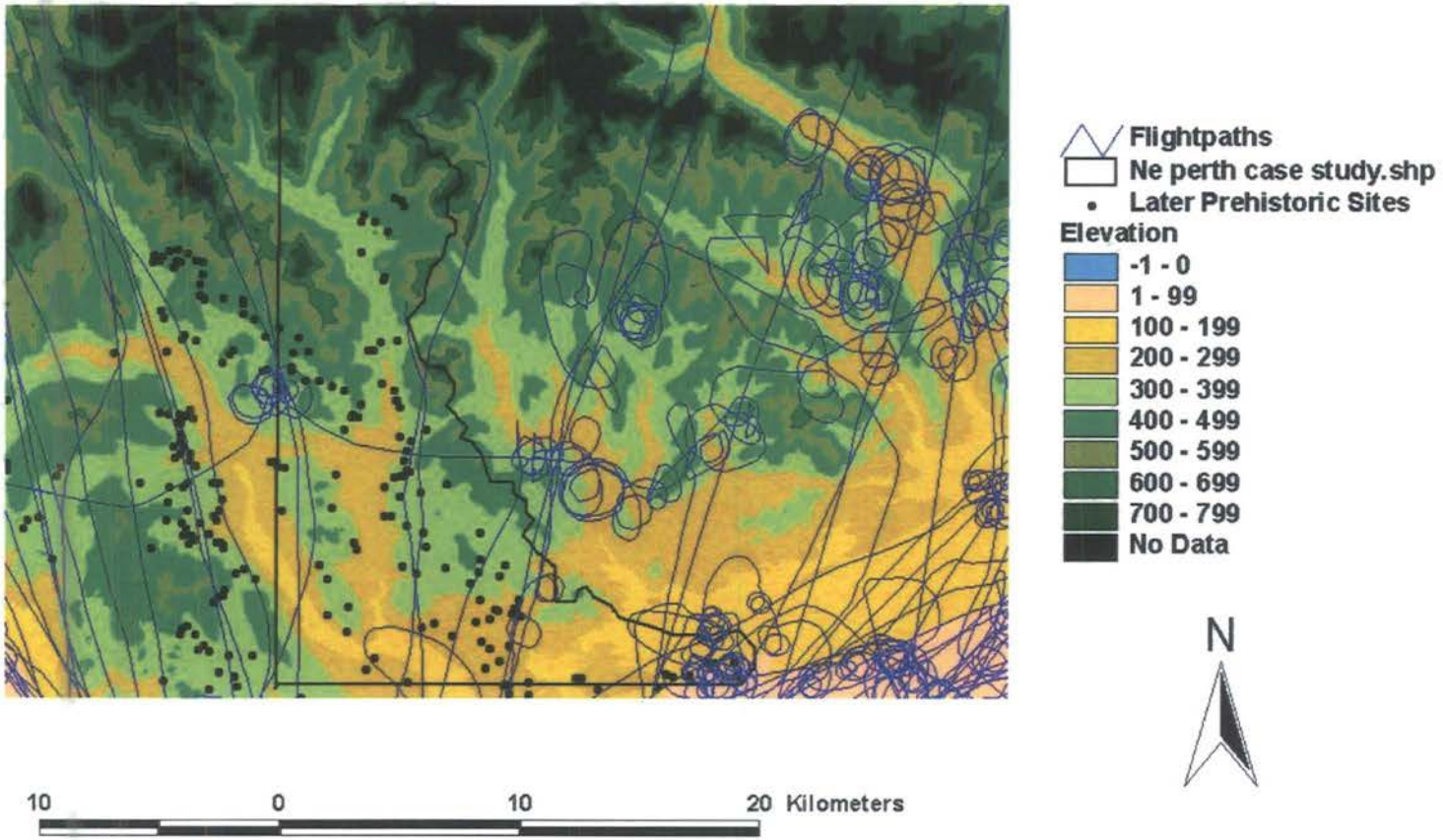

Fig. 7-18 Recent RCAHMS flight paths across north-east Perthshire Case Study Area

7.4 Discussion

The evidence presented above provides strong evidence for a tradition of monumental architecture in the Late Bronze Age, reflected in the large numbers of substantial stone roundhouses. These buildings could have provided large amounts of space for extended families, especially if one envisages an upper floor. Excavated evidence, coupled with field observation, suggests that many of these structures incorporate an internal post-ring or ring-ditch, which might also provide support for the contention that at least some of the ring-ditches observable in the crop-mark record further south are the remains of similar stone roundhouses. This could alter the perceived pattern of LBA settlement, suggesting some occupation of the lowlands at this time. The accreted remains of LBA settlement have resulted in the density of sites visible today; in several cases, tangential pairs of roundhouses show evidence for the second round house having been added at a later date (RCAHMS 1990, 4),. A situation can be envisaged where roundhouses were used and reused, with the function of each building altering over time. For instance, the older house in a tangential pair might have initially been a dwelling. It may have been abandoned for any of the reasons discussed in Chapter 4, before the site was resettled, with a second roundhouse being added. The older house might then have been used as a byre or store. A situation like this might be envisaged for a group such as RCAHMS (1990) group G at Balnabroich (Fig. 7-4, 29054/NO15NW14). A single walled roundhouse partly overlies the outer wall of a double walled one. This earlier one seems to have had at least two phases. Its wide funnel entrance might provide support for its use as a byre. A similar sequence of use and reuse has been demonstrated on the LIA SuSRH site of Aldclune (Hingley *et al.* 1997)

Comparison of entrance orientation data and aspect data sheds much light on the reasons for stone roundhouses generally having entrances in the south or south-east. Although most stone roundhouses are situated on south-west-facing slopes and therefore exposed to the prevailing wind, orientating the entrances to the south or south-east means that draughts and the undesirable effects of driving rain are kept to a minimum. Keeping the entrance on the south also means midday light into the structure is maximised. Houses on west, north or north-west facing slopes *never*

have entrances facing in those directions, even though there are some structures on other sites which do.

The evidence for Iron Age activity on some of the excavated sites, coupled with the three ring-ditch houses on the lower slopes provides support for the idea that the upland zone (particularly the lower slopes) continued to be exploited into the Iron Age, although upland settlement in this period may have been seasonal. By this time, the massive multivallate enclosure on Barry Hill (31061/NO25SE23) may have been constructed and been serving as a regional centre for dispersed communities who though having settled in the lowlands to some extent, whether down to practical reasons or just tradition, still looked to the hills at certain times.

Chapter 8 Later Prehistoric Settlement and Society in Perthshire and Stirlingshire: Setting the Evidence in Context

"That is the biographic style, and it does to tack together torn bits of stuff, stuff with raw edges." (Woolf 1931)

8.1 Introduction

The three case studies have enabled a more detailed understanding of the nature and significance of the later prehistoric settlement pattern in the study area and coupled with the detailed discussion of the excavated evidence in Chapter Four, facilitate a synthesis of later prehistoric settlement and society in Perthshire and Stirlingshire. Here this evidence will be set in the broader context of Eastern Scotland. Following a period by period overview of the study area, the evidence for later prehistoric settlement in Eastern Scotland to the North (Aberdeenshire, Kincardineshire, Angus and Fife) and South of the Firth of Forth (the Lothians) is synthesised and compared to the evidence from the Study Area.

8.2 Late Bronze Age

Despite occasional examples of very large concentrations of stone roundhouses in the uplands (e.g. Balnabroich: 29054/NO15NW14 etc.), the evidence for LBA settlement indicates small communities and even single households with a mixed economy some craft activities. These communities were not, however insular, with at least some members travelling around. This is evidenced not only in shared architectural traditions but also in metalwork styles that exhibit artistic influences from elsewhere (see Chapter Four). South of the Highland boundary fault, people also favoured the upland areas for settlement, hence the occupation of the Gargunnock and Sidlaw Hills. A recent review of metalwork deposits in the Forth and Tay valleys (Cowie and Hall 2001) indicates that the deposition of weaponry in rivers forms part of a wider phenomenon of depositing weaponry in water places, as explored by Bradley (1998a). In contrast, ornaments and tools tend to be recovered from dry-land

contexts. The find of a sword at Cambus, apparently associated with a skull fragment, also points towards a watery burial for some of the LBA dead (Cowie and Hall 2001). Although LBA settlement appears to have been concentrated in the uplands, these communities should not be seen as insular; they were clearly taking part in depositional traditions that span space as well as time. Not everyone was a farmer; specialisation is indicated in the high quality metalwork in hoards and other deposits. There is evidence for different uses of different structures. Cowie and Hall (2001) have suggested that 'hill-fort' sites served as centres in the LBA but there is, as yet, no evidence to suggest an origin earlier than EIA for such sites in the study area. It remains a possibility, however, given the evidence for LBA activity at such sites as Eildon Hill North and Traprain Law, East Lothian, although it should be borne in mind that neither of these sites were fortified in the Late Bronze Age.

Although Halliday (1985, 245) has argued that the ring-ditch houses are contemporaneous with the double-walled hutcircles, both dating to the first half of the first millennium BC, evidence published since suggests otherwise. Radiocarbon dates from ring-ditch houses in Angus strongly indicate occupation in the Iron Age (with most dates falling in the LIA) whilst the double-walled hut-circles seem, on the basis of the evidence from Badyo (26422/NN96SE27), to indicate dates in the early part of the first half of the first millennium BC. If this dating is accepted as being representative of these sites in general, then a rather different settlement pattern emerges. All the evidence available suggests that there is no *chronological* significance in the variant morphology of the upland stone roundhouses; rather, its significance may be functional and possibly related to the size or nature of the social group occupying it.

8.3 Early Iron Age (800-400BC)

The shift towards settlement in the lowlands may not have been as dramatic as it appears from the surviving archaeology. It should be borne in mind that lowland LBA stone roundhouses may have been partly or wholly destroyed by later ploughing. Surviving traces, such as post-rings or ring-ditches may be overlooked. The move to the lowlands may also have been coupled with an increased emphasis

on arable cultivation, for which the lowland soils and topography are better suited. This appears to have been associated with a move towards enclosure of settlement, generally sited on knolls and rises, which provide good drainage and views over surrounding land. Lowland settlements were relatively isolated spatially and there seems to have been little need for the kind of land division observable in East Lothian, for instance around the Chesters (Halliday 1982, 75; RCAMS 1924, 9-10)[77]. The possibility should, of course, be borne in the mind that at least some land division took the form of hedges (Boyd 1984). The only excavated pit-alignment in the study area, at Loanleven (26806/NO02NE90.0: Lowe 1990), remains undated. Large ditched enclosures on hilltops may have served as local centres, in much the same way as Traprain Law and Eildon Hill North (Owen 1992, 70) may have done; as yet there is little or no evidence for actual domestic occupation of such sites. Many of these exhibit several phases, indicating adaptation and reuse over long periods. However, this does not amount to a complete abandonment of the Highlands; there was still some settlement at high altitudes, for instance in the crannogs of Loch Tay as well as ring-ditch houses on the lower slopes. There is also some evidence for further activity on upland stone roundhouse sites running into the LIA, probably in the form of transhumant settlement, with some reuse or rebuilding of old buildings.

8.4 Late Iron Age (400BC-AD400)

The mid to late first millennium BC saw increased social stability, reflected in the popularity of the palisade. These could enclose stock when necessary and shield the activities going inside from the outside observer but could not have been defended against attack successfully (pace Raisen and Rees 1995, 43). Constructed entirely of wood, they would have been especially vulnerable to fire. Many such sites are situated at low altitudes, overlooked by surrounding land (e.g. Portend: 24066/NN50SE18). If the height of the palisade was c 2.7m as Raisen and Rees (1995, 43) suggest, some kind of raised walkway would have been necessary for defending the settlement. Just one circular cropmark palisade in the study area demonstrates two concentric palisade lines, which could potentially represent the

[77] Neither Chesters, nor the pit-alignments surrounding it, have been dated.

remains of such a walkway; this is at Stralochy, Perthshire (31055/NO04SE18: Fig. 8-1). The enclosure is 40m in diameter, with the palisade lines 4m apart (RCAHMS 1994c, 50-51) and is situated on Caputh Hill (but not on the summit), at 130m OD. The other site with two concentric palisade lines is a unique playing-card shaped enclosure at Newmill Cottages, again in Perthshire (77387/NO03SE45) on a knoll, at 45m OD. This is over- or under-lain by a cropmark souterrain and its date is therefore unclear.

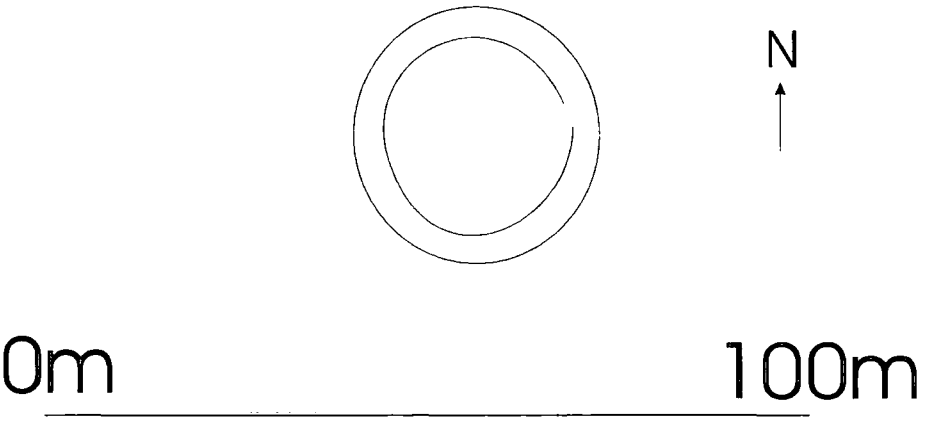

Fig. 8-1 Transcription of rectified oblique aerial photograph of Stralochy palisade, the only such enclosure to show two concentric palisade lines.

In some cases, palisades were directly succeeded by a later phase of settlement. In Stirlingshire and potentially in southern Perthshire, substantial stone roundhouses were built on top of palisades. In the rest of Perthshire, phase(s) of unenclosed settlements of timber roundhouses seem to have followed palisades. The agglomerations of circular maculae on some sites indicate that rebuilding or reoccupation occurred on these many times. If it is assumed that each timber house might have lasted several decades, these cropmarks may exhibit the accumulated remains of centuries of occupation on the same site. This need not, however, have been continuous. While there is little evidence that occupation on univallate and multivallate enclosures continued into the first millennium AD, some of these sites, whether consciously associated with previous generations or not, may have continued to serve as communal meeting places.

8.4.1 Souterrains and unenclosed settlement

Souterrains, and their associated open settlements seem to dominate understanding of the later Iron Age in Eastern Scotland north of the Forth, their distribution extending from a core in Angus into Aberdeenshire, Perthshire and beyond (Wainwright 1963, 7-9). A sparser distribution has been observed to the South of the Forth (Welfare 1984) and only one has so far been confirmed in Stirlingshire (a timber-lined example at Easter Moss (46860/NS88NE49): Strachan 1999a)[78]. The souterrains North of the Mounth, in Aberdeenshire, share some traits with those of Angus and Perthshire, but are significantly smaller (Wainwright 1963, 7-8). Although the corpus collated by Wainwright (1963) has been significantly augmented by aerial survey since the 1970s (Maxwell 1983b; 1987; RCAHMS 1994c), the general distribution he noted remains essentially the same (Armit 1999a, 577). The core of his Southern Pictland group is still in Angus and Perthshire, extending into North Fife and South Kincardineshire. As mentioned in Chapter One, souterrains were amongst the first monuments to attract interest from antiquarians. Armit (1999a) provides the most recent review of souterrains but seems to reinforce some misconceptions that are challenged here.

Given the impressive size of the souterrains in the core 'Southern Pictland' area, it is tempting to see souterrains either as centralised storage for a community and/or storage of an agricultural surplus, which could eventually be traded with neighbouring communities (Macinnes 1983). As Watkins (1980a, 199) noted, souterrains such as Newmill, Bankfoot (27007/NO03SE13.1) could have stored far more food than was necessary for a family living in the associated roundhouse. This is particularly attractive when one notes that the souterrains in the Northern Isles are far smaller, arguably reflecting smaller communities and lower agricultural potential compared to the fertile lowlands of Scotland. Nevertheless, evidence from the cropmark record and now from excavations at Auchlishie and Dubton in Angus, indicates that some settlements had more than one souterrain and their dense distribution counts against Watkins' (1980a) argument that they were controlled by an élite.

[78] The other possible example is at Castlecary (NS77NE43).

That souterrains form part of unenclosed settlements was first posited by Wainwright (1963), and reiterated by Watkins (1980a), following his excavation of the open settlement and souterrain at Newmill, Bankfoot (27007/NO03SE13.1). This was repeated by Maxwell (1983b; 1987) who argued that the majority of souterrains discovered aerially were associated with open settlements. This is now the working assumption, with Armit (1999a) postulating that souterrains are to be found at many farming settlements throughout the fertile lowlands, acting as centralised storage. Armit argued that a contemporary building was uncovered during Jervise' excavation of a souterrain at West Grange of Conon, Angus (Jervise 1863). A recent re-excavation has cast doubt on this theory, suggesting that the apparent paving noted by Jervise was actually a fortuitously sub-circular shaped area of natural bedrock (Cameron 2003). Indeed, at Redcastle, Angus, a large timber-lined souterrain, there was no evidence for an associated roundhouse (Alexander 1998a), although Armit (1999a), not unreasonably given the position of the site on a sandy slope, argues that ploughing obliterated it.

West Grange of Conon, Angus was on the site of a later burial ground (Cameron 2003), as was Redcastle, Angus (Alexander 1998a; Alexander and Rees 1997b). At Fowlis Easter, 'stone coffins' were also reported on the same land as a souterrain (Stuart 1865); a similar juxtaposition may have occurred at Carlungie, Angus where there were short cists and possibly also long cists nearby (Wainwright 1963, 121). Incidentally, the buildings uncovered at Carlungie were actually later than the souterrain. These 'isolated' souterrains may hold the key to identifying the function(s) of souterrains in general; it is tempting to see the long cist burials as a later re-use of sacred ground, although it could, of course, be coincidence. The souterrain at The Welton (28896/NO14SE29) is in the same field as numerous features of potentially later prehistoric date, including square barrows and similar juxtaposition can be found at other, unexcavated sites in Perthshire. The point here is that there are more excavated souterrain sites juxtaposed with cist burials than there are proven to be associated with round houses. It may be wise not to assume presence of domestic dwellings at souterrain sites, which is in itself likely to lead to the assumption that they served a domestic function.

8.4.1.1 The Abandonment of Souterrains; comparing the evidence from Perthshire and Stirlingshire to that from other 'Angus-type' souterrains

"Vague hints and an absence of contradictory evidence are no substitutes for positive evidence, and it is a fact that we cannot say...when the Longforgan souterrain was de-roofed..." (Wainwright 1956, 63-64)

The prevailing view, following Wainwright's excavations at Ardestie, Carlungie I (Wainwright 1963) and Longforgan (31710/NO32NW1: Wainwright 1956, 62) and Watkins' (1980a) at Newmill, Bankfoot (27007/NO03SE13.1) is that souterrains were backfilled in a single episode. Armit (1999a) uses this as the basis for arguing for the existence of a 'souterrain abandonment horizon' in the second century AD. The evidence for this from Newmill is quite convincing. However, the radiocarbon date from the bonfire, from which Armit dates the destruction, does not indicate a second or third century date as he argues. The date calibrates to 130AD-410AD at 2 sigma i.e. second to fifth centuries. Even at 1 sigma, it calibrates to third to fourth century (220AD-390AD (GU1019)). Thus, the argument that this date confirms that the Roman finds and therefore the backfill were deposited during, or soon after the Roman occupation does not hold. What this date suggests is that the wood in the bonfire was probably felled at some point between 130AD and 410AD, and most likely between 220AD and 390AD. This is not a sound basis on which to deduce the date of the abandonment episode as being between two historical events in the second and third centuries.

Indeed, the evidence from many recently excavated souterrain sites does not fit Armit's hypothesis. At Shanzie (183018/NO25SE55), for instance, there was no evidence for deliberate backfilling; rather, the excavators argued, the souterrain had gradually silted up over a period of 700-800 years before it was reused, with a cobbled surface being laid on top of the primary silt. When it fell out of use once more, it again silted up naturally (Coleman and Hunter 2002). Turning to the evidence from Angus, a similar pattern is evident. At Fletcherfield, the first 45cm or so of fill was clearly the result of natural silting, although the next 65cm of fill was more homogenous and could have been the result of deliberate backfilling (Dick

2002). This suggests that any backfilling took place long after the souterrain had fallen out of use and certainly not in the narrow window in the Roman Iron Age that Armit suggests. Although McGill (2003) tentatively suggests that the souterrain at Ironshill was also backfilled in a single episode, the evidence implies that this timber-lined souterrain had also lain open for some time before it was backfilled. 60cm of primary silting was evident below the homogenous fill. At West Mains, Lunan Bay, a possible souterrain also produced only evidence of natural silting; unfortunately it produced no artefacts or other dating evidence (Alexander 2000b). At Hurly Hawkin, too, there was a layer of silt 0.2m deep in the bottom of the souterrain, again suggesting that the souterrain had fallen out of use some time before the collapse or dismantling of the roof (Taylor 1982, 220-221). Indeed, the subsequent fill included pottery fragments dating to the early fourteenth century AD.

Coupled with Coleman and Hunter's (2002, 97) observation that the Roman artefacts found in souterrain fills cannot be assigned to as narrow a chronological range as Armit argued, this evidence provides a convincing case for rejecting the idea of a souterrain abandonment horizon. While some souterrains, including Longforgan (31710/NO32NW1), Newmill, Bankfoot (27007/NO03SE13.1), Carlungie I (Wainwright 1963), Carlungie II (Wainwright 1953a), Ardestie (Wainwright 1963), and Dubton (Cameron 2002) (Angus) do appear to have been backfilled and partially dismantled in a single episode, many others definitely have not. Hawkhill, Angus was deliberately backfilled, but in two separate episodes, and with no other finds than a broken saddle quern and a broken rotary quern[79] (none of the Roman artefacts which Armit stresses) (Strachan 1999b), as was Newmill, Bankfoot.

In summary, Armit's (1999a) argument cannot be sustained using the available evidence. Some of the souterrains have indeed been deliberately backfilled but many have not. If Armit's theory cannot be sustained, a scenario could alternatively be envisaged in which souterrains were backfilled when people felt it necessary, for whatever reason. Perhaps in some cases, this was to reclaim the gap-site for

[79] There is some evidence that quern stones were deliberately deposited in the entrances of souterrains as part of a ritual "closure" deposit; this is evident at Hawkhill, Newmill and Carlungie. Hingley (1992) has argued there may be a conceptual link between the use of souterrains for storing grain and the disposal of the tools used for grinding it. This pattern of deposition does not in itself, however, prove that there was a single backfilling episode at these sites nor indicate contemporaenity.

cultivation, or to ensure that domestic animals or children did not fall in; sometimes this happened immediately the structure went out of use (for instance, where it was decided to stay on at the same settlement site), while in others it might have been hundreds of years later. This model is not as elegant, or as neat as Armit's, but it would appear to fit the available evidence better.

8.4.2 Discussion of Roman-native relationships, settlement in Roman and post-Roman period

In discussing the relationships between the occupying Roman army and the indigenous people of this area, it needs to be borne in mind that there may be many sites that, despite producing no Roman goods, were nevertheless occupied in the Roman period and were home to people who interacted with the occupying force. Studies have necessarily focussed on Roman finds from non-Roman contexts (Hunter 2001a), with particularly informative advances being made in scientific analysis of metalwork (e.g. Dungworth 1998). Any attempts to go beyond this and attribute single events observable in the archaeological record to Roman action, for instance in MacKie's (1982; 1987) contention that the destruction deposit at Leckie (45379/NS69SE12) was attributable to an attack by the Romans, go well beyond what can reasonably be extrapolated from the archaeological remains. There is a tendency to interpret Roman objects on native sites as trinkets or status indicators (Macinnes 1984a). It has already been shown here that crannogs and so-called duns may not be the homes of a native élite, as Macinnes (1984a) argued. Hunter (1997; 2001a) has presented the argument that access to these objects was socially controlled but that regional variations in this are evident. Hoards containing Roman goods are near absent from Perthshire although some of the best evidence for Roman artefacts in burials comes from his North-East region (defined by Hunter as the area between the Antonine Wall/River Forth and the Moray Firth). Hunter suggests that, like South-East Scotland (the Tyne-Forth), hierarchical access to Roman goods is evident in the depositional patterns in the North–East (South of the Mounth). The 'rich' sites in Stirlingshire fit in best with Hunter's South-East zone and, he argues reflect a stronger social hierarchy, although they may also reflect the easier access to Roman goods in the frontier area (Hunter 2001a). Wide ranges of Roman goods are

manifest at Camelon (46922/NS88SE24), Buchlyvie, Fairy Knowe (44651/NS59SE3) and Leckie (45379/NS69SE12) with much narrower ranges from Easter Moss (46860/NS88NE49) and Lower Greenyards, Bannockburn (47244/NS89SW12).

As Hingley (1992) has pointed out, these patterns may in part be due to the attention paid to substantial houses; relatively few hillforts, enclosed and open settlements have produced relevant material but relatively few have been excavated. The reservoir effect that upstanding buildings may have on the picture in this region, which has been intensively cultivated since (Hunter 1998b) also needs to borne in mind. As discussed in 4.2.2, only twelve excavated sites in the study area have produced Roman goods (Fig. 4-4), seven of which are substantial stone roundhouses. Eight out of twelve are in Stirlingshire, which over-represents the sites nearer the Antonine Wall compared with those on the Gask Ridge or nearthe 'Glen-blocker' forts of Perthshire. As will be discussed further in the following chapter, there are opportunities to address this in future fieldwork.

8.4.3 Burial; locating the missing dead

Evidence for Iron Age burial in Perthshire and Stirlingshire has been so elusive that there has been a temptation to argue that bodies were disposed of in archaeologically invisible ways (Armit 1997b, 96). Hingley (1992, 38) suggests that the variety of burial traditions in the period frustrates any attempt to identify patterns in the data. Here, the possibility is raised that Iron Age burials in the region have been missed because erroneous assumptions were made. It is dangerous to assume, as has often been done in the past, that any burial which does not contain grave goods must be Early Christian, even if it is orientated west-east, as so often has been done in the past. Dating a burial by its orientation is a very crude device, and ignores the possibility that prehistoric communities may also have had reasons for orientating their dead west-east. For instance, it may have been thought appropriate to orientate bodies towards the rising sun, just as some roundhouses are (Oswald 1997)[80]. If the

[80] Although this interpretation of the roundhouse evidence has been convincingly challenged recently by Pope (forthcoming).

normative burial rite is unknown, it cannot be assumed that absence of grave goods was unusual. The general rule of thumb is that crouched inhumations are Bronze Age and that extended inhumations are first millennium AD or later. However, as will become evident, there are informative exceptions to this rule. It should also be borne in mind that in an area where human remains often do not survive, due to the acidity of the soil, organic grave goods (and even small metal objects) might leave no trace. Laying aside the 'traditional' assumptions, a search was made for burials that might be attributed to the Iron Age.

Several long cist burials have been excavated in the study area and although they are usually assumed to date to the first millennium AD, many have not be independently dated. At Avonglen, seven long cists were discovered during quarrying, of which two were excavated (Close-Brooks 1973; Main and Murray 1980; Walker 1974; 1976). Of these, cist 2 was orientated south-west/north-east and cist 3 slightly off west-east. There were no grave goods, although a pebble was found between two stone slabs at the E end of Cist 2. Young (1973) was only able to tentatively identify the individual in Cist 3 as male. One of the cists not excavated was that of a child (Walker 1974). Long cists were found on this site in the nineteenth century, too, so it could represent a larger cemetery.

Similar long cists were found at Denovan, on the same site as two short cists of Bronze Age date. The excavator believed these to be Iron Age, rather than early Christian; this was based on the fact that they were orientated north-east/south-west rather than east-west (Hunter 1971, 31). The long cists had been badly damaged by ploughing and presumably chemical action; no bones were evident. Hunter (ibid., 31) argued against continued sanctity of the site, suggesting instead that the site was chosen in the Iron Age, as in the Bronze Age, because it was on sandy ground overlooking a river. However, a break in use need not preclude an Iron Age community deliberately choosing the site as one associated with the 'ancestors' [81]. Hingley (1999) has recently argued for a sense of the past in the Iron Age, as manifested in the reuse of Neolithic and Bronze Age monuments. The juxtaposition

[81] In the context of Early Bronze Age Aberdeenshire, Noble (2001) has recently suggested that there was a preoccupation in keeping water *out* of graves, noting a preference for free-draining sand and gravel coupled with slab lining and in some cases, clay sealing. If this was also the case in Perthshire, a juxtaposition with later settlements may simply reflect a shared interest in well-drained land.

of Bronze Age and Iron Age cemeteries is therefore potentially highly significant. However, activity in the later prehistoric period on earlier sites need not provide confirmation that people saw the monuments as being part of *their* past. In more modern times, prehistoric monuments have been associated with a variety of mythical creatures[82]; MacRitchie (1917) even suggested that the souterrains of Southern Pictland, traditionally known as *eirde hooses* (earth houses) might be the origin of local myths about the 'little people'. Various possible motivations behind the reuse of old sites or burial grounds should be considered.

Hingley (1999) cites just one site within the study area, namely Moncrieffe (28012/NO11NW11), a stone circle reused as a metalworking area (Stewart 1985). Pragmatic reuse is an explanation that should be considered here, however; the circle could potentially have provided a sheltered spot with good light, away from any settlement. Even if metalworking was not, as some (e.g. Budd and Taylor 1995; Hingley 1997b) have argued, a 'magical task' the poisonous nature of the resultant fumes may have been recognised. However, if further radiocarbon dating and excavation support the hypothesis that Iron Age people living in Stirlingshire, Perthshire and the surrounding area were choosing historical burial grounds in which to bury their dead, this might provide additional support for Hingley's argument.

[82] There are nine instances in the study area of site names which include the word "fairy", including 7 "Fairy Knowes".

Fig. 8-2 Child's long cist at East Coldoch (courtesy Roman Gask Project)

Close-Brooks (1984) has argued that long cists are a tradition of the first few centuries AD, but this is based on the dating of grave goods in the Tyne-Forth province. This dating may be supported by the evidence from East Coldoch (46081/NS79NW34), where a child's long cist (Fig. 8-2), orientated south-north, was uncovered at the entrance to a roundhouse that seems to date to the Roman Iron Age, at least in the later phases. Although the cist did not contain any surviving inhumation and the chronological relationship with the multi-phased roundhouse has not been established (Woolliscroft and Hoffmann 2003b), its position seems unlikely to be coincidental. It seems reasonable, therefore, to accept that the grave might be Late Iron Age in date.

However, it possible that some of the other long cists that do not include Roman period objects might be earlier. The presence of Roman goods in some long cists should not be allowed to skew the dating of potentially earlier graves. There is another reason to believe that some long cist burials in the study area are Iron Age. Again in Stirlingshire, there is an apparently local concentration of so-called 'warrior' burials. These are long-cists containing individuals buried with weaponry and other items. Those at Falkirk, Camelon, Carmuirs Gravel Pit

(46911/NS88SE16) were originally interpreted as being those of Roman soldiers, or at least local people recruited to serve as auxiliaries (Breeze *et al.* 1976) but Fraser Hunter has argued more recently that they are Iron Age. The sword is of a LPRIA type, the mode of burial is not Roman and the double burials and weapon burials are far more common in an Iron Age (albeit southern) context (Hunter 2001b, 121). Until recently, the one Scottish parallel was from Merlsford, Fife[83] (Hunter 1996) but another 'warrior' burial belonging to this central Scottish group has now been found at Marshill, Alloa, comprising an extended male inhumation placed in a corbelled cist with a sword, scabbard suspension rings, a spear, a pin, toe rings, and a glass bead (Hunter forthcoming; Mills 2004). The Marshill example is the first 'true' warrior burial, in the Southern British sense, since it includes a spear as well as a sword.

An Early Bronze Age date was assumed for three oval cists from Barbush (159347/NN70SE91), until an AMS date from bone from Cist 3 (which had no grave goods) produced a surprisingly late date of 2845±50BP (AA-36507) (Holden and Sheridan 2001) which calibrates to 1190BC-840BC at 2σ. One could probably explain this away if it were not for the fact that similarly late dates, attributable to the Iron Age, were obtained for burials in oval pits or cists at Dryburn Bridge (Triscott 1982, 122), Dunbar Golf Course (Baker 2002) and Broxmouth (Ashmore and Hill 1984; Hill 1982a) in East Lothian. An oval cist recently excavated at the Late Iron Age enclosure at Knowes, also in East Lothian, contained cremated bone (C. C. Haselgrove pers. comm.). For further examples without radiocarbon dates, in East Lothian and the Borders, see Halliday and Ritchie (1982) and Crone (1992). An as yet undated oval cist has also been excavated at East Coldoch, although this time apparently within a round barrow (Woolliscroft and Hoffmann 2003b).

[83] Although this was not a long-cist burial.

Fig. 8-3 Oval Cist at East Coldoch; note the clay bottom (courtesy Roman Gask Project)

Its position in the relative sequence on the site suggests it may date to the first millennium BC, or possibly earlier. Round barrows in this area are generally assumed to be Early Bronze Age (RCAHMS 1994c)[84], but recent excavations at Redcastle in Angus show that they were also used, along with square barrows, in the Early Historic period (Alexander 1999). Indeed, two of the round barrows at Inchtuthil (The Women's Knowe: 79584/NO13NW7.1 and 79585/NO13NW7.2) overlay the remains of the legionary fortress (Abercromby *et al.* 1902). The possibility that round barrows and oval cists may have been used in the Iron Age should not, therefore, be ruled out (compare also examples from Peebleshire and Lanarkshire: Harding 2001). There is even a possibility that some of the short rectilinear cists in Perthshire and Stirlingshire may have been misidentified as Bronze Age; a femur from a teenaged woman buried in a short cist at Kingsbarns in Fife was recently dated to 460-160BC (GU-8219) (James 2001). An Early Bronze Age date should not be assumed for what Coutts (1971, 14 & 18) terms 'un-urned' short cists. However, it proved impossible to accurately estimate the number of un-urned short cists so far found in the study area. There are at least 267 known cist sites in Perthshire and Stirlingshire but many are known only from antiquarian

record, which provide insufficient detail to determine presence or absence or grave-goods, or even to ascertain whether the cist was short or long.

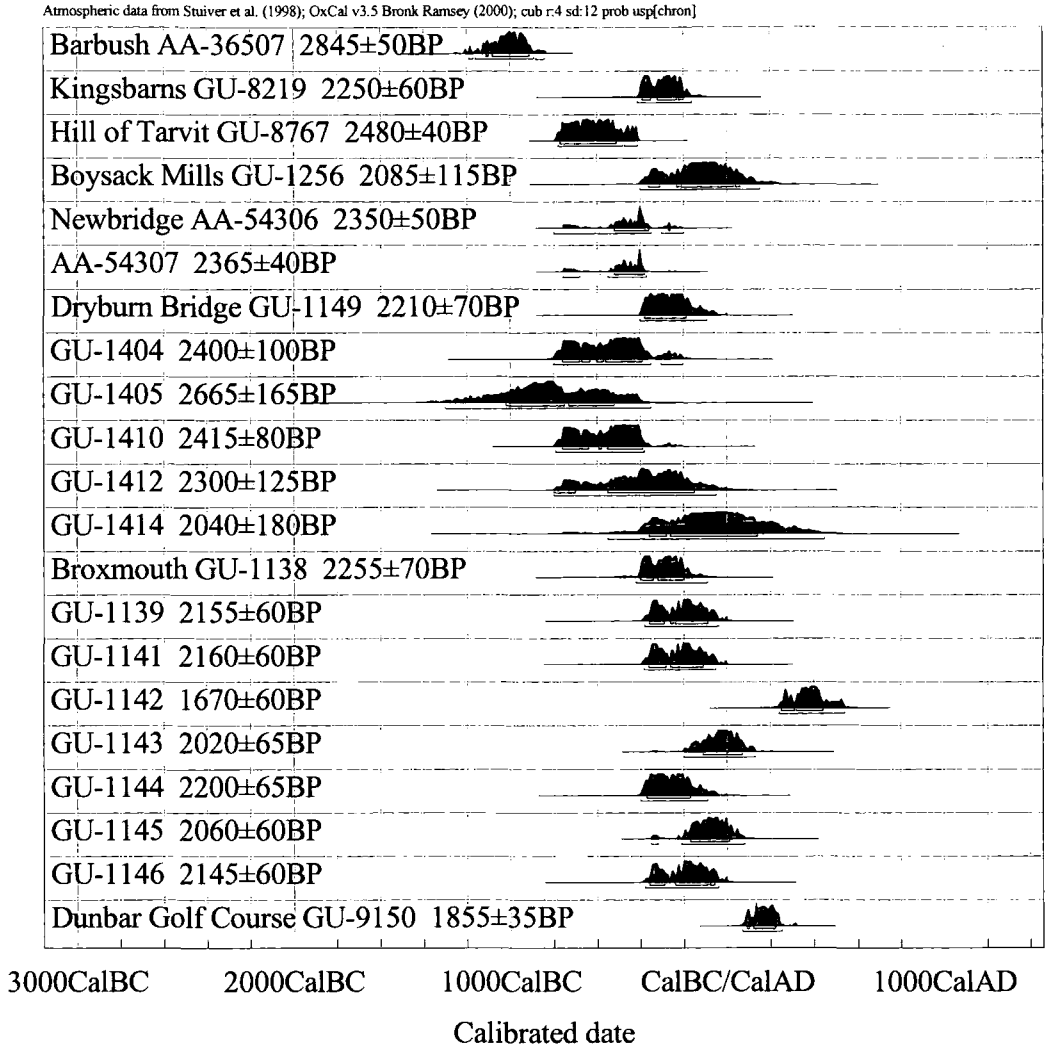

Fig. 8-4 Late Bronze Age and Iron Age radiocarbon dates from burials in and around the study area. Barbush is in Stirlingshire, while Hill of Tarvit is in Fife, Boysack Mills is in Angus, Newbridge is in Midlothian. Dryburn Bridge, Broxmouth and Dunbar Golf Course are all in East Lothian.

Square barrows are also a possible candidate to fill the apparent gap in the burial record. Square barrows in Scotland, like souterrains, are concentrated in Angus but the distribution includes eastern Perthshire and Fife as well as Aberdeenshire, Moray, Midlothian (Rees 2002b) and Dumfries and Galloway (Cowley 1996). Although those excavated at Redcastle, Angus proved to be Early Historic, the unusually large example at Wester Denhead (30958/NO24SW46) produced a sherd of Roman

[84] Although excavations at Pitnacree (Coles and Simpson 1965) and North Mains, Strathallan (Barclay 1983b), indicated that some are Neolithic.

pottery, and the Boysack Mills example a first century BC/AD pin. While still Early Historic, the square barrows at Thornybank, Midlothian (Rees 2002b) are significantly older than those at Redcastle. There are apparently stylistically related square cairns elsewhere, e.g. Garbeg and Whitebridge (Wedderburn and Grime 1984), Lundin Links (Fife) (Greig *et al.* 2000), Kilpheder, South Uist (Brennand *et al.* 1998; Parker Pearson 2002) and Wales (Rees 2002b, 347-349), although these have all proved to be Early Historic in date. Although none of the Scottish square barrows uncovered so far have been cart/chariot burials, an Iron Age cart/chariot burial uncovered recently at Newbridge, Midlothian (Carter and Hunter 2003), confirms that contacts between Eastern Scotland and the Continent may have influenced burial practices in the Late Iron Age, an idea previously discussed by Murray and Ralston (1997). The Newbridge chariot burial also bears comparison with the example from Ferrybridge, West Yorkshire (Boyle 2004), since both included an articulated cart/chariot. In contrast, those excavated in East Yorkshire all included dismantled vehicles (Stead 1991). Perhaps the early dates indicated by a first century BC/AD ring-headed pin and late first millennium BC/early first millennium AD radiocarbon dates from Boysack Mills (Murray and Ralston 1997) should not be so readily dismissed.

There is of course the possibility that some cremation burials in the area are Iron Age and some of the missing dead may have been scattered and therefore rendered archaeologically invisible. A cremation burial in Fife was recently interpreted as Bronze Age despite the fact that it contained charcoal which was dated to 780BC-410BC (2480±40BP (GU-8767)) (James and Duffy 2001) and no other dating evidence. While the only other feature on site contained Bronze Age pottery, this is not sufficient grounds to interpret the burial as being earlier than the single date suggests. Indeed, it raises the possibility that at least some of the 'missing' burials are cremations, although all of those in the study area so far radiocarbon dated have indicated dates in the third or second millennia BC[85].

[85] Apart from a cremation deposit in an urn at Sandy Road stone circle, New Scone which produced a Mediaeval date (Stewart 1965). The date was, however, from the Gakushin laboratory, which has since been shown to have been unreliable.

8.5 Comparison with areas of settlement to the North of the Forth

In synthesising the evidence relating to settlement and society in the Scottish Iron Age at the time, Hingley (1992) argued that open settlements predominated north of the Forth, in Fife and Tayside. This was seen to contrast sharply with the predominance of enclosed settlements South of the Forth. This impression was repeated by Armit (1997b, 61). However, a rather different picture is now emerging, largely due to the survey and excavation carried out in the twenty-one years since Macinnes' (1983) thesis. Macinnes acknowledged that her study only took account of evidence gathered up to the time she started her PhD research (in 1978) and was not therefore, exhaustive (Macinnes 1983, 3). It is timeous, then, to review the evidence that has accumulated in the intervening twenty-five years, in the light of this new study of Perthshire and Stirlingshire. The syntheses of the areas of Eastern Scotland adjacent to the Study Area below are not intended to be exhaustive and are based solely on published data. They are intended to give a flavour of each and briefly explore the similarities and differences with the settlement record of Stirlingshire and Perthshire. The burial records have already been discussed, in 8.4.3.

8.5.1 Fife

The corpus of known sites in Angus and Fife has grown significantly since Macinnes' work in the early 1980s. In the recent Agenda document, Fife was classified as a 'Black Hole' (Haselgrove *et al.* 2001), which is perhaps a little pessimistic given Macinnes' (1983) treatment of North-East Fife in her thesis, and the results of some of the developer-funded excavations of the 1990s. In addition, Bersu's (1948a; 1948b) excavations show that substantial and simple timber roundhouses were built there. Maxwell's (1968) excavation of a simple stone roundhouse at Drumcarrow Craig shows that upland settlement in Fife bears comparison with that in Perthshire, although Maxwell argued that structurally it should be compared with sites to the south. Although he preferred a LIA date, the finds would certainly not be out of place in a much earlier context. At Ormiston Farm, an LIA date was favoured for a stone roundhouse overlying a timber

roundhouse (Sherriff 1988), which would again suggest some cultural affinity with the area south of the Forth. The univallate enclosure at Scotstarvit Covert, with its central roundhouse (Bersu 1948a), might compare best with enclosed sites in Stirlingshire; in its use of space it also bears comparison with the palisades of the Study Area. Macinnes (1982b) noted numerous lowland unenclosed settlements of loosely agglomerated roundhouses, particularly beside the Mottray Water, and dates these to the first millennium BC. She notes 'forts' in defensible locations along hill ranges overlooking the Tay Estuary. She assumes that they belong to the late first millennium BC and therefore bear comparison with enclosed settlements South of the Forth. Iron Age pottery was indeed found at Clatchard Craig, but the multiple ramparts were all of Early Historic date (Close-Brooks 1986). Some of the other multivallate enclosures could, however, be much earlier than this and parallel those in Perthshire. Rectilinear enclosures such as Green Craig (Bersu 1948b), however, find better parallel in East Lothian. 'Stray finds' of brooches and a tankard handle found in recent years may hint at previously undetected settlements of Roman Iron Age date (Hunter 1996, 117). Hunter (1996, 122-123) notes that uptake of Roman brooches by native society in this area, and indeed in Scotland as a whole, shows a bias towards forms that echo native styles, although the significance of this is not yet fully understood. As in Perthshire, there is insufficient evidence to attempt a study of Roman-native relationships in this area.

There is some evidence for specialist craft activities having taken place in the Iron Age in Constantine's Cave (metal-working) and Kinkell Cave (bone-working), which also yielded Roman finds interpreted by Hunter as ritual offerings. These caves have been compared to Sculptor's Cave, Covesea and Borness Cave, Kirkcudbright (Hunter 1996, 119); no similar sites are yet known in the Study Area, but this may have as much to do with regional variation in geomorphological characterics than any variation in ritual or craft venues.

Although several sherds of LBA/IA pottery were recovered at Craigie Hill, none came from features that were conclusively Iron Age. One sherd, for instance, came from the upper fill of a ring-ditch thought to be the remains of a round barrow (Freeman 1997). The unenclosed settlement at Easter Kinnear nearby, also detected from aerial photography, was found to date to a period slightly later than that under

consideration here producing radiocarbon dates in the sixth and seventh centuries AD (Driscoll 1997). The evidence from an Early Historic settlement and metalworking site at Scotstarvit, on the Fife water pipeline, may include some evidence for activity in the fourth century AD (MacGregor 1998, 85 & 89). The results of further as-yet unpublished developer-funded excavations in Fife, and in particular that at Drumoig (Halliday 1996; 1998; Halliday and Simpson 1997; H. F. James 1999), may enhance the limited later prehistoric period dataset.

Most noticeable, however, are the low numbers of souterrains; Wainwright (1963) listed only six, all in South-East Fife. Since then, several more have been identified through aerial survey by RCAHMS (Maxwell 1987, 36), extending the distribution into North-East Fife. However, Macinnes' (1982b, 70) argument that the low distribution density "seems to divorce the area from unity with Angus to the North of the Tay" still holds true. Wainwright (1963, 3 & 8) also argued that the Fife souterrains are structurally different from his Southern Pictland group, and bear comparison with the souterrains of the Northern Isles. Macinnes went on to suggest that the development of North Fife in the latter part of the Iron Age parallels that of the area to the South and hints that this might be linked to the construction of the Gask Frontier in the Roman period (Macinnes 1983, 382-385). Consequently, she proposed that "The cultural boundary thought to exist at the Forth-Clyde isthmus should therefore, properly be seen as a fluctuating boundary between the Forth and the Tay, with the affinities of the intermediate zone oscillating one way or the other" (Macinnes 1983, 398). Macinnes also noted the very low density of known sites in Northern Fife (one per 1.9 sq miles) compared to those then known for East Lothian (one per 0.8sq miles) and Angus (one per 1.2 sq miles) (Macinnes 1983).

8.5.2 Angus

Angus is regarded as "unsorted" (Haselgrove *et al.* 2001) although Werner (2002; forthcoming) has since used Strathmore (most of Angus and a small part of Perthshire) as a promising case study in the potential of GIS to elucidate settlement patterns. She notes that upland hillfort sites in Angus are positioned in areas that have preferential views of Strathmore rather than upland areas. This leads her to

suggest that upland settlements had less territorial ties to specific hillforts (ibid.) although, as she admits, this assumes a contemporaneity which is far from demonstrated. Rather, the lowlands were probably a stronger focus for the upland 'hillforts' (ibid.), a conclusion which ties in well with that envisaged for Perthshire (above). Macinnes (1983, 377) contended that in this area in the later second and early first millennium BC, small enclosures (i.e. palisades), or unenclosed sites predominated. This argument relied on the evidence from hut-circle sites in Perthshire for the upland zone and Douglasmuir, the only unenclosed settlement that by then had been excavated (Kendrick 1995), for the lowland zone, in the dating of unenclosed settlement. The dating of the enclosed settlements was based on radiocarbon dates from palisaded sites in the Tyne-Forth zone. Unenclosed settlement in the uplands can be confirmed now as being primarily LBA although, as discussed in Chapter 4, there may have been renewed activity on these sites in the IA. Macinnes (1982b, 61) did note the lowland curvilinear palisaded sites of Angus and without the benefit of evidence from excavations which have taken place since, suggested a date in the early first millennium BC. As discussed in Chapter 4, this can be contested, with radiocarbon dates pointing to occupation in the latter half of the first millennium BC. Dates in this range came from Ironshill East (McGill 2003). Other examples of palisades in Angus include those at Dillavaird (NO25SE16), Priestfield (NO64NE12), Templeton (NO64NW86), Hawkhill (NO65SE37), Newbarns (NO64NE70) and Craigmill (NO53NE84). Since the excavations at Douglasmuir, several other ring-ditch houses have been excavated (although none of these occurred in agglomerations comparable to that at Douglasmuir), suggesting dates in the LIA, rather than the EIA; the dates from Douglasmuir fall in the flat point on the calibration curve (Kendrick 1995) and *may* be more appropriately placed in the later part of that range.

Macinnes (1983) describes a rather different picture for the later Iron Age, arguing that contrasts between the areas North and South of the Forth are far more marked in this period. Defended enclosures did exist in Angus, although apparently confined largely to the upland zone; she argues that, by this time, they are an integral part of a complex settlement system. Angus was made up of largely autonomous settlements with no central authority. She stresses, however, that this need not imply an egalitarian society, since a local chief could for instance have controlled each

souterrain, which she argues was a centralised storage unit. However, dates from multivallate enclosures investigated since Macinnes' study show that lowland examples such as Mains of Edzell can be placed in the EIA (R. J. Strachan *et al.* 2003), as can the origins of upland multivallate enclosures such as the Brown Caterthun (Dunwell and Strachan forthcoming). Use in the first few few centuries AD was evident from the artefacts recovered at the promontory forts of Castle Rock (Ralston 1986a) and West Mains of Ethie (Wilson 1980), which are best understood as part of the north-east promontory forts discussed in 8.5.3. The use of parallels from Angus to elucidate dating issues in particular has already served to highlight the similarities between sites in this county and the study area.

Maxwell (1987) injected a note of caution in his synthesis of Roman period settlement in Scotland, suggesting that while the *Firth* of Forth might mark a cultural boundary, the same could not be said of the rest of the River Forth. He suggested instead, that at least for the Roman period, the southern boundary of the Caledonian territory might run from the Tay valley, to the Tay-Earn confluence and thence South East across the Fife peninsula. This model was based on what Maxwell saw as a complementary distribution of, on the one hand, brochs, duns, homesteads and 'palisaded works' in the Teith and Forth valleys and on the other, the open settlements and souterrains north of the Tay. As will be made clear below, this model does not fit the evidence as it now stands.

8.5.3 Aberdeenshire and Kincardineshire

Aberdeenshire and Kincardineshire are considered together, as their settlement evidence is similar and neither have received comprehensive synthetic treatment (Grampian was another 'black hole' for Haselgrove *et al* (2001)). A regional chronology is yet to be established (Ralston *et al.* 1983, 150) but available accounts (e.g. Christison 1900b; Ralston 1987; Ralston and Inglis 1984; Ralston *et al.* 1983) do give a flavour of the available evidence. Understanding will no doubt be greatly enhanced by the eventual publication of Forest Road, Kintore, the site of more than 27 LBA and IA (and possibly even earlier) roundhouses, including 13 ring-ditch houses (Cook 2001; 2003). As in Perthshire, upland settlement consists largely of

stone roundhouses; evidence from Dinnet suggests that at least some were in use in the LIA (Abercromby 1904b). However, evidence from Sands of Forvie suggests that some may be a great deal earlier (Ralston *et al.* 1983, 155). Ralston *et al* (1983, 154) noted a wider altitudinal spread for these settlements than has been noted in Perthshire.

Evidence from Wardend of Durris (Russel-White 1995) indicates that palisades may also be an important part of the settlement pattern in Aberdeenshire. Ralston *et al* (1983) stress the huge variation in areal extent of what they termed forts but note the slightness of the ramparts and ditches on the smaller sites. Like stone roundhouses, the altitudinal range of these sites is wide. Together these formed the basis of Ralston *et al*'s (1983, 156-164) classification system for forts in north-east Scotland, which identified six classes; it is as yet unclear whether these have any chronological, cultural or functional significance. Cairnton of Balbegno, a lowland multivallate enclosure, produced radiocarbon dates indicating an EIA origin for the site (Wedderburn 1973). Some upland multivallate enclosures, such as Mither Tap o' Bennachie (Maclagan 1881), may be contemporary with Early Historic forts such as Dundurn (Alcock *et al.* 1989) and Clatchard Craig (Close-Brooks 1986) rather than the EIA enclosures of Perthshire. The multivallate enclosure of Barmekin of Echt is generally assumed to be Iron Age and has been compared to the Brown Caterthun in Angus (Feachem 1966, 72; Simpson 1920, 50), but no dating evidence has yet been recovered from the site (Simpson 1920; Skene 1822) and it may be partly Early Historic in date (Ralston and Inglis 1984, 10). Feachem (1966, 68) noted the oblong and often vitrified enclosures characteristic of the area, such as Dunnideer and Tap o' Noth. Vitrification has also been noted at enclosures in Perthshire and Stirlingshire, but sites such as Dunnideer exhibit far more extensive firing. Tap o' Noth, which includes an oblong vitrifed fort and larger enclosure filled with the remains of more than 200 roundhouses bears comparison with Eildon Hill North, in the Borders (Ralston *et al.* 1983, 158), and Traprain Law, East Lothian, and may represent the major settlement of the *Caledonii* north of the Mounth (Ralston and Inglis 1984, 10)

Ralston *et al*'s (1983, 162-164) class 6 deserves special attention, since this consists of the promontory forts, which have seen more excavation than other potentially Iron

Age types in the region (Ralston 1987, 15). A date range for such sites can therefore be far more confidently ascribed. Their distribution extends from the south coast of the Moray Firth, along the north coast of Aberdeenshire and down the east coast to Angus. Green Castle, Portknockie consists of a single timber-laced rampart on the landward side, which was radiocarbon-dated to the seventh or eighth century AD. Iron Age artefacts were, however, recovered from the interior, indicating some later prehistoric activity on the site (Ralston 1980, 31-33). In contrast to Perthshire and Stirlingshire, inland promontory forts are rare, probably due to the lack of suitable topography (Ralston 1980, 35). The bivallate promontory fort of Dundarg proved to be Iron Age, although documentary evidence suggests Early Historic occupation, and it was also occupied in the Mediaeval period (Fojut and Love 1983). Similarly, Castle Point, Troup (Cullykhan), which included a vitrified phase, includes Iron Age and Early Historic phases (Greig and Greig 1990). The existence of both later prehistoric and Early Historic phases on these sites is striking.

Understanding of univallate enclosures is somewhat limited; a recent excavation at Berryhill produced virtually no evidence by which to deduce function, and the enclosed phase remains undated, although there was earlier Neolithic and Bronze Age debris on the hill. The simple stone roundhouse outside the enclosure is likewise undated (Murray 2002).

Excavated evidence suggests that the methods of roundhouse construction (Alexander 2000a; Cameron 1999b; Russel-White 1995) were similarly varied to those in Perthshire (Ralston and Inglis 1984, 8) although evidence from Forest Road, Kintore, indicates a LBA date for the ring-ditch house, in contrast to the available evidence from Angus.

Antiquarian accounts of souterrain excavations mention the ubiquitous wood, ashes, charcoal and unctuous earth (e.g. Jervise 1864; Michie 1872; Stuart 1822; 1854). The rather unusual Y-shaped example at Meikle Kinord, which Barclay (1980, 206) argued was a ritual structure, produced a carved stone ball (Michie 1872) and Culsh produced sherds of pottery, bone and two querns (Stuart 1822, 262). Given the evidence from Dalladies (Watkins 1980b), it seems reasonable to concur with Wainwright (1953b, 226; 1963, 7-9) that, although closely related to the Angus-

group of souterrains, those in Aberdeenshire and Kincardineshire are significantly smaller, perhaps indicating that agricultural surpluses in this area were not as huge as is envisioned for Perthshire. Alternatively, this could indicate that smaller social groups were the norm in the latter couple of centuries BC and the beginning of the first millennium AD. Wainwright (1953b, 226) noted that several Aberdeenshire souterrains seem to have been associated with what he termed hut-circles. Such a relationship was confirmed by John Abercromby (1904b, 119) at Dinnet, where the upper stone of a rotary quern was found in the souterrain, suggesting an Iron Age (or later) date. Although Wainwright (1953b, 226) called this "a structural relationship alien to souterrain sites in Angus", it might be interpreted as echoing the association of some Southern Pictland souterrains with timber roundhouses (but see reservations expressed in 8.4.1 above). There is, as yet, no reason to believe that the souterrains of Aberdeenshire and Kincardineshire are later in date than those of Wainwright's (1963) Southern Pictland group. Although Ralston and Inglis (1984, 9) placed them in the first two centuries AD, on the basis of finds from the entrance of the souterrain at Castle Newe, it is quite possible that some actually date to the late first millennium AD. Other finds, such as rotary quern stones, stone cups/lamps and pottery are less securely dateable (Ralston and Inglis 1984, 9); for reasons discussed in 4.2.3.2.1 and its fragmentary nature, the presence of a saddle quern in the fill at Northwaterbridge (Small *et al.* 1974, 293) should not be taken to indicate a pre-200BC date.

Roman forays into this area were brief and although candidates for the battle site of Mons Graupius include Bennachie (St. Joseph 1978) and the Pass of Grange (e.g. Burn 1953), there is insufficient evidence to present a detailed assessment of Roman-native relations (Ralston *et al.* 1983, 151). The numerous possible locations for the battle of Mons Graupius (AD83), described by Tacitus in his *Agricola* (29-38), have been discussed and summarised by Keppie (1980) and Maxwell (1990). Although the argument is rather out of fashion, it remains a possibility that the battle took place in Perthshire, the main candidate in that area being Dunning in Strathearn, site of both a Roman temporary camp and the multivallate enclosure of Dun Knock. Feachem (1970)[86] argued that the place name evidence, coupled with the presence of a Roman temporary camp with two phases of construction, and the fact that a much

[86] Feachem (1970, fn) followed Watson (1926, 56) in arguing that Mons Grampius/Graupius is a mis-translation and the battle should be referred to as Mons Craupius and identified with *Dorsum Crup*.

later battle was fought on the spot, provided circumstantial evidence that the battle was fought in the vicinity of this Strathearn Village. The discovery of a multivallate enclosure of putative Iron Age date at Dun Knock, Dunning (26688/NO01SW18), along with two further temporary camps in the vicinity might be taken to support this interpretation (Maxwell 1990, 102-104). However, it is far from certain that Dun Knock, Dunning was in use in the Roman period; while Driscoll (1987; 1991) has argued that it is an Early Historic *Caput*, it bears morphological similarities to the Early Iron Age multivallate enclosures. The arguments for Dunning as the location for Mons Graupius were expanded upon by Smith (1987). However, subsequent excavations at Dunning temporary camp leave open the *possibility* that it was only occupied in the second century (Dunwell and Keppie 1995, 60); if this was the case, it cannot be connected with the battle of Mons Graupius and would cast doubt on the identification of Duncrub Hill or Craig Rossie as the battle site's namesake.

Other Perthshire candidates include Ardoch Moor, Dalginross and Fendoch, all of which were advocated by antiquarians in the eighteenth and nineteenth centuries (Maxwell 1990, 77-79). Still later, Pitblado (1935) posited a site at Gleneagles, a suggestion given short shrift by Maxwell (1990, 93). Breeze (1979, 4; 1982, 50) and Maxwell (1990; 1999, 45) have both argued that the battle site was most likely North of the Mounth, whilst noting that neither the proposed sites of Raedykes, Bennachie, close to Durno temporary camp (St. Joseph 1978), the Pass of Grange nor a site near Culloden fit the description given by Tacitus exactly. On balance, it would seem reasonable to suggest that the site of Mons Graupius is most likely in Aberdeenshire and thus beyond the study area. The most compelling reason for this is Tacitus' own assertion that the spot was only reached after a season of campaigning, suggesting a site rather further North than Dunning. While it has been argued that knowing the precise location of the battle would tell us little about Agricola's campaign, it is undeniable that the discovery of mass graves and associated weaponry would tell us much about Iron Age warfare and society (Hanson 1991, 137).

It is difficult to reconcile the available evidence for social organisation in the Roman Iron Age in the area with the level of political unity that would have been necessary to gather a large, suitably trained army and fight a pitched battle against the occupying Roman forces. Indeed, accounts of an earlier raid on the camp of the

Legio IX Hispana suggest that guerrilla warfare was more readily used by the people termed the Caledonii. Breeze (1982, 40 & 47) and Hanson (1991, 120) envisaged a social structure similar to that known from Southern Britain, with the tribes negotiating treaties in order to organise a suitably formidable fighting force (30 000 men, according to Tacitus (*Agricola* 29). Armit (1997b, 48) notes, however, that feuding, raiding and associated protection rackets, rather than territorial wars, would have been more familiar to the tribes that united at Mons Graupius. It seems clear that the character chosen to lead this army, Calgacus, was a personification of the northern tribes, spouting rhetoric imagined by Tacitus (Breeze 1982, 49; Hanson 1991, 17). Calgacus' name was, if not invented, certainly Latinised, and it would seem that he was "a man of outstanding valour and nobility" (Tacitus, *Agricola* 29), rather than a king, or even a chief. Breeze (1982, 49) estimated that Agricola's army at 28 000 soldiers at most, given that the legions were not at full strength. According to Tacitus, a third of the Caledonian force fell on that day, compared to just 360 Romans. If this was the case, the defeat could be seen as a veritable massacre, which would have caused a widespread shortage of men and hence husbands and fathers for a generation. Indeed, if Tacitus' observation made in connection with the Boudiccan revolt[87] holds true for Caledonia also, it may have caused a shortage of women, too, something that would have had the potential to have an even more dramatic effect on population figures. However, Tacitus (*Agricola* 29) refers to "30 000 *men*...flocking to the colours" at Mons Graupius and it seems unlikely that the presence of women as warriors would have gone without comment. Women are mentioned as victims of rape and seduction in Calgacus' speech (*Agricola* 31), and then again only *following* the battle, in a description of the carrying away of the wounded and in the relaying of a rumour that war widows were subject to mercy-killing at the hands of their own people (*Agricola* 38). At any rate, such a dramatic loss of life would have been talked about, indeed grieved over, for decades, if not centuries to come. There are, however, as yet too many unknowns to assess the true impact on Iron Age society in the area (pace Whittington and Edwards 1993); without any population figures for Caledonia, or even certainty over which tribes (if the groups involved were indeed such) made up the confederacy.

[87] "Egged on by such mutual encouragement, the whole island rose under the leadership of Boudicca, a lady of royal descent – *for Britons make no distinction of sex in their appointment of commanders* (Tacitus' *Agricola* 16, my italics). Calgacus' speech before the Battle of Mons Graupius includes the Caledonians within the term "Britons".

However, it does seem clear that periodic raids or forays into Roman territory further South were made by the people that Roman writers called the *Caledonii* (Ralston and Inglis 1984, 12). Tacitus mentions "threatening movements by the enemy on land" (*Agricola*, 25) and that "the natives of Caledonia turned to armed resistance on a large scale – though the facts were exaggerated, as the unknown always is, by rumour. They went so far as to attack some of forts, and inspired alarm by their challenging offensive...then Agricola learned that the enemy was about to attack in several columns" (ibid.). The Caledonians are then said to have changed tactics, leading to the night attack on the ninth legion mentioned above (Tacitus, *Agricola*, 26). As in Perthshire and Stirlingshire, there is stylistic evidence from metalwork found in Aberdeenshire that suggests contact with areas to the South and an insular society must not be imagined (Ralston and Inglis 1984, 11).

8.6 Comparison of settlement with areas to the South-East

8.6.1 East Lothian

Numerous authors have noted the predominance of enclosed settlement south of the Forth, based largely on the data from East Lothian and the Borders, which like the study area was greatly enhanced both by RCAHMS aerial survey in the late 1970s and the floruit of excavation which followed. Macinnes (1983, 35) noted that in East Lothian, two thirds of enclosures were curvilinear and one third rectilinear, a pattern which still holds today (Haselgrove 2000). Having ruled out topographic reasons for this, she suggested a chronological explanation for the variation, again something that has subsequently been borne out by excavation. In a study of the cropmarks of East Lothian, Burke (1997) noted that most occurred on less well-drained land and that there was no particular correlation with areas of shallow soil depth. Amongst excavations in East Lothian, what is noticeable is that nearly every enclosure site excavated has revealed a sequence of settlement far more complex than was evident from the air. This has served to overturn Piggott's (1948) Hownam sequence (Armit 1999b; Harding 1982a). The classic example is Broxmouth (Hill 1982a), but a revised sequence has recently been developed by Dunwell (forthcoming) for Dryburn Bridge and more recent excavations such as those carried out by the Traprain Law

Environs Project, including Whittingehame Tower (Haselgrove 2002), Standingstone (Carne *et al.* 2003) and Knowes (Haselgrove pers. comm.) have also yielded evidence for long and complex occupational sequences.

A similarly complex sequence emerged at Lower Greenyards, Bannockburn (47244/NS89SW12). In terms of the current study, Dunwell's (forthcoming) rephasing of Dryburn Bridge is particularly important. He has argued that the third and final settlement phase consists of an unenclosed settlement of ring-ditch houses, comparable to Douglasmuir, Angus (Kendrick 1995), although dated somewhat later. This is very different to the sequence envisaged by Triscott (1982), the original excavator, and means that this site does not, as he claimed, reverse the Hownam sequence. At Broxmouth there appears to have been two phases of unenclosed settlement, one at the beginning and one at the end of the site's occupation (Hill 1982a) and unenclosed phases were also identified at St Germains (Alexander and Watkins 1998) and Fishers Road East (Haselgrove *et al.* 2000, 171-172). The fact that some of the roundhouses at the Chesters overlie the ramparts indicates that this site, too may have been unenclosed in its later phases. As Haselgrove and McCullagh (2000) have pointed out, the low quality of the dating evidence means that it is unknown whether some enclosed and unenclosed settlements were contemporaneous or rather that there were shifts between unenclosed and enclosed settlement.

Hingley (1992, 33) stresses the need to explain enclosure as temporary monumental elaboration. Although he mentions the possibility that unenclosed sites formed the lowest level of a settlement hierarchy in East Lothian, he stresses the fact that substantial houses (which he associates with high status), occur on such sites elsewhere and also that souterrains are almost invariably associated with unenclosed settlements in Tayside, apparently working from Watkins' (1980a) theory that souterrains belonged to a local élite (see above for an alternative view). While contemporaneity with the Roman occupation can be positively demonstrated at many of the East Lothian ditched enclosures, this is the case at just one in Stirlingshire and none in Perthshire, suggesting a rather different general sequence in this area. In addition, there is evidence that Traprain became an important centre in the Roman period, whether ritual as Aitchison (1987) would argue, or political, as is generally

thought (e.g. Erdrich *et al.* 2000; Hill 1987), something which is yet to be demonstrated at any of the hilltop ditched enclosure sites in the study area, even those in obviously strategic positions, such as Abbey Craig (see Chapter 5). There is, of course, the possibility that Traprain Law and other large enclosures served a multiplicity of functions, including ritual and political ones, whether during the Roman period or before this.

Neither aerial nor geophysical survey prepared archaeologists for the discovery of an multi-phased settlement at Phantassie during evaluation of the A1 dual carriageway corridor. The second main phase includes stone cellular buildings which are more reminiscent of the later prehistoric architecture of the Western Isles than anything previously encountered in East Lothian (Lelong 2002). As Hingley (1990a) has suggested, the comparative lack of evidence for unenclosed settlements in East Lothian is probably down to low detection levels rather than actuality. RCAHMS has recently detected some cropmark souterrains in East Lothian, which may be a further indication of previously undetected open settlement. The only one excavated was disproved but in reassessing the Dryburn Bridge evidence, Dunwell (forthcoming) has identified two 'proto-souterrains' in Phase 3. The supposed 'proto-souterrains' at Standingstone (Carne *et al.* 2003) seem, however, to have been roundhouse foundations (Pope pers. comm.).

So what is the difference between East Lothian and the study area if it is accepted that unenclosed settlement may well have been the norm at certain periods in this area too? In East Lothian, there seems to have been a tradition of reuse of settlement sites and this may have served to mask unenclosed phases in much the same way as long sequences of open settlement in the study area are likely to have masked enclosed phases of palisades. In Stirlingshire there are similarities with East Lothian; enclosed settlements, both in the plough zone and the uplands are the norm (although the distribution is far less dense). However, the discovery of Easter Moss (46860/NS88NE49) raises the possibility that, as in East Lothian, there is further unenclosed settlement yet to be discovered. Indeed, the lack of excavated unenclosed settlement may actually be related to the low numbers of enclosed settlements; Houses 3 and 4 (of ring groove and post-ring construction) at Lower Greenyards, Bannockburn (47244/NS89SW12) were situated outside the defences

and could not be related stratigraphically to the other main features on the site; they could well be related to an unenclosed phase of occupation. In Perthshire on the other hand, as far as is known the *ditched* enclosures were built on entirely separate sites, with no evidence yet of continuity from or into unenclosed phases; there are numerous examples, including Dun Knock, Dunning (26688/NO01SW18) which are perhaps misleadingly classified as forts by the NMRS but which are likely to be settlement sites, since current evidence suggests that unenclosed settlement in the lowlands of the study area belongs in the last couple of centuries BC and the first couple of centuries AD. In contrast, the situation in East Lothian suggests a much more fluid approach to settlement form.

Perhaps the most important point that emerges from a comparison of the study area to East Lothian is the disparity in the period of occupation of ditched enclosures. While all the evidence from East Lothian points to a LPRIA origin for ditched enclosures (with the exception of Traprain Law, which has Bronze Age origins (Jobey 1976)), the evidence from the study area and indeed from Angus, suggests an EIA origin for these sites (see Chapter 4 and 8.5 above), although activity at some, such as North Mains, Strathallan (26000/NN91NW12), continued into the LPRIA. Macinnes (1983) sees East Lothian society as highly organised and stratified by this period, possibly with an emphasis on land and/or stock ownership, contrast to Angus and this may still hold to some extent, despite the revised settlement chronology proposed above.

8.6.2 Midlothian

No synthetic work has ever been carried out for the later prehistory of West Lothian, and considerations of the data from Midlothian are restricted to a summary by The Midlothian Field Group (RCAHMS 1988)[88] accompanying a list of the monuments, and a review of the roundhouse evidence by Reynolds (1982). Both these areas are listed as 'Black Holes' by Haselgrove *et al* (2001). Indeed, virtually no excavation of relevant sites has taken place in West Lothian, so at any attempt at synthesis

[88] Note, however, that RCAHMS' publication is restricted to Midlothian *District*, which forms only part of the old County Midlothian.

would be premature. In the case of Midlothian, as in East Lothian, there is evidence for unenclosed settlement, multivallate and univallate enclosures and palisades. The majority are known only as cropmarks (RCAHMS 1988). A ring-groove house at Melville Nurseries, c100m south of a palisade, provides evidence for unenclosed settlement in this area (Raisen and Rees 1995); in form it is very similar to the ones at Bannockburn (47254/NS89SW21) and Lower Greenyards, Bannockburn (47244/NS89SW12) in Stirlingshire. The house is remarkably similar to one found within the Roman fort at Carpow, Perthshire (30081/NO21NW24). A saddle quern and radiocarbon date of 770-400BC from the upper fill of the ring-groove suggest an EIA date. There are also hints of a phase of unenclosed settlement at Braidwood (Reynolds 1982, 47), a bivallate enclosure predated by a palisaded phase and some of the thirteen roundhouses (Brown 1968; Piggott 1958a), as well as at Brixwold (Crone and O'Sullivan 1997, 402). Reynolds (1982, 48) also draws attention to the single unenclosed ring-ditch house on Castlelaw Hill. This is now complemented by two ring ditches apparently associated with a field system, at Vogrie Grange (RCAHMS 1988, 8). Souterrains such as those at Crichton (Edwards 1925; Rosehill 1871) and Castlelaw (Childe 1933) might also provide indirect evidence for unenclosed settlement, although judging by the use of Roman masonry (including the famous pegasus stone) at Crichton, it, like many of the southern souterrains, was built significantly later than those in the main Angus centred concentration (Welfare 1984). Several palisades are known from this area; morphologically that at Melville Nurseries is very similar both to those noted in Stirlingshire and Perthshire and the inner enclosure at Dryburn Bridge, with the central placing of the roundhouse recalling Bannockburn and Fairy Knowe in particular. The central ring-groove house does nothing to alter this impression and MacSween (1995) notes the similarity of the pottery to that recovered from Broxmouth and Dryburn Bridge.

In plan, the sub-rectangular univallate enclosure at Brixwold bears comparison with the rectilinear enclosures in East Lothian, and the radiocarbon dates, indicating two phases of occupation, one in the late first millennium and another, perhaps contiguous, in the early first millennium AD, also sit well in an East Lothian context. Crone and O'Sullivan (1997, 403), however, point out the exceptional size of the ditch compared to those on excavated rectilinear enclosures in Northumberland, suggesting that they imply a preoccupation with defence (cf. Bowden and McOmish

1987; 1989; Hingley 1990a). Crone and O'Sullivan (1997, 402-404) cite as best parallels some upstanding sites in Eastern Dumfriesshire. Since then, however, particularly deep ditches have also been found at the curvilinear enclosure at Whittingehame (Haselgrove 2002) and a rectilinear example at Knowes, both in East Lothian.

RCAHMS notes a group of settlements surviving as upstanding earthworks in the Pentland foothills. In particular, Corsehope Rings seems, like Broxmouth (Hill 1982a) in East Lothian, to reverse the Hownam sequence, with a palisade overlying the multivallate fortifications (RCAHMS 1988). Excavations at Castlelaw, site of a multivallate enclosure and souterrain were carried out by Childe (1933) in 1931-2 and Piggott and Piggott (1958a) in 1948 .

In all, it would appear that in its range of site types, Midlothian is similar in some respects to East Lothian, although the palisades echo more strongly those of the study area, as does the 'broch' of Bow (Curle 1892). In addition, the scatter of souterrains differentiates Midlothian from East Lothian, where none have yet been found. Several pit alignments are known from the cropmark record in Midlothian (RCAHMS 1988, 23-24), although they need not all be later prehistoric. A radiocarbon date (2060±70 (GU-1632), which calibrates to 360BC-AD90), was obtained from a primary deposit in a pit-alignment at Eskbank Nurseries (Barber 1985) although in superficial character this was similar to those in East Lothian rather than the examples in the Study Area. Waddington (1997, 23) has noted that there is consistency in the morphological characteristics of pit alignments, in particular the depth of the pits. No invasive investigation of pit-alignments in Perthshire or Stirlingshire has yet taken place but their morphology suggests that they are more likely to be Late Bronze Age or Iron Age, rather than Late Neolithic (Waddington 1997, 30).

Midlothian is ripe for re-evaluation, particularly in light of the accumulated results of aerial survey over the past twenty years; including it in any new study of settlement patterns in East Lothian would doubtless prove rewarding. Having provided a synthesis of settlement and society in the study area and a discussion of how it fits into the wider picture of later prehistoric settlement in Eastern Scotland,

recommendations for strategies to address the numerous questions posed by this investigation of the evidence are made in the next chapter.

Chapter 9 Conclusion and Suggestions for Further Research

9.1 Introduction

This concluding chapter seeks to assess how well the study has addressed the aims outlined in Chapter One, identifying problems that were encountered. It also provides suggestions as to how future research may help address those problems. It is true that there is a need for more excavation but this must be targeted excavation, designed to answer specific questions about Iron Age society. Developer-funded excavations of course now have their place, but this need not (and should not) preclude pursuit of an academic research agenda in the area. This study has provided a detailed review, analysis and discussion of palaeoenvironmental and economic data relating to the later prehistoric period in the study area, as well as a detailed discussion of the excavated evidence, with particular emphasis on dating, function and contextual analysis. Reclassification of the data enabled a reassessment of the nature of later prehistoric settlement, unburdened by preconceptions. The usefulness of this was then tested in three case studies, which assisted in the development of a narrative detailing how later prehistoric settlement and society developed in the study area from the Late Bronze Age through to the post-Roman Iron Age, a period running from 1000BC to AD 400. Putting all this into the context of what is known of later prehistory in Eastern Scotland has enabled a greater understanding of the similarities and differences compared with other counties.

9.2 Summary

It is clear from this study that the key to appreciating the structure of the data within this region is a sound understanding of the history of research. The tactic of imposing no start date for literature, and not pre-judging the quality of the evidence on the basis of its antiquity has enabled a thorough assessment of an area that has not seen as much research as other areas of Scotland. While in more recent times the later prehistory of Eastern Scotland has been neglected in favour of south-east Scotland (particularly East Lothian) or the Atlantic zone, a tradition, particularly of amateur involvement can be identified going back to the eighteenth century. With

notable exceptions, the Roman remains have received attention at the expense of the later prehistoric, both in terms of aerial survey and excavation. Several key players have been identified in the history of antiquarian research in the area, with Christian Maclagan and David Christison emerging as pioneers in field recording. It seems clear that the downturn in interest in the first half of the twentieth century was precipitated by the loss of such researchers as Maclagan, Christison and Joseph Anderson, coupled with the effects of the two world wars. The upturn in interest in the area from the late 1940s onwards, can be attributed almost entirely to Margaret Stewart. However, aerial and ground survey, by J K St Joseph/CUCAP since the 1940s and by RCAHMS, since the mid 1970s has been crucial in altering the perceived nature of the archaeological resource, with the density of known upland settlement increasing dramatically, and numerous plough-truncated sites being identified in lowland cropmarks.

Understanding such a complex and varied dataset, accumulated over decades and within the context of numerous and varied theoretical approaches, required a sound appreciation of its nature, combined with an appropriately robust theoretical approach. Chapter Two outlined the author's stance on the major theoretical trends that have emerged within later prehistoric archaeology, in the process emphasising the strength of an approach that combines aspects of many of these. Separately, these approaches might be labelled as processual and post-processual, but if they are to be used successfully, they must be used together. Systematic analysis of empirical datasets must form the core of any study of settlement and society; it is only through this process that one can ensure that the application of theoretical models is based on sound data and can therefore provide insights into what was really going on in the past.

Chapter Three successfully characterised the geology, geomorphology and soils of the study area, and identified factors that might have affected how later prehistoric people interacted with and perceived their environment. From this point of view, the most important aspect was a putative phase of high relative sea-level in the Forth Valley, which would have had a major impact on the later prehistoric landscape and on people's lives. Aside from a few sites, the area that would have been affected by this increased wetness, and the distribution of later prehistoric settlement sites are

mutually exclusive. Despite the relatively low level of palaeoenvironmental research that has taken place, an analysis of published, radiocarbon-dated cores enabled an assessment of the later prehistoric environment. In particular, clear evidence was found for significant climatic deterioration in the Early Iron Age. Also in evidence were extensive forest clearance in the later first millennium BC and early first millennium AD, and increased arable cultivation over the same period. Most of the evidence for extensive forest clearance in the Late Iron Age came from Stirlingshire, suggesting that the sparse settlement pattern observed may not be an accurate reflection of settlement density. A significant population, or at least an element of centralised control must have existed for Iron Age people to have required such extensive clearance, whether this was for arable cultivation, stock-grazing, building projects, or other uses. It can be concluded that the sparse settlement distribution noted in Stirlingshire is not a direct reflection of the extent of later prehistoric occupation of the area but rather an artefact of landuse and detection methods. A mosaic of vegetation types can be envisaged for the later prehistoric landscape, which seems to have opened out in the last few hundred years of the first millennium BC, perhaps to cope with an increased population.

Analysis of existing excavated data on plant macrofossils provided further detail here, suggesting that such crops were grown and processed in both the upland and lowland zones. However, some evidence for grazing was also revealed. Though the data is limited, there is evidence from East Coldoch and Oakbank to extend the northerly limit of wheat-growing in the Iron Age. Barley retains its status as the dominant crop in the later prehistoric period, having been cultivated in the lowland and highland zones. However, some evidence for oat and wheat cultivation was also noted. While the absence of significant quantities of cereal pollen need not conclusively imply a pastoral dimension to the later prehistoric economy, a reassessment of zoo-archaeological evidence made it quite clear that domestic cattle and sheep/goat were in use, in addition to domestic horses and wild animals. Moreover, the animal bone assemblages suggest that if later prehistoric society in the study area was hierarchical, this was not reflected in access to certain types of animals. While pig and deer may have been linked to high status in other areas of Iron Age Britain, the available evidence suggests that this was not the case in the study area.

While the analysis presented here provided a sound basis from which to interpret the later prehistoric landscape, it would be useful to see whether the key events identified through pollen analysis can also be recognised throughout Perthshire. Most of the published cores for the study area came from Stirlingshire and the interpretation given her was necessarily therefore skewed towards the environment of this county. To develop the general impressions provided in the thesis into a more detailed account of vegetation change over time would require a much denser distribution of cores than is currently available, especially from Perthshire. In particular, knowledge of the extent of arable cultivation in the upland zone would assist in understanding the nature and extent of transhumance activity and how it developed through time, from the Late Bronze Age, through the Iron Age. The analysis of plant macrofossil and bone assemblages was limited to a study of presence and absence, since only six later prehistoric sites were excavated using a systematic soil sampling strategy. However, the positive results obtained show clearly that even where preservation conditions are less than ideal, a regionally-based reassessment can identify patterns in the data. Previous researchers have been too pessimistic in their consideration of the potential of plant macrofossil and bone assemblages in the area. For further studies of the later prehistoric economy to investigate the patterns identified here in more detail, routine bulk sampling strategies are essential. Soil pH tests must also be routine, so that the significance of presence and absence of organic remains can be assessed. This approach will in future enable statistically valid assessments of the relative proportions of farmed produce and hence its social and economic significance. In particular, it should be possible to ascertain whether the apparent avoidance of shellfish is real. It should also enable an assessment of the extent to which pig and deer were used. It is possible that access to these animals was restricted to certain social groups; systematic approaches to collection and analysis of archaeological material should enable an assessment of this.

Chapter Four went on to describe the organisation and classification of the archaeological data used in the present study. Despite the problems encountered, including the relatively low numbers of closely dateable artefacts and the problems with radiocarbon dates caused by the flat point on the calibration curve between

800BC and 400BC, it proved possible to assign broad date ranges to the different types of site identified. Fifty-five later prehistoric radiocarbon dates were identified, and used as the preferred method for dating site types. The dating potential of all artefact types was explored, although the chronological sensitivity of types such as stone lamps, cups and querns was found to be low. Better recording of contextual information for such finds, coupled with appropriately long sequences of radiocarbon dates may help in future to refine the dating of these artefact types. Indigenous metalwork is not that common on settlement sites but it would be helpful to have more regionally sensitive chronologies for jewellery items, based on the evidence which has accumulated since the introduction of radiocarbon dating. On-going work on the Iron Age pottery of Eastern Scotland, by Catherine McGill (C. McGill pers. comm.) is proving promising in identifying regional and chronological trends. Together these initiatives would go a long way to improving understanding of poorly dated sites. In the meantime, a combination of radiocarbon dates and site morphology provide the best way of applying some chronological control to the data considered here.

A morphological approach to the classification of site types enabled the ordering of the data, providing a way through the confusing array of terminology that has accumulated over the last two hundred years or so and evident in the classification of sites within the National Monuments Record of Scotland. An assessment of the dating evidence for each site type confirmed that the morphological types had broad chronological significance. The chronological ranges of site types could be no more refined than periods of a few hundred years, owing to the limitations of radiocarbon dating and the low level of chronological sensitivity in most of the artefact types. These problems are not insurmountable; long sequences of single-entity radiocarbon dates obtained from well-chosen contexts on sites excavated in future could further refine the broad chronology offered here. The problem is not with the nature of the sites themselves but with previous approaches. However, the broad chronological framework provided here is an improvement on what existed before. It enables the provision of a much more detailed model of settlement chronology and shows that the assumption that open settlement dominates north of the Forth is erroneous; enclosed settlement also features in the settlement pattern, from the Early Iron Age right up to AD 400, the end of the period under consideration here. The sites that

were identified were predominantly domestic in nature, with little positive evidence for war or conflict at any level. Most importantly, there seems little to support the idea of a highly structured society, at any time. If there was a social hierarchy, it is not reflected in settlement morphology. Indeed, it highlights some points that in the past had been obscured by variant terminology. It is, for instance, clear as a result of this research that there is a tradition of substantial stone architecture in Perthshire and Stirlingshire, stretching from the Late Bronze Age through to the Late Iron Age. The significance of this becomes particularly clear when the roundhouse data analysed is compared to that presented by Pope (2003) for Central and Northern Britain. Pope (Pope 2003, 62) did not include brochs or duns in her analysis, as a rule excluding sites with a wall width of more than 3m. However, including thick-walled sites in the study undertaken here shows that such complex substantial stone roundhouses, despite betraying influence from the west and north of Scotland, can be understood best within the context of other roundhouses of different construction type.

Rees and Ashmore's (Ashmore 1999; Rees 1998) work at Culhawk Hill in Angus shows that careful sample selection and use of AMS dating can greatly enhance appreciation of the use-history of a site; this should be used as the model for all sampling strategies on later prehistoric sites. If there is to be any hope of drawing out more detailed chronologies, for EIA enclosures in particular, bulk and potentially residual samples must be avoided. Long series of AMS dates should be considered a necessity, not a luxury; the success of such an approach at Port Seton (Haselgrove *et al.* 2000) should provide argument enough.

There may be potential for sampling for dating on unexcavated sites. Sampling of unexcavated crannogs in Loch Tay (and elsewhere) has enhanced understanding of the chronological range of these sites (Henderson 1998b). However, while small-scale sampling of a large number of sites, rather than large-scale area excavation of a small number, may be the most cost-effective and productive way of enhancing understanding of the chronology of enclosed sites, more than one radiocarbon sample should be taken from each site. This should apply to cropmark and upstanding ditched enclosures, whether univallate or multivallate. Ring-ditch houses in Perthshire should also be targeted in order to ascertain whether a narrow chronological range in the Iron Age is to be favoured for these sites. Knowing this

would prove a great help in assessing the extent of Iron Age activity in the uplands. Targeting sites such as Hill of Alyth (31103/NO25SW19 and 31114/NO25SW29), where stone roundhouses and ring-ditch houses are juxtaposed, with an appropriate strategy for dating, would greatly improve understanding of the settlement pattern.

The case studies of Stirling, south-east Perthshire and north-east Perthshire enabled an assessment of site morphology and settlement patterns on a more local level, armed with a regionally-specific chronological and functional framework. Stirlingshire has received a relatively large amount of attention but the focus in recent years on the brochs and other sites perceived to be high-status has led to a distorted view of what the Iron Age in Stirlingshire was really like. It has also led to undue emphasis being placed on the Roman Iron Age at the expense of the rest of the later prehistoric period. Despite having the highest proportion of excavated sites, Stirlingshire provided little in the way of evidence for Late Bronze Age settlement, and Iron Age settlement is sparse. Taking a chronologically dynamic view of the area, it seems clear that there is little evidence of a settlement hierarchy, although the extent of woodland clearance in the Late Iron Age indicates that there was a degree of regional organisation, and possibly a significant expansion in population, by the last few centuries BC. There was little in the study area to refute the notion that there was a period of high relative sea level during the Iron Age, which may explain some of the gaps in settlement distribution. There is a strong tradition of monumentality on domestic sites in Stirlingshire, reflected in the EIA by the multivallate enclosure and in the LIA by the substantial stone roundhouse. The archaeological evidence was not entirely successful in providing an accurate picture of what was going on in the later prehistoric period. On its own, it might suggest, even accounting for the destruction of some sites, that the area was, as RCAHMS put it a virtual no-man's land. However, the inclusion of the palaeoenvironmental evidence led to a different conclusion and this demonstrates the strength of the approach taken here, undertaking a detailed review and analysis of palaeoenvironmental data as well as archaeological data.

The discovery of multiple phases of occupation at sites such as East Coldoch, Buchlyvie, Fairy Knowe, Lower Greenyards, Bannockburn and West Plean also raises the possibility that the settlement pattern appears sparse because the tradition

in this area was to reuse or rebuild on the same site rather than to start afresh elsewhere. Coupled with the evidence for a phase of high relative sea-level, possibly at the same time as the other major changes, the landscape of the Late Iron Age was very different indeed from that familiar to Late Bronze Age or even Early Iron Age people. More detailed modelling of sea-level changes using GIS, with a more refined contour interval than that within the present study would enable a more detailed analysis of the potential effect of these environmental changes on *individual* later prehistoric sites, whether those associated with burial or settlement.

The new analysis of site morphology and settlement patterns in an area of south-east Perthshire, as set out in Chapter Six, shows how the picture has been altered by intensive aerial survey. The settlement pattern in south-east Perthshire is relatively dense compared to the Stirlingshire case study, with much of the record being made up of the unenclosed cropmark settlements. Unlike Stirlingshire, where there is virtually no settlement evidence below 15m OD, much of the south-east Perthshire settlement is situated low in the Carse of Gowrie. This could correspond with evidence indicating that the Blairdrummond phase of high relative sea level did not have as dramatic an effect in the Tay area. While there is extensive evidence for unenclosed settlements and souterrains in the Carse of Gowrie, there are several enclosure sites, including univallate and multivallate enclosures and palisades. There is wide variation in the size of these multivallate and univallate enclosures; it is likely that the smaller ones that relate to the Early Iron Age settlement of the area. The largest ones in and around the south-east Perthshire case study, such as Over Durdie, Law Hill, Arnbathie and Carnac, Moredun may have served as regional centres. The evidence suggests that there may have been a religious and/or royal centre at Scone during the early historic period and there is a possibility that this significance stretches back into the later prehistoric period. Some square enclosures may be the remains of Iron Age burials and the fact that all of the carved stone heads from Perthshire come from within the case-study area, also hints at a special significance.

Compared to the Forth Valley, far less work has been done on sea-level change in the Firth of Tay area, and the unequivocal evidence for a later prehistoric episode of high relative sea-level is not, so far, forthcoming. Further work is therefore required to

establish the extent and timing of this, as it could have a major effect on interpretation of gaps in later prehistoric settlement distribution. A higher relative sea-level would also have had a major effect on how settlement sites, and the distances and areas between them, were perceived by people of the time.

The issue of land allotment and how it related to unenclosed settlement needs to be addressed in the lowland zone. More research is needed on the activities that took place on enclosed settlements, particularly the multivallate enclosures. There has been very little area excavation of enclosure interiors, although on sites where this has been undertaken (e.g. Lower Greenyards, Bannockburn; Falkirk, Camelon; East Coldoch) the results have been highly informative. Excavation of enclosure interiors would seem to be essential to our understanding of how such sites functioned. It ought to be possible to further test the hypothesis, based on the evidence excavated so far, that smaller enclosures were domestic establishments, while larger ones were associated with communal activities, which while regular, might leave little archaeological trace. Again, long sequences of radiocarbon dates, along with soil micromorphology would enable a better understanding of the history of use, reuse and abandonment

A fresh look at a portion of north-eastern Perthshire, as set out in Chapter Seven has shown that new insights can be obtained from analysis of a dataset greatly enhanced by RCAHMS' survey work. As in Stirlingshire, analysis of roundhouses showed that there is a tradition of substantial stone architecture, stretching back into the Late Bronze Age. The concern with monumentality is not something that is unique to the Late Iron Age. However, the extent and nature of Iron Age settlement in this upland zone in as yet unclear. It is clear from work carried out at Badyo and at Tulloch Field, Enochdhu that there was some Iron Age activity. However, it is unclear whether this was the same sort of activity as took place in the Late Bronze Age or whether this was a summer occupation of the uplands by people who lived in the lowlands the rest of the year. The role of seasonality and transhumance in the Iron Age needs to be explored in further detail. Although this study succeeded in characterising the later prehistory of upland and lowland areas, the relationship between upland and lowland settlement is not entirely clear. It is possible that summer transhumance took place in the Iron Age and that while crops ripened in the

lowland zone, people took their stock into the hills for summer pasture. Some of the stone roundhouses in the upland zone may represent the remains of transhumant, rather than permanent settlement. Transhumance is well documented in eighteenth century highland Scotland, and likely also took place in the centuries before. Drawing on first-hand accounts by Thomas Pennant and contributors to the Statistical Accounts, Steven (1985, 43-45) describes how the inhabitants of rural townships would depart with their livestock in early summer, for shielings in the uplands. The men would carry out any repairs required, before returning to the township, leaving the women and children behind. In this way, the ripening crops in the glens were protected from wandering livestock, while the men cleaned and re-thatched the houses. Those remaining at the shielings tended the cattle, carried out dairying activities and collected herbs and roots. Similar practices may have also occurred in the Late Bronze Age and Iron Age but cannot be confirmed from the available evidence. This issue could, however, be addressed through further research.

Future research requires an integrated approach to upland and lowland settlement; sedentism should not be assumed and there should be an awareness of potential links between the areas. One of the main problems encountered with the evidence considered in this study was the lack of systematic soil sampling strategies in excavations. Further excavation of upland settlements is required, with systematic sampling strategies allowing the recovery of plant macrofossils that might give an indication of what time of year the site was occupied. Whether livestock were primarily being kept for dairying or meat production is also unclear from the available evidence. However, bone assemblages in the Study Area may never be adequate to carry out mortality studies.

Much longer sequences of dates are required from upland settlements to understand more fully the histories of use at sites. In addition, soil micromorphology studies on house floors would enable a better understanding of site formation processes and contribute to an understanding of the nature of settlement. Halliday's (forthcoming) contention that upland roundhouses such as the ones considered here were used for rather shorter lengths of time than is generally assumed requires further investigation. The implications are huge, as it would have had a significant effect on

how the landscape was perceived. If extensive settlement in the uplands represents the remains of relatively few families moving around the landscape, it is easy to see how the landscape would rapidly become littered with the remains of previous generations. The extent to which roundhouses that were no longer used as dwellings remained in use for other purposes also needs to be explored. In the Western Isles, abandoned blackhouses, located immediately adjacent to modern bungalows (Armit 1996), have been used as sheds or stock enclosures.

It is as yet unclear how field systems fit into the picture of upland settlement. There has been virtually no excavation of field boundaries, so there is still difficulty in understanding how land division and allotment related to settlement, especially given the potential temporal dynamism. It is unclear whether the field systems evident were conceived as whole or whether they were being periodically being divided, opened up and added to. Investigating these issues through excavation would help to ascertain whether field boundaries were primarily used to assert ownership, keep stock in or out or divide up different types of crops.

So far this discussion of research strategies has concentrated on the domestic, but production sites should also be targeted. Haselgrove *et al* (2001, 26-27) have highlighted the need for a better understanding of iron production and its relationship to bronze working, as well as the time-scale involved in the transition. It would therefore make sense to concentrate on sites that have produced some surface evidence. The discovery of surface iron slag on the stone roundhouse on Hill of Easter Bleaton (29116/NO15NW7: Hall 1995a), would suggest that it is an ideal candidate for further investigation. Since there are several roundhouses on this hill, focussing on several houses might enable us to ascertain whether such activities took place in a domestic context or were deliberately separated from the everyday. Ongoing work by Hunter on jet and cannel coal should eventually provide a better understanding of the extent of craft specialisation and trade, especially with regard to the stone rings so common on sites in the Study Area.

Chapter Eight successfully provided a narrative account of the later prehistoric settlement and society of the Study Area, from the Late Bronze Age to the Late Iron Age. While the Late Bronze Age settlement evidence is predominantly domestic in

nature, it would be a mistake to see it as entirely insular, since depositional practices and architectural traditions spanned space and time. So far, all of the evidence suggests that upland settlement was the norm for this period. The Early Iron Age saw a move towards enclosed settlement, although some upland settlement is still evident, in the form of crannogs in Loch Tay and in some use of upland stone roundhouses. Increased social stability in the mid to late first millennium BC may be suggested by the popularity of the palisade. This social stability is reflected again in the development of unenclosed settlements in Perthshire, and in some cases associated roundhouses, in the last couple of centuries BC. An analysis of the excavated evidence showed that Armit's (1999a) souterrain abandonment hypothesis cannot be sustained. However, in Stirlingshire, substantial stone roundhouses and occasionally, univallate enclosures, seem to have been the norm, with the emphasis remaining on the individual household.

Chapter Eight also successfully collated, analysed and discussed the dispirate evidence for later prehistoric burials in the Study Area. Oval cists, 'un-urned' short cists and square enclosures emerge as likely candidates. What would seem to be essential is a regional research design which specifically addresses burials and the fact that they are not usually found on sites targeted for excavation, combined with a retrospective AMS dating of human remains surviving in archives. Such a project has already proved successful when applied by the NMS to Bronze Age cremations, and it would seem appropriate to target un-urned cists in particular, in order to test the hypothesis that these represent at least some of the later prehistoric burials. Given the liminal position of burials on such sites as Broxmouth and Dryburn Bridge in East Lothian, it would also seem prudent to ensure open area excavations of enclosure sites take in the area immediately outside the enclosing palisade or ditch. Looking outside the supposed boundaries of a site may also help in the identification of further phases of settlement, which might otherwise have gone undetected; the discovery of a souterrain immediately outside the palisade at Ironshill East, Angus (McGill 2003) is a good example. Further investigation of cropmark square barrows is required to clarify their chronological range and morphological trends; eventual discovery of cart burials would not be that surprising. So far, the only square enclosure sites excavated in Perthshire have been the large and rather atypical examples at Wester Denhead and Hallhole. Targeting a site such as Sherrifton,

which exhibits a range of square barrow sizes, and some round barrows could clarify the dating of such sites. The context of burials should also be investigated, since there is a possibility that mortuary structures have, as yet, gone undetected. There is a possibility that some of the larger square enclosures, such as Wester Denhead (30958/NO24SW46) and Hallhole (28475/NO13NE10) are examples of this.

Chapter Eight also successfully compared the Study Area to counties adjacent to the Study Area, North and South of the Forth, in order to assess the similarities and differences between them. As in the Study Area, substantial and simple timber roundhouses have been identified in Fife. Simple stone roundhouses are also found in upland Fife, as in Stirlingshire and Perthshire. While some of the enclosures, both multivallate and univallate in Fife bear comparison with those in the Study Area, others find better parallel in East Lothian, to the south of the Forth. It seems likely that some of the unenclosed settlements in the Study Area date to the Early Historic period, as was the case at Easter Kinnear in Fife. The low number of souterrains in Fife, however, contrasts sharply with lowland areas of Perthshire. Aberdeenshire and Kincardineshire were more difficult to synthesise and compare with the Study Area, owing to the lack of a regional chronology for those areas. However, there are some similarities, notably the presence of souterrains, numerous multivallate enclosures and a variety of roundhouse types. The problems encountered in synthesising the evidence for later prehistoric evidence in Aberdeenshire and Kincardineshire can only be countered through further targeted excavation, and a wider study of the settlement patterns of that area, taking into account in particular the results of aerial survey by Aberdeenshire Archaeological Service of recent decades.

In the case of enclosure sites, the issue of sampling is crucial. Archaeologists need to put themselves in the position of being able to recognise structured deposition and this requires excavating greater proportions of ditches than might otherwise be the case (perhaps even greater than the 25% suggested by Hill (1995, 127)). Although excavations elsewhere in the British Isles have shown that such deposits are often placed in ditch terminals, these should not be targeted at the expense of the rest of the ditch, as doing so runs the risk of reinforcing an unsubstantiated preconception. Depositional practices may vary greatly in this region. Use of space is a particularly

important issue, in ascertaining the function of different roundhouses, in unenclosed settlements (in the lowlands and the uplands) and within enclosures. Phosphate survey (perhaps even remotely on unexcavated sites) should be routine on all settlement sites. This strategy would enable us to ascertain whether size is related to function, in the case of ditched enclosures, palisades and houses. On these sites and on unenclosed settlements, both in the uplands and the lowlands, this would help us to deduce which buildings housed animals as well as or rather than, people.

Sampling for soil micromorphology analysis is also crucial, especially on stratified house floors such as those uncovered at upstanding sites such as Buchlyvie, Fairy Knowe (44651/NS59SE3) and well-preserved cropmark sites such as East Coldoch (46081/NS79NW34). To this end, targeting of unenclosed settlements consisting of groups of circular maculae might prove particularly rewarding, since these often seem to produce the best-preserved floor levels; see for instance Birnie, Moray (Hunter 2002), East Coldoch (Woolliscroft and Hoffmann 2003b) and Hawkhill, Angus (Strachan 1999b). This would help enhance greatly understanding of site formation processes and thus help in the identification of abandonment or post-abandonment deposits, structured deposits and genuine floor levels. This might also shed light upon the reasons for relatively low numbers of artefacts being recovered from most sites, since this may be attributable, at least in part, to floors being kept scrupulously clean and rubbish (and ritual deposits) being deposited off-site.

Use of space could also be addressed through geophysical survey (resistivity and/or magnetometry) on enclosed sites and would be relatively cost-effective. In particular, multivallate enclosures, in the uplands and lowlands, should be targeted, since it is as yet unclear which served as settlements and which other purposes. It would be particularly useful to know whether such sites as Law Hill, Arnbathie (28110/NO12NE14) and Barry Hill (31061/NO25SE23) had internal structures that might relate to their initial use. Geophysical survey would enable detection of remains of buildings not necessarily evident on the ground or from aerial photographs of cropmarks.

9.3 Discussion

The following discussion is intended to highlight the main trends which have emerged from the project.

In both Perthshire and Stirlingshire, the climate appears to have been rather more clement in the Late Bronze Age than in the Iron Age. LBA lowland settlement in Perthshire and Stirlingshire, if it exists, has proved rather elusive so far. However, the tradition of ritual deposition, some of which occurred in the lowland zone, and the evidence for exchange of ideas and craft items, indicates that at least some elements of society spent time in the lowland zone, whether on a seasonal or permanent basis. The dominant form of settlement was certainly the stone roundhouse, the vast majority of which seems to have been located in the upland zone, clustered around the 300m contour. The extent of transuhumance in this period is unclear but it remains certain that the economy was mixed, and that cereals were grown in upland areas.

Something rather different occurred in the Early Iron Age, as the climate deteriorated markedly. This may have had a major effect on the economy, and though the theory is still controversial, it is a possibility that it ultimately forced a permanent move into lowland areas. In lowland areas, whether in Stirlingshire or Perthshire, the multivallate or univallate enclosure seems to have been the most common settlement form. The extent to which the uplands were occupied in this period is unclear. There remains room for some settlement and farming activity in the uplands, although it is unclear whether this was on a seasonal or permanent basis.

In the Late Iron Age, it seems that the availability of land for settlement in lowland Stirlingshire was seriously curtailed by a period of high relative sea level. In the long term, an increasing emphasis on arable cropping was hugely successful with a surplus perhaps indicated by the large numbers of souterrains in lowland Perthshire. It is feasible that the near-total absence of souterrains in Stirlingshire reflects the fact that such farming was less productive in this area, and perhaps the large-scale forest clearance documented for this area (Chapter 3, 3.3) represents an attempt to alter this trend by increasing the land available for cultivation. It is possible that this is also related to increasing population or increasing complex social organisation. In

lowland Perthshire, the move from enclosed to unenclosed settlement may suggest a development in social organisation away from purely kin-based groupings.

The previous models, which emphasised the differences between settlement, society and economy in areas north and south of the Forth, as a long-term structural feature of Scottish archaeology have been shown to be erroneous. The most important thing to note is that it is not until the Late Iron Age that marked differences in the settlement of Stirlingshire and Perthshire can be observed. Until then, they are remarkably similar. Stone roundhouses can be found on higher ground in both areas. Multivallate and univallate enclosures are characteristic of both areas in the Early Iron Age. Palisades are also characteristic of both study areas in the Late Iron Age. It is towards the end of the first millennium BC that the two counties do appear to diverge. In Stirlingshire, there emerges an emphasis on substantial stone architecture, culminating in the development of the so-called lowland brochs in the first two centuries of the first millennium AD. Thus, the emphasis on the individual household was retained. In Perthshire, for the most part, there seems to have been a move towards agglomerations of unenclosed settlement. However, that these groups of unenclosed roundhouses are contemporaneous, rather than representing a series of single homesteads occupied successively, is largely an unproven assumption. In this, there is a similarity to the unenclosed stone roundhouses of the uplands. This issue of intra-site chronology, and therefore questions regarding certain aspects of social organisation, can only be resolved by extensive excavation of appropriate sites, utilising techniques that shed light on the micro-detail of site formation processes, such as soil micromorphology, coupled with extensive series of single-entity AMS dates.

Both Stirlingshire and Perthshire have unique characteristics, but also share similiarities with surrounding areas. In some ways, Fife, notably its low number of souterrains, bears comparison to Stirlingshire, although some of the settlement types are, perhaps more readily compared with those in Perthshire. Angus, too, shares many traits with the Iron Age of Perthshire. The real differences, though, come when comparing settlement and society of the study area with that north of the Mounth, in Aberdeenshire. This may, of course, be due to the rather different terrain, and the relatively low proportion of areas of very high arable potential, in lowland

Aberdeenshire, when compared to lowland Perthshire and Angus reducing the possibility of the production of cropmarks. While some categories, such as the multivallate enclosures and stone roundhouses are shared between the regions, Aberdeenshire souterrains are of a very different character, and seem to be associated with stone roundhouses in higher areas. Lack of excavation, however, means that the chronological significance of this, if any, cannot be assessed. The most striking difference observable when comparing evidence for settlement in the study area with East Lothian is the general sequence at settlement sites. There is more evidence in East Lothian for multiple phases of settlement on single sites, moving from unenclosed to enclosed sequences of settlement. In addition and in contrast to what seems to have occurred in Perthshire, enclosed settlement is a strong feature of the period of Roman occupation. Midlothian appears to bridge the gap between East Lothian and Stirlingshire, exhibiting similarities with both counties.

To say that enclosed settlement dominates south of the Forth while open settlement dominates north of it is to misrepresent the evidence as it now appears. The most informative excavated data still comes from the research excavations of the late 1970s and early 1980s; the publication of these over the past few years has had more of an impact on understanding than the results of developer-funded excavations carried out since NPPG5 (Scottish Office 1994, as evident in Chapter 4). However, it is the evidence from aerial photographs of cropmark sites, and in particular those taken by RCAHMS since it started its aerial photography programme in 1976 that have been most influential in shaping the alternative picture of settlement discussed in this thesis. It is clear that enclosed settlement formed a major part of the anthropogenic landscape in the lowland areas of Perthshire and Stirlingshire during the Iron Age. While it is plain that open settlement flourished in Perthshire in the latter part of the first millennium BC, it is by no means certain that this followed total abandonment of enclosed sites, and it is certain that some enclosures were in use in the first few centuries of the first millennium AD.

A conscious decision was made in this study to move away from the status-dominated assumptions of previous accounts. The tendency to assume that evidence of material wealth identified on a single site can be taken as a direct indicator of that site occupying an elevated position within local settlement and social hierarchies,

without undertaking detailed comparisons with potentially contemporaneous sites in the wider area, has led to the assumptions regarding the existence of an élite for which the evidence in this area is limited at best. This trend is particularly noticeable in articles and excavation reports on Iron Age sites. Again and again, we are told that crannogs are élite residences. So are brochs, duns, large roundhouses and any site that produces more than the odd sherd of coarseware. It is not so much that we have lost sight of the ordinary people, but that nobles have been conjured out of minimal evidence. When we look at the Iron Age of Stirlingshire in a chronologically dynamic way, we see rather than the no-man's land described by RCAHMS (RCAHMS 1963) and Henderson (Henderson 1998a), or the highly stratified society envisaged by those who assume that the lowland brochs are high-status, a wealthy area with a high enough population to necessitate large-scale woodland clearance by the final years of the first millennium BC. There is no evidence as yet of a great gap between rich and poor. While the scale of this clearance suggests a degree of social organisation, this need not have been on a regional scale, and certainly settlement morphology in this period suggests an emphasis on household rather than wider community. In Perthshire too, both highland and lowland, there is little evidence of a social hierarchy at any time. In lowland Perthshire, unenclosed settlements are myriad in the LIA and there is no evidence that the associated souterrains are high-status, as Watkins (Watkins 1980a) argued. Indeed, aerial survey since the late 1970s and early 1980s indicates that souterrains were commonplace, and some settlements may even have had more than one.

9.4 Conclusion

The contextual, temporally dynamic approach to later prehistoric remains taken here has enabled us to gain a much more firmly-based view of settlement and society in Perthshire and Stirlingshire. In terms of later prehistoric settlement remains, Perthshire is very rich and it deserves further attention in future, in particular to establish a more detailed history of contact between uplands and lowlands. In Stirlingshire, the relationship to areas to the north and south will become clearer only when attention is turned away from the lowland brochs and towards the other settlements that formed part of the later prehistoric landscape. While many of the

suggestions made above can be taken up by contractors in the commercial context, others require the initiation of specific field-based research projects. It is to be hoped that these timely opportunities are seized upon in future.

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Appendix 1 List of Journals Consulted

The Archaeological Journal

Archaeologia Scotica

British and Irish Archaeological Bibliography

Discovery and Excavation in Scotland

Forth Naturalist and Historian

Glasgow Archaeological Bulletin

Glasgow Archaeological Journal

Journal of the Perthshire Society of Natural Sciences

Proceedings of the Prehistoric Society

Proceedings of the Society of Antiquaries of Scotland

Scottish Archaeological Forum

Scottish Archaeological Journal

Scottish Archaeological Review

Tayside and Fife Archaeological Journal

A Touch of GAS: the Newsletter of Glasgow Archaeological Society

Transactions of the Glasgow Archaeological Society

Transactions of the Perthshire Society of Natural Sciences

Transactions and Proceedings of the Perthshire Society of Natural Sciences

Transactions of the Stirling Natural History and Antiquarian Society

Transactions of the Stirling Field Club

Appendix 2 Excavations of Later Prehistoric Sites in the Study Area

This gazetteer provides basic information on excavated later prehistoric sites in the Study area, including references to reports in Discovery and Excavation in Scotland, excavation reports and other references used. NMRSNAME is the name of the site as recorded in CANMORE. **NUMLINK** is a unique identification number that can be used to search for the site in the Access database provided with the thesis (Appendix Six). **MAPNO** is the relevant OS 1:10000 map number, which together with **SITE** number can be used to locate the site in CANMORE. **CLASSSUB** is the classification the site has been given in the NMRS database. **New classification** is the classification used within the present study. **Reference (DES)** lists references to the excavation in Discovery and Excavation in Scotland. **Reference (exc)** lists references to excavation reports, or unpublished excavation records used if the excavation has not been fully published.

Stirlingshire

NMRSNAME Abbey Craig
NUMLINK 47113
MAPNO NS89NW
SITE 10
CLASSSUB Fort
New Classification Univallate Enclosure
Reference (DES) Aitchison (1981a); Glendinning and Hall (2001); Glendinning (2003)
Reference (exc) SUAT Ltd. (2001)

NMRSNAME Avonglen Quarry, Polmont
NUMLINK 47786
MAPNO NS97NE
SITE 1
ALTNAME Avonbank
CLASSSUB Cists: Long
New Classification Long Cists
Reference (DES) Close Brooks (1973); Walker (1974; 1976); Main (1980)
Reference (exc) Close-Brooks *et al.* (1973); Lunt (1973); Young (1973)

NMRSNAME Bannockburn
NUMLINK 47254
MAPNO NS89SW
SITE 21
CLASSSUB Homestead: Palisaded
New Classification Palisade
Reference (DES) Taverner (1985)
Reference (exc) Rideout (1996)

NMRSNAME Buchlyvie, 'Fairy Knowe'

NUMLINK 44651
MAPNO NS59SE
SITE 3
CLASSSUB Broch; Cist
New Classification Complex Substantial Stone Roundhouse
Reference (DES) Main (1975; 1976)
Reference (exc) Boyd (1985); Main (1978; 1979; 1998)

NMRSNAME Castlehill Wood
NUMLINK 46233
MAPNO NS79SE
SITE 49
CLASSSUB DUN
New Classification Complex Substantial Stone Roundhouse
Reference (DES) Feachem (1955a)
Reference (exc) Feachem (1957)

NMRSNAME Denovan Mains
NUMLINK 47008
MAPNO NS88SW
SITE 13
CLASSSUB Cists; Cists: Long
New Classification Long Cists
Reference (DES) Hunter (1967)
Reference (exc) Hunter (1971)

NMRSNAME Easter Moss
NUMLINK 46860
MAPNO NS88NE
SITE 49
CLASSSUB Souterrain (Possible)
New Classification Souterrain
Reference (DES) Strachan (1999a)
Reference (exc) Strachan (1998)
Reference (others) none

NMRSNAME Falkirk, Camelon
NUMLINK 46922
MAPNO NS88SE
SITE 24
CLASSSUB Fort; Enclosure: Palisaded
New Classification Multivallate Enclosure; Simple Timber Roundhouses
Reference (DES) none
Reference (exc) McCord and Tait (1978); Proudfoot (1978)
Reference (others) none

NMRSNAME Gillies Hill
NUMLINK 46246
MAPNO NS79SE
SITE 60
CLASSSUB Fort
New Classification Multivallate Enclosure
Reference (DES) Rideout (1984)
Reference (exc) Rideout (1992)
Reference (others) none

NMRSNAME Keir Hill Of Gargunnock
NUMLINK 46294
MAPNO NS79SW
SITE 4
CLASSSUB Homestead
New Classification Substantial Stone Roundhouse
Reference (DES) MacLaren (1957)
Reference (exc) MacLaren

(1958); Trump (1957, 219)

NMRSNAME Kettlehill
NUMLINK 44508
MAPNO NS57SE
SITE 9
CLASSSUB Dun (Possible)
New Classification Substantial Stone Roundhouse
Reference (DES) Scott (1958)
Reference (exc) RCAHMS (1963, 447)

NMRSNAME Leckie
NUMLINK 45379
MAPNO NS69SE
SITE 12
CLASSSUB Broch; Fort: Promontory
New Classification Complex Substantial Stone Roundhouse
Reference (DES) MacKie (1970; 1971b; 1972; 1973; 1974; 1975)
Reference (exc) MacKie (1982; 1987; 2004); http://www.gla.ac.uk/HuntMus/leckie

NMRSNAME Lower Greenyards, Bannockburn
NUMLINK 47244
MAPNO NS89SW
SITE 12
CLASSSUB Fort; Homestead: Palisaded; Ring-Groove House
New Classification Palisade; Multivallate Enclosure; Simple Timber Roundhouses
Reference (DES) Milne (1974); Rideout (1997; 1985)
Reference (exc) Rideout (1996)

NMRSNAME Meikle Reive
NUMLINK 45194
MAPNO NS67NW
SITE 6
CLASSSUB Fort
New Classification Multivallate Enclosure
Reference (DES) Fairhurst (1954; 1955; 1960)
Reference (exc) Fairhurst (1956)
Reference (others) none

NMRSNAME Myrehead
NUMLINK 47816
MAPNO NS97NE
SITE 37
CLASSSUB Enclosure: Palisaded; Cropmarks
New Classification Palisade; Simple Timber Roundhouses
Reference (DES) Barclay (1981; 1982)
Reference (exc) Barclay (1983a); Barclay and Fairweather (1984)

NMRSNAME Torwood, The Tappoch
NUMLINK 47004
MAPNO NS88SW
SITE 1
ALTNAME Tappoch Broch
CLASSSUB Broch
New Classification Complex Substantial Stone Roundhouse
Reference (DES) Hunter (1949b; 1949); MacKie (1964)
Reference (exc) Dundas (1866; Lefroy 1867); Lefroy (1867); Hunter

(1949a; 1949c)

NMRSNAME Wallstale

NUMLINK 46232

MAPNO NS79SE

SITE 48

CLASSSUB Dun

New Classification Substantial Stone Roundhouse

Reference (DES) Thomson (1965; 1967)

Reference (exc) Thomson (1969)

NMRSNAME West Plean

NUMLINK 46898

MAPNO NS88NW

SITE 5

ALTNAME Common Hill

CLASSSUB Homestead

New Classification Univallate Enclosure; Simple Timber Roundhouse

Reference (DES) Steer (1953; 1954; 1955)

Reference (exc) Steer (1956)

Perthshire

NMRSNAME Aldclune
NUMLINK 25822
MAPNO NN86SE
SITE 1
CLASSSUB Duns
New Classification 2 Substantial Stone Roundhouses
Reference (DES) Triscott (1980); Wilson and Triscott (1996)
Reference (exc) Stevenson (1985); Hingley *et al.* (1997)

NMRSNAME Ardlebank
NUMLINK 29245
MAPNO NO15SW
SITE 8
ALTNAME West Persie; Balmyle Hill
CLASSSUB Hut-Circles; Field-System
New Classification 4 Simple Stone Roundhouses; 4 Substantial Stone Roundhouses
Reference (DES) none
Reference (exc) Stuart (1868a)

NMRSNAME Badyo
NUMLINK 26422
MAPNO NN96SE
SITE 27
ALTNAME Carn Dubh
CLASSSUB Hut-Circles; Field System; Glass Bead; Bronze Pin; Iron Objects; Pottery;
New Classification 4 Substantial Stone Roundhouses; 3 Simple Stone Roundhouses
Reference (DES) Rideout (1987); Russel-White (1990)
Reference (exc) Rideout (1995)
Reference (others) Tipping (1995)

NMRSNAME Balnabroich
NUMLINK 29054
MAPNO NO15NW
SITE 14
ALTNAME Stylemouth
CLASSSUB Hut-Circles; Field-System
New Classification 8 Simple Stone Roundhouses; 11 Substantial Stone Roundhouses
Reference (DES) King (1992)
Reference (exc) Stuart (1868a)

NMRSNAME Barnhill
NUMLINK 28436
MAPNO NO12SW
SITE 67
ALTNAME Kinnoull Manse Garden; St Leonard's Manse
CLASSSUB Souterrain; Flint Scraper
New Classification Souterrain
Reference (DES) none
Reference (exc) Hutcheson (1904; 1905)

NMRSNAME Barry Hill
NUMLINK 31065
MAPNO NO25SE
SITE 26
CLASSSUB Enclosure
New Classification Multivallate Enclosure
Reference (DES) none

Reference (exc) Wise (1857b)

NMRSNAME Belhie
NUMLINK 25986
MAPNO NN91NE
SITE 38
CLASSSUB Ring-Ditch; Cropmarks; Enclosure (Possible)
New Classification Possible Timber Roundhouse
Reference (DES) Ralston (1988a)
Reference (exc) Ralston (1988b)

NMRSNAME Benchil Burn
NUMLINK 27028
MAPNO NO03SE
SITE 32
CLASSSUB Pit-Alignments; Cropmarks
New Classification Pit-Alignments
Reference (DES) Bishop (1997)
Reference (exc) none

NMRSNAME Blair Atholl, Golf Course Road
NUMLINK 25796
MAPNO NN86NE
SITE 34
CLASSSUB Cist; Long
New Classification Long Cist
Reference (DES) Reid (1985b)
Reference (exc) none

NMRSNAME Blairgowrie, Greenbank Cottage
NUMLINK 28897
MAPNO NO14SE
SITE 3
CLASSSUB Cairn; Cist; Souterrain (Possible)
New Classification Souterrain
Reference (DES) Hall (1995b, 98)
Reference (exc) none

NMRSNAME Borenich
NUMLINK 25880
MAPNO NN86SW
SITE 6
CLASSSUB Homestead; Miscellaneous Finds; Walls; Field Clearance Cairns
New Classification Substantial Stone Roundhouse
Reference (DES) none
Reference (exc) Watson (1915)

NMRSNAME Bunrannoch House
NUMLINK 24573
MAPNO NN65NE
SITE 7
ALTNAME Caistealan Dubha
CLASSSUB Homesteads; Hut-Circles; Field-System
New Classification 2 Substantial Stone Roundhouses; 4 Simple Stone Roundhouses
Reference (DES) Atkinson *et al.* (2001); MacGregor (1999)
Reference (exc) none

NMRSNAME Burnside
NUMLINK 28889
MAPNO NO14SE
SITE 22
ALTNAME Blairgowrie; Kinloch
CLASSSUB Enclosure
New Classification Univallate

Enclosure

Reference (DES) CFA (1993a)

Reference (exc) none

NMRSNAME Carpow

NUMLINK 30081

MAPNO NO21NW

SITE 24

CLASSSUB Roman Fort

New Classification Simple Timber Roundhouse

Reference (DES) none

Reference (exc) Dore and Wilkes (1999, 523-524)

NMRSNAME Carse Farm

NUMLINK 68188

MAPNO NN84NW

SITE 65

CLASSSUB Linear Cropmarks; Ring-Ditch (Possible); Pits

New Classification Possible Timber Roundhouse

Reference (DES) Cachart (1998)

Reference (exc) none

NMRSNAME Castle Craig

NUMLINK 26048

MAPNO NN91SE

SITE 11

ALTNAME Pairney

CLASSSUB Fort

New Classification Multivallate Enclosure

Reference (DES) Reid (1984a); Sherriff (1979)

Reference (exc) Sherriff (1984)

NMRSNAME Castle Law, Abernethy

NUMLINK 27917

MAPNO NO11NE

SITE 12

ALTNAME Castlelaw; Abernethy

CLASSSUB Fort

New Classification Multivallate Enclosure

Reference (DES) none

Reference (exc) Christison (1899)

NMRSNAME Castle Law, Forgandenny

NUMLINK 26583

MAPNO NO01NE

SITE 5

ALTNAME Culteuchar Hill

CLASSSUB FORT

New Classification Multivallate Enclosure

Reference (DES) none

Reference (exc) Bell (1893)

NMRSNAME Castle Menzies Home Farm

NUMLINK 25639

MAPNO NN84NW

SITE 29

CLASSSUB Querns; Pottery; Hearth; Cremation; Ring-Ditch; Pits

New Classification Pits

Reference (DES) Clark (1970)

Reference (exc) None, but excavation photographs are in the NMRS

NMRSNAME Coldoch

NUMLINK 45356

MAPNO NS69NE

SITE 6

CLASSSUB Broch

New Classification Complex Substantial Stone Roundhouse

Reference (DES) none

Reference (exc) Anderson (1873; 1877); Henderson (1866); Maclagan (1872; 1875; 1881; 1884, 22-23)

NMRSNAME Craigend

NUMLINK 27105

MAPNO NO04NE

SITE 7

CLASSSUB Hut-Circles

New Classification 7 Simple Stone Roundhouses, 1 Complex Substantial Stone Roundhouse

Reference (DES) none

Reference (exc) none

NMRSNAME Craighead

NUMLINK 29136

MAPNO NO15SE

SITE 23

ALTNAME Alyth Burn

CLASSSUB Hut-Circles; Field-Systems; Cup-Markings

New Classification Simple Stone Roundhouse

Reference (DES) Rideout (1983)

Reference (exc) Rideout (1995)

NMRSNAME Cuiltburn

NUMLINK 25295

MAPNO NN81NE

SITE 19

CLASSSUB Enclosure

New Classification Univallate Enclosure; simple timber roundhouses

Reference (DES) Woolliscroft (1998)

Reference (exc) Woolliscroft and Hoffmann (2001)

NMRSNAME Cultalonie

NUMLINK 27264

MAPNO NO05NE

SITE 17

ALTNAME Moine A'chlachain; Pitcarmick Estate

CLASSSUB Hut-Circles; Field-System

New Classification 7 Simple Stone Roundhouses; 1 Substantial Stone Roundhouse; 1 Complex Substantial

Reference (DES) Barrett and Downes (1993; 1996)

Reference (exc) none

NMRSNAME Dalnaglar

NUMLINK 29381

MAPNO NO16SE

SITE 2

CLASSSUB Hut-Circles

New Classification

Reference (DES) Stewart (1960); Stewart and Coles (1958; 1959)

Reference (exc) Stewart (1964); Longworth (1959, 279-280; 1960, 348)

NMRSNAME Dalrulzion

NUMLINK 29060

MAPNO NO15NW

SITE 2

CLASSSUB Hut-Circles; Small Cairns

New Classification 3 Simple Stone Roundhouses

Reference (DES) none

Reference (exc) Thorneycroft (1938; 1947)

NMRSNAME Drumderrach

NUMLINK 31055

MAPNO NO25SE

SITE 18

ALTNAME

CLASSSUB Souterrain

New Classification Souterrain

Reference (DES) none

Reference (exc) Small and Bateson (1995)

NMRSNAME Drumharvie

NUMLINK 26154

MAPNO NN92SE

SITE 1

ALTNAME Findogask Church; Kempy

CLASSSUB Fort

New Classification Multivallate Enclosure

Reference (DES) none

Reference (exc) Christison (1901)

NMRSNAME Dunblane, Barbush Quarry

NUMLINK 159347

MAPNO NN70SE

SITE 91

CLASSSUB Watching Brief; Cists; Jet Necklace; Food Vessel

New Classification Oval Cist

Reference (DES) Hunter Blair and Hunter (1999); Main (1985); Rideout (1998)

Reference (exc) Holden and Sheridan (2001)

NMRSNAME Dundurn

NUMLINK 24873

MAPNO NN72SW

SITE 3

ALTNAME St Fillans

CLASSSUB Fort

New Classification Multivallate Enclosure

Reference (DES) Alcock (1976a)

Reference (exc) Alcock *et al.* (1989)

NMRSNAME Dunsinane Hill

NUMLINK 30660

MAPNO NO23SW

SITE 1

SUB 1

ALTNAME Macbeth's Castle; Dunsinnan; Dunsinan Hill

CLASSSUB Fort

New Classification Multivallate Enclosure

Reference (DES) McIntyre (1991)

Reference (exc) Playfair (1819); Wise (1857a)

NMRSNAME East Coldoch

NUMLINK 46081

MAPNO NS79NW

SITE 34

CLASSSUB Homestead; Palisaded (Possible); Enclosure

New Classification Univallate Enclosure; Simple Timber Roundhouses;

Reference (DES) Davies (2000); Woolliscroft and Hoffmann (2002; 2003a)

Reference (exc) Davies (2001); Woolliscroft and Hoffmann (2003b); Woolliscroft and Lockett (2002)

NMRSNAME Easterton
NUMLINK 24728
MAPNO NN70SE
SITE 65
CLASSSUB Enclosure: Palisaded; Pottery
New Classification Palisade
Reference (DES) Main and Anderson (1989)
Reference (exc) Main (1992); pers. comm.

NMRSNAME Falkirk, Camelon, Carmuirs Gravel Pit
NUMLINK 46911
MAPNO NS88SE
SITE 16
CLASSSUB Roman Burial; Sword
New Classification Long Cists
Reference (DES) Close-Brooks *et al.* (1975)
Reference (exc) Breeze *et al.* (1976)

NMRSNAME Glencarse
NUMLINK 30488
MAPNO NO22SW
SITE 12
ALTNAME Glendoick
CLASSSUB Settlement: Unenclosed; Souterrain
New Classification Timber Roundhouses; Souterrain
Reference (DES) Maxwell 1982, 33
Reference (exc) Maxwell (1987, 37-40); RCAHMS (1994c, 64-65)

NMRSNAME Grenich
NUMLINK 25871
MAPNO NN86SW
SITE 2
CLASSSUB Homestead; Field-System; Dykes
New Classification Substantial Stone Roundhouse
Reference (DES) CFA (1993c)
Reference (exc) Watson (1915)

NMRSNAME Hallhole
NUMLINK 28475
MAPNO NO13NE
SITE 10
CLASSSUB Barrow: Square; Plantation Bank
New Classification Square Enclosure
Reference (DES) none
Reference (exc) Abercromby (1904a)

NMRSNAME Inchtuthil
NUMLINK 28598
MAPNO NO13NW
SITE 6
ALTNAME Inchtuthil Plateau
CLASSSUB Fort
New Classification Multivallate Enclosure
Reference (DES) none
Reference (exc) Abercromby *et al.* (1902)

NMRSNAME Law Hill, Arnbathie
NUMLINK 28110
MAPNO NO12NE
SITE 14
CLASSSUB Settlement: Unenclosed; Hut-Circles
New Classification Simple Stone Roundhouses; Substantial Stone Roundhouses
Reference (DES) Archaeological Section of Perthshire Society of Natural Science (1950)
Reference (exc) Brash (1950); Stewart (1950); excavation photographs are in the NMRS

NMRSNAME Litigan
NUMLINK 24945
MAPNO NN74NE
SITE 6
CLASSSUB Fort: Ring
New Classification Substantial Stone Roundhouse
Reference (DES) Taylor (1969)
Reference (exc) Taylor (1990)

NMRSNAME Loch Tay, Oakbank
NUMLINK 25024
MAPNO NN74SW
SITE 16
ALTNAME Fearnan
CLASSSUB Crannog; Paddle
New Classification Crannog
Reference (DES) Dixon (1979; 1980; 2003) Dixon and Cavers (2000; 2001)
Reference (exc) Dixon (1981a; 1982; 1984a; 1984b); Miller (2002); Miller *et al.*(1998)

NMRSNAME Longforgan
NUMLINK 31710
MAPNO NO32NW
SITE 1
CLASSSUB Souterrain
New Classification Souterrain
Reference (DES) Wainwright (1955)
Reference (exc) Wainwright (1956)
Reference (others) Wainwright (1963, 196)

NMRSNAME Lub Chalan
NUMLINK 23965
MAPNO NN43NE
SITE 3
ALTNAME Lubchurran
CLASSSUB Hut-Circle
New Classification Simple Stone Roundhouse
Reference (DES) Cormack (1955; 1957)
Reference (exc) none

NMRSNAME Methven Wood
NUMLINK 26752
MAPNO NO02NE
SITE 41
ALTNAME Almondbank
CLASSSUB Enclosure: Palisaded
New Classification Palisade
Reference (DES) Reid (1984b); Sherriff (1980)
Reference (exc) Sherriff (1986)

NMRSNAME Monzie
NUMLINK 25449

MAPNO NN82SE

SITE 28

ALTNAME Monzie Castle; Monzie House

CLASSSUB Souterrain (Possible); Stone Axe; Sword

New Classification Souterrain

Reference (DES) none

Reference (exc) none

Reference (others) Wainwright (1963, 197-198)

NMRSNAME Mudhall

NUMLINK 30930

MAPNO NO24SW

SITE 2

ALTNAME Coupar Grange

CLASSSUB Souterrains

New Classification Souterrains

Reference (DES) none

Reference (exc) Wainwright (1963, 198-199)

NMRSNAME Newmill, Bankfoot

NUMLINK 27007

MAPNO NO03SE

SITE 13

SUB 1

ALTNAME Redgorton

CLASSSUB Souterrain

New Classification Souterrain

Reference (DES) Reid (1985c); Watkins (1977)

Reference (exc) Watkins (1979; 1980a)

NMRSNAME North Mains, Strathallan

NUMLINK 26000

MAPNO NN91NW

SITE 12

ALTNAME Waulkmill

CLASSSUB Fort

New Classification Multivallate Enclosure

Reference (DES) Barclay (1987)

Reference (exc) Barclay (1983b); Barclay and Tolan (1990)

NMRSNAME Queen's View

NUMLINK 25844

MAPNO NN86SE

SITE 3

CLASSSUB Homestead

New Classification Substantial Stone Roundhouse

Reference (DES) Stewart (1976; 1977)

Reference (exc) Taylor (1990)

NMRSNAME Rait

NUMLINK 30457

MAPNO NO22NW

SITE 6

CLASSSUB Fort

New Classification Multivallate Enclosure

Reference (DES) Cachart (2001)

Reference (exc) none

NMRSNAME Shanzie

NUMLINK 183018

MAPNO NO25SE

SITE 55

CLASSSUB Souterrain

New Classification Souterrain

Reference (DES) Coleman (2000)

Reference (exc) Coleman and Hunter (2002)

NMRSNAME Sillerton, Braehead
NUMLINK 31721
MAPNO NO32NW
SITE 2
CLASSSUB Cists: Long
New Classification Long Cist
Reference (DES) Taylor (1956; 1958)
Reference (exc) none
Reference (others) none

NMRSNAME The Welton
NUMLINK 28896
MAPNO NO14SE
SITE 29
ALTNAME Welltown; Rosemount
CLASSSUB Settlement: Unenclosed; Souterrains
New Classification Timber Roundhouses; Souterrains
Reference (DES) Maxwell (1981)
Reference (exc) Maxwell (1987, 40-41); RCAHMS (1994c, 67)

NMRSNAME Tulloch Field, Enochdhu
NUMLINK 27582
MAPNO NO06SE
SITE 20
CLASSSUB Hut-Circles
New Classification 2 Simple Stone Roundhouses
Reference (DES) Thoms (1976; 1977; 1979b; 1980; 1981; 1982; 1983)
Reference (exc) RCAHMS (1990, 81); Thoms (1979a); pers. comm..

NMRSNAME Turrerich Burn
NUMLINK 25538
MAPNO NN83NE
SITE 1
CLASSSUB Hut-Circle; Structure
New Classification Simple Stone Roundhouse
Reference (DES) Morrison (1969)
Reference (exc) none

NMRSNAME Wester Denhead
NUMLINK 30958
MAPNO NO24SW
SITE 46
CLASSSUB Enclosure; Barrow: Square; Cropmarks; Roman Pottery; Settlement;
New Classification Square Enclosure
Reference (DES) none
Reference (exc) RCAHMS (1994c, 18)

Appendix 3 Sites in Stirlingshire Case Study

NUMLINK is a unique identification number that can be used to search for any site in the Access database appended to the thesis. Together, MAPNO and SITE can be used to search CANMORE, RCAHMS' online database.

NUMLINK	MAPNO	SITE	NMRSNAME	CLASSSUB
23819	NN30SW	3	Rowchoish Point	Crannog (Possible)
46911	NS88SE	16	Falkirk, Camelon, Carmuirs Gravel Pit	Roman Burial; Sword
42515	NS39NE	2	Loch Lomond, Mill Cairn	Crannog
42530	NS39SE	10	Strathcashell Point, Fort	Fort
42531	NS39SE	11	Loch Lomond, Strathcashell Point	Crannog; Logboat (Possible)
42532	NS39SE	12	Loch Lomond, Inchcruin	Crannog (Possible)
43449	NS48SE	2	Knockinhaglish	Fort
43476	NS49SE	3	Craigievern	Broch
43479	NS49SW	2	Loch Lomond, 'The Kitchen'	Crannog
43482	NS49SW	5	Arrochymore	Dun
43483	NS49SW	6	Gartfairn	Enclosure
44416	NS57NE	19	Middleton Farm	Cists: Long
44425	NS57NE	27	Craigmaddie	Fort
44508	NS57SE	9	Kettlehill	Dun (Possible)
44607	NS58SW	5	Quinloch Muir	Fort: Vitrified
44621	NS59NE	5	Gartur	Crannog
44623	NS59NE	7	Lake Of Menteith	Crannog (Possible); Jug
44651	NS59SE	3	Buchlyvie, 'Fairy Knowe'	Broch; Cist
45194	NS67NW	6	Meikle Reive	Fort
45262	NS67SW	3	Carlston	Fort
45287	NS68NE	4	Todholes	Hut-Circle
45288	NS68NE	5	Todholes	Hut-Circle; Small Cairn
45290	NS68NE	7	Todholes	Hut-Circle (Possible); Small Cairns (Possible)
45308	NS68NW	7	Dunbeg	Fort
45309	NS68NW	8	Double Craigs	Hut-Circle

45310	NS68NW	9	Craigton	Dun
45320	NS68SW	4	Waterhead	Hut-Circle (Possible); Small Cairn
45342	NS69NE	24	Spittalton	Enclosure
45346	NS69NE	28	Boghall	Ring-Ditch
45347	NS69NE	29	Boghall	Ring-Ditch (Possible)
45356	NS69NE	6	Coldoch	Broch
45361	NS69NW	10	Flanders Hill	Homestead
45379	NS69SE	12	Leckie	Broch; Fort: Promontory
45387	NS69SE	5	Brokencastle	Dun
45406	NS69SW	4	Loch Laggan	Crannog (Possible)
45812	NS77NE	1	Auchincloich	Broch (Possible)
45832	NS77NE	27	West Auchincloich	Dun
45850	NS77NE	43	Castlecary	Souterrain (Possible)
45857	NS77NE	5	Coneypark	Fort
45887	NS77NW	21	Colziumbea	Dun (Possible)
45890	NS77NW	24	Auchinvalley	Fort (Possible)
45891	NS77NW	25	Townhead	Dun (Possible)
45897	NS77NW	30	Townhead	Homestead
45944	NS78NE	3	Sauchie Craig	Fort
45950	NS78NE	9	Loch Coulter	Crannog (Possible)
45957	NS78SE	1	Myot Hill	Fort
45973	NS78SE	4	Braes	Fort
45987	NS79NE	10	Gallow Hill, Bridge Of Allan	Fort
45994	NS79NE	17	Kippenross	Fort
46080	NS79NW	33	Easter Row	Fort
46081	NS79NW	34	East Coldoch	Homestead; Palisaded (Possible); Enclosure
46083	NS79NW	36	East Coldoch	Ring-Ditch
46206	NS79SE	3	Stirling, Mote Hill	Fort
46232	NS79SE	48	Wallstale	Dun
46233	NS79SE	49	Castlehill Wood	Dun
46235	NS79SE	50	Castlehill	Dun

46236	NS79SE	51	Wester Craigend	Dun
46246	NS79SE	60	Gillies Hill	Fort
46247	NS79SE	61	Castlehill	Dun (Possible)
46294	NS79SW	4	Keir Hill Of Gargunnock	Homestead
46295	NS79SW	5	Baston Burn	Dun
46296	NS79SW	6	Touch Muir	Dun
46824	NS88NE	16	Hill Of Dunmore	Enclosure
46856	NS88NE	45	Airth	Enclosure (Possible); Cultivation Remains
46860	NS88NE	49	Easter Moss	Souterrain (Possible)
46868	NS88NW	10	Cowie	Fort
46871	NS88NW	13	Sauchenford Holdings	Ring-Ditch; Cropmarks
46891	NS88NW	31	Plean	Ring-Ditch; Ring-Ditch (Possible)
46898	NS88NW	5	West Plean	Homestead
46900	NS88NW	7	Langlands	Fort
46922	NS88SE	24	Falkirk, Camelon	Fort; Enclosure: Palisaded
46935	NS88SE	36	Wester Carmuirs	Ring-Ditches
47004	NS88SW	1	Torwood, The Tappoch	Broch
47007	NS88SW	12	Wheatlands	Settlement
47008	NS88SW	13	Denovan Mains	Cists; Cists: Long
47013	NS88SW	18	Bonnybridge, Bonnywood Farm	Homestead (Possible); Quern
47017	NS88SW	21	West Bonnyfield	Dun (Possible)
47023	NS88SW	27	Wester Carmuirs	Fort; Settlement
47025	NS88SW	29	Wester Carmuirs	Ring-Ditch
47047	NS88SW	49	Doghillock	Dun (Possible); Shale Object
47113	NS89NW	10	Abbey Craig	Fort
47117	NS89NW	14	Dumyat	Fort
47162	NS89NW	6	Logie	Homestead
47244	NS89SW	12	Lower Greenyards, Bannockburn	Fort; Homestead: Palisaded; Ring-Groove House
47254	NS89SW	21	Bannockburn	Homestead: Palisaded
47274	NS89SW	7	Stirling, Braehead	Enclosure; Dun (Possible)
47786	NS97NE	1	Avonglen Quarry, Polmont	Cists: Long

47816	NS97NE	37	Myrehead	Settlement; Enclosure: Palisaded
47827	NS97NE	47	Lathallan	Enclosure: Palisaded; Cropmarks
47836	NS97NE	55	Avondale Farm	Enclosure: Palisaded
47880	NS97NW	2	Bowhouse	Homestead
48223	NS99NE	14	Castleton	Fort (Possible)
74536	NS78NE	17	Middlethird	Dun
76356	NS88SW	50	Wester Carmuirs	Enclosure: Palisaded
85674	NS97NE	103	Waukmilton	Cropmarks
86383	NS59NE	16	Lochend	Crannog
112356	NS88SW	55	Bonnybridge School	Enclosure (Possible)
131244	NS39SE	157	Bucinch	Hut-Circle (Possible); Jetty; Quarry
132132	NS48NE	37	Easter Drumquhassle	Pits; Linear Cropmarks; Sunken Floored Buildings (Possible)
132133	NS59SE	18	Over Kepdowrie	Fort; Sunken Floored Building (Possible)
158871	NS78SW	27	Tomtain	Hut-Circle

Appendix 4 Later Prehistoric Sites in SE Perth Case Study

NUMLINK	MAPNO	SITE	SUB	NMRSNAME	CLASSSUB
28106	NO12NE	10		Law Hill	'Crannog'
28108	NO12NE	12		Evelick	Fort; Enclosure; Pen; Trackways
28110	NO12NE	14		Law Hill, Arnbathie	Settlement: Unenclosed; Hut-Circles
28116	NO12NE	2		Law Hill, Arnbathie	Fort; Hut-Circle
28128	NO12NE	30		Bonhard Park	Settlement: Unenclosed; Souterrains; Pits; Buildings (Possible)
28129	NO12NE	31		Wester Bonhard	Settlement: Unenclosed; Cropmarks; Cultivation Remains
28172	NO12NW	40		Ardgilzean	Enclosure
28173	NO12NW	41		Ardgilzean	Cropmark
28184	NO12NW	51		Balgarvie	Settlement: Unenclosed (Possible); Cultivation Remains
28216	NO12SE	29		Glencarse	Ring-Ditch; Pit-Alignment; Building
30397	NO22NE	16		North Grange	Ring-Ditches
30398	NO22NE	17		Mains Of Inchture	Ring-Ditch; Enclosures; Buildings
30406	NO22NE	24		Ninetree Brae	Souterrains; Pits; Cropmarks; Enclosures; Rig
30411	NO22NE	29		Inchture	Ring-Ditch
30440	NO22NW	28		Whitemyre	Hut-Circle
30443	NO22NW	30		Plaistow	Enclosure; Cropmarks
30449	NO22NW	36		Kilspindie	Settlement: Unenclosed; Souterrains (Possible)
30457	NO22NW	6		Rait	Fort
30488	NO22SW	12		Glencarse	Settlement: Unenclosed; Souterrain
30493	NO22SW	17		Hill Of Errol	Souterrain (Possible)
30494	NO22SW	18		Mains Of Murie	Enclosure
30497	NO22SW	20		Hill Of Errol	Settlement: Unenclosed; Pits; Cultivation Remains; Cropmarks
30491	NO22SW	15		Mains Of Errol	Ring-Ditches; Pits; Cropmarks; Souterrain
28217	NO12SE	3		Deuchny Wood	Fort; Stone Cup
28243	NO12SE	52		Pow Of Glencarse	Ring-Ditch; Linear Cropmarks
28244	NO12SE	53		Coates Of Fingask	Round House; Souterrain; Rig
28245	NO12SE	54		Cairnie Mill	Ring-Ditch
28350	NO12SW	187		Upper Muirhall	Enclosure

28351	NO12SW	188		Upper Muirhall	Cropmarks
28352	NO12SW	189		Hilton House	Fort
28373	NO12SW	206		Grange Of Elcho	Souterrains
28436	NO12SW	67		Barnhill	Souterrain; Flint Scraper
30512	NO22SW	34		Inchcoonans	Ring-Ditch
30517	NO22SW	39		Glencarse	Souterrain; Cropmarks
30520	NO22SW	41		Mains Of Murie	Ring-Ditch (Possible)
30531	NO22SW	51		Hill Of Errol	Settlement: Unenclosed; Souterrains; Cropmarks
30533	NO22SW	53		Ardgaith	Settlement: Unenclosed; Pits
30489	NO22SW	13		Paddockmuir Wood	Settlement: Unenclosed (Possible)
30495	NO22SW	19		Mains Of Murie	Settlement: Unenclosed; Building; Rectangular (Possible); Pits
30528	NO22SW	49		Lornie Wood	Cropmarks
28226	NO12SE	37		Tofthill	Enclosure; Souterrain; Settlement: Unenclosed (Possible)
28227	NO12SE	38		Newton Of Glencarse	Enclosures
28205	NO12SE	19		Kinfauns, 'Keiter's Loch'	Crannog (Possible); Miscellaneous Finds
28218	NO12SE	30		Pepperknowes	Ring-Ditch; Linear Cropmarks
30515	NO22SW	37		Sandyhall	Settlement: Unenclosed; Cropmarks; Enclosure: Rectilinear
28174	NO12NW	42		Sheriffton	Settlement: Unenclosed; Souterrain; Pit-Alignment; Linear
30521	NO22SW	42		Hill Of Errol	Settlement: Unenclosed (Possible); Cropmarks; Ring-Ditch; Quarries
30519	NO22SW	40		Inchcoonans	Settlement: Unenclosed; Buildings
30516	NO22SW	38		Clashbenny	Settlement: Unenclosed; Souterrain (Possible); Cropmarks
30514	NO22SW	36		Loanfoot	Ring-Ditch; Linear Cropmarks
30511	NO22SW	33		Over Durdie	Fort
30492	NO22SW	16		Mains Of Errol	Enclosures; Cropmarks; Settlement: Unenclosed; Souterrain;
30410	NO22NE	28		Inchture	Ring-Ditch (Possible)
30407	NO22NE	25		Middlebank Holdings	Ring-Ditch; Pits; Cropmarks
30408	NO22NE	26		New Mains	Souterrain
30409	NO22NE	27		Baledgarno Burn	Cropmarks
28130	NO12NE	32		Mill Of Bonhard	Ring-Ditches; Cropmarks; Round House
30441	NO22NW	29		South Inchmichael	Settlement: Unenclosed; Souterrains; Linear Cropmark; Pits
30530	NO22SW	50		Coldcot	Pits; Cropmarks

30523	NO22SW	44		Pitroddie	Settlements: Unenclosed; Souterrains; Ring-Ditches
30472	NO22SE	17		Tay Lodge	Cropmark
30394	NO22NE	14	0	Middlebank	Settlements: Unenclosed; Souterrains
28160	NO12NW	30		Jeaniebank	Fort (Possible)
28162	NO12NW	32		Blairhall	Barrows
28175	NO12NW	43		Blairhall	Cursus; Ring-Ditches; Linear Cropmarks; Pits
30390	NO22NE	10		Inchture	Enclosure; Cropmarks
73131	NO22NW	67		Gasconhall	Cropmarks; Souterrain (Possible)
72052	NO12NE	41		Pole Hill	Ring-Ditch House
72088	NO22NW	50		Whitemyre	Hut-Circle; Hut-Circle (Possible)
73132	NO22NE	36		Rossie Priory	Pits; Cropmarks; Cultivation Remains; Ring-Ditch; Linear Cropmarks;
72401	NO22NW	61		Rait	Settlement: Unenclosed; Souterrains
78138	NO12SE	79	1	Glencarse House	Souterrain (Possible)
77397	NO12NW	57		Loch Eye	Barrow; Pits; Cropmarks
68444	NO22NE	33		Boyne	Souterrain (Possible)
72403	NO22NE	35		Middlebank	Enclosure; Settlement: Unenclosed (Possible); Souterrain
71845	NO22SW	63		Clashbenny	Settlement: Unenclosed; Souterrain; Pits
68441	NO22SW	56		Glencarse	Souterrain
70801	NO12SW	235		Dow Hill	Fort; Quarries
73121	NO12SE	75		Coates Of Fingask	Souterrain (Possible)
73126	NO12SE	78		Pans Hill	Souterrain (Possible); Cropmarks
70802	NO12SW	234		Easter Tarsappie	Cropmarks; Barrow: Square (Possible)
70806	NO22SW	59		Hillview	Pits
70818	NO12SW	236		Dow Hill	Souterrain (Possible); Settlement; Unenclosed (Possible);
77185	NO22NE	14	2	Middlebank	Settlement: Unenclosed; Pit-Circle; Souterrain (Possible)
77184	NO22NE	14	1	Middlebank	Settlement; Unenclosed; Souterrains
78312	NO12SE	81		Coates Of Fingask	Enclosure; Cropmarks; Linear Cropmarks; Ring-Ditch
68228	NO22SW	57		Gallowflat	Settlement: Unenclosed; Cropmarks; Souterrains
70805	NO22SW	60		Doo-Cot Cottages	Souterrain (Possible)
78435	NO12SE	80		Goukton	Souterrain
70803	NO12SE	69		Tofthill	Settlement: Unenclosed

68442	NO12SE	63		Priorland	Ring-Ditch (Possible)
68085	NO12NE	38		Law Hill, Arnbathie	Hut-Circle; Enclosure
73127	NO12SE	79	0	Glencarse House	Souterrains
68811	NO12NW	53		Sheriffton	Barrows: Square; Ring-Ditches; Linear Cropmark
72919	NO12NW	55		Sheriffton	Ring-Ditch; Pits; Cultivation Remains
82361	NO12SE	85		Inchyra	Round House; Souterrain (Possible); Cropmarks
82362	NO22SW	69		North Den Strip	Ring-Ditches; Settlement: Unenclosed; Pits
82363	NO22SW	68		Myreside	Souterrains; Pits; Cultivation Remains
110199	NO12SE	94		Tofthill	Enclosure; Cropmarks
110200	NO12SE	95		Tofthill	Linear Cropmarks
125852	NO12NW	67		Ardgilzean	Barrows: Square; Rig; Pits; Barrow (Possible)
143558	NO22SW	78		Glendoick	Enclosure; Souterrains; Pits; Cropmarks
149494	NO22SW	79		Glencarse	Souterrain
149495	NO22SW	80		Glencarse	Souterrain
158889	NO12NE	64		Middleton	Souterrain; Pits
166763	NO22SW	88		Over Durdie	Enclosure (Possible); Souterrain (Possible)

Appendix 5 Sites in NE Perth Case Study

NUMLINK	SITE	SUB	NMRSNAME	CLASSSUB
31065	26		Barry Hill	Enclosure
183018	55		Shanzie	Souterrain
29005	10		Drumturn Burn	Hut-Circles; Field-System
29007	12		Knockali	Hut-Circles
29008	13		Knockali	Hut-Circles
29009	14		Knockali	Hut-Circles; Enclosures
29011	16		Hill Of Easter Bleaton	Hut-Circles
29012	17		Thief's Burn	Hut-Circles; Field-System
29015	2		Saebeg	Hut-Circles; Small Cairns
29017	21		Drumfork	Hut-Circles; Field-System
29026	3		Corrie Burn	Hut-Circles; Field-System
29027	30		Corb	Hut-Circle
29044	5		Drumderg	Hut-Circles; Field-System
29047	8		Saebeg	Hut-Circles; Cairns; Small Cairns
29053	13		Knockali	Hut-Circles; Field-System
29054	14		Balnabroich	Hut-Circles; Field-System
29060	2		Dalrulzion	Hut-Circles; Small Cairns
29070	29		Craigton	Hut-Circle; Field-System
29071	3		Mains Of Persie	Hut-Circles
29104	59		Mains Of Persie	Hut-Circle
29112	66		Lochan Na Clodaich	Hut-Circles
29113	67		Lochan Na Clodaich	Hut-Circle
29116	7		Hill Of Easter Bleaton	Hut-Circles
29119	8		Hill Of Easter Bleaton	Hut-Circles; Slag
29120	9		Hill Of Easter Bleaton	Hut-Circles
29122	10		Braes Of Cloquhat	Hut-Circle; Small Cairns
29124	12		Black Briggs	Hut-Circles
29129	17		Rannagulzion	Hut-Circle; Enclosure
29130	18		Smyrna	Hut-Circles; Field-System
29131	19		Drumderg	Hut-Circle; Enclosure; Field-System

29132	2		Rannagulzion	Hut-Circles; Field-System
29134	21		Tullymurdoch	Hut-Circles; Field-System
29135	22		Tullymurdoch	Hut-Circle
29136	23		Craighead	Hut-Circles; Field-Systems; Cup-Markings
29137	24		Smyrna	Hut-Circle; Small Cairns
29138	25		Olies Burn	Hut-Circles; Field-System
29139	26		Hill Of Craighead	Hut-Circles; Field-System
29143	3		Hill Of Kingseat	Hut-Circles; Field-System; Cairn (Possible)
29149	35		Mains Of Mause	Hut-Circles
29151	37		Welton Of Creuchies	Hut-Circles
29154	4		Black Briggs	Hut-Circles
29158	43		Burnside Of Drimmie	Hut-Circle (Possible)
29159	44		Braes Of Cloquhat	Hut-Circle
29169	53		Mains Of Creuchies	Hut-Circle (Possible)
29170	54		Hill Of Kingseat	Hut-Circle
29174	58		Olies Burn	Hut-Circle
29187	7		Mains Moss	Hut-Circle (Possible)
29200	81		Smyrna	Hut-Circle
29212	10		Moss Of Cochrage	Hut-Circle; Small Cairns
29213	11		Hill Of Cally	Hut-Circle
29215	13		Hill Of Cally	Hut-Circles
29223	20		Hill Of Cally	Hut-Circles
29234	30		Rochallie	Hut-Circles; Small Cairns
29245	8		Ardlebank	Hut-Circles; Field-System
29246	9		Hillside	Hut-Circles; Field-System
29268	8		Loch Beanie	Hut-Circle
29269	9		Invereddrie	Hut-Circle
29290	28		Invereddrie	Hut-Circles
29314	42		Creag Na Bruaich	Hut-Circles; Small Cairns
29321	49		Creag Na Bruaich	Hut-Circle; Small Cairns
29328	55		Westerton	Hut-Circle; Field-System

29329	56		Westerton	Hut-Circles; Small Cairns
29346	71		Invereddrie	Hut-Circles; Small Cairns
29347	72		Invereddrie	Hut-Circle
29379	18		Whitehouse	Hut-Circles; Field-System
29381	2		Dalnaglar	Hut-Circles
29395	32		Dounie Cottage	Hut-Circles
29396	33		Tomlia	Hut-Circle
29400	5		Whitehouse	Hut-Circles
29404	9		Tomlia	Hut-Circles; Small Cairns
29418	11		Cnoc An Daimh	Hut-Circles
29440	13		Creag Nam Brataichean	Hut-Circle
29450	139		Glenkilrie	Hut-Circles
29475	19		Carn Dearg	Hut-Circle; House Platform
29477	20		Carn Dearg	Hut-Circle; Platform; Small Cairns
29482	25		Lamh Dhearg	Hut-Circles; Small Cairns
29484	27		Cnoc A'chaorainn	Hut-Circle; Small Cairns
29485	28		Cnoc Meadhon	Hut-Circles
29500	4		Craigies	Hut-Circles
29508	47		Lair	Hut-Circles
29514	52		Torr Lochaidh	Hut-Circles
29519	57		Bleaton Hill	Hut-Circles; Field-System
29522	6		Lair	Hut-Circle
29525	62		Cnoc An Daimh	Hut-Circle; Enclosure
29540	76		Shaw's Croft	Hut-Circles
29541	77		Westertown	Hut-Circle
29542	78		Glenkilrie	Hut-Circles; Small Cairns; Building
29547	82		Glenkilrie	Hut-Circle; Small Cairns
29548	83		Glenkilrie	Hut-Circles
29555	86		Glenkilrie	Hut-Circles; Small Cairns
29558	89		Allt A'bhuirich, Balvarran	Hut-Circle
29560	90		Dalnoid	Hut-Circle

29561	91		Craigies	Hut-Circles; Small Cairns
29684	88		Invereddrie	Hut-Circles
31055	18		Drumderrach	Souterrain
31061	23	0	Barry Hill	Fort; Millstone
31084	41		Drumderrach	Hut-Circle
31086	43		Bruceton	Burials; Ring-Ditch (Possible); Souterrain (Possible)
31103	19		Hill Of Alyth	Hut-Circles
31114	29		Hill Of Alyth	Ring-Ditch Houses
31122	5		Tullymurdoch	Hut-Circles; Small Cairns
31123	6		Tullymurdoch	Hut-Circles; Field-System; Small Cairns; Buildings
88207	47		Bruceton	Ring-Ditch; Pits
164126	54		Cult	Settlement: Unenclosed; Souterrains

Appendix 6 The Database Extract

The attached CD-ROM contains an extract of the database during the study, entitled Davies_2006.mdb. It is in Microsoft Access 2000 format. The tables are as follows:

6-1: All_RCAHMS_Sites_in_Perthshire_and_Stirlingshire
6-2: All_RCAHMS_Sites_in_Perthshire_and_Stirlingshire_text
6_3: Later_Prehistoric_Sites_in_Perthshire_and_Stirlingshire
6_4: Details_Later_Prehist_Sites_in_Perthshire_&_Stirlingshire
6_5: Exc_Enviro
6_6: Excavated_Timber_Roundhouses
6_7: Excavated_Palisaded_Homesteads
6_8: Excavated_Stone_Roundhouses
6_9: Stirlingshire_Upstanding_Enclosures
6_10: Stirlingshire_Cropmark_Enclosures
6_11: SE_Perth_Cropmark_Enc_Morph
6_12: SE_Perth_Upst_Enc_Morph
6_13: SE_Perth_CS_Unenc_Settle
6_14: NE_Perth_Upst_Enc_Morph
6_15: NE_Perth_Unenc_Settle