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ISBN 0-315-55448-7

THE UNIVERSITY OF ALBERTA

PORDEN POINT: AN INTRASITE APPROACH TO SETTLEMENT SYSTEM ANALYSIS

BY

ROBERT WILLIAM PARK (C)

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF ANTHROPOLOGY

EDMONTON, ALBERTA

FALL 1989

THE UNIVERSITY OF ALBERTA

RELEASE FORM

NAME OF AUTHOR: Robert William Park

TITLE OF THESIS: Porden Point: an intrasite approach to settlement system analysis

DEGREE: Doctor of Philosophy

YEAR THIS DEGREE GRANTED: 1989

Robert William Park
(Student's signature)

#32 - 534 PLATTS LANE,
LONDON, ONTARIO, N6G 3A8
(Student's permanent address)

Date: October 2, 1989

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled PORDEN POINT: AN INTRA-SITE APPROACH TO SETTLEMENT SYSTEM ANALYSIS submitted by ROBERT W. PARK in partial fulfilment of the requirements for the degree of DOCTOR OF PHILOSOPHY.

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(Supervisor)

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Date: August 18, 1989

ABSTRACT

This thesis is an exploration into intrasite variability and its relevance to the study of prehistoric settlement systems, on the rationale that approaches to the study of settlement systems have generally relied heavily on intersite variation without allowing for any effective interplay between that level of analysis and the level represented by intrasite variability. After a general discussion of the topic of variability in the archaeological record and its relevance to the study of prehistoric settlement systems, the thesis focuses on a single site locality belonging to the Thule culture of the North American Arctic and Greenland. Unlike most studies that have been carried out on sites of this type and in this geographical area, the strategy employed in the present research is to sample a site in an extensive manner in order to explore the range of variation that is present between all of the living units rather than treating the entire site as the unit of analysis. A total of seventeen semisubterranean houses are present at the Porden Point site and sixteen of these were excavated. Individual houses are taken to be single residence units on the basis of ethnographic analogy, and variation between them is explored.

On the basis of this analysis, it is shown that there is substantial behavioural variation between these units which appears attributable to settlement system factors. Correlations are drawn between patterning in the faunal remains and patterning evident between classes of artifact types, and an attempt is made to account for this and to extend the knowledge gained from the Porden Point site to Thule sites in other regions of the Arctic.

This study has a number of specific implications for future research. The fact that a preliminary analysis of other Thule sites revealed variability similar to that evident at Porden Point indicates that this approach should be applied to the analysis of other Thule artifact collections. This research also demonstrates that studies of intrasite variation have the potential of increasing the sensitivity and sophistication of our understanding of specific prehistoric settlement systems previously known only from intersite variability.

ACKNOWLEDGEMENTS

I would like to express my deep gratitude to everyone who contributed to the completion of this research. First I would particularly like to thank my advisor, Dr. Clifford Hickey, along with my dissertation committee members, Dr. Milton Freeman, Dr. David Lubell, Dr. Allen McCartney, and Dr. Michael Wayman, each of whom provided helpful comments and advice which greatly improved the final product — I obviously retain responsibility for the remaining flaws.

The fieldwork at Porden Point was principally funded through research grants from the Boreal Institute for Northern Studies, with additional funding from the Arctic Institute of North America. Extensive logistical support in the field was provided by the Polar Continental Shelf Project of the Department of Energy, Mines and Resources. Dr. Peter Ramsden and Patricia Sutherland also contributed greatly to the completion of the work at Porden Point through the loan of equipment, and by initiating me into Arctic fieldwork. I would like to thank the Resolute and Grise Fiord Councils for their generous permission to carry out the excavations, which were carried out under archaeological permits 84-562 and 85-570 from the Government of the Northwest Territories, and in 1985 under land-use permit #N85N323.

Next I must express my deep appreciation for my field assistants: in 1984 Rosemarie Denunzio, Brenda Kennett and John MacDonald, and in 1985 Catherine Hooey, Ingrid Kritsch, and John MacDonald. It was only through their enthusiasm and hard work that the work at Porden Point was completed.

A number of other people and organizations contributed to specific aspects of the research. Charles Hett, Ruth Norton and Martha Segal of the Conservation Services Division of the Canadian Museum of Civilization assisted greatly by arranging the conservation of many of the Porden Point artifacts, and Bruce McGillivray and Gary Ericson of the Provincial Museum of Alberta helped in the identification of the avian faunal remains. Dennis Carmel carried out tooth thin-sectioning and Dr. Michael Wayman analysed the metal artifacts from Porden Point, while Dr. Owen Beattie, Dr. Ruth Gruhn and Dr. Charles Schweger also provided technical advice and assistance — the help of all of these individuals is gratefully acknowledged.

I also must express my sincere appreciation for the advice, criticism, and especially the friendship of many of my fellow students, particularly Rochelle Allison, Eric Damkjar, James Savelle and Douglas Stenton — the assembly of so many people with a common interest in northern archaeology at the U. of A. provided a stimulating atmosphere within which to carry out the research.

Finally, I want to thank Linda for always being there when I needed her most. I wish to dedicate the thesis to my parents, whose encouraged me to follow my interests wherever they led me.

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1. INTRODUCTION

This thesis is an exploration into variability in the archaeological record. Specifically, it is a study of intrasite variability and its relevance to the study of prehistoric settlement systems. This particular line of research is employed on the rationale that approaches to the study of settlement systems have generally relied heavily on intersite variation without allowing for any effective interplay between that level of analysis and the level represented by intrasite variability. This thesis demonstrates that studies of intrasite variation have the potential of increasing the sensitivity and sophistication of our understanding of specific prehistoric settlement systems previously known only from intersite variability.

After a general discussion of the topic of variability in the archaeological record and its relevance to the study of prehistoric settlement systems, the thesis focuses on a single site locality belonging to the Thule culture of the North American Arctic and Greenland. The origin of the Thule culture can be traced back in time through the Birnirk culture of northwestern Alaska to the Okvik and Old Bering Sea cultures which are known from the area around Bering Strait. From its centre in northwestern Alaska, the bearers of the Thule culture spread to the east by a dramatic population movement throughout the Canadian Arctic and into Greenland approximately one thousand years ago. Possibly a similar process within Alaska with or without population replacement eventually resulted in a Thule influence reaching at least as far as the base of the Alaska Peninsula. The resulting widespread Thule population developed locally into the many historically-known Inuit groups (Dumond 1977; McGhee 1978; Maxwell 1985; recent detailed synopses of Thule culture history can also be found in Morrison 1983a and McCullough 1986).

From its Okvik, Old Bering Sea and Birnirk antecedents the Thule culture inherited a complex and sophisticated material culture, much of which centred around the open-water hunting of sea mammals. However, Thule economic adaptations appear to have varied regionally and over time throughout the huge part of the Arctic eventually encompassed by the bearers of this culture. In the region which is the focus of the present research, the Eastern Arctic (defined following Maxwell's [1985] usage of the term), the Thule left their most distinctive mark on the landscape in the form of large semisubterranean structures built of rocks, earth, and often whale bones. Such structures are normally referred to as 'winter houses'. The widespread construction of these dwellings, often in sizeable clusters, distinguishes the Thule from their Inuit descendants who in many parts of the Eastern Arctic used snow houses as their winter home. The ultimate goal of instituting this research project in that specific region is to begin to provide a data base suitable for the development of a better understanding of the particular settlement processes that led to the development of the diverse Central Eskimo groups from a Thule culture base.

Unlike most studies that have been carried out on sites of this type and in this geographical area, the strategy employed in the present research is to sample a site in an extensive manner in order to explore the range of variation that is present between all of the living units rather than treating the entire site as the unit of analysis. The specific Thule site locality examined in the course of this research is situated at Porden Point on Devon Island, Northwest Territories, and will be described in Chapter 3. A total of seventeen semisubterranean houses are present there and sixteen of these were excavated prior to and during the course of the present research. Specific dwelling structures are taken to be single residence units on the basis of ethnographic analogy, and variation between them is explored.

On the basis of this analysis, it will be shown that there is substantial behavioural variation between these units which appears attributable to settlement system factors. Correlations are drawn between patterning in the faunal remains and patterning evident between classes of artifact types, and an attempt is made to account for this and to extend the knowledge gained from the Porden Point site to other regions.

Variability

One of the major weaknesses inherent in many current approaches to the derivation of knowledge from the archaeological record is the means by which we identify and assess the significance of variability. Because of this, the explicit study of 'variability' has proliferated enormously in recent years across almost every realm of the archaeological record. In 1982 Gordon Willey was able to write that:

> "Variability," or "variability in the archaeological record," has been the shibboleth in American archaeology for the last two decades... One can hardly deny the importance and necessity of "variability." Without it archaeology would be as nothing. All phenomena of the past would meld into an undifferentiated whole. But, conversely, if no two phenomena could ever be grouped into a type, a modality, or a norm, there would be no archaeological discipline. (Willey 1982:614)

Archaeologically, variability must necessarily be identified and quantified/qualified through the process of sampling. However, the nature and amount of variability discovered can be significantly shaped by the sampling strategy that is employed (e.g., Hole 1980), and the choice of sampling strategy and the subsequent assigning of meaning to the variability that is discovered both depend to a great extent on the archaeologist's theoretical perspective on the potential range of variation possible within a single cultural system.

One thus comes up against a classic archaeological 'Catch-22': one can either assume that variability seen in the ethnographic record can be used as an accurate analogue for variation in prehistoric cultures, and therefore in the archaeological record, or one can assume that rather different kinds and ranges of variability may have been characteristic of prehistoric cultures and therefore of the archaeological record. In the former case, ethnographic data can be used to predict the realms within which variability should be sought in the archaeological record and can help in assigning significance to differences when they are identified. In the latter case, however, variability must be sought in all realms of the archaeological record, and ethnographic data will be of much more limited utility in assessing it when it is uncovered.

It has been argued quite convincingly that one cannot learn about the *nature* of the archaeological record just from studying archaeological data (e.g., Binford 1983:12-14), but it can also be argued that at some point it is necessary to use archaeological data to assess the appropriateness of our interpretive and explanatory approaches. This means asking whether our models accurately predict where and in what amount variability will be present in the archaeological record, regardless of its meaning, or whether there is more/less variability present, or if variability is present in a realm of the archaeological record where our models suggest that it should not be found.

In order both to ask and to answer these questions, it becomes necessary to work back and forth between modelling (based on ethnographic data, ethnoarchaeological and 'actualistic' studies, or whatever approach seems appropriate) and the archaeological record. Any sampling strategy should be designed in such a way that assumptions regarding the expected nature and extent of variability do not, without justification, preclude the discovery of variation beyond what is expected. And variability discovered in one realm of archaeological data must also be considered in the context of any discovered in other realms — not in isolation as is sometimes done. By analyzing the results of this type of research, archaeologists can begin to learn about sampling strategies that are appropriate (or inappropriate) from an archaeological and cultural perspective in addition to a mathematical or statistical one (Hole 1980).

It is middle range theory that allows us to assign meaning to the archaeological record (Binford 1983), and we are still very much in the process of developing practical and appropriate middle range theory for much of our archaeological data base (Thomas 1986). But in spite of the great value of middle range theory building and research, any notion of declaring a moratorium on research-oriented archaeological excavation until such a time as we have all of our middle range tools worked out would be counter-productive. It is only by reference to the archaeological record itself that our middle range approaches can be tested, refined and expanded upon. And that must be a major thrust of any foray into the archaeological record. However, in following this approach, there is always the problem that when the archaeological record and the archaeologist's models do not agree, the problem may be *either* in the models themselves *or* in the middle range theory utilized to assign significance to the archaeological data. If all of the middle range tools could be perfected beforehand, archaeologists would just have to worry about the models; however, without this dialogue between middle range theory building and the archaeological record, our middle range tools are not going to be validated (e.g., Thomas 1986:246-247).

Settlement system studies

One area of archaeological research where this approach is both appropriate and very much needed is in the study of prehistoric settlement systems. Various approaches to their study have been developed with widely varying goals. The problem of assessing the variability present in the archaeological record is quite central to this field of research due to the specific nature of the data base examined.

In North American archaeology the development of settlement pattern studies in the 1950s was both a development from and a response to the then-prevailing emphasis on culture history and chronology. After 'the artifact', priority had been given to the analysis of individual sites, their ages, and sometimes the subsistence practices carried out at them. Within the hierarchy of analysis, the next unit above the individual site was the 'Culture', 'Phase' or 'Tradition'; there was really no intermediate level. The Culture was a composite of the data from the individual sites grouped within it, usually based on a trait list approach.

With the advent of settlement studies, new hierarchical units of analysis both smaller and larger than the individual site but still smaller than the Culture were introduced. At the smallest end of the scale there was the study of activity areas, as well as the study of the intrasite patterning of structure types and other attributes with the goal of elucidating information about the nature of the community that occupied the site (e.g., Chang 1968; Longacre 1970). At the larger or intersite end of the scale, research into the geographical distribution of the different kinds of sites belonging to a single culture became important (e.g., Willey 1953). This latter type of research represented a more sensitive and perhaps appropriate approach to the study of synchronous variation and change over time in prehistoric cultures. It also had the very important advantage of requiring that only a few sites be intensively excavated; extensive survey and limited test excavations could then provide much of the remaining required data.

Reconstructionist approaches

The majority of approaches to the study of settlement patterns take what may be termed a 'reconstructionist' approach (e.g., Binford 1986:461-465; Dunnell 1980:77-83, 87-88). This type of approach is basically descriptive in that its ultimate goal is to generate data analogous to some of the types of data that would result from an ethnographic study of a prehistoric group, were that possible. It is only at a secondary level of analysis that these data are used in an interpretive or explanatory fashion. This type of approach has been used on both the intrasite and intersite level.

Intrasite analysis

At this level the individual site or some part of the site represents the unit of analysis. A number of rather different approaches can be subsumed under this heading. One of these is site catchment analysis (Flannery 1976; Roper 1979; Vita-Finzi and Higgs 1970), although a case could also be made for also including this under the heading of intersite analysis. Site catchment analysis is based on the assumption that site location is determined by the distance to local resources. Thus, by reconstructing and analyzing the resources that would have been available within the catchment area of the site (as determined by any of a number of methods) information concerning the 'function' of the site can be generated. This function is often the role the site would have fulfilled within a group's annual round; a catchment analysis for different sites of the same prehistoric culture can be carried out to determine whether or not they plausibly represent different aspects of the same annual round. This is usually the conclusion if it appears that the resources locally available at the sites would have had different seasonal abundances (e.g., Clark 1983; Davidson 1983). However, site catchment analysis may not be appropriate in many situations. It seems most useful for the study of groups whose major subsistence activity was agriculture rather than hunting and gathering, because the site catchments for a settlement system employing base camps in addition to hunting camps will be difficult to define (Flannery 1976:92, 94).

Another major theme in intrasite studies has been the identification of activity areas in order to learn about the prehistoric use of space (e.g., Kent 1984; 1987). This type of research can have a number of goals. It can be carried out in order to learn how people organized and utilized space on this small scale and how that may have changed over time (e.g., Newell 1987), or it may be done simply to identify the varied functions served by different parts of a structure or site.

This latter approach can be turned around and utilized in a predictive fashion to determine whether different parts of a site or different structures from a site were likely to have been occupied contemporaneously, and in general interpretations of the demographic nature (e.g., resident population size) of site occupations (e.g., Conkey 1980; Grøn 1987:304-307). This type of analysis necessarily relies a great deal on ethnographic analogy to provide the middle range linkages to make such interpretations.

Intersite analysis

Current intersite approaches to hunter-gatherer settlement patterns fall into two groups: (1) those that seek either to identify the nature of the 'typical' annual round of the culture being studied or simply learn how a particular site was articulated into an annual round; and (2) those approaches that seek to understand the underlying organizational constraints that combined to produce an annual round put together in a particular fashion. These are quite different goals, although the information produced by the former approach is in some ways a prerequisite to the latter, which in turn can perhaps provide testable models for the former. This is true only in the sense that one must have some rationale for concluding that two sites were part of the same annual round pattern, and it is more likely the former kind of approach that would provide this.

Within the first approach, establishing the annual round became a central focus for settlement pattern research into prehistoric hunter-gatherers, leading to site catchment analysis and to subsistence-settlement studies. From the beginning, a great deal of settlement pattern research, especially on the intersite level, has been explicitly ecologically grounded (Trigger 1968:67; Willey 1968:215). Thus, settlement pattern studies have incorporated paleoenvironmental and, for approaches such as site catchment analysis, paleogeomorphological data. Subsistence-settlement studies focus on the interaction between cultures and their resource base, often from a cultural ecology background and within a systems theory framework (Root 1983:197-198). In this type of approach, environment and resources are given theoretical and analytical priority.

The type of result produced by this kind of approach generally includes information about the standard pattern of seasonal movements of the members of a culture as well as the type of resources that they would have exploited at different times of the year, all based on one or a few sites thought to be representative.

Organizational approach to subsistence/settlement

Lewis Binford, among others, has for some time argued that the real goal of archaeological research must be to learn about the organizational basis of prehistoric systems as opposed to learning about the specific behaviours/events that took place within the context of these systems and were determined by them (e.g., Binford 1987:450). Without understanding this framework, he argues, prehistoric behaviour may seem "erratic or particularistic" (Binford 1987:452).

Binford developed an approach to allow the study of this organizational or systemic basis of hunter-gatherer adaptations. The basis of the approach was the idea that hunter-gatherers commonly employ two rather different strategies of mobility while following their annual subsistence/settlement round: 'residential' and 'logistical'. A high degree of residential mobility will result in what is termed a 'foraging' pattern of mobility, while a high degree of logistical mobility will produce a 'collecting' pattern. The particular mobility pattern of any given group will focus on one or the other of these two strategies, although for most groups some aspects of both strategies will be employed, perhaps in varying proportions at different times of the year, and at different levels within a society (Binford 1987:451; Kelly 1983:279).

To make use of this concept archaeologically, Binford (1978, 1981) argues that these patterns can be recognized through the study of the characteristics and distributions of sites across a landscape, combined with a specific method of analyzing faunal remains based on the 'economic anatomy' of particular species of animals. That is essentially a measure of the differential utility (nutritional value, percentage of bone to meat, etc.) of various anatomical portions of an animal carcass as determined by 'actualistic' studies. Given that this set of relationships can be considered to have remained constant from the past into the present (as long as evolution has not significantly altered the anatomy of the species in question and basic human perceptions of these portions have not changed), the analysis of the anatomical portions represented in the faunal remains from an archaeological site can provide information concerning the economic behaviour of the people who produced the faunal assemblage. This kind of data can then, in conjunction with similar data from other sites, provide information about the 'systematic situation' within which the sites were produced. It should be noted, however, that this approach is strictly based on subsistence and is not designed to take into account non-food uses of animal products such as skins for clothing, etc.

In *The archaeology of place*, Binford (1982) discussed the fact that places have differing economic potential depending on how they fit into a particular settlement system — in other words, the economic potential of a location is not necessarily something inherent in it and has meaning only in the context of a given settlement system. More importantly, Binford argued that a place's economic potential and its position in a particular settlement pattern/strategy could change seasonally; i.e., a single settlement system could make use of a single location in more than one organizational context at different times of the year (e.g., as a residential camp and as a hunting camp). One of the most far-reaching implications is that the same organizational system will produce differing assemblage types in a single place (i.e., site) if that place is utilized at different times of the year and/or in different settlement system contexts, which has broad implications for repeatedly-used places. Therefore, the types of data that can be provided by the analysis of the anatomical portions represented in the faunal remains from an archaeological site are of the utmost importance in trying to understand the role(s) played by particular places.

In principle, Binford's approach has the advantage of providing a way of dealing with and actually taking advantage of variability within the archaeological record rather than just averaging it out in the definition of an archaeological 'culture'. This is because the same culture could exploit the same resource in very different ways under different economic situations, but always within the same systemic constraints. By looking at data from different sites formed under several different economic situations the archaeologist can explore the nature and outer limits of these constraints. However, for this type of approach to be successful, the prehistoric utilization of the environment needs to be examined in great detail: more and more kinds of sites that figured in the use of the landscape must be incorporated; one cannot be limited to considering only the locations where people lived.

Settlement system problems

A number of serious weaknesses have been identified in our current approaches to the study of settlement systems. One of these relates to our very limited ability to identify contemporaneous sites or even parts of sites (e.g., Renouf 1987:321). This means that one must assume that the settlement system that is being studied remained unchanged over a period at least as long as the smallest temporal unit that can be confidently defined by whatever dating technique is being used in order to use data from different archaeological sites to define an annual round (Root 1983:197; Wobst 1983:223). Given the amount of latitude involved in most archaeological dating methods this can mean an assumption of homeostasis over extremely long periods of time — an assumption that should be justified or at least made explicit if it is to be used but regularly is not. And given that studies of prehistoric settlement patterns often have the goal of identifying and explaining *changes* that have taken place in this realm, the archaeologist must first assume that settlement patterns tend to remain in stable adaptations which are broken only by brief episodes of change. He/she must then attempt to understand the nature of the change solely through knowledge of the stable patterns before and after it.

That problem is partly one of resolution, particularly chronological. The better our control over the chronology becomes, the better equipped the archaeologist would be either to make the above assumptions or reject them. However, the problem also derives from our inadequate understanding of the nature of settlement systems: do they really function in a 'homeostasis-change-homeostasis' fashion, and if they do, how much variability within the system can be present during the stable periods? (Wobst 1983:223). In subsistence-settlement studies this is not as much of a problem at least theoretically, because causality is assigned to the environment and to resources. Therefore, settlement system stability should result from environmental stability and settlement system change should be the result of environmental change. Given dependable measures of prehistoric environments, one should be able to predict settlement system responses accurately. However, this relationship requires testing — it certainly cannot be accepted as a given (Bailey 1983:60). Also, some environments appear to undergo cyclical changes — therefore, settlement system stability in such an environment might be quite different from stability in a less dynamic kind of environment. Finally, a strict subsistence-settlement approach cannot take into account the possibility that variability could result from factors other than the external environment — factors internal to the culture itself (Hodder 1982; Root 1983:198).

An associated problem with many of our current approaches to the study of archaeological settlement patterns is the fact that a normative approach to sites and to site function must be employed. Given that one can almost never excavate more than a very few examples of a given 'type' of site within a region, one must assume that other unexcavated sites situated in similar environmental and/or geomorphological settings fulfilled a very similar function within a standardized annual round. In the absence of excellent survey data one often has to extrapolate the very existence of these other functionally similar sites (Wobst 1983:222).

A third problem relates to our difficulties in quantifying relevant factors such as the number of people who occupied a site, the length of time it was occupied and the number of times it was re-occupied. Given that at least approximate answers to these questions must be considered basic to any attempt to understand a site's function, our inability to answer them satisfactorily is a fundamental problem. All approaches to the study of prehistoric hunter-gatherer population size seem to conclude that prehistoric hunter-gatherers lived in groups of a size quite comparable to those of their ethnographically-known counterparts (e.g., Hassan 1981:63-93). This may indeed be the case, but the methods of ascertaining prehistoric population size, ultimately based as they are on ethnographic analogy and studies of modern populations, seem to preclude the possibility of any other conclusion.

Hierarchy and analysis

A final problem relates to the choice of methods and units of analysis appropriate to the problems with which one wishes to deal and to the types of inferences one ultimately hopes to make. This issue has been discussed by Thomas (1986:259) in relation to optimal foraging theories: "Theory constructed at one level of resolution cannot necessarily be smoothly transferred to other levels." In effect, one can argue that there is a hierarchy of analysis. For settlement pattern studies this means being able to operate at both the intra- and intersite level and ensuring that there is no discontinuity between these levels of analysis. In the past, the types of data gathered for intrasite analysis and the types of inferences derived from them have been of dubious utility on the intersite level of analysis, and the types of conclusions generated on the intersite level have tended to be untestable or untested on the intrasite level. In other words, there has been little effective interplay between the various levels of analysis.

Discussion

All of these problems combine to produce a situation where our approaches to the study of settlement systems and the types of information we wish to gain from this genre of study need to be re-evaluated. Our ultimate aims for the study of hunter-gatherer settlement systems include the identification of annual rounds, acquisition of knowledge about the demographic and social groupings represented, and, more fundamentally, learning about the strategies that were employed and how these were expressed in the specific prehistoric examples being studied. In one sense, we already have some of the tools necessary to approach these issues. For example, Binford's forager/collector model accommodates human needs, technological capabilities, demography, human values, and the constraints of particular environments. However, our means of applying these tools need to be refined.

Therefore, given the problems outlined above, one of our immediate goals in the study of settlement systems must be to improve our ability to recognize relevant variability in the archaeological record and assign meaning to it. Methodological changes may be required:

> ...traditional research strategies may minimize or obscure intrasite variability, thereby increasing difficulties accompanying attempts to identify and compare different kinds of social groupings, and exacerbating problems raised in comparing one settlement with another. (Kramer 1982:664)

Our present approaches tend to allow for a certain amount of variability, but only within certain specific realms. For instance, given different dwelling structure styles at a single hunter-gatherer site, the traditional approach would probably be to assume that these represented functional differences or, more likely, chronological change. However,

> ...Given the lack of standardization in vernacular architecture cross-culturally, the archaeologist's problem would seem to be not so much one of discovering that ancient houses (and their resident social units) were not identical, as of obtaining a representative sample from which ranges of variation might be established and from which efforts to specify their causes might proceed. (Kramer 1982:673)

Thus, the problem can be seen in part as one of sampling. In addition, individual members of a culture do not all participate in it in the same ways, or to the same degree. But while it has been recognized that there would be more than one way to live within a given environment with the same technology, there appears to have been the implicit assumption that prehistoric groups would have done things the same way 'internally'; therefore, archaeological variability would only reflect change over time within one culture, or different cultural groups. This is the basis of any strongly normative approach, on the intra- or intersite level. But the ethnographic literature is full of examples of different individuals within a group deciding to do different things at the same time, and of whole groups doing different things from year to year (e.g., Barnard 1983:199; Binford 1984:241; Damas 1969:47; Freeman 1988:158).

This is where Binford's (1987:452) observation — that without reference to the underlying organizational or systemic constraints, the archaeological record of behaviour can seem "erratic or particularistic" — becomes especially relevant. A normative approach averaging out all of this variability seems fundamentally flawed, but one must ask whether there is anything that can be done with the erratic or particularistic data without resorting to a normative approach? One answer to this might be to use them to learn about the specific range and extent of variability in prehistoric settlement systems. Rather than trying to define *the* annual round for a prehistoric group, one could, after gaining an insight into the underlying organizational constraints, acquire an understanding of the specific options that were selected, and determine whether these changed over time. Thus, one opens up the potential of observing the effects of culture operating within these organizational constraints. And as long as the effects of the constraints are understood, the behaviour need not be perceived as erratic and particularistic.

It should be reiterated at this point that subsistence/settlement systems are of course just one contributor to variability in the archaeological record. But we have tools that allow us to identify and potentially to ascribe meaning to variability in prehistoric economic behaviour. Having done this, we can then attempt to identify whether the causes of this variability are strictly economic or whether other factors, particularly social, are represented.

Research design implications

Accepting these arguments, we need to revise our research methodologically and analytically. Methodologically, this means that we must alter our approach to the excavation of sites so that the sampling strategy employed does not shape, obscure, or assume the non-existence of intrasite variability in many realms. In principle, this would mean that some sites should be completely excavated in such a way as to recover as many kinds of data as possible, and, ultimately, that the sites from whole regions would be excavated this way. In practice, this is obviously not possible given funding constraints and the archaeological responsibility of preserving intact some of the archaeological record for future archaeologists who will hopefully have better techniques and different problems to solve.

However, failing this, one might be able to go to archaeological data gathered from the era prior to the 1960s, before the use of rigorous sampling procedures were employed and during the period when funding and costs sometimes allowed large-scale individual excavations and regional studies. But in many of these cases the techniques of excavation and the subsequent analysis and reporting of the data make this an unprofitable exercise, at least initially.

Given all of these factors, the most practical way to begin to implement this approach would still seem to be the essentially complete excavation of certain selected sites of a size that could be excavated under the aforementioned constraints. This approach has been advocated for intrasite analysis specifically (Kent 1987:10-11; 23-24) and for both intrasite and intersite analysis (Kramer 1982:672), always with the goal of learning about the range of variability present in different prehistoric contexts:

> Archaeological community studies that examine interhousehold variability at individual sites may suggest explanations for some of the differences observed at the local level; in the larger and longer view, a distinction between intrahousehold and interhousehold variation and change may help to illuminate transformations that interest us. If we wish to move beyond a normative view of ancient societies and their component units, and begin to understand how these units articulate with one another over space and time, we must refine our methods for identifying such variability. (Kramer 1982:674)

A major benefit of employing such an approach would be the opportunity that it would provide to assess the suitability of certain sampling strategies in specific situations. In that context, such research should allow us to assess in a more sophisticated fashion the conclusions generated through the application of specific sampling strategies in the course of past research and guide the development of future excavation strategies, all with the ultimate goal of being able to make more powerful inferences based on the meaningful variability discovered. In this way, judicious use of the archaeological record itself can aid in the refinement of appropriate middle range tools (Simms 1988:210; Thomas 1986:246-247).

In particular, an approach involving the extensive excavation of single sites should be especially appropriate for settlement system studies, in part because of the powerful analytical tool provided by Binford's economic anatomy approach to faunal analysis. Such an approach can be transferred between the inter- and the intrasite levels of analysis and thus facilitates the examination of results obtained on one level with those from the other. It also provides a well-grounded departure point for other analytical approaches on the intrasite level.

Specifically, therefore, the application of such an approach to a subsistence/settlement pattern study in an appropriate archaeological context should be valuable in a number of ways:

1. As an illustration of the existence and extent of variability within an archaeological site in a realm of the archaeological record where a normative approach would average it out and where some sampling strategies could produce highly unrepresentative results.
2. As a practical demonstration of a method to isolate and ascribe meaning to such variability.
3. As a benchmark against which past sampling strategies can be measured., and from which appropriate sampling strategies can be developed for the future.
4. As an analogue for other sites of the same type (if only in a negative sense, by illustrating that a normative approach might be inappropriate).
5. As a contribution to our knowledge concerning the settlement system of the specific culture being studied.

The rest of this thesis attempts to apply these concepts to the Thule culture. Chapter 2 presents a discussion of what is known about the subsistence/settlement patterns of the Thule and states why sites of this culture are appropriate candidates for this type of research

2. THULE ARCHAEOLOGY AND APPROACHES TO VARIABILITY

Introduction

In Chapter 1 a number of concepts were discussed with regard to the derivation of knowledge from archaeological data, especially data on prehistoric settlement practices. The potential for learning inherent in the variability present in the archaeological record was discussed, along with the need to scrutinize our ideas concerning past systems of organization and our approaches to the archaeological record. Accepting those points, has this been done in studies of the Thule culture?

Thule culture research strategies in perspective

For a long time the most urgent research questions concerning the Thule in the Eastern Arctic have been perceived to be culture-historical; important culture-historical questions are still being answered in the 1980s. Understandably, the strategies employed to answer these questions have been strategies thought appropriate to produce culture-historical answers given the analytical tools that were available such as the trait-list approach. Individual sites were almost invariably the major units of comparison and the artifact and faunal collections from different structures at each site were amalgamated into a single assemblage which could then be compared with similarly-constituted assemblages from other sites, with the concomitant but often unstated assumption that large sites would have represented large resident populations rather than locations repeatedly occupied over a very long period of time by smaller groups. Regional settlement system variability within the Thule culture was certainly recognized and is being studied (e.g., Morrison 1983a, 1983b; Savelle 1987), but when working on a scale smaller than the regional one, variability has usually been normalized, averaged-out.

In fact, one cannot point to many examples of studies of Thule intrasite variability. When it has been explored, the data that have been looked at have primarily been either architectural variability (e.g., McGhee 1984, Schledermann 1976) or faunal variability (e.g., Stenton 1983). When intrasite variability has been discussed it is most often interpreted in terms of chronological differences, either from stylistic change or as a response to environmental change over time. Chronological differences are undoubtedly a factor and will be considered in this research. However, it is now widely recognized that factors other than stylistic and environmental change can lead to extensive intrasite variability and we must formulate our approaches to studying such variation so that this can be taken into account. And this requires that we avoid the automatic use of amalgamated assemblages.

In Thule archaeology the amalgamation approach was utilized because it was thought to be useful for dealing with culture-historical problems. But one should now ask whether it was appropriate for settlement and subsistence pattern analysis, since inferences concerning these factors were also advanced. Working just from ethnographic analogy with historic Inuit groups there is reason to believe that this might be inappropriate (e.g., Damas 1969:47; Freeman 1988:158). Variability in Inuit settlement patterns and behaviour does not appear to have been restricted always to the intersite level. On a more general level, the amalgamation approach may be inadequate because for many purposes it is on the level of the *household* that "social groups articulate directly with economic and ecological processes" (Wilk and Rathje 1982:618). Thus, amalgamated collections might by definition be inappropriate for examining many economic processes. Therefore, for some purposes such as settlement systems analysis, Thule archaeology needs to get away from analyses carried out at the level of sites using amalgamated collections and explore the potential of analyses carried out on an intrasite level, utilizing smaller analytical units.

However, a fairly substantial body of interpretations and conclusions has been generated with regard to aspects of settlement and subsistence in the course of culture-historical research. At this point it is important to outline and assess these interpretations.

Thule culture settlement systems

To begin this discussion concerning reconstructions of Thule settlement patterns it is appropriate to proceed historically and return to the pioneering work of Therkel Mathiassen (1927a, 1927b). Definition of the overall settlement/subsistence pattern of the Thule was not really Mathiassen's goal but he did make some statements on the topic, mostly contrasting the settlement/subsistence pattern of the Thule with that of the modern Inuit:

> Whereas the present day Central Eskimos live a very nomadic existence, with snow houses and tents as their only dwellings, with caribou hunting as their principal occupation, whilst the hunting of marine mammals has, as far as most tribes are concerned, retired somewhat into the background, the Thule culture has to a much greater degree been connected with the coast, has been based upon the hunting of the big marine mammals, especially whales and walruses, and has had permanent winter houses situated at the good hunting grounds... (Mathiassen 1927b:2)

> It [the Thule culture] presents to us a people, living in permanent winter houses by the coast, in conical tents in summer, hunting the whale, the walrus, the seal, the bear and the caribou, trapping foxes, catching birds and salmon, all by means of a highly developed implement technique. (Mathiassen 1927b:6)

> If we should look to see which of the Central Eskimo tribes stand closest to the Thule culture, we should doubtless find that it is the Iglulik Eskimos. Their qarmat must, as already stated, be regarded as a relic of the Thule house, and in their mode of living the hunting of sea animals, especially walrus hunting, is of greater importance than among the other Central Eskimos. (Mathiassen 1927b:163)

Elsewhere he commented that the the Thule must have known how to build snow houses (based on the presence of artifacts identified as snow knives) but implied that such structures were probably only used as temporary dwellings during journeys (Mathiassen 1927b:156). In other words, their use did not form an important component of the Thule annual round. The whole thrust of his discussion was that Thule was essentially a "coastal culture" (e.g., Mathiassen 1927b:182, 185, 195), so that the typical Thule annual round would have involved a large proportion of the year being spent at the coast focussing on marine resources, particularly bowhead whales and walrus.

Since the time of Mathiassen's work, research has shown that the Thule pattern of subsistence/settlement was by no means organizationally or technologically limited to a concentration on sea mammal resources (e.g., Maxwell 1960; Taylor 1966; 1968) and that the Thule occupied some regions where the largest sea mammals, bowhead whales, were not available (e.g., Morrison 1983a; McCartney and Savelle 1985). However, in the many regions of the Canadian Arctic and Greenland where Thule and historic Inuit territories overlapped, the former's settlement pattern is still distinguishable from that of the latter, mostly on the basis of the Thule practice of constructing coastal semisubterranean winter house settlements while many historic Inuit groups wintered in transient snowhouse camps out on the sea ice. However, given the great diversity of patterns exhibited by the historic Inuit, this criterion cannot necessarily be considered diagnostic.

Moving to a somewhat more fundamental level, Morrison (1983a) and Savelle (1987) have recently argued that the basic organizational properties of the Thule subsistence-settlement pattern were different than those employed by their historically-known descendants. Morrison (1983a:246-279) proposed that the distinguishing characteristic of Thule occupations everywhere was that they subsisted throughout the winter on a stored surplus of food. He went on to argue that the change from this Thule pattern to the ethnographically-known Inuit pattern was a response to climatic changes that reduced the open-water period during which the principal sources of storable food (especially ringed seals in his study area, but bowhead whales elsewhere) were available, in concert with the initial development of effective breathing-hole sealing techniques. Thus, the problem of acquiring enough food during a shorter open-water season to last over a longer winter encouraged the shift to a pattern where winter subsistence was no longer dependent on stored foods.

Savelle (1987), using concepts originally defined by Binford (1980), argued that the fundamental settlement/subsistence difference between the Thule of the Central Canadian Arctic and the historic Netsilik Inuit of essentially the same area was based on the fact that the Thule practiced a collecting strategy while the historic Inuit followed a foraging pattern. He argued that in his study area a declining availability of bowhead whales and caribou subsequent to climatic deterioration discouraged the pattern of low residential mobility practiced by the Thule, who had relied quite heavily on these resources. And the means by which they had been able to rely on them so heavily was by combining low residential mobility and high logistical mobility with the ability to store these resources in large quantities.

Morrison and Savelle seem to be arriving at basically similar conclusions, although following different analytical means to get there. They are both arguing that the terrestrial winter occupations were an aspect of the Thule settlement pattern closely tied to the consumption of stored supplies, and that when adequate quantities of food and/or fuel to last throughout the winter could not be acquired this pattern was abandoned.

Reconstructions of a Thule annual round

Given that the above interpretations of Thule settlement patterns depend to a great degree on reconstructions concerning the specific way of life of the Thule, it should be worthwhile at this point to summarize what has been inferred about their annual round. The initial part of this discussion will concentrate on the part of the annual round represented by the winter house sites, since it is that part that has been studied most thoroughly by archaeological research.

Three factors are of particular importance in this discussion: the season(s) during which the sites were occupied, the size of the group that would have lived there, and the types of activities that were carried out at or from these sites. Some ethnographic evidence will first be reviewed, to help put the Thule models in perspective.

Ethnographic analogues for Thule winter house sites

During historic times, semisubterranean winter houses that appear to have been basically analogous in terms of construction to those of the Thule were utilized in several different parts of the North American Arctic and Greenland. In northern Alaska some large 'villages' of such houses were occupied throughout the winter although much smaller winter settlements were known as well. The economic basis of these large and seasonally permanent groupings appears to have been the fruits of the spring bowhead whale hunt (Spencer 1984:326-330). Moving east one also finds semisubterranean dwellings in use historically, but in most cases substantially smaller groups appear to have wintered together. The Sallirmiut of Southampton Island are reported to have spent much or all of the winter in semisubterranean houses. The basis of their winter subsistence seems to have been ice-edge hunting and breathing-hole sealing (Mathiassen 1927a:269-270). The Polar Eskimo also occupied a type of winter house, often from about the middle of September until May but many members of the group would move away into snow house hunting camps at around the beginning of February with the return of daylight (Steensby 1910:296-297). This latter pattern appears to have been followed by at least some of the Iglulingmiut who lived around the Melville Peninsula (Boas 1888:446-447; Lyon 1824; Parry 1824), some Labrador Inuit (who, however, lived in much larger, communal winter houses [Taylor 1974:55]), and by at least some of the Inuit groups that occupied the Mackenzie River delta (McGhee 1974a:10-18; Smith 1984:351).

The basic conclusion that one can draw from this sketchy survey of the use of semisubterranean winter houses in the historic period is that there was considerable variability in the length of time such settlements were occupied in any given year and in the numbers of individuals who would spend the winter together. There are thus many possible permutations from the ethnographic record for the Thule utilization of similar structures. These will be discussed in the following sections.

Season of occupation

Given the many problems associated with accurately delimiting the season(s) during which sites would have been inhabited, not many researchers have published explicit statements concerning the precise period of occupation of Thule winter sites. One of the few exceptions to this is found in Taylor and McGhee (1979:115), who suggest that:

> On the basis of ethnographic analogy and physical evidence, the heavy winter houses found on the site were almost certainly occupied for part or all of the season during which the ground was frozen from the surface, perhaps from October to May. The smaller and lighter semisubterranean structures were probably occupied during a warmer season, when an insulating roof of heavy sod was not necessary.

This view, often expressed as a statement to the effect that Thule winter houses were seasonally 'permanent', has also been espoused in a slightly less explicit fashion by Morrison (1983a:252), McCartney (1980:536), McCullough (1986:517-518), Sabo (1981:309), Savelle (1987:68, 72), and Schledermann (1976).

Disagreements with this proposition, when expressed, mostly concern the question of what time of year the Thule would have moved out of these houses. For example, Sabo (1981:309) believed that the earlier Classic Thule of southern Baffin Island occupied the winter house sites throughout the winter, but he suggested that during the later Developed Thule phase these same types of sites were not always occupied for the whole winter — sometimes people would move during the winter from this type of settlement into snow house villages out on the sea ice. Savelle and McCartney (1988:52) suggest a similar distinction between early Classic and late Classic Thule sites in the Central Canadian Arctic.

Other researchers have recognized a settlement pattern distinction between two different types of semisubterranean dwelling structure: 'winter houses', and *qarmat*. Very generally, winter houses are thought to have been occupied throughout the cold part of the year, while *qarmat* could have been occupied in the autumn only, *or* from the autumn through to the spring (Mathiassen 1927b:133; Schledermann 1976:43-44). The importance of making this distinction is first the implication that winter houses *must necessarily* have been occupied throughout the winter, and second, that a shift in settlement pattern took place because of the inferred increase over time in the use of *qarmat*.

I have elsewhere (Park 1988) questioned the whole basis of the winter house/*qarmat* distinction and the generally-accepted view that Classic Thule winter houses would necessarily have been occupied throughout the winter season. However, the rationale for this is mostly a negative one, suggesting that: "...given the types of evidence that we presently have, we often could not reliably distinguish archaeologically between structures occupied repeatedly between September and May, and ones occupied repeatedly just between September and January" (Park 1988:170). Accepting that we do not have conclusive evidence to prove that winter houses were invariably or even usually occupied throughout the winter in Thule times, it currently seems most reasonable to believe that the flexibility that characterized historic Inuit settlement patterns was a characteristic of Thule settlement patterns as well. This is not to suggest that the Thule followed the same pattern as any particular historic Inuit group — rather, it is simply an argument to the effect that any inference regarding the permanency of winter house sites is presently unverified and not an established fact on which we can build further inferences.

Winter community size

There is also disagreement concerning the usual number of people that would have passed the winter together during Thule times. Thule sites in the Canadian Arctic range in size from as few as two winter houses up to more than 50 (McCartney 1979; 1980:525-526). One point of view has it that groups of anywhere between 20 and 50 persons usually wintered together, inhabiting perhaps four to six houses (e.g., McGhee 1972:118; 1974b:177; 1984:80; Morrison 1983a:252-254). The evidence for this model comes from the fact that a large number of Thule sites are not any bigger than that, particularly in the western part of the Canadian Arctic. Therefore, the number of houses at the largest sites could have grown over time with the abandonment of some structures and the construction of others, perhaps spanning a period of centuries (e.g, Schledermann 1979:138). Thus, the ultimate number of house ruins found at a site might bear no relation to the much smaller number of houses that were occupied during any given winter.

In contrast, the other point of view takes the position that a considerably larger number of people often wintered together, this number being reflected by the number of houses found at a site (e.g., McCartney 1980:525-526; Savelle 1987:229). Savelle (1987:229) explicitly assumes an 80% contemporaneity rate for his eight winter house sites which range in size from six to 39 houses. The mean number of winter houses per site is 19, so he is assuming that an average of 15 would have been occupied concurrently (although at his largest site this would mean that 31 houses were inhabited at the same time).

All researchers acknowledge the extreme difficulty of establishing the exact contemporaneity of archaeological remains. But in the absence of conclusive stylistic evidence that the houses at a given Thule site derive from two or more separate occupational episodes, this latter model argues for a high degree of contemporaneity. The rationale behind this interpretation appears to rest largely on the huge amount of food and other necessary products that could have been provided by the harvest of bowhead whales (especially), but which would then have required large-scale storage for winter consumption. The occurrence at some winter house sites of numerous features identified as meat caches (McCartney 1980:535) is thought to reflect this. Accepting the storage of large quantities of food and fuel, it is assumed that a large local population was being supported over the winter.

At first this pattern would appear to be similar to the one observed historically amongst many Inuit groups where the largest population aggregations also took place during the winter. However, the economic rationale of the reconstructed Thule pattern — the consumption of a stored surplus — is very different from that which has been proposed to explain the large groupings of the historic period: the requirement of assembling relatively large numbers of individual hunters to undertake breathing-hole sealing (Damas 1969:51).

Given the much smaller number of winter houses at some sites, it is certainly evident that the Thule sometimes wintered in small groups (although it has been suggested that additional inhabitants of Thule winter communities could have lived there in archaeologically-invisible snow or ice houses [McCartney 1980:529; Park 1988:171]). Therefore, we can be reasonably certain that if the Thule did *sometimes* winter in quite large groups this was by no means *always* the case. There is no necessary inconsistency in the Thule wintering in groups of quite different sizes; however, accepting the fact that they did sometimes winter in small groups, along with the possibility that the houses at a site accumulated over time through the abandonment of some houses and the construction of others, contemporaneity needs to be demonstrated to the extent that this is possible — it cannot be assumed.

Winter activities

There is also some disagreement about just what activities would have been carried out by the Thule during the part of each year that they spent in the winter house communities. One of the main points of controversy revolves around the question of breathing-hole sealing. Two types of data have recently been brought to bear on this question (McCullough 1986; Morrison 1983a; 1983b; Stenton 1983; 1987b). Season-of-death data from the thin section analysis of ringed seal teeth from sites in three different regions of the Canadian Arctic indicate that most of the seals were killed during the months from spring through autumn. And a functional analysis of Thule harpoon foreshafts suggests that throwing harpoons were in much greater use by the Thule than the thrusting harpoons believed to be characteristic of breathing-hole sealing. All of this has led to the suggestion that the Thule did not possess effective breathing-hole sealing techniques (Morrison 1983a; 1983b).

However, two other factors can also be considered (Jacobs 1979). Lack of light during the mid-winter period could have been a severe constraint on outdoor activities, particularly breathing-hole sealing, and this factor becomes more critical with increasing latitude. In addition, the extreme cold conditions of mid-winter would have placed enormous demands on the insulating properties of people's clothing. Thus, even if the Thule did have effective breathing-hole techniques, hunting might simply have been suspended during mid-winter given food supplies adequate to last through that period. This model could help explain the thin section data of McCullough (1986:501) and Stenton (1983:152-154) where only mid-winter kills are absent, but would not completely explain the data of Morrison (1983b:74) where almost all of the kills were made in the summer and fall, between approximately August and November.

Although they have been referred to as such (e.g., Sabo 1981:309), it is not known to what extent winter sites may have served as base camps (i.e., settlements from which task groups would travel to specific procurement locations). The presence on Thule sites of abundant evidence for dog traction and some evidence for umiaks suggests that travel for this purpose certainly would have been possible during most parts of the year. But it should be recognized that the particular placement of a given winter site may have related to activities that were carried out in its vicinity during the winter months that it was occupied, or its location may have been selected in order to be adjacent or central to resources gathered and stored prior to the winter.

Spring-Summer-Fall occupations

Archaeological research into the Thule culture has to a great extent concentrated on the winter house sites and avoided the excavation of structures thought to derive from the warmer seasons. Exceptions include Maxwell (1960), but by and large the strategy of selecting winter houses to excavate in order to acquire enough artifacts to address culture-historical problems has dominated. For this reason, and in spite of the fact that Thule age 'tent rings' of various shapes and sizes are extremely common almost everywhere in the parts of the Arctic Islands occupied by the Thule (e.g., McCartney 1977; Schledermann 1975; Savelle 1987), there is a severe shortage of excavation data from them.

Nevertheless, a few observations can be made concerning this part of the Thule annual round. While the precise season of occupation of these highly variable structures cannot be ascertained it is apparent from the references mentioned above that they are extremely common along the coast, indicating that the Thule spent a fair amount of time there during (presumably) the warmer seasons of the year. Similar structures are, however, also known from sites in the interior (e.g., Ramsden 1982; Stenton 1987a). Given that survey in the interior has been extremely limited it is presently impossible to really assess the significance of this use of the interior by Thule groups, who otherwise appear to have spent much of their time at the coast.

The occupation of these coastal tent ring sites during the open-water season would presumably have represented an important part of the Thule annual round in the part of the Arctic where the hunting of bowhead whales was practiced (McCartney and Savelle 1985:43; McGhee 1984:80-84). Although any interpretations concerning the nature of sites containing these structures obviously run up against the same problem that was encountered with the winter house sites — identifying dwellings occupied contemporaneously — it has been noted that the largest such sites have considerable numbers of structures present (e.g., Savelle 1987). Based on this and incorporating assumptions regarding the minimum manpower necessary for consistently successful whaling, it has been suggested that these sites may have represented the maximum population aggregations of the Thule annual round (McGhee 1984:84). However, the lack of excavation data from such sites precludes any real attempt to assess whether the structures were occupied contemporaneously; therefore, it is equally possible that large sites of this type were simply situated in strategic locations that were visited repeatedly over a long period of time.

Seasonal movements

With regard to the pattern and geographic extent of seasonal movements as represented by the different kinds of Thule site, only a few proposals have been made and these are rather contradictory. Collins (1952:50) interpreted different structures at the M1 and nearby M2 sites on Cornwallis Island as representing the summer and winter homes of a single group — in other words, they spent most if not all of the year at this location. For a part of the coast of Somerset Island, McCartney and Savelle (1985:43) comment that "The close association between winter sites of whale bone houses and major summer/fall camping, butchering, and/or caching sites is immediately evident." Again, the implication is that groups passed much of the year within a fairly restricted geographical area.

However, based on his reconstruction of their hunting practices and demography, McGhee (1984:84) suggests that the Thule (in the Central High Arctic at least) wintered separately in relatively small groups and got together in a single location somewhere else for whaling during the open-water season. Thus, the winter camps and the open-water season camps occupied by a single group may have been widely separated.

Discussion

In general, the picture of the Thule culture that emerges from the archaeological literature is substantially different from the one that we have of the ethnographically-known Inuit. For one thing, the fluidity and flexibility so evident amongst the Inuit is not reflected in most of the Thule reconstructions, except perhaps on the regional scale. This is curious, since we have used ethnographic analogy quite freely in our interpretations of Thule technology but have not been comfortable extending the types of variability seen in other aspects of Inuit culture to the Thule. In one sense, the large Thule winter sites may have prevented us from viewing the Thule as Eskimos — certainly, the methodological approaches that we have brought to such sites have not allowed for the possibility of similar variability.

Turning to specifics, from the preceding review of what we know about Thule culture settlement/subsistence organization it should be evident that there is considerable diversity of opinion with regard to many basic facets of Thule culture settlement practices. Examples include the seasonal permanence of winter house occupation, winter subsistence practices, winter community size, and annual round.

For culture-historical research in the Arctic these gaps in our knowledge are not a major problem. However, for research into settlement systems and their dynamics these lacunae are somewhat awkward. One of the most significant results of these gaps is the problem they cause in attempts to understand the specific nature of the *changes* that led to the development of the varied ways of life of the historic Inuit in the Eastern Arctic from a Thule base. A specific example can be found in the area of settlement pattern studies. These studies tend to rely extensively on site survey data, without detailed excavation data on seasonality and subsistence, etc., from more than a few sites (and sometimes a site-type such as 'summer-fall hunting camp' or 'winter base camp' might be defined on the basis of just one example). But the two obvious requirements for using such an approach are: (1) regular *types* of sites do in fact exist and are meaningful in a settlement system sense; and (2) these *types* of sites can be recognized by attributes that are identifiable with only a minimum of excavation.

In archaeological studies of the Thule culture, however, research has seemingly gone directly from dealing with broad culture-historical questions all the way to sophisticated settlement system analysis (e.g., Savelle 1987). Except within a culture-historical framework, there has not been any body of research in which archaeologists analyzed individual Thule sites in a broad or in-depth fashion, let alone examined different kinds of Thule sites in order to define *types* of sites. Always there has been a huge bias in favour of the excavation of semisubterranean house sites over any other variety of Thule site. Therefore, the implicit assumptions that meaningful (in a settlement system sense) types of Thule sites do in fact exist, and that they can be identified largely on the basis of surface characteristics, have apparently been generated in something approaching a data vacuum.

A recent example of this, although by no means the only one, is presented by Savelle (1987). The basic theoretical approach that Savelle used is a powerful one that can provide important insights into the nature of prehistoric settlement systems. However, that approach requires a fairly thorough understanding of the function, demography and seasonality of the site types being studied. Given that there had not been any research into the Thule culture designed theoretically and methodologically to explore these factors for semisubterranean house sites let alone for the other types of sites that also were part of Savelle's data base, he was forced to rely on inferences generated during the course of culture-historical research, or to depend on ethnographic analogies of arguable relevance.

In order to use the factor of site size and, by inference, site population to compare his sites over time, Savelle (1987:229) explicitly assumed that 80% of the structures at a Thule semisubterranean house site would have been occupied contemporaneously. Even if made only for the purpose of comparison, this assumption represents a fairly far-reaching inference concerning Thule settlement systems. But the same assumption is implicit in the culture-historical approach that amalgamates artifact and faunal collections from different houses at a site for the purpose of comparing the resulting assemblage with similarly-constituted assemblages from other sites.

For Thule research the issue goes beyond just contemporaneity and demographics. The assumption of a high degree of contemporaneity for contiguous semisubterranean houses is in some ways an assumption of uniformity and this normative approach is implicitly applied to many other aspects of Thule settlement systems, particularly in the assumption that all winter houses (i.e., massively-built semisubterranean houses) reflect a particular type of settlement pattern that can be compared with another pattern characterized by the use of *qarmat*, or of snow houses.

Thus, one of the causes of the weakness in our interpretive base has undoubtedly been a disparity between the level of analysis brought to bear on the Thule data (normally the comparison just of entire sites) and the types of inferences that have subsequently been drawn. Hence, the conclusions that have been produced concerning Thule settlement strategies were based on assumptions generated for the purposes of culture-historical research, and must be considered untested.

The purpose of this exercise is not to claim that everyone has been going about things the wrong way. On the contrary, it should be emphasized that until recently the analysis of settlement and subsistence systems was not a primary research goal of any researcher. Rather, this discussion has demonstrated that the inferences that *have* been generated concerning these issues must be examined critically because of the context of their derivation — particularly since, paradoxically, they have shaped a great deal of our recent thinking about and research into the Thule culture.

Revised approaches to Thule research

Turning to a discussion of ways and means to deal with these problems, it should be pointed out that this need not involve applying the newest and most fashionable methodological weapons in our collective archaeological arsenal but simply the application of various techniques (preferably ones that have been exposed to some ethnoarchaeological or actualistic evaluation) in such a way as to subject accepted truths to some form of testing. Care must obviously be given to ensure that the techniques chosen and the issues at question are on a similar level of any analytical hierarchy.

For the Thule culture the settlement/subsistence system inferences most poorly grounded would appear to relate to their annual round, the nature of their winter subsistence, and particularly to the economic and demographic nature of their social groups during the winter and at other times of the year. All of these issues are inter-related so it is difficult to break them down into discrete hypotheses and test implications. For example, when trying to deal with the contemporaneity of structures one obviously would want to look at specific recognized chronological indicators. However, given the almost impossible task of identifying exactly contemporary occupations on just that basis, one would also wish to look at other factors which might provide clues as to which structures could have been occupied concurrently. These should include the examination of economic factors, particularly from the faunal record. But this raises a number of quite different issues when trying to establish contemporaneity from faunal data. For example, if one could identify in the faunal remains some evidence for sharing between the occupants of different structures, this would provide support for contemporaneous occupations; however, the specific archaeological correlates of sharing are debatable, and depend to a great extent on how one believes culture works at a fairly basic level (e.g., Binford 1984; Gould 1980; Gould and Watson 1982).

I am only familiar with one attempt to apply these correlates concerning contemporaneity to Thule culture remains (Savelle 1987) and that took place from a slightly different perspective. As a rationale for the extrapolation of limited faunal data (both the representation of species and of anatomical portions) to unexcavated structures at the same sites Savelle (1987:91) states that "Historically, there is little reason to suggest probable significant differences in contemporary subsistence practices between members of any given residential group", and uses archaeological evidence to postulate that "...the complete excavation of a dwelling and associated midden should, at least for comparative purposes, provide a close approximation of the remains at contemporary dwellings" (Savelle 1987:91). Leaving aside the appropriateness of using archaeological evidence (where contemporaneity must be an inference) to justify the latter statement, it appears that Savelle is arguing that very similar patterns of faunal remains should be a hallmark of contemporary occupations at sites of the same type. This seems to come down on one side of a debate in the literature between Lewis Binford (1984) and Richard Gould (1980; Gould and Watson 1982) over the expected nature of patterning in faunal remains. Binford comes down strongly on the other side of the debate, arguing for a high degree of variability in subsistence practices *as they would condition the faunal remains*, using the Nunamiut as an example (Binford 1984:238-243).

The whole point to be gained from this discussion is that there are at least two possible patterns which one could expect to find in the faunal remains from contemporary structures at a given site, depending on how one theorizes about the nature of such cultural practices as sharing and how it would be reflected in the archaeological record. It is obviously here that middle range research is so important, and Binford's middle range linkages seem much more fully developed. However, one must then go to the archaeological record to see if any of the expected patterning is indeed present.

Given these facts it would seem to be necessary to approach the archaeological record of the Thule in an exploratory manner, searching for intrasite variability. To do this, it was evident that what was required was a rather different excavation and analytical strategy than the one usually employed in Thule studies. For these reasons the sampling strategy chosen was to excavate as much of a moderately-sized semisubterranean house site as possible, and, equally importantly, to excavate other kinds of Thule structures there as well. Necessarily, the analysis of the excavation results should take place not on the level of the entire site but on the basis of smaller, intrasite units. The individual dwelling structures appear to be suitable units on the basis of ethnographic analogy.

It should of course be kept in mind that there are several factors that can produce archaeological variability. Some of these are cultural in nature while others are environmental but archaeologists, having adopted a systemic approach, understand that these factors are linked. Many of the particular archaeological tools that in this research will be brought to bear on intrasite variability are designed to explore prehistoric economic behaviour, but we should always remember that other factors may be involved as well. This question will be explored more fully in the conclusions.

The excavations at Porden Point

In order to apply the ideas outlined here to archaeological data, a research project was put together to carry out excavations at a moderately-sized Thule site locality in the Canadian High Arctic, at Porden Point, Devon Island. In the next chapter the data on the Thule remains at Porden Point and the results of the excavations there will be presented.

3. THE PORDEN POINT SITES

Introduction

Presumably named during the Franklin search expeditions in honour of Eleanor Anne Porden, Sir John Franklin's first and much less famous wife, Porden Point (76°15'N, 93°40'W) is a low gravel spit dotted with many meltwater ponds trapped by beach ridges. Located at the southeast corner of the Grinnell Peninsula, Devon Island, N.W.T., it projects out to the east into Prince Alfred Bay at the head of Wellington Channel and forms the southern shore of a small enclosed bay (Figure 1).

Following an initial reconnaissance in 1974, Robert McGhee of the Archaeological Survey of Canada carried out survey and small-scale excavations at Porden Point during the summers of 1976 and 1977 in the course of a larger research project into the overall prehistory of the Grinnell Peninsula region. He located sites deriving from the Thule, Dorset, Independence II, Pre-Dorset, and Independence I cultures (McGhee n.d.a; n.d.b). Seven sites containing Thule structures ranging from caches to winter houses were identified. McGhee's excavations of the Thule culture remains there included three winter houses and a cache-like boulder structure found to contain a collection of hunting implements. The collections from these excavations were written up as part of this author's Master's thesis (Park 1983).

The additional fieldwork at Porden Point required for the present research project was carried out over a 14-week period spanning the summers of 1984 and 1985. During that time extensive excavations were carried out at the five largest Thule sites at Porden Point (Figure 2). However, the majority of the excavations of Thule non-winter structures were carried out under a parallel research project by Rochelle Allison and will be reported elsewhere. This report will concern itself primarily with the results from three sites: RbJr-1, RbJr-4, and RbJr-5 (Figure 3), although a brief summary of the other Thule remains at Porden Point will also be presented.

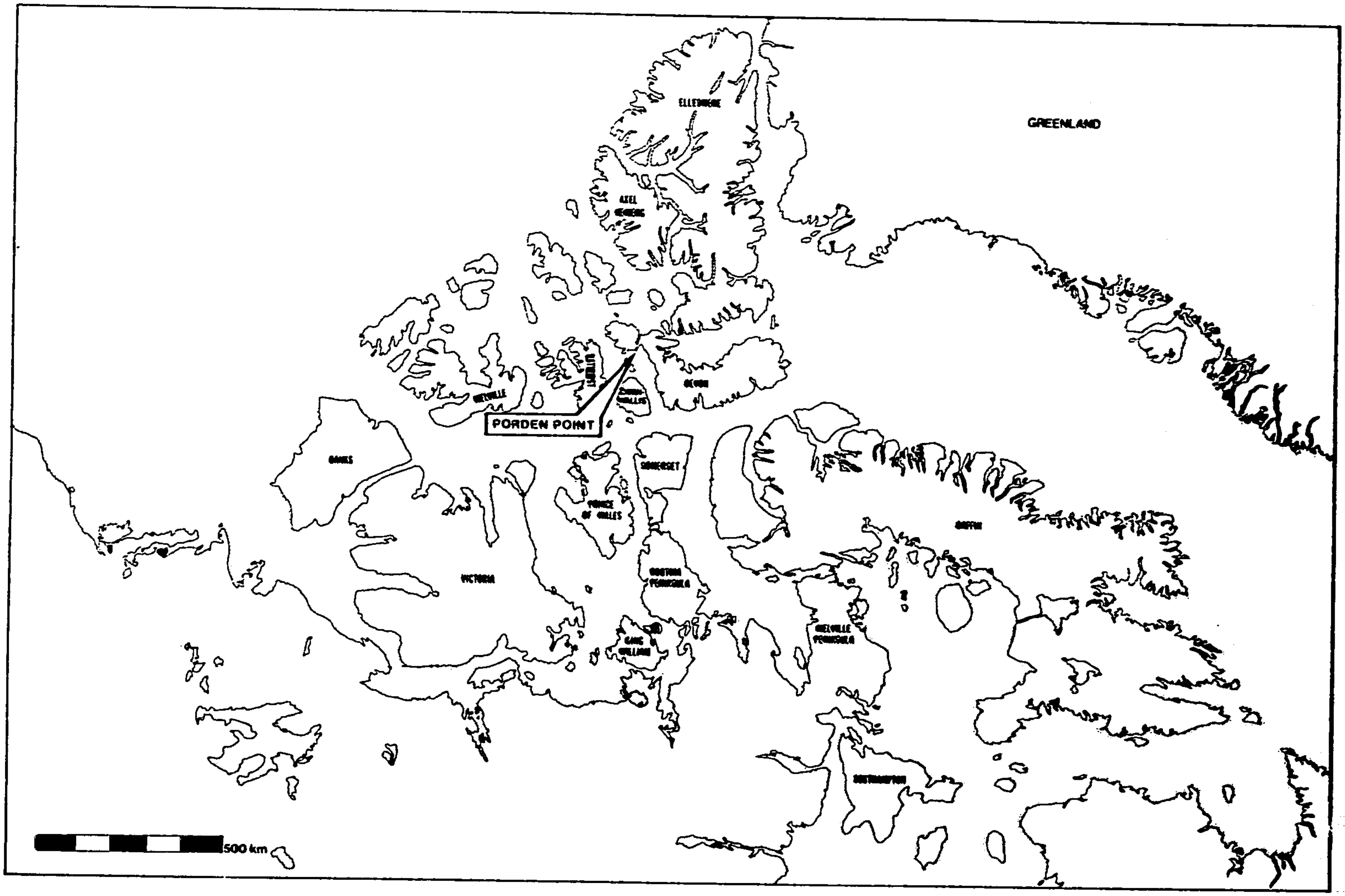


Figure 1. The "Eastern Arctic", showing the location of Porden Point, Devon Island, N.W.T.

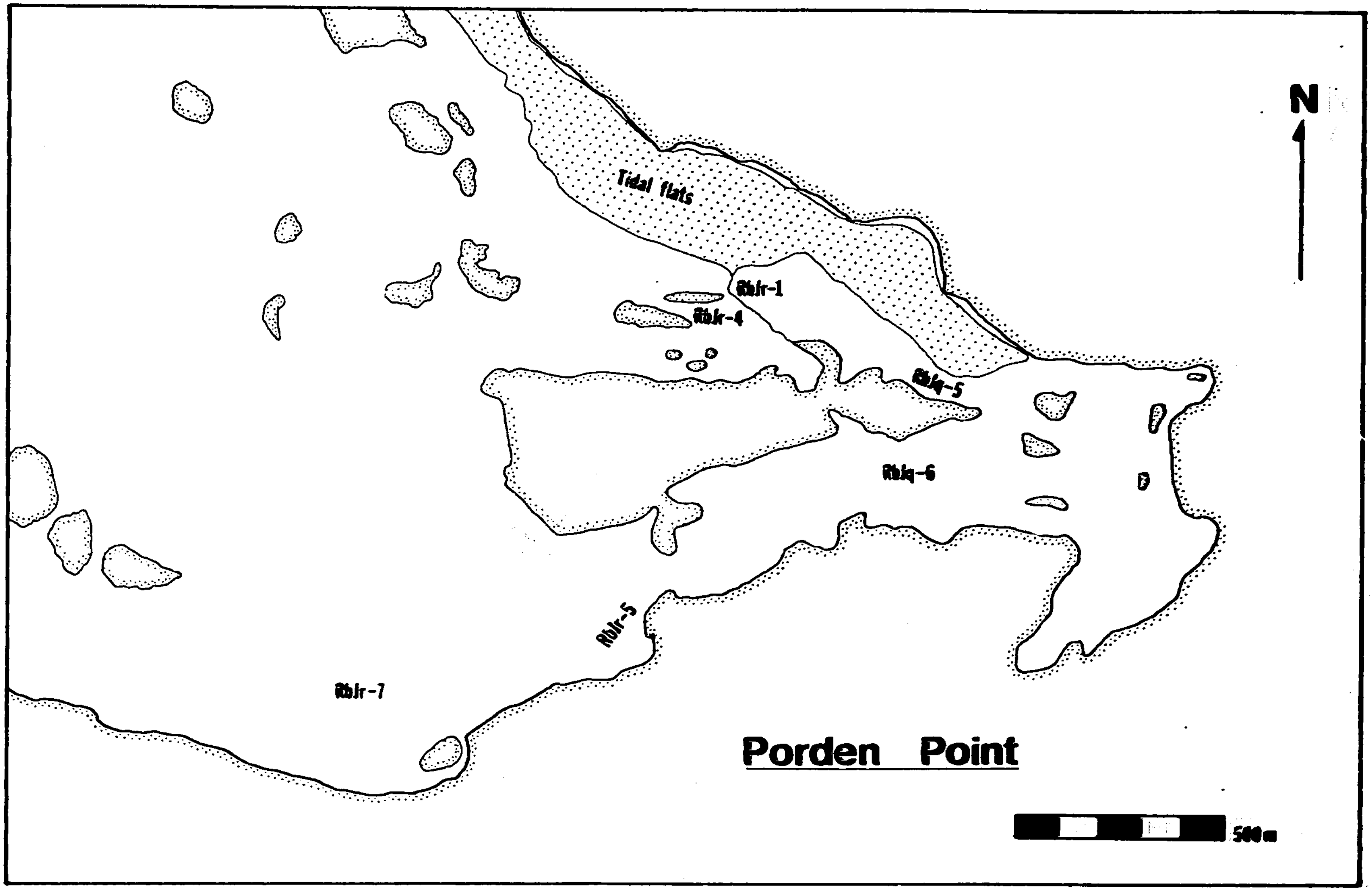


Figure 2. Porden Point, showing the locations of the sites referred to in the text.

Figure 3 . Porden Point viewed from the north. The numbers indicate the location of each site.

Excavation methodology

The 1984 and 1985 excavations at Porden Point were carried out following standard archaeological techniques, modified as necessary to deal with the solidly-frozen condition of many of the winter houses. The sites were surveyed by transit and all excavated structures were drawn by hand. The location of each artifact was plotted on these drawings and its relative position (depth and/or relationship to structural features) was recorded. The artifacts themselves were treated as necessary in the field to stabilize them, and those requiring specialized conservation treatment were later sent to the Canadian Conservation Institute.

For the 1984 and 1985 excavations, the faunal remains from Porden Point were collected by one m^2 units within each house, by levels consistent with the architecture of the houses where possible (e.g., "in sod layer"; "on sleeping platform"; "in entrance tunnel"; etc.). In addition, obvious concentrations of bone were collected as a unit. All of the faunal remains except bowhead whale were shipped to Edmonton and identified using the comparative faunal collection of the Department of Anthropology, University of Alberta and, for the bird remains, the collection of the Provincial Museum of Alberta.

To complement the hand-drawn excavation maps made in the field, plan-view photographs were taken of the structures at various stages of excavation, employing a bipod-mounted camera. These photographs formed the basis of the excavation plans used in this report, in spite of the fact that the unavoidable use of a wide-angle lens with the bipod camera introduced a small amount of distortion into the plans of those structures that were constructed on sloping terrain. However, this distortion was felt to be less than that present in the hand-drawn diagrams of these complicated three-dimensional structures. The placing of lines in each excavation plan indicating the position of the original one m^2 string excavation grid will allow anyone to ascertain exactly how much distortion is present in each plan, and at the same time permits the use of square designations (e.g., B3) in the structure descriptions. Finally, it should be noted that references in the following house descriptions to the right and left sides of winter houses are from the perspective of someone looking into the structure from the entrance passage.

Site descriptions

The first two sites to be discussed (RbJr-1 and RbJr-4) are situated extremely close to each other (Figure 4), and while their being given separate site designations does reflect the spatial clustering of most of the houses, this distinction should not be over-emphasized. Thus, for all intents and purposes except the following descriptions these two sites will be considered as a single unit.

RbJr-1: The Porden Point Brook Village site (Figures 5 & 6)

This site is located approximately 1200 m west of the tip of Porden Point and 300 m from its northern coast, on both the coastal and inland slopes of a gravel beach ridge with a maximum elevation of 7.0 metres above sea level. Ten winter houses straddle a curved section of a shallow mossy brook draining the large pond in the centre of Porden Point, while 12 gravel rings of various sizes are located to the northeast of the winter houses, on the coast-facing slope of the beach ridge.

In 1976 and 1977 Robert McGhee excavated Houses 5 and 7 here. In 1984 Houses 1, 4 and 8 were excavated, followed by Houses 2, 6, 9 and 10 in 1985. No midden excavations were carried out due to the almost complete absence of accessible midden deposits, either due to their presently being under water, having eroded away, or never having been present.

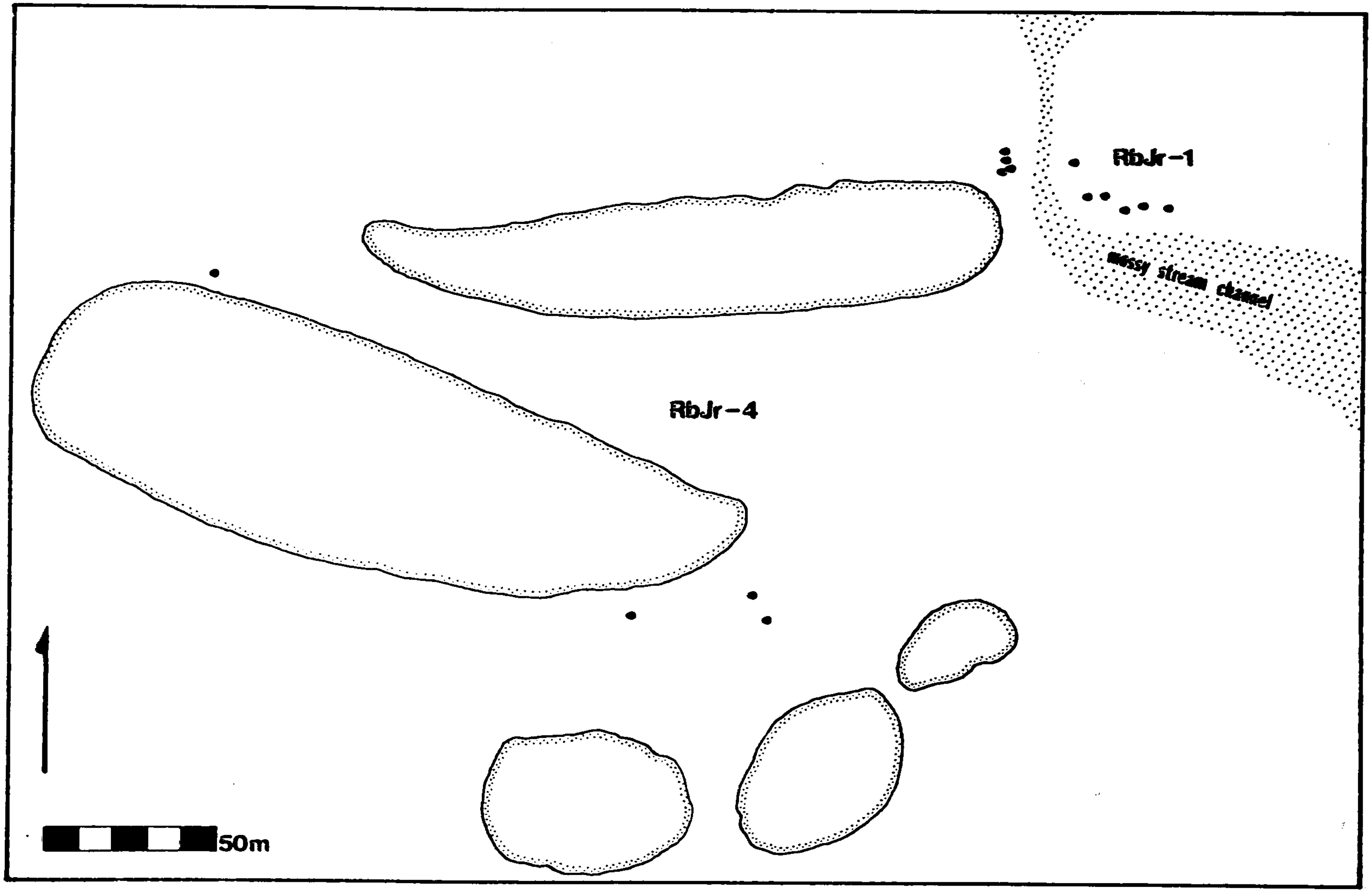


Figure 4. RbJr-1 and RbJr-4, showing the relative locations of the winter houses (the black dots).

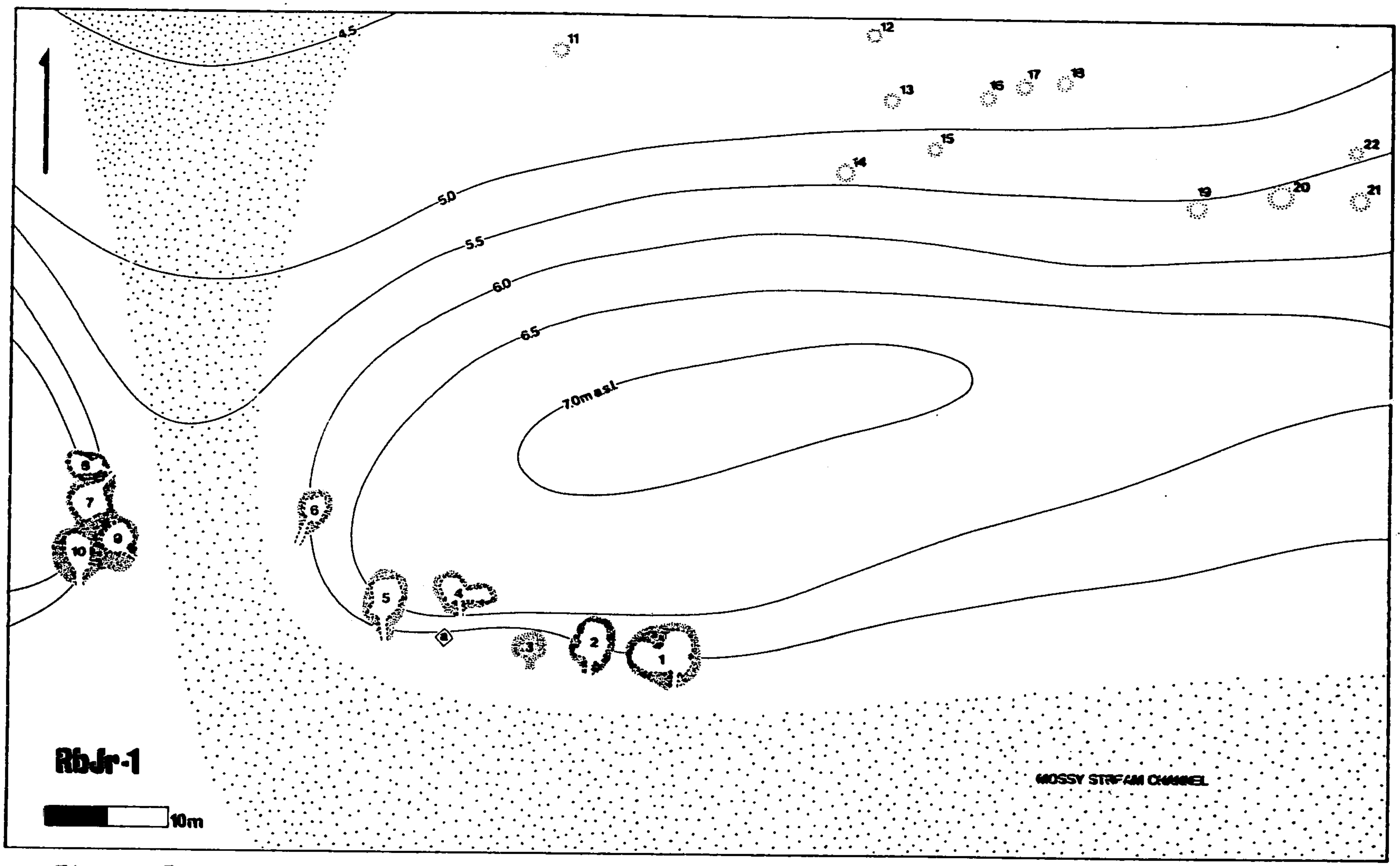


Figure 5 . RbJr-1: The Porden Point Brook Village site.

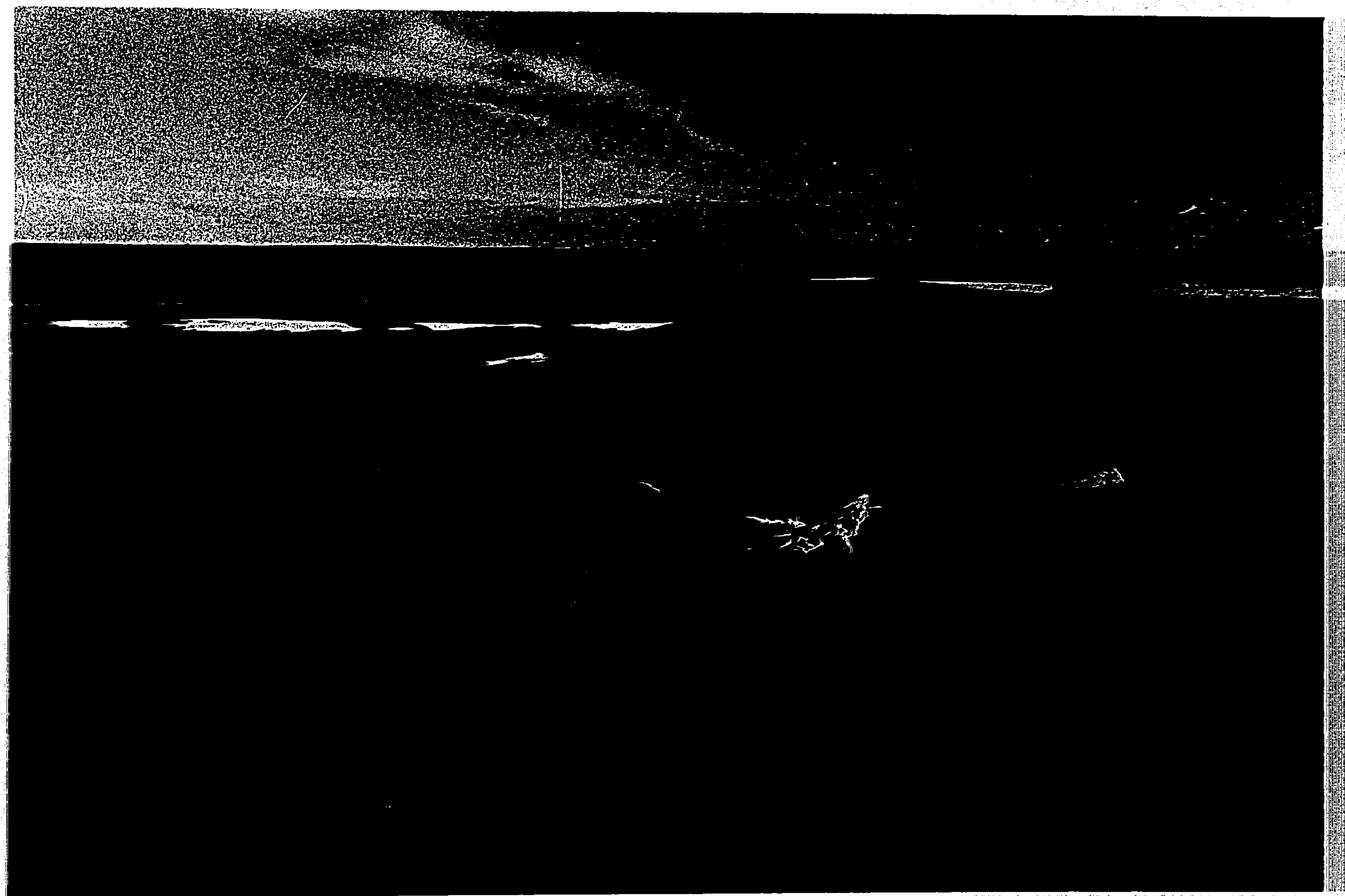


Figure 6 . RbJr-1, looking west. House 1 is in the foreground.

RhJr-1 House 1 (Figure 7)

House 1 at RbJr-1 was located at the eastern end of the line of winter houses there, with its entrance passage opening to the south, away from the coast. It was the largest winter house at Porden Point, with an internal living area of approximately 14.2 m^2. Well preserved structurally, it appeared to have suffered little disturbance since being abandoned by its occupants.

Substructure

The house was roughly bilobate in form with two raised rear sleeping platforms. The front wall of the house was formed by piled boulders except in the southwest corner, where it was formed by stacked bowhead vertebrae and skull fragments. The back wall of the house, behind the sleeping platforms, appears to have been less massive than the front wall but most of the boulders that made up this part of the wall had been displaced forward onto the platforms. The entrance passage opened to the south and, prior to excavation, one lintel stone still spanned it. The passage could not be excavated for its complete length due to standing water, but at the proximal end its depth was 50 cm below floor level, reaching a depth of at least 65 cm approximately 1.5 m distant from there. It did not appear to have been paved.

The central area of the floor was neatly paved with flat slabs, and this flagging extended part way under the east platform but not the west one. However, the southwest and southeast corners of the house were not paved. A thick layer of charred fat approximately one m^2 in area (in units F5 and F6) may indicate that the unpaved southeast corner of the house was used for cooking.

Both sleeping platforms were raised approximately 50 cm above the level of the house floor. They were separated from each other by a projection of the house wall (square D4). The west platform was found perfectly intact while one slab of the east platform had fallen forward into the floor area. The two platforms differed slightly in construction, although both were made of roughly rectangular flat slabs with their lateral ends resting on rock ledges forming part of the house wall, and their medial ends resting on a central support structure which also divided the space under each platform into two storage 'lockers'. For the west platform this central support structure consisted of piled boulders and whale skull fragments, with its front end, which supported the front edge of the platform, taking the form of a column of bowhead cervical vertebrae (square C5). For the east platform this central support structure consisted of a row of upright columnar rocks. The rear support of the two platforms also differed, with the back edge of the east platform resting on piled boulders while the back edge of the west platform rested on neatly coursed small flat slabs. Finally, the back walls immediately above the level of the platforms consisted of flat facing stones, somewhat more neatly and regularly placed in the case of the east platform.

Superstructure

This house was one of just two at Porden Point that appeared to have essentially all of its roof support whale bone still present. A total of 111 identifiable whale bones were found in the house, including four mandibles and three mandible fragments, along with 65 ribs and 15 rib fragments. The position of the bones as found (Figure 8) suggests that the house roof may have consisted of a fairly flat framework of mandible rafters (Figure 9) resting on the raised walls of the house, with the gaps bridged by the numerous ribs. The relatively small amount of 'fill' in the house depression does not seem consistent with the house having had a thick sod roof.

Contents

House 1 was well frozen, and artifact preservation was excellent. In all, 156 artifacts were recovered from it, including some well-preserved skin artifacts. No harpoon heads or other items usually thought to be sensitive cultural/chronological markers were found in this house. A sample of the smaller artifacts from this house is presented in Figure 10; a complete list of the functional types that were found in this house is presented in Appendix 1.

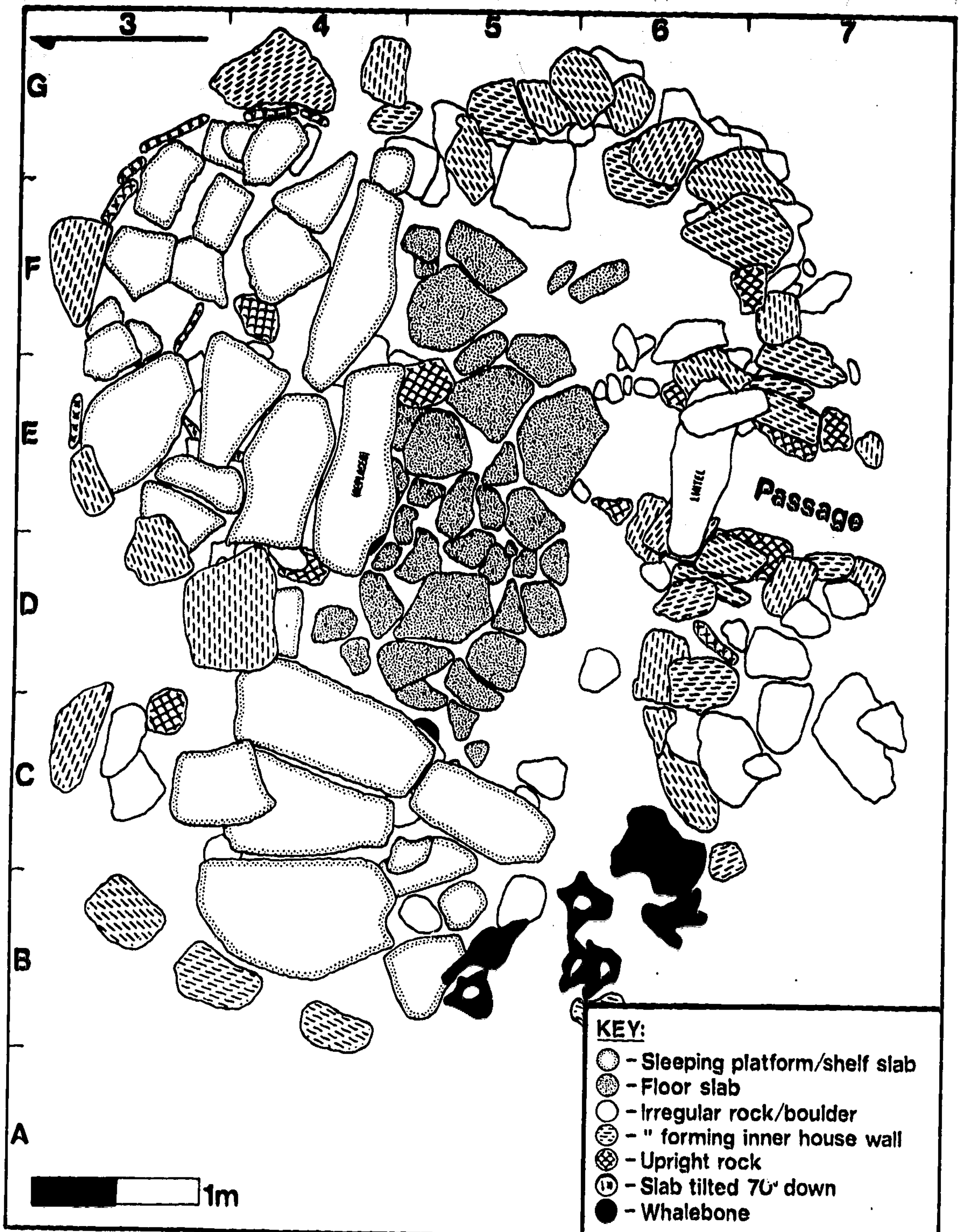


Figure 7. RbJr-1 House 1: Excavation plan.

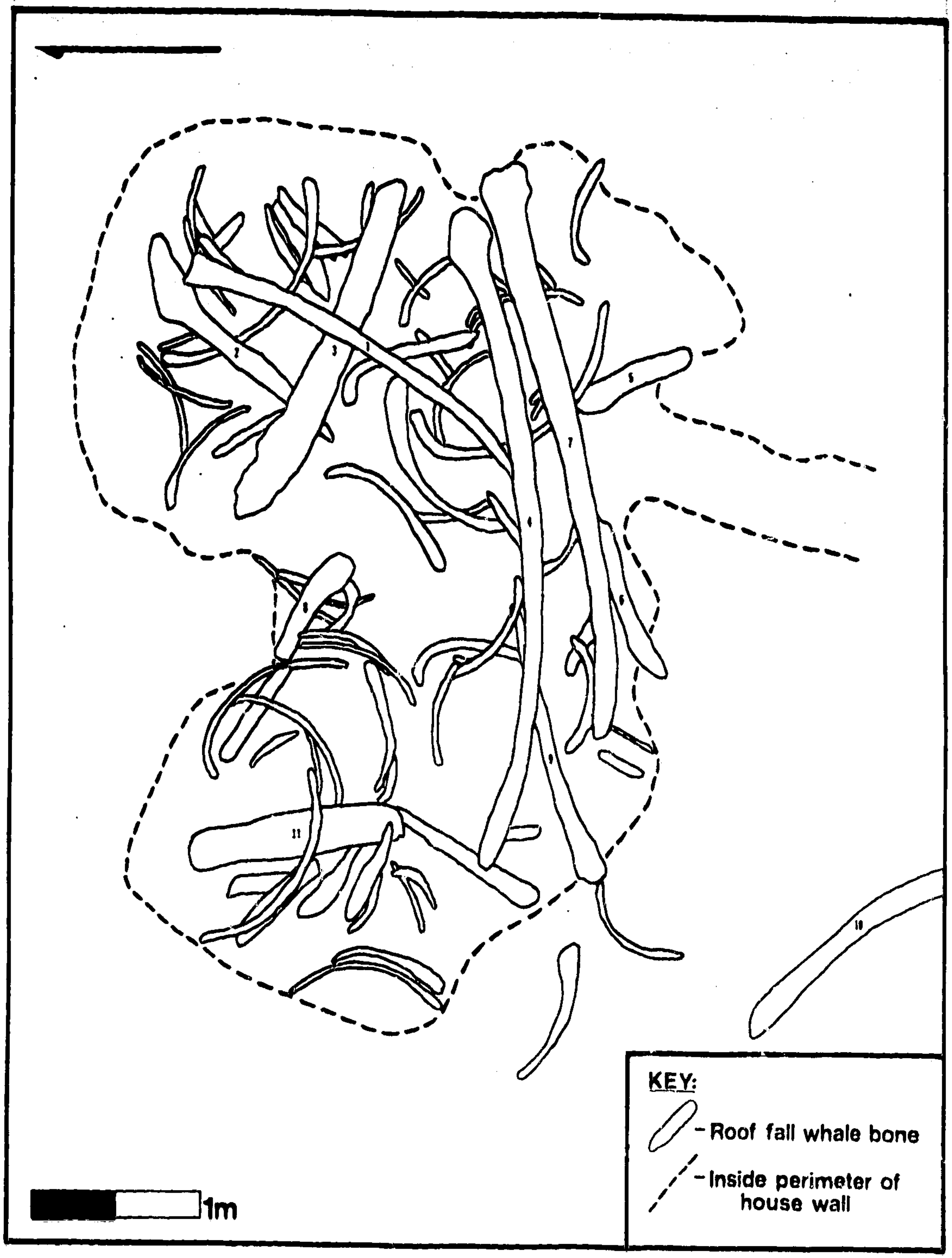


Figure 8 . RbJr-1 House 1: Roof fall whale bones as found.

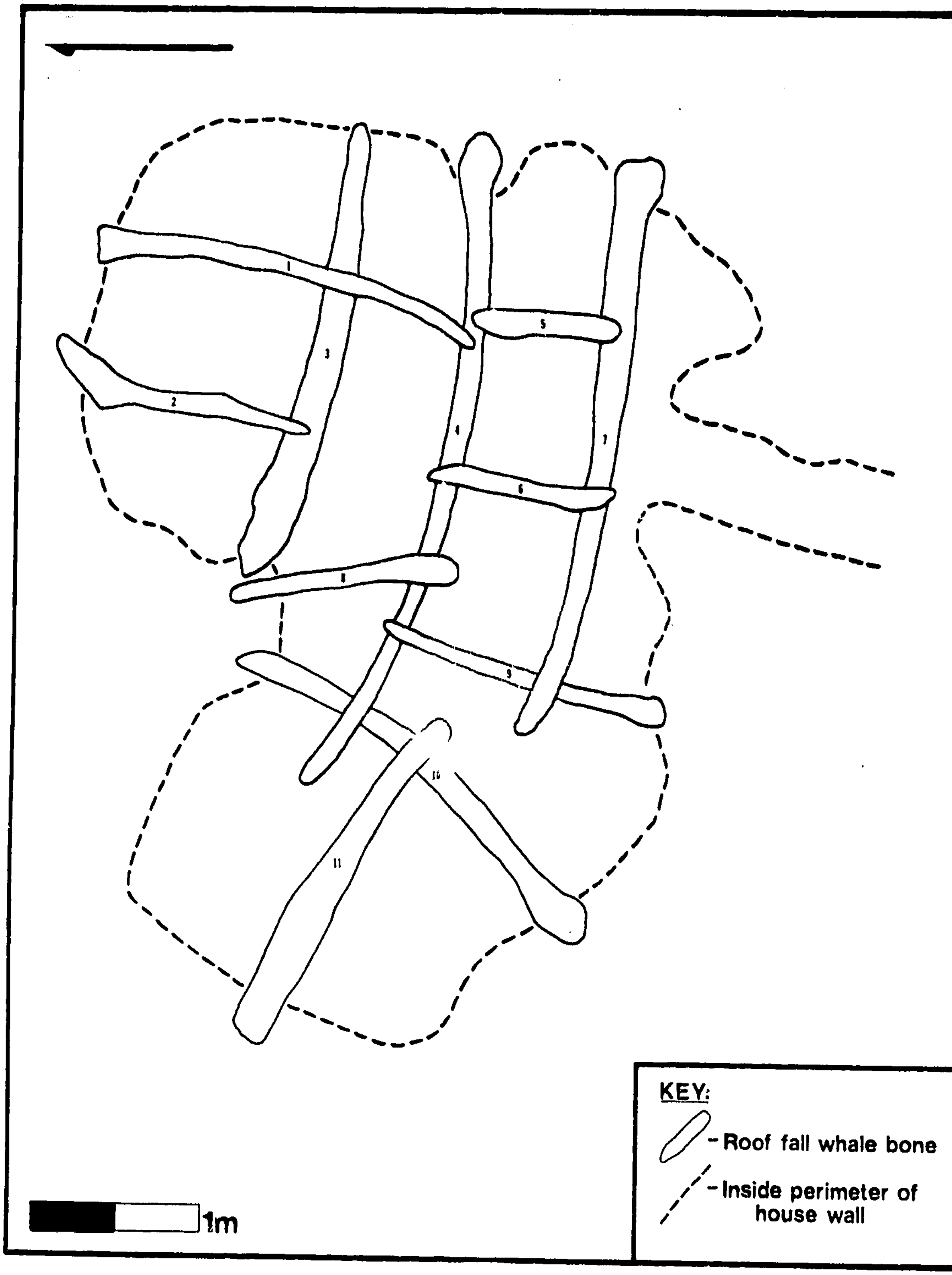


Figure 9. RbJr-1 House 1: Reconstructed roof support framework utilizing the roof fall whale bones.

Figure 10 captions: RbJr-1 House 1 Artifacts

	Catalogue #	Description
a	572	Unfinished ivory trace buckle
b	446	Wooden sling handle
c	474	Whale bone snowknife
d	374	Copper fragment
e	477	Ivory comb
f	372	Wooden gull hook shank
g	286	Wooden bow drill spindle
h	578	Seal radius *ajagak*
i	265	Antler quiver handle (?)
j	336	Whale bone maul head
k	338	Antler bird dart side prong
l	375	Antler bird dart side prong
m	471	Wooden box end
n	437	Whale vertebral epiphysis top disk
o	434	Whale bone ulu handle
p	559	Antler harpoon socket piece fragment
q	419	Whale bone harpoon socket piece fragment
r	470	Wooden arrowshaft base section
s	469	Wooden arrowshaft base section
t	510	Ivory gull hook barb (?)
u	599	Bone gull hook barb (?)
v	283	Tapered whale bone shaft section
w	439	Whale bone harpoon ice pick
x	475	Whale bone harpoon foreshaft
y	436	Whale bone man's knife

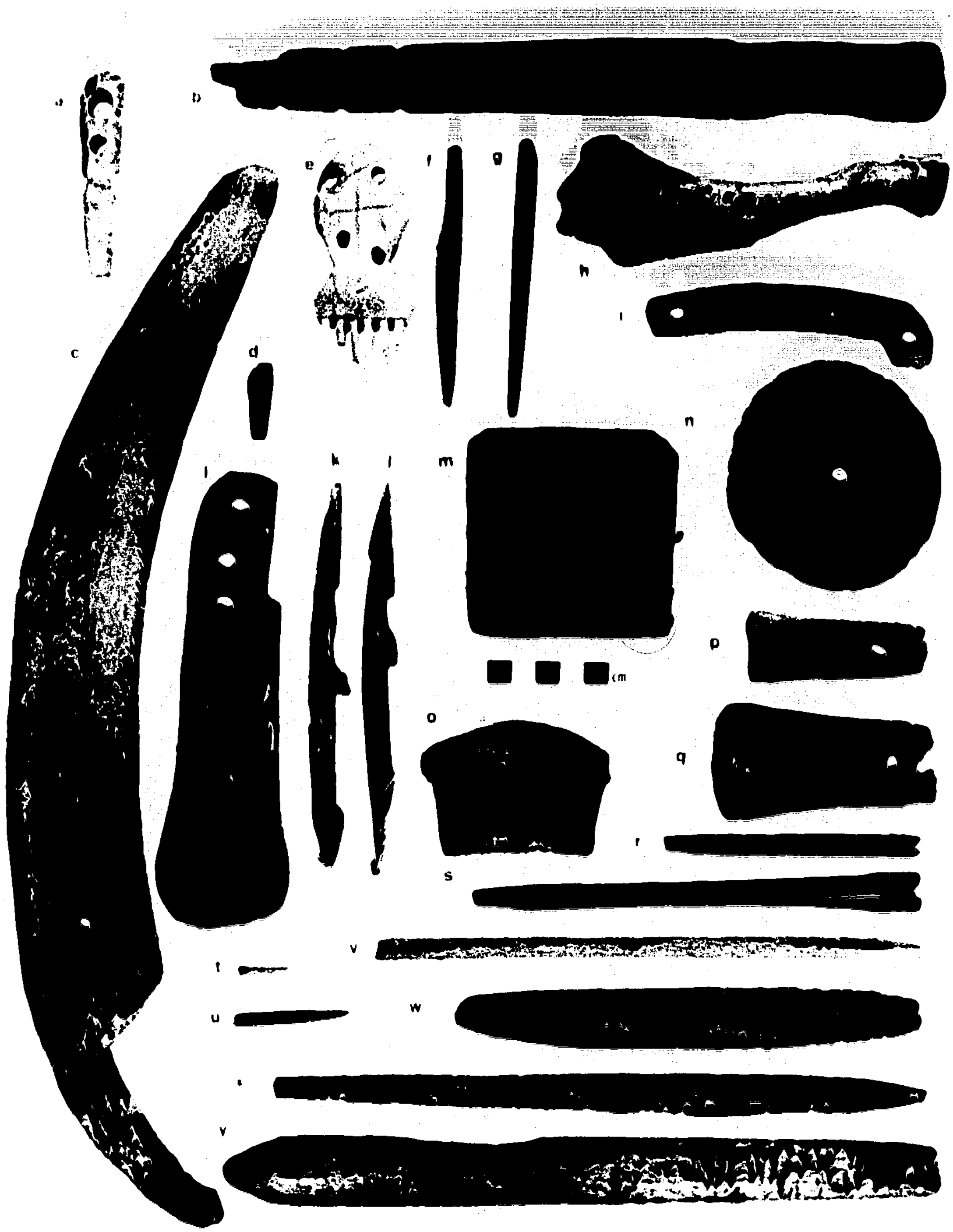


Figure 10. RbJr-1 House 1 artifacts.

RbJr-1 House 2 (Figure 11)

House 2 at RbJr-1 was the second house from the eastern end of the line of six winter houses on the eastern side of the stream channel. Its entrance passage opened to the south, away from the coast. This was a moderately well preserved house with an internal living area of approximately 7.0 m^2. It appeared, however, to have suffered some post-occupation disturbance, and contained abundant evidence that it had served as a fox den after being abandoned.

Substructure

The house was roughly oval in outline with a single rear sleeping platform raised approximately 40 cm above the level of the floor. Several of the slabs making up the platform were found displaced forward into the floor area of the house. The rear platform slabs rested on a gravel bench while the front ones were supported centrally by a line of piled boulders and upright rocks which divided the space under the platform into two lockers. Soil from the house wall had apparently slumped forward onto the rear part of the platform but this had the fortunate effect of preserving a portion of a baleen platform mattress there.

The floor was neatly paved with flat slabs. This paving extended part way under the west half of the sleeping platform but not under the east half. A small pantry/cooking alcove opened off the southwest corner of the house at floor level, to the left of the entrance passage (square C4-5). It was paved with one large flat slab which had subsequently had another, almost the same size and shape as the first, laid on top of it. The whole pantry area was thoroughly saturated with oil.

The entrance passage, which appears not to have been paved, was only excavated for part of its length due to rapid accumulation of standing water. Its base was approximately 40 cm below floor level.

Superstructure

Like House 1 just beside it, House 2 appears to have retained most or all of its roof

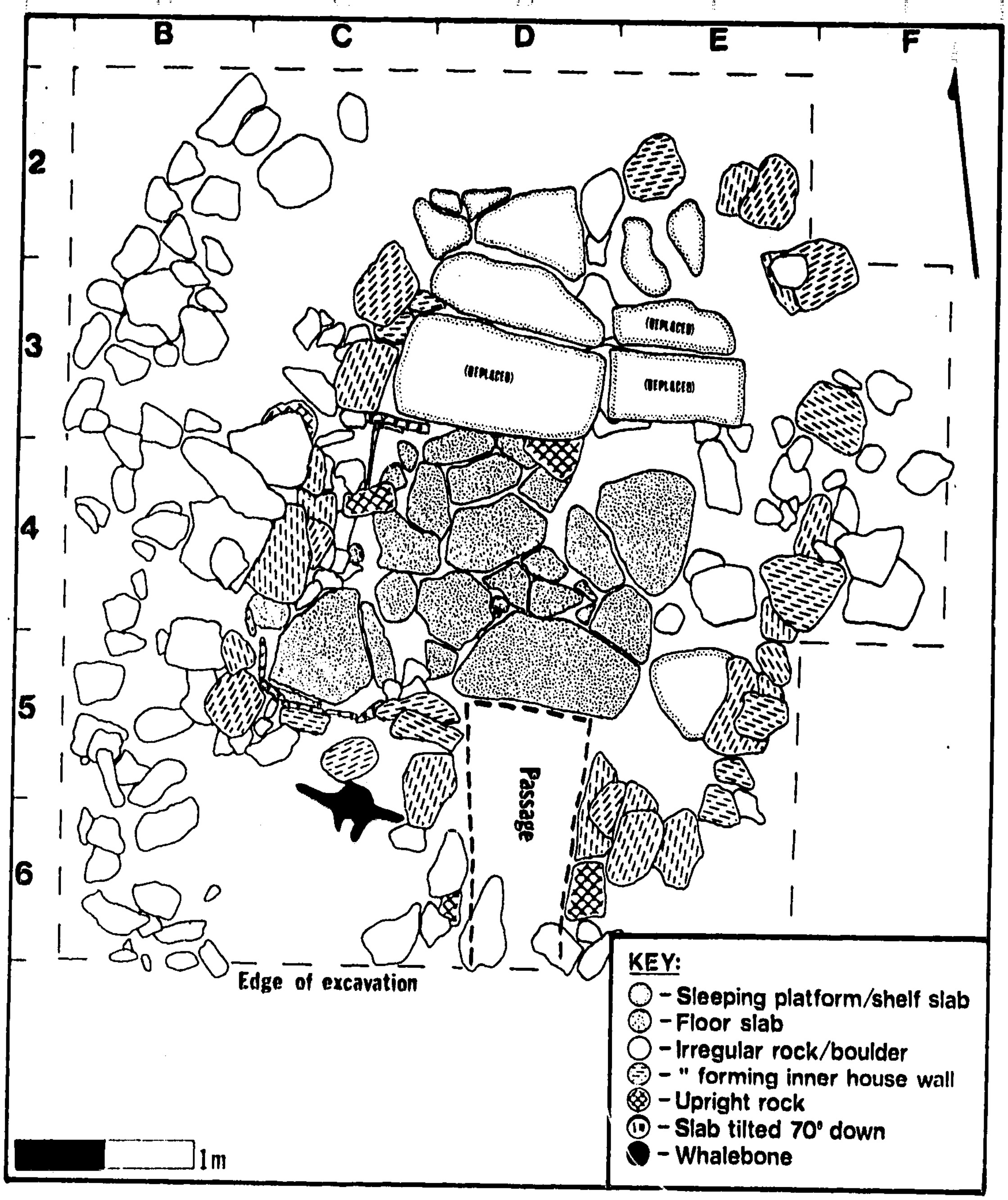


Figure 11. RbJr-1 House 2: Excavation plan.

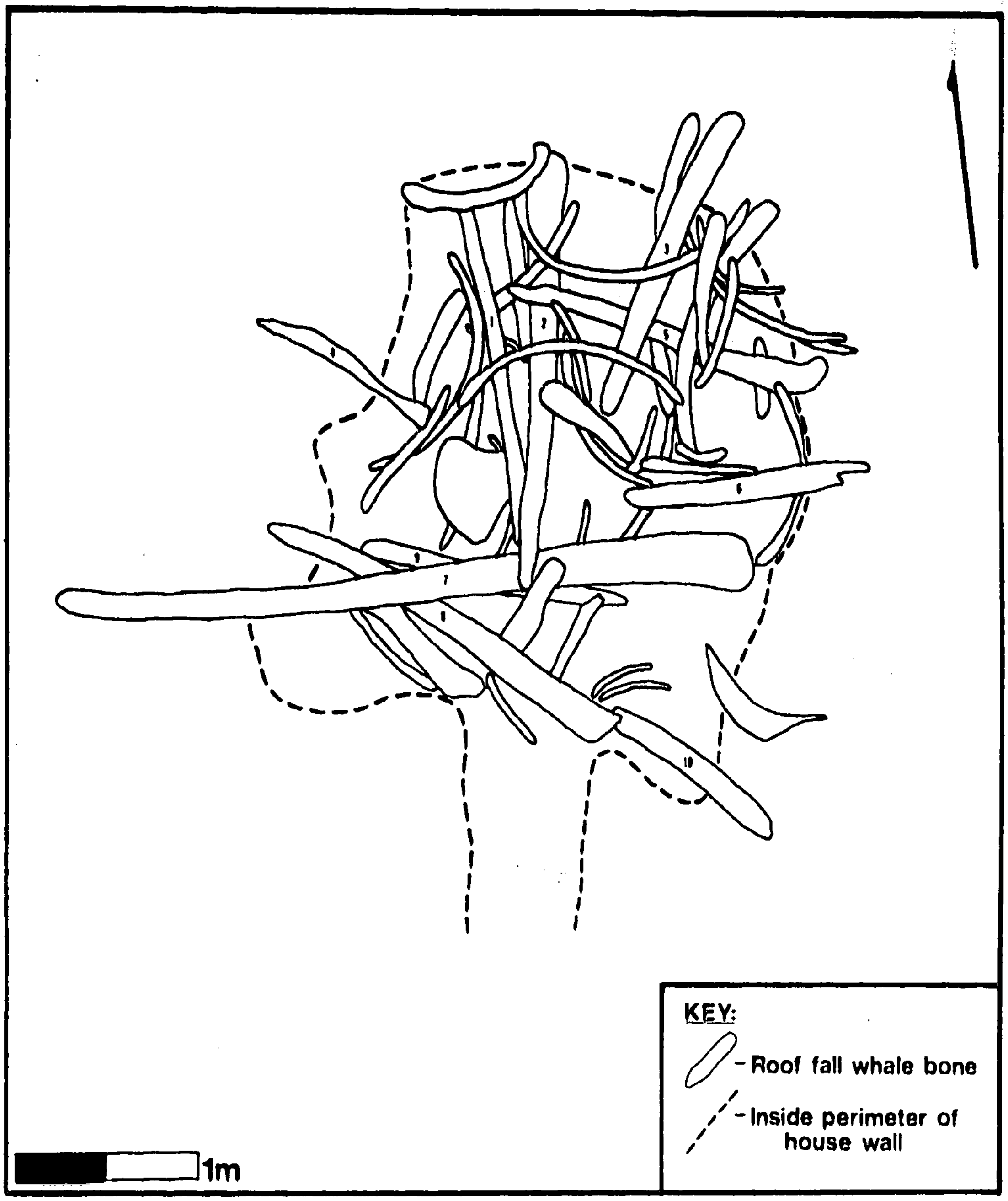


Figure 12. RbJr-1 House 2: Roof fall whale bones as found.

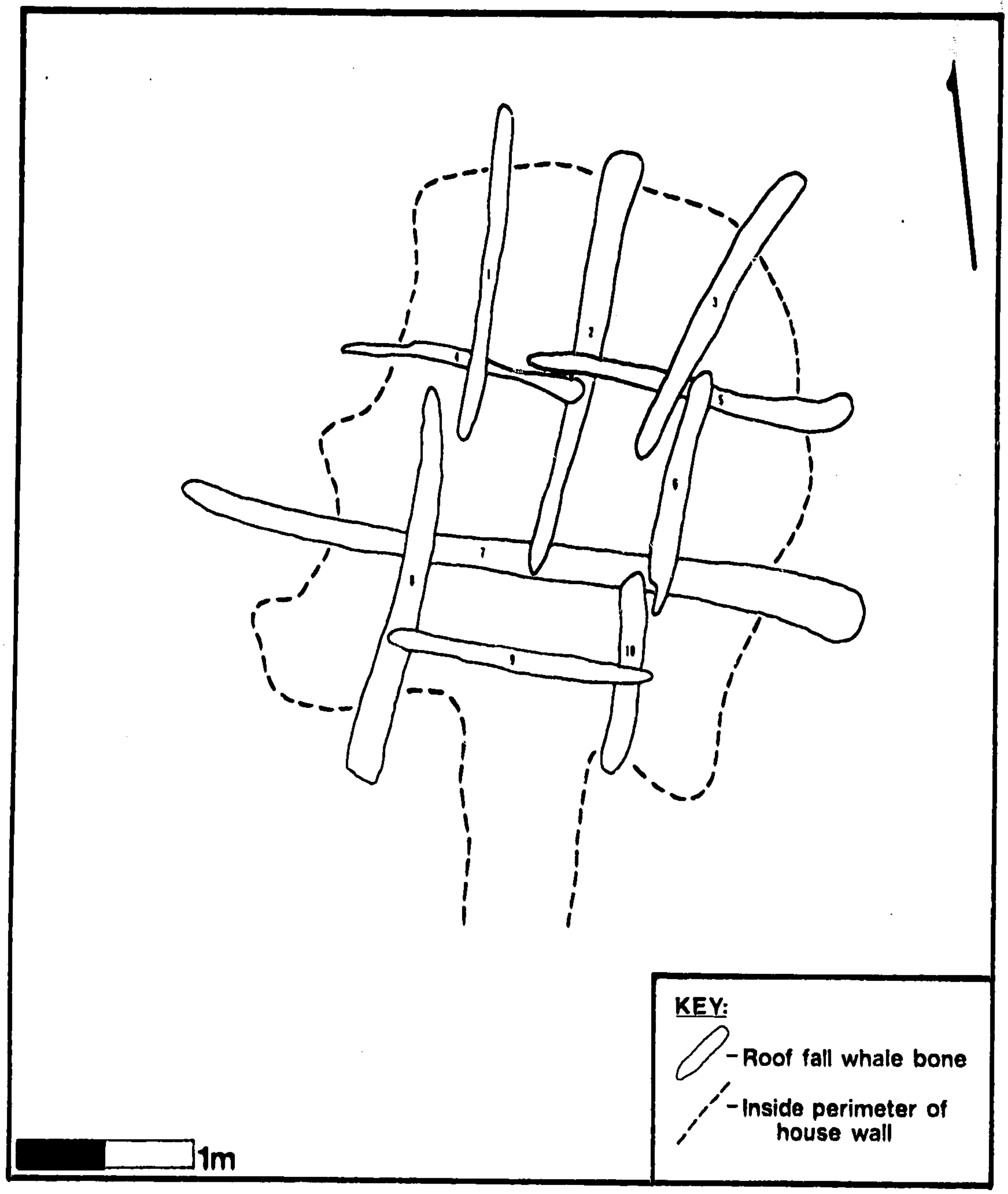


Figure 13. RbJr-1 House 2: Reconstructed roof support framework utilizing the roof fall whale bones.

Figure 14 captions: RbJr-1 House 2 Artifacts

Catalogue #	Description
a..........694	Ivory harpoon head fragment
b..........895	Whale bone paddle blade/shovel
c..........680	Antler harpoon head fragment
d..........900	Antler harpoon socket piece
e..........826	Whale bone harpoon ice pick
f..........853	Seal radius *ajagak* with inserted top disk
g..........896	Bi-pointed wooden shaft
h..........705	Ivory dart fragment
i..........926	Ground slate fragment
j..........663	Whale bone sled shoe fragment
k..........823	Whale bone axe/adze head
l..........719	Antler arrowhead fragment
m..........923	Whale bone trace buckle
n..........732	Wooden figurine fragment
o..........771	Wooden figurine
p..........770	Fox tooth tied with braided sinew
q..........769	Wood and ivory gull hook tied with baleen
r..........832	Wood and bird bone (?) gull hook
s..........924	Wooden arrowshaft base with fletching

support whale bone (Figure 12). This included 92 identifiable whale bones of which 14 were more or less complete mandibles (mostly quite small), and 35 were complete ribs. Based on their position in the house depression, the form of the roof frame could be reconstructed with some confidence (Figure 13). The main roof support consisted of a large mandible spanning the width of the house over the floor area. One end rested on a pile of at least four thick flat slabs (which had pitched over but was still identifiable) on the east side of the house (square E4) while the other end probably rested on a similar support. The other, shorter mandibles were then laid so as to have their inner ends resting on it.

An interesting feature of this house was the fact that it was surrounded by an external ring of small boulders, exposed in squares B2 through B6. This may have been part of a built-up wall around the house depression to raise the roof frame high enough for comfort inside the house, or, more probably, it may have been used to anchor the skins that would have covered the roof frame.

Contents

House 2 was solidly frozen and artifact preservation was excellent. A total of 121 artifacts was recovered from it, including several skin items and two complete gull hooks. Some of the artifacts from the house are illustrated in Figure 14; see Appendix 1 for a complete list of the artifacts that were found.

RbJr-1 House 3

Located third from the east in the line of winter houses on the eastern side of the stream channel at RbJr-1, this relatively small house was not excavated. The decision not to excavate at least one winter house at the site was taken in accord with the principle of leaving intact where possible at least part of any site for future archaeologists with more refined techniques and different research questions. This particular house was chosen because its low-lying position suggested that drainage might prove a problem during excavation.

On the surface the house appears as a shallow heavily-grassed depression, subrectangular in outline. The entrance passage opens to the south. No whale bones were evident and only a few rocks could be seen protruding through the turf.

RbJr-1 House 4 (Figure 15)

House 4 was the fourth house from the east end of the line of six winter houses on the eastern side of the stream channel at RbJr-1. Its entrance passage opened to the south, away from the coast. It was a small bilobate winter house with an internal living area of just 5.6 m^2. Prior to excavation it appeared simply as a shallow grassy depression containing a jumble of boulders, but upon excavation the floor and much of the walls of the house were found to be quite intact.

Substructure

House 4 had two sleeping platforms but both were very poorly preserved. The platform slabs that were present were mostly displaced, and not nearly enough were found to surface both platforms, suggesting that some slabs may have been removed after the abandonment of the house. However, from what remained of the platforms it was evident that they were quite different from each other in construction. The west platform apparently followed the standard pattern (at RbJr-1 and RbJr-4) by being made up of two rows of rectangular slabs with their lateral ends being supported by boulders in the wall and their medial ends resting on a central support structure made up of piled rocks and upright columnar boulders. This created the usual two lockers under this sleeping platform. The entire east sleeping platform, on the other hand, appears to have rested on a gravel bench so no lockers could have been present. However, its front edge may have projected farther into the house so that there might have been storage space under it. In addition, the east sleeping platform appears to have been rebuilt once, with a new layer of flat slabs laid over the old platform surface. The lowest platform was raised 15 cm above the level of the floor while the later one was 30 cm above floor level.

The walls of the house consisted of piled boulders except in the area between the two platforms where upright slabs were employed (square D4). The floor of the house was neatly paved, with this flagging extending partly under the west platform. In the southwest corner of the house (squares B5 and C5) there was a small pantry/cooking alcove, set off from the rest of the house by a slanted slab. This alcove was raised about 8 cm above the level of the house floor and contained a small amount of charred material. In the southwest corner of square C4, near the centre of the floor, there was a small cavity (storage pit?) beneath the flagstones. It was approximately 40 cm in diameter and extended 35 cm below floor level. It contained a few pieces of worked antler and baleen along with some skin scraps, all thoroughly soaked in oil.

The entrance passage of the house was extremely neatly constructed, although time constraints prevented us from excavating its full length. Its floor, which was situated approximately 35 cm below the level of the house floor, was paved with large flat slabs.

Superstructure

Nothing can be said about the roof of House 4 because almost none of the roof support structure was found in the house. Only 21 identifiable pieces of whale bone were recovered, of which the largest were a small mandible fragment and two ribs.

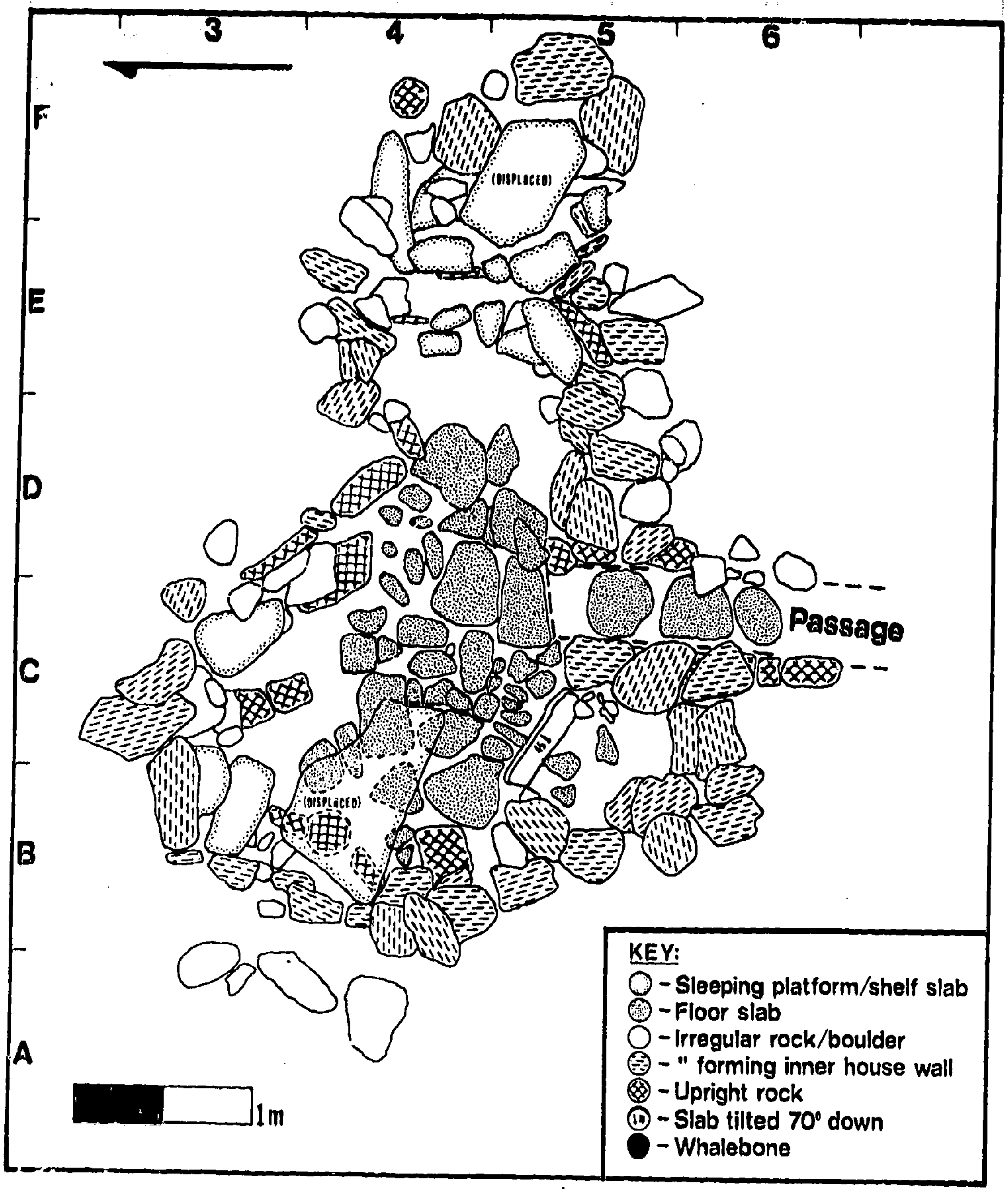


Figure 15. RbJr-1 House 4: Excavation plan.

Figure 16 captions: RbJr-1 House 4 Artifacts

Catalogue #		Description
a	425	Antler harpoon head
b	255	Whale bone harpoon head
c	560	Antler harpoon head
d	533	Whale bone harpoon head
e	562	Whale bone harpoon socket piece
f	350	Whale bone harpoon foreshaft
g	348	Antler arrowhead
h	275	Whale bone whaling harpoon head
i	585	Whale bone bladder float mouthpiece
j	345	Whale bone bladder mending disk
k	351	Ground slate end-blade
l	363	Whale bone snow knife fragment
m	357	Caribou astragalus bow drill mouthpiece
n	352	Ivory 'tip' fragment
o	457	Antler leister prong
p	340	Toy lance (?)
q	256	Antler arrowhead
r	591	Wooden toy shovel
s	262	Barbed ivory pin fragment
t	515	Whale bone man's knife handle half
u	491	Whale bone man's knife handle half
v	539	Wooden figurine fragment
w	465	Complete wood and antler (?) arrow
x	412	Ivory bead fragment on baleen thong
y	489	Whale bone ulu handle
z	414	Ivory Dorset culture 'spatula'
aa	281	Antler Dorset culture harpoon foreshaft
bb	450	Baleen figurine

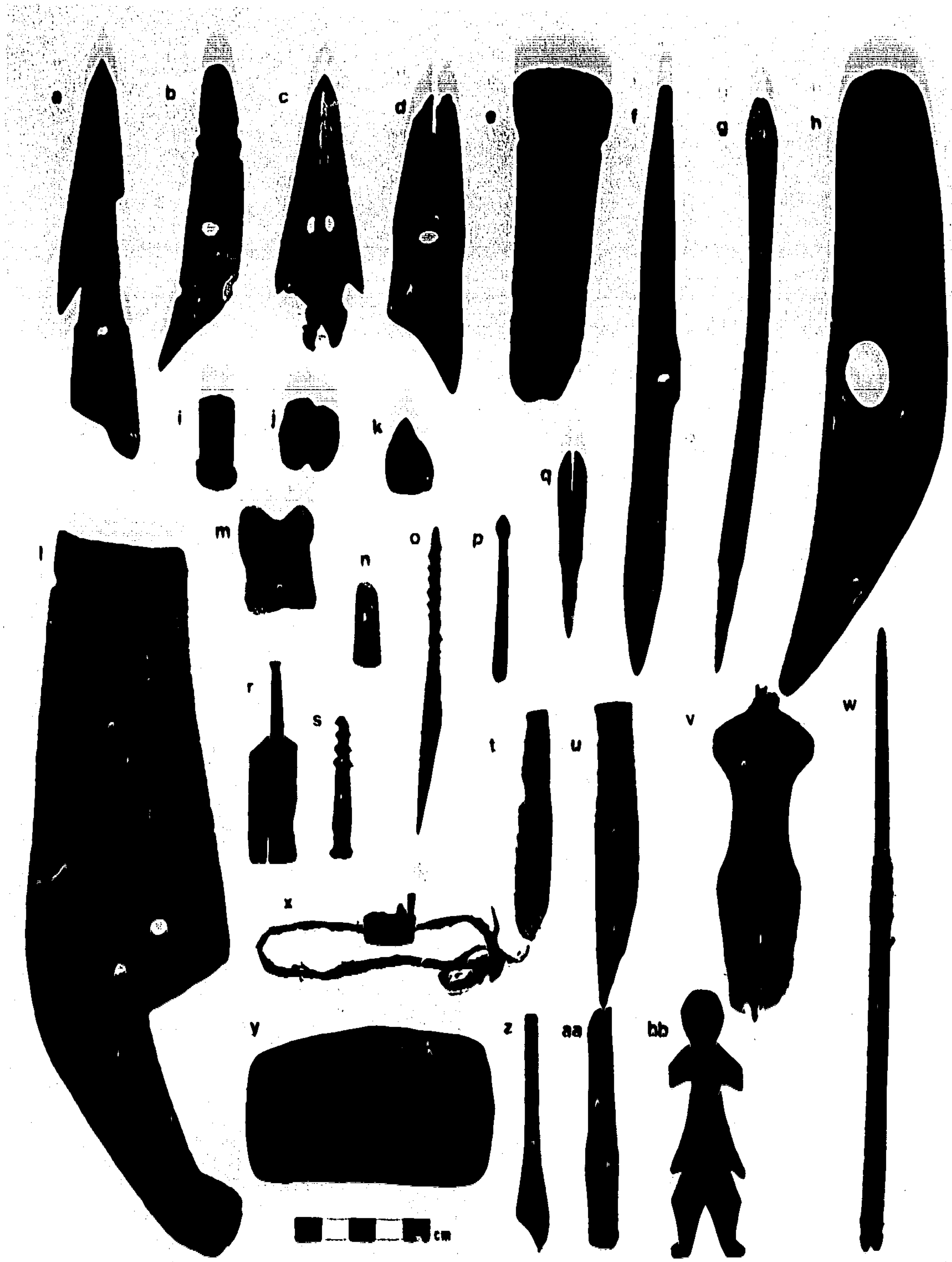


Figure 16 . RbJr-1 House 4 artifacts.

Contents

This house was also well frozen, and artifact preservation was excellent. The rich and varied artifact collection from it comprises 159 objects (see Appendix 1), some of which are illustrated in Figure 16.

Midden

A midden area of approximately five m^2 was located just southwest of the entrance passage of this house. It was probably associated with House 4, and/or possibly with House 5. A one m^2 test excavation in the midden by Robert McGhee in 1976 produced 231 identifiable faunal bones and abundant quantities of cinders, but no artifacts (Park 1983:17; 73).

RbJr-1 House 5

House 5 was the second house from the west end of the line of six winter houses on the east side of the stream channel at RbJr-1, and like the other houses of this group had its entrance passage opening to the south. It was excavated during the summers of 1976 and 1977 by Robert McGhee and reported by this researcher (see Park 1983). It had an internal living area of approximately 6.2 m^2.

Substructure

The house was oval in outline with a single rear sleeping platform, the front edge of which was supported with large elongated boulders while the back edge rested on a gravel bench. The house floor, 20 cm below the level of the platform, was flagged. A small cooking area or pantry was located just to the left of the inclined entrance passage.

Superstructure:

House 5 was overlain by 46 whale bones, including two mandibles, all presumably derived from the roof support framework. However, their position in the house depression appears to provide no information about the construction of the roof.

Contents

House 5 produced a total of only 46 artifacts, described in Park (1983).

RbJr-1 House 6 (Figure 17)

House 6 was at the west end of the line of six winter houses on the east side of the stream channel at RbJr-1. Its entrance passage opened slightly west of south, away from the coast. It proved to be a small winter house with an internal living area of approximately 3.4 m^2. Prior to excavation it appeared as a grassy depression with a few rocks poking through the sod. After being exposed it became apparent that it had suffered considerable post-occupation disturbance but its basic form could still be determined.

Substructure

The house proved to to be roughly oval in outline with a single rear sleeping platform. The back wall surrounding the platform area was neatly constructed of piled rocks, but what remains of the walls of the sides and front of the house consisted merely of several moderately sized boulders, probably due to disturbance. Only a couple of the platform slabs were found, but the platform appears to have taken the usual form, with two lockers beneath it. The floor area immediately in front of the platform was somewhat haphazardly paved with flat slabs, but the southeast corner of the house did not appear to have been paved. What seems to have been a small box hearth constructed of thin flat slabs set upright was present along the east wall just in front of the sleeping platform (square E3). The entrance passage was excavated for most of its length (over 3.5 m). At its proximal end it was bounded by upright columnar boulders but was not paved. Its depth was approximately 40 cm below the level of the house floor.

Superstructure

None of the roof support framework was found in the house, and only five pieces of whale bone were found in the house: one phalange, two rib fragments and two vertebrae.

However, this house was surrounded by an outer ring of rocks that may have served to anchor the skins that would have covered the roof frame.

Contents

Preservation was somewhat poorer than in most of the other houses at this site, except in the deep entrance passage. A total of 93 artifacts was recovered (see Appendix 1), including an ivory figurine and a baleen figurine found together in the wall behind the sleeping platform (Figure 18).

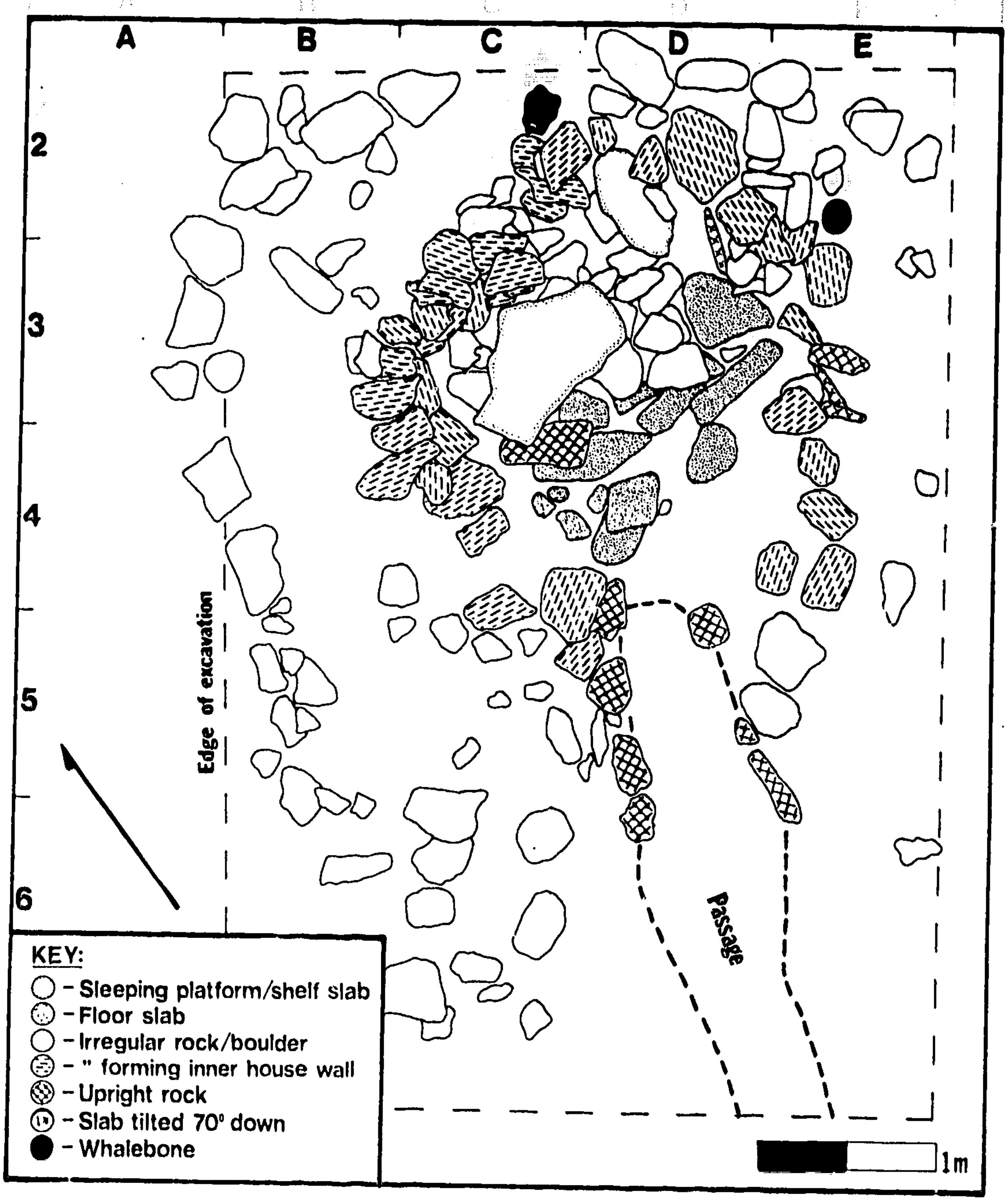


Figure 17. RbJr-1 House 6: Excavation plan.

Figure 18 captions: RbJr-1 House 6 Artifacts

	Catalogue #	Description
a	915	Antler harpoon head
b	944	Antler arrowhead
c	684	Ivory dart head base fragment
d	780	Whale bone harpoon ice pick
e	814	Slate ulu with baleen binding
f	837	Unfinished ivory trace buckle
g	855	Whale bone trace buckle
h	859	Ground slate knife fragment
i	737	Amber bead
j	870	Walrus tooth bow drill mouthpiece
k	673	Ivory fish spear barb (?)
l	700	Whale bone harpoon socket piece
m	664	Whale bone man's knife handle
n	686	Whale bone man's knife handle
o	666	Whale bone adze head (?)
p	867	Ivory figurine
q	866	Baleen figurine
r	909	Wooden figurine

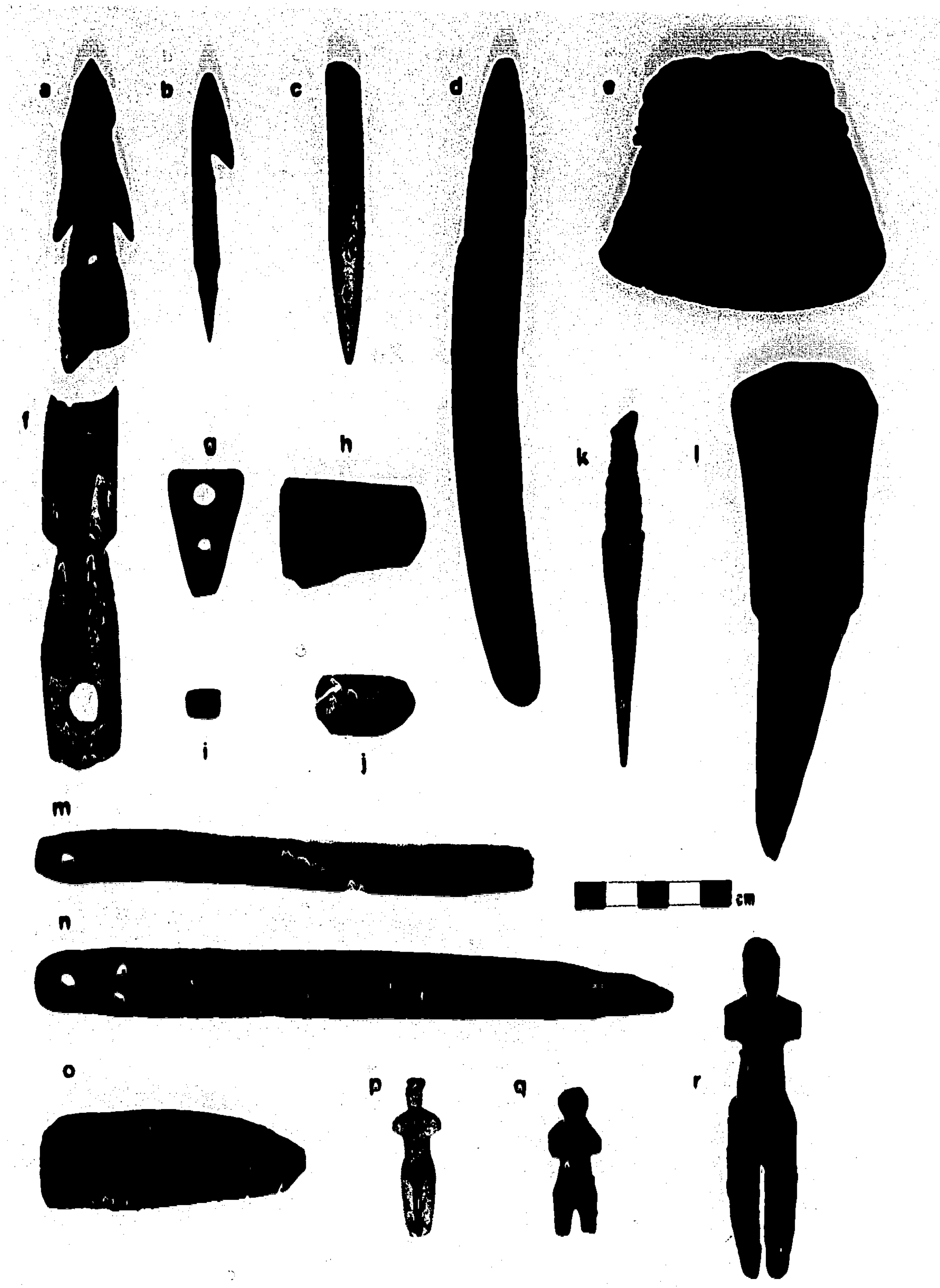


Figure 18. RbJr-1 House 6 artifacts.

RbJr-1 House 7

House 7 was situated second from the north in the cluster of four winter houses on the west side of the stream channel at RbJr-1 (see Figure 5). Its entrance passage opened to the northeast. It was excavated in 1976 and 1977 by Robert McGhee and reported in Park (1983). It had an internal living area of approximately 6.5 m^2.

Substructure

The house was oval in outline with a single rear sleeping platform, flagged floor, and a cooking alcove to the left of the entrance passage. However, the house had been rebuilt at least twice, as three separate layers of platform slabs (though much of the top layer was missing) and two superimposed flagged floors were uncovered during its excavation. A square cavity formed by four whale phalanges was found beneath the centre of the lowest floor.

Superstructure

House 7 contained very little whale bone deriving from the roof framework, although one large mandible present just beside the house may have come from it. However, the stumps of three upright roof supports were still present in the floor area.

Contents

House 7 contained 172 artifacts, including several well-preserved skin boots and a wooden Dorset culture figurine. These are reported in Park (1983).

RbJr-1 House 8 (Figure 19)

House 8 at RbJr-1 was the most northerly house in the cluster of four winter houses on the west side of the stream channel. Its entrance passage opened to the east. It was one of the smallest winter houses at Porden Point, having an internal living area of only 3.5 m^2. Prior to excavation it appeared only as a shallow grassy depression.

Substructure

The house was oval in outline with a single rear sleeping platform. Some of the platform slabs had been displaced into the floor area of the house while others had disintegrated into tiny fragments, but the platform appears to have been constructed in the usual fashion with two small storage lockers beneath it. The sleeping area was surrounded above the level of the platform surface by thin upright facing slabs. The house walls consisted largely of stacked boulders. The floor was neatly paved with flat slabs.

One interesting feature was a 'shelf' constructed of small flat slabs on the north side just to the right of the entrance passage (square C5). The shelf was raised approximately 35 cm above the level of the floor and was divided from the central part of the house by a large upright slab. The position of the slab suggests that this area may have been walled off from the rest of the house late in its occupation, as upon removal it was found to have been built over and around a bent-wood bowl (RbJr-1-600). The purpose of the shelf is unknown but the most likely interpretation is that the area served as a pantry or cooking area.

The sunken entrance passage was walled by upright columnar boulders at its proximal end. Its complete excavation was not possible due to time constraints so its depth could not be determined. Its length also could not be ascertained due to the fact that it appears to have intersected with the passage of House 7 (see Figure 5). It is possible that Houses 7 and 8 shared a common entrance passage, but this could not be satisfactorily determined because the passage of House 7 had previously been dismantled during excavation.

Superstructure

As with many of the other houses, little of the roof support material of House 8 was found. Only 13 identifiable whale bones were uncovered and of these the largest were two small maxilla fragments and four ribs. There did not appear to be an outer ring of rocks surrounding the house.

Contents

House 8 contained a total of 79 artifacts (see Appendix 1), of which one proved to be a fragment of a ceramic lamp (Carole Stimmell, personal communication), the only ceramic item found at Porden Point. Some of the artifacts from this house are illustrated in Figure 20.

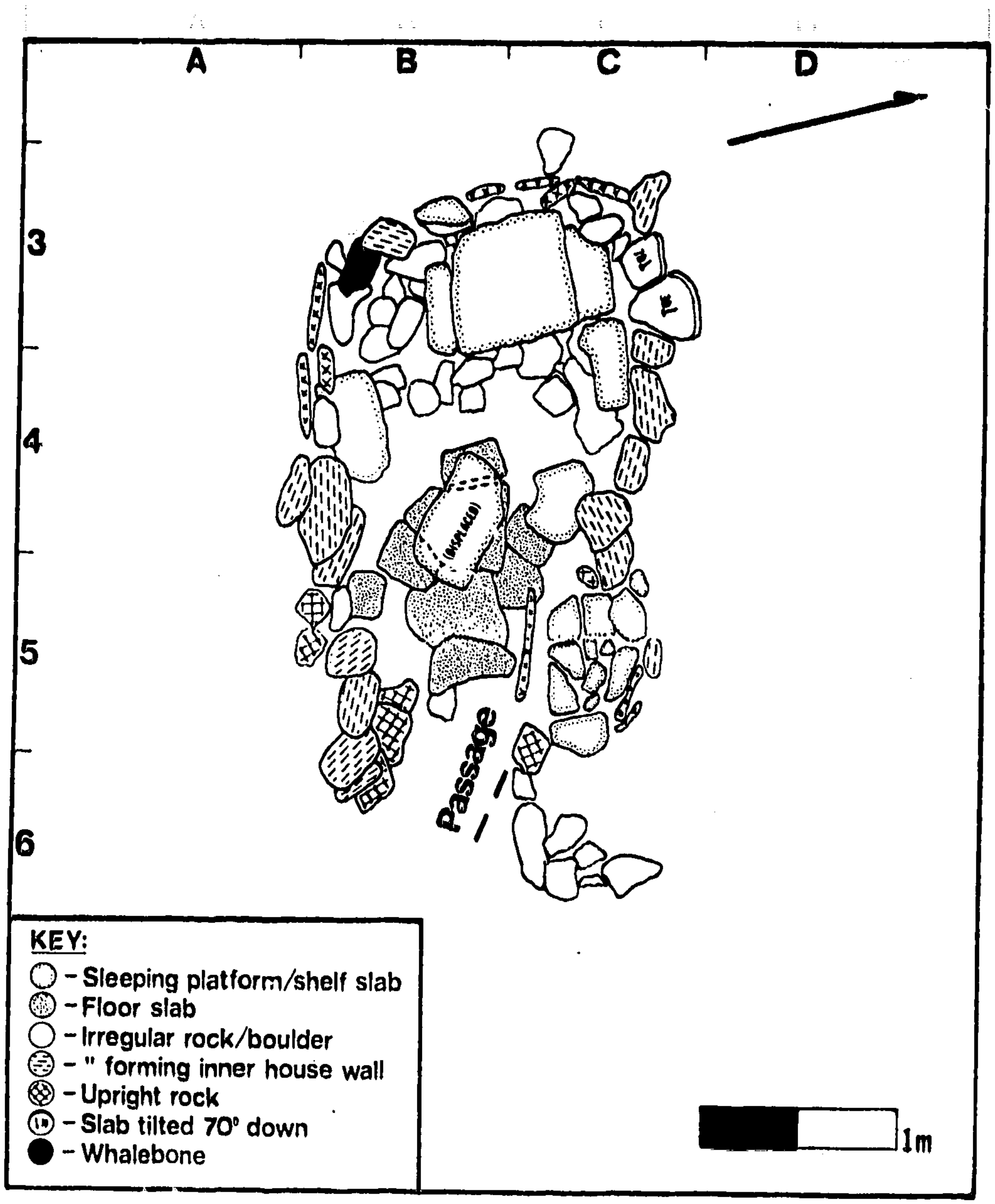


Figure 19. RbJr-1 House 8: Excavation plan.

Figure 20 captions: RbJr-1 House 8 Artifacts

Catalogue #	Description
a.........550	Unfinished ivory harpoon head
b..........259	Whale bone harpoon tip (?) pendant
c..........461	Broken whale bone harpoon foreshaft
d.........455	Broken ivory bladder dart head
e..........581	Broken whale bone marline spike
f..........603	Whale bone ulu handle
g.........582	Broken whale bone adze head
h.........314	Ivory bow drill mouthpiece
i..........622	Stemmed slate end-blade
j..........292	Sliver of copper (needle?)
k.........579	Wooden figurine
l..........382	Bear canine pendant
m........312	Baleen toy drum rim
n.........415	Broken slate ulu (?) blade
o..........561	Ivory trace buckle
p..........549	Broken whale bone drag line handle
q.........342	Ceramic vessel fragment
r..........600	Bent-wood bowl side
s..........261	Broken whale bone sled shoe section
t..........583	Whale vertebra tied with baleen

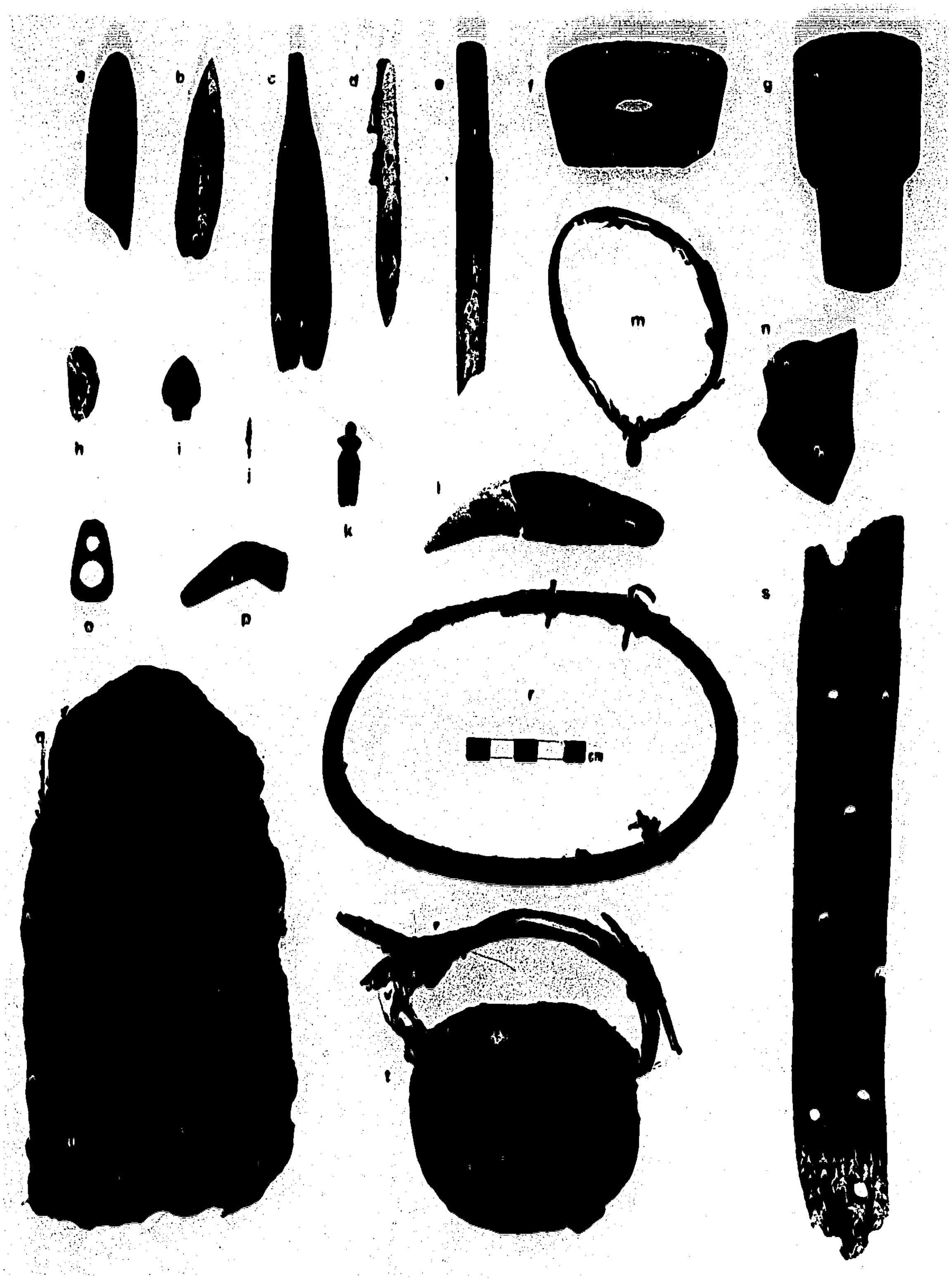


Figure 20 . RbJr-1 House 8 artifacts.

RbJr-1 House 9 (Figures 21-25)

House 9 was the easternmost house in the cluster of four winter houses on the west side of the stream channel at RbJr-1. Its entrance passage opened to the southeast. On the surface this house appeared to be fairly poorly preserved structurally, and the initial clearing of the house only confirmed that opinion. However, further excavation revealed that it, like the adjacent House 7, had been repeatedly refurbished and the earlier levels of the house were better preserved than the uppermost one. Its internal living area throughout its occupation was approximately 4.8 m2.

Substructure

Description of this house is made somewhat difficult due to the fact that five separate floors and three separate platforms were found (which have been numbered from lowest to uppermost in the order that they were used). For the sake of convenience, on the accompanying diagrams the first two floors have been drawn with the first platform, the third and fourth floors with the second platform, and the fifth floor with the third platform. However, except for the last, there is no way to validate these associations. It can only be stated that, on the basis of the five floors, the house was modified at least four times after being built.

In each of its incarnations the house appears to have been oval with a single rear sleeping platform. The platforms, particularly the third, were badly disturbed and appeared to be missing some slabs. The first and second platforms were surfaced with somewhat smaller slabs than many other houses, and were supported centrally by two parallel lines of upright rocks such that three storage lockers were created beneath them (see Figures 21 and 22). The method of construction of the third platform could not be determined as almost nothing of it remained *in situ*. However, a column of bowhead whale cervical vertebra (squares H2-I2) may represent one of the platform supports, based on the similar structure found supporting the front edge of the west platform in RbJr-1 House 1.

The house walls were constructed partly of upright columnar rocks and partly of stacked rocks and boulders. All five floors were fairly neatly paved with flat slabs,

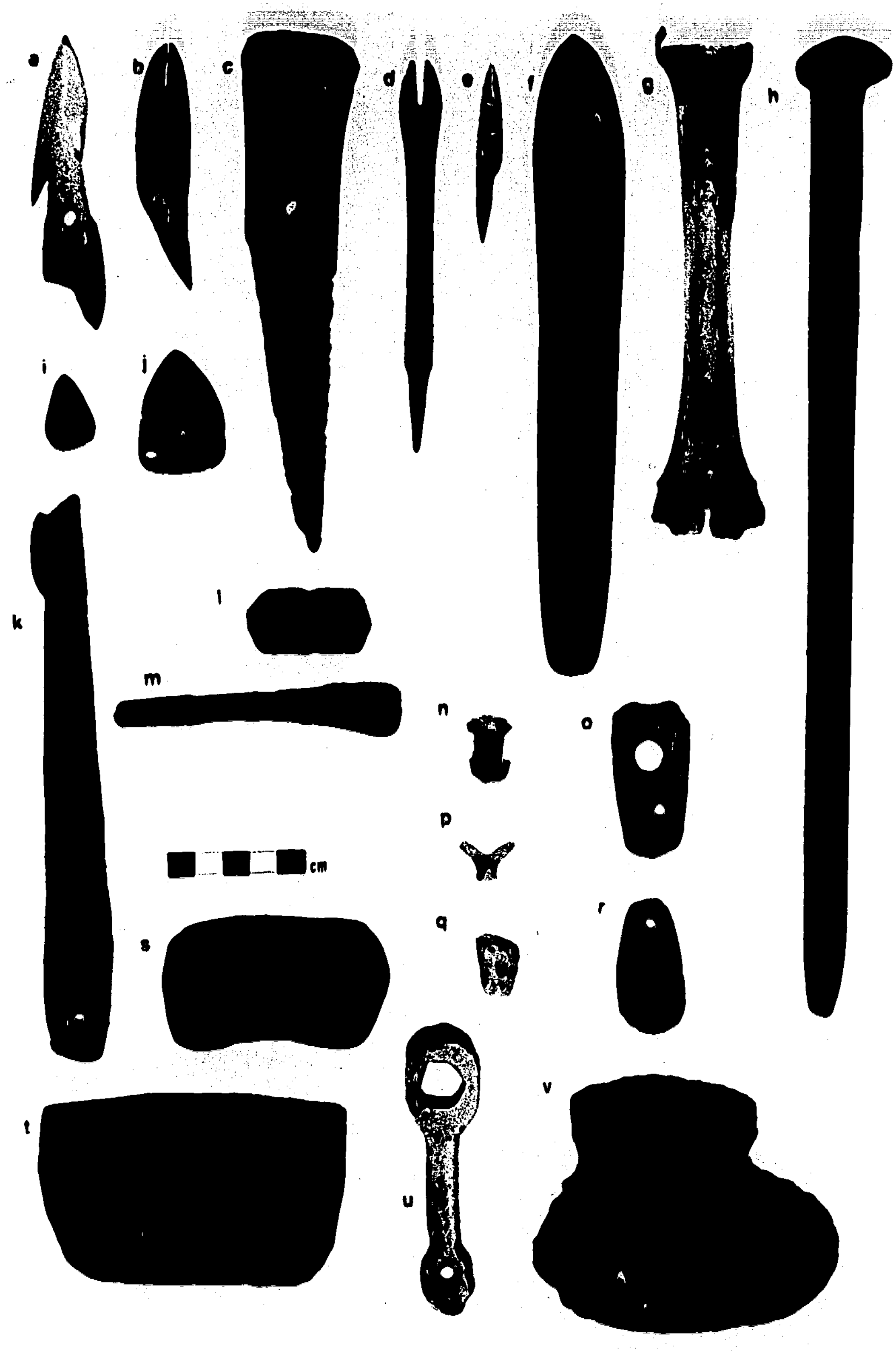


Figure 27. RbJr-1 House 9 artifacts.

although the actual area of the paving varied between the different levels. There was generally less than 5.0 cm of fill between each floor level. A raised shelf located on the eastern side of the house may have served as a pantry or cooking area. It was surfaced with small flat slabs and appears to have been used during the earlier occupations of the house but apparently not subsequently.

The entrance passage opened to the southeast and was walled with upright columnar boulders at its proximal end. A whale skull at the foot of the bank just beyond the end of the passage (see Figure 25 squares J5-K5) may have been mounted over the house entrance, a feature seen in Houses 2 and 3 at RbJr-4.

Superstructure

A total of 47 identifiable pieces of whale bone were found, most of which probably derived from the roof (Figure 26). The largest bones included two mandibles, two mandible fragments, two maxilla fragments, and 16 ribs. However, it appears almost certain that additional whale bones would have been necessary to construct an adequate roof, particularly since the two largest bones, the intact mandibles, were both less than 2.0 m long. It is not known whether House 9 only had one roof during the whole period of its occupation or whether the roof was reconstructed several times.

Contents

House 9 was found to contain the most rich and varied artifact collection from the site, particularly in terms of perishable items (see Appendix 1). A selection of the less fragile of the 170 artifacts that were recovered is presented in Figure 27, but also found were four skin boots, a skin hood, a child's mitten (for the conservation of which see Jenkins 1987), and a tied bundle containing two complete arrows, two arrowshafts, one arrowshaft portion, and a separate arrowhead.

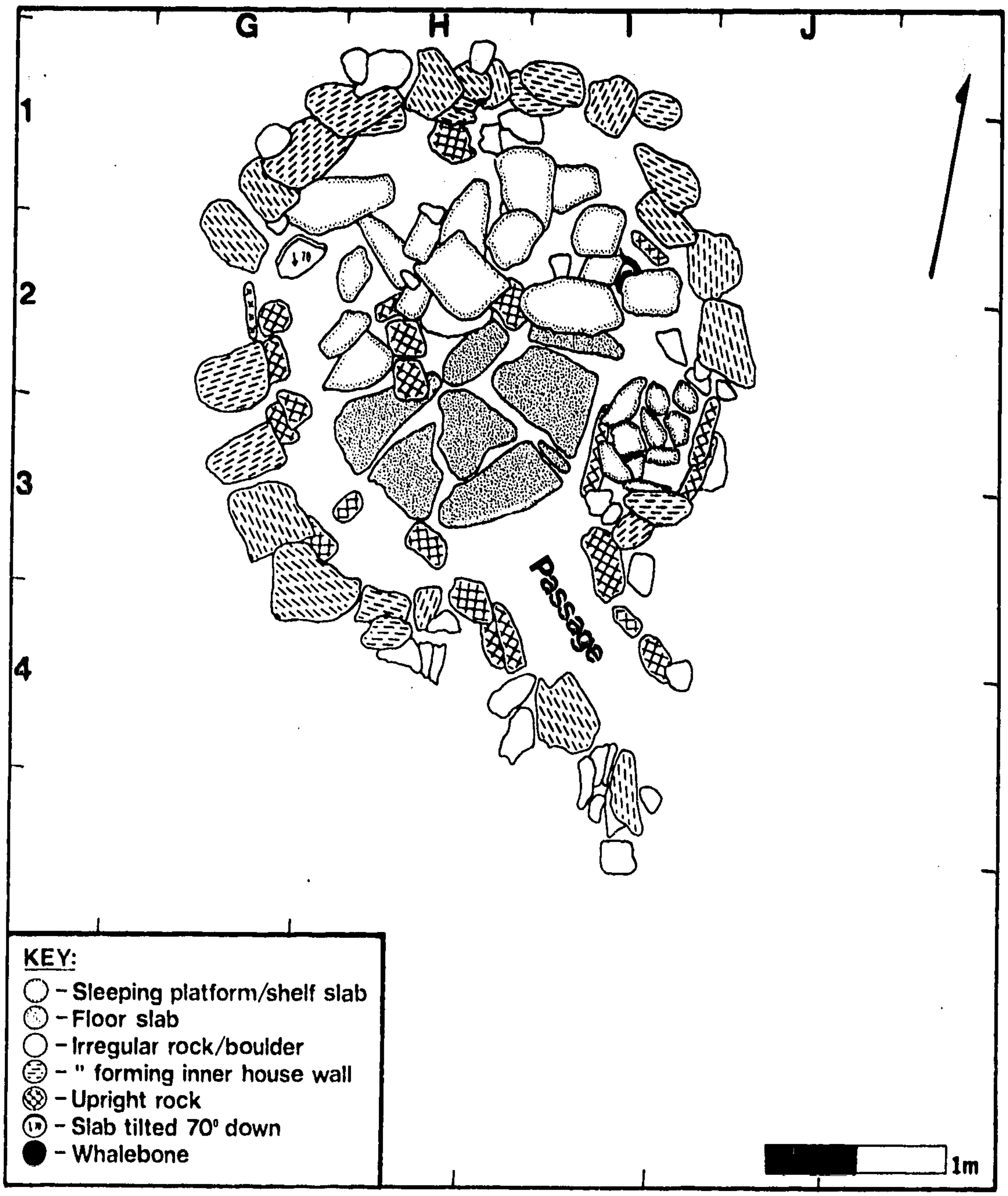


Figure 21 . RbJr-1 House 9: Excavation plan, showing the first platform and the first floor.

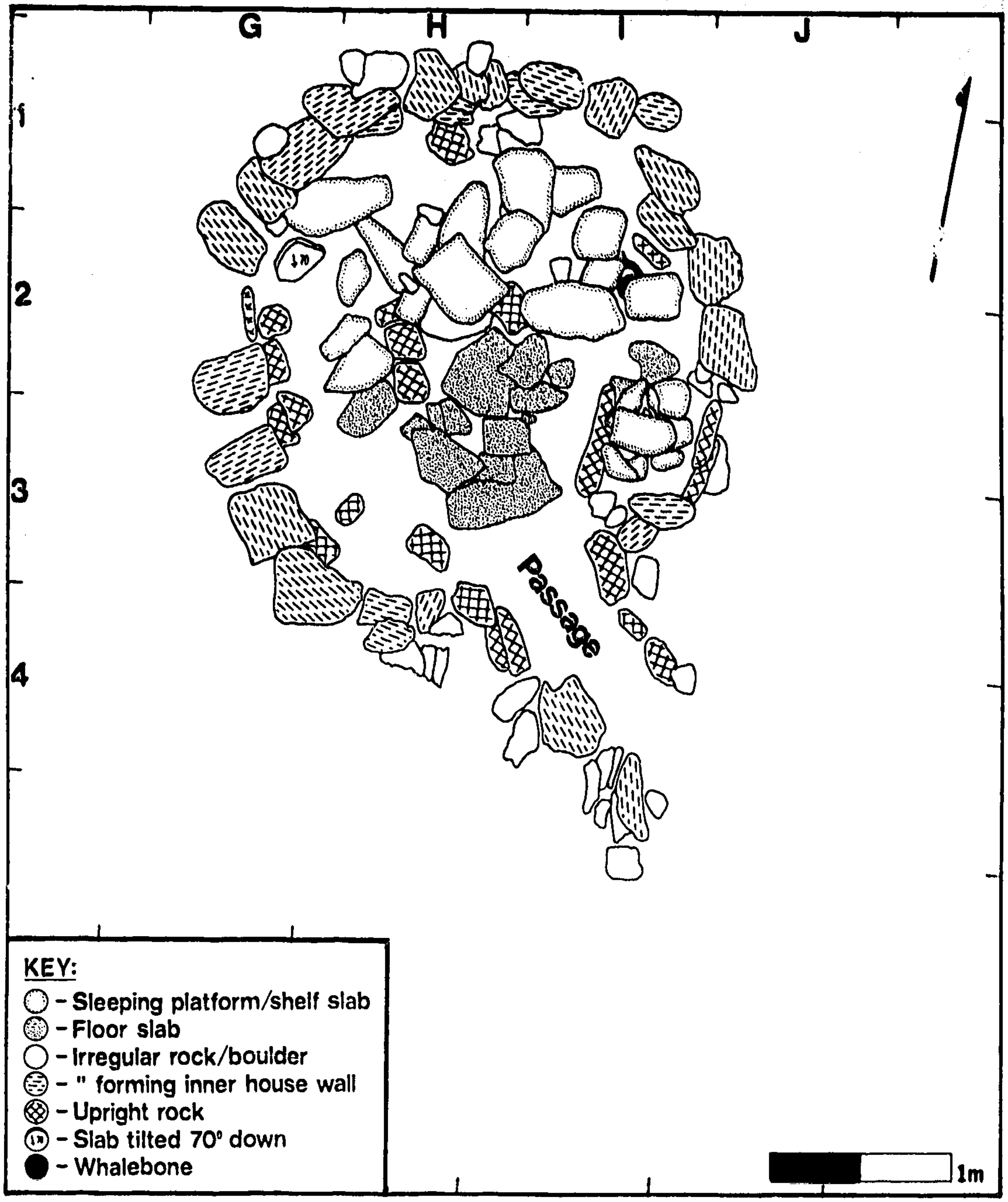


Figure 22. RbJr-1 House 9: Excavation plan, showing the first platform and the second floor.

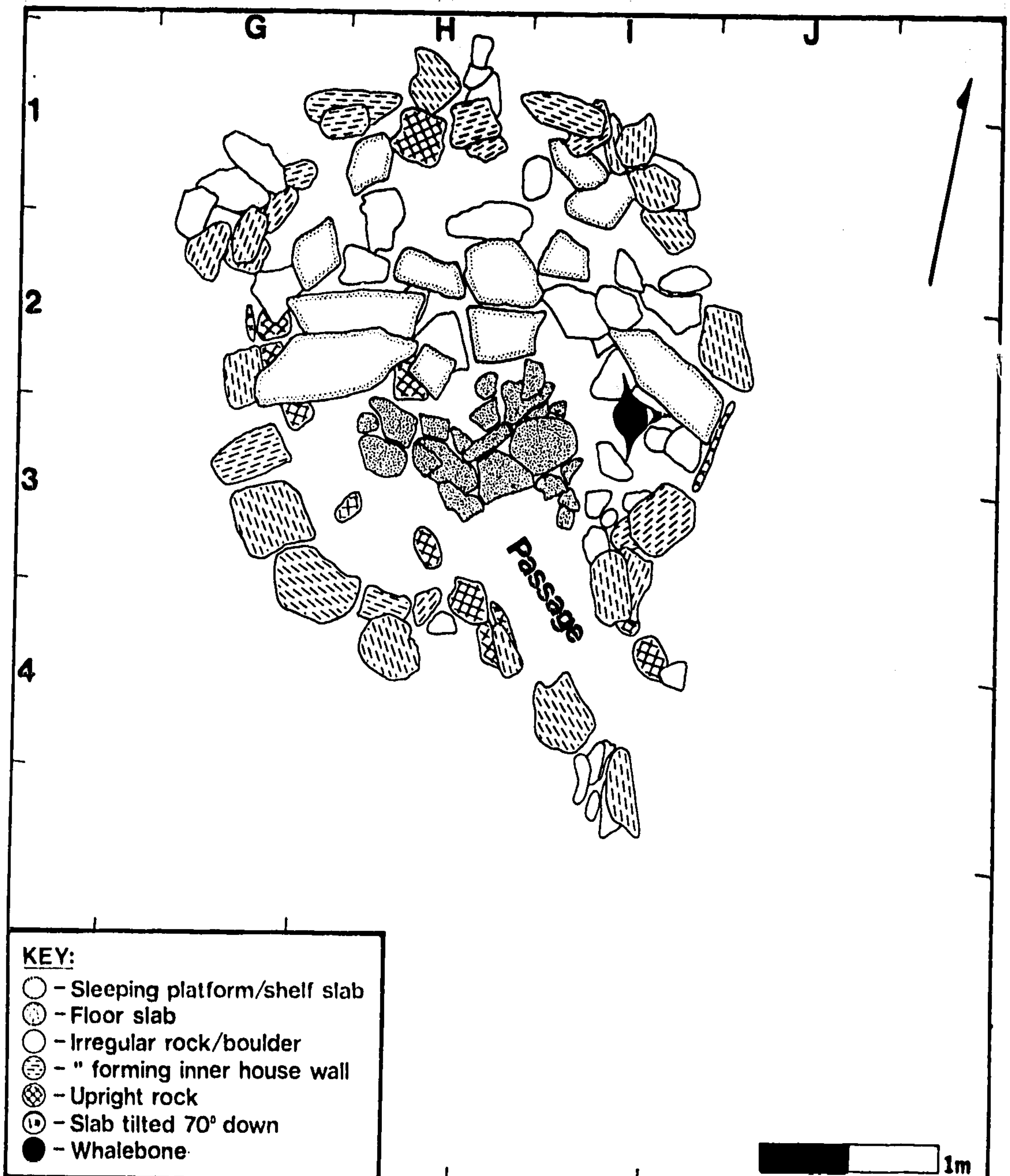


Figure 23. RbJr-1 House 9: Excavation plan, showing the second platform and the third floor.

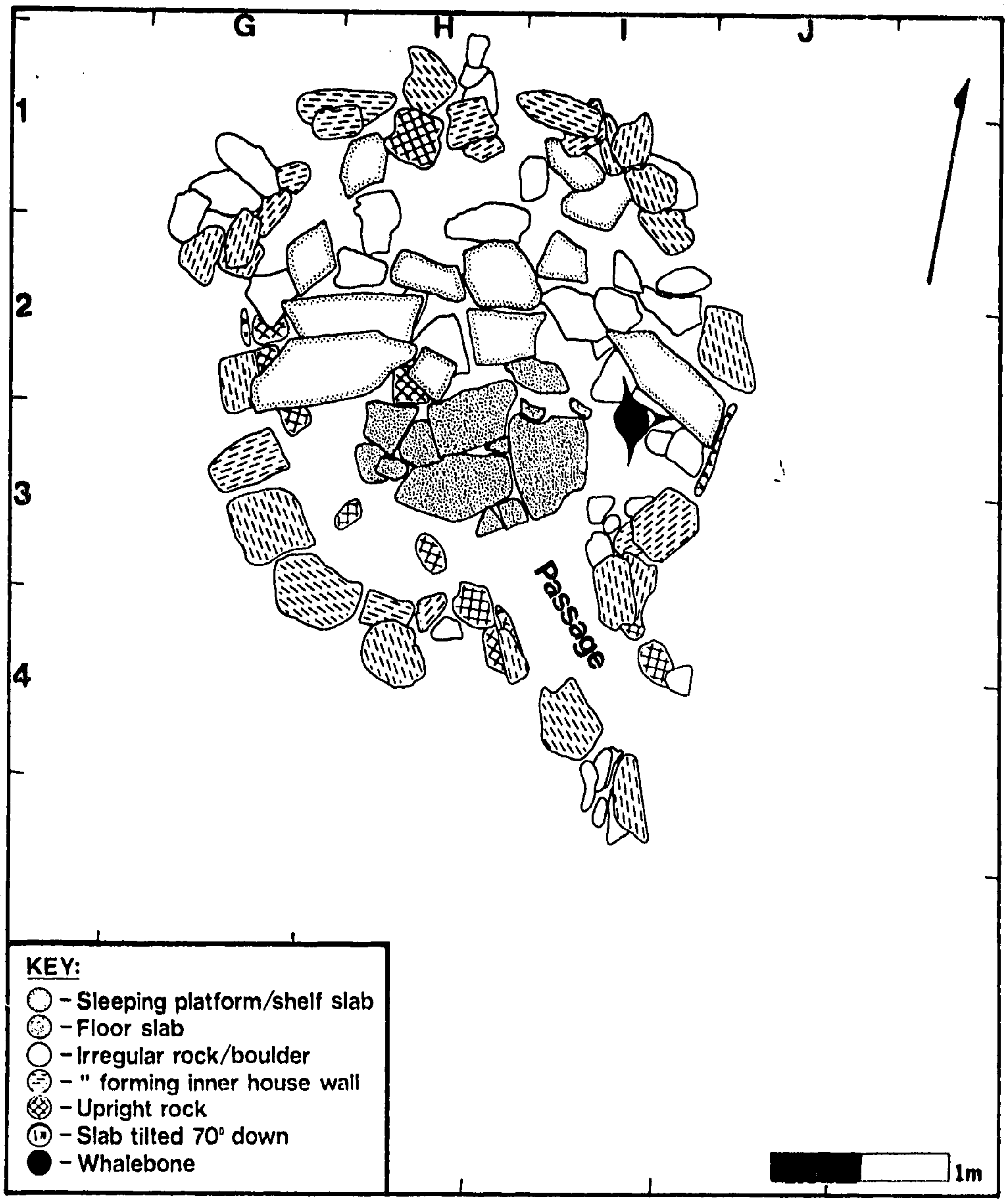


Figure 24. RbJr-1 House 9: Excavation plan, showing the second platform and the fourth floor.

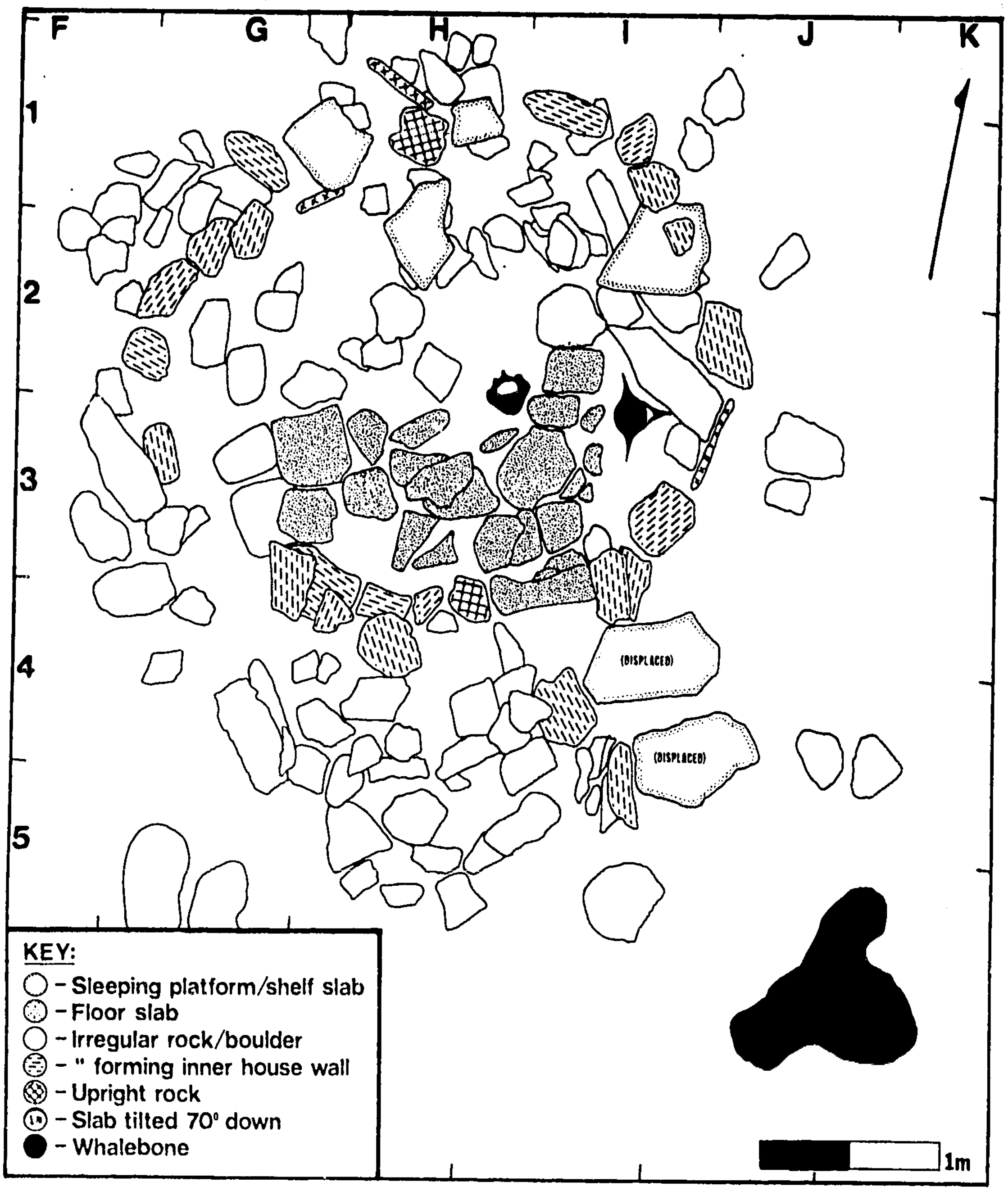


Figure 25. RbJr-1 House 9: Excavation plan, showing the third platform and the fifth floor.

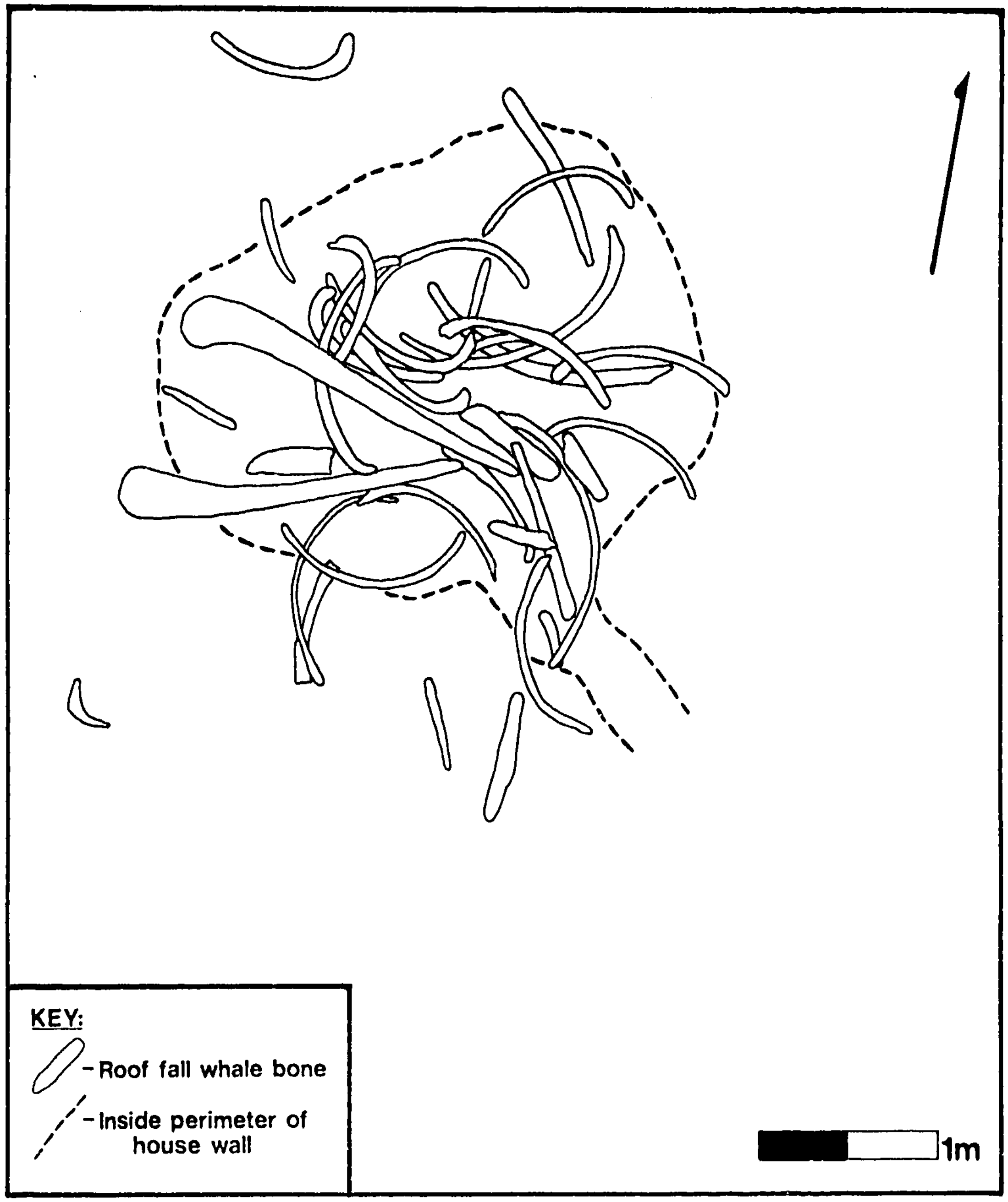


Figure 26. RbJr-1 House 9: Roof fall whale bones as found.

Figure 27 captions: RbJr-1 House 9 Artifacts

Catalogue #		Description
a	960	Broken ivory harpoon head
b	712	Unfinished whale bone harpoon head
c	1045	Whale bone harpoon socket piece
d	946	Whale bone arrowhead
e	749	Ivory arrowhead
f	874	Unfinished (?) whale bone lance head
g	918	Caribou metapodial beamer
h	876	Broken whale bone snow probe handle
i	750	Slate end-blade
j	941	Iron end-blade
k	985	Antler man's knife with iron blade
l	862	Wooden amulet box half
m	971	Baleen toy paddle (?)
n	806	Ivory bladder mending plug
o	745	Whale bone trace buckle
p	747	Ivory needle case toggle (?)
q	948	Ivory bow drill mouthpiece
r	980	Whale bone bola weight
s	863	Whale bone ulu handle
t	761	Whale bone ulu handle
u	865	Whale bone (?) shaft wrench
v	739	Slate ulu blade

RbJr-1 House 10 (Figure 28)

House 10 was the most southerly of the winter houses in the cluster of four winter houses on the west side of the stream channel at RbJr-1. Its entrance passage opened to the south. It was found to be shallow, with an internal living area of approximately 5.9 m^2, quite well preserved structurally.

Substructure

The house was oval in outline with a single rear sleeping platform. This was made in the usual fashion with two rows of rectangular flat slabs laid with their lateral and medial edges supported by lines of rocks such that two storage lockers were created beneath the platform. A whale scapula was used as one of the platform slabs. A small shelf just in front of the sleeping platform on the right side of the house (squares E3-F3) was probably a lamp platform.

The walls apparently consisted of stacked boulders, most of which had fallen from place. Thus, just the lower course of rocks remained *in situ*. The floor was neatly paved with flat slabs. A small unpaved alcove formed by an extension of the wall to the right of the entrance passage (square F4) may have served as a cooking area or pantry, although nothing else (e.g., charred fat, etc.) indicated this. The entrance passage was filled with massive slabs which had apparently formed its roof and this, combined with time constraints, precluded its being excavated.

Superstructure

Not too much can be said about the roof structure, although at least some of the roof support whale bone was still present (Figure 29). A total of 38 identifiable whale bones were found, of which two were mandibles, nine were mandible and maxilla fragments and eight were ribs. The pattern in which they were found does not appear to reveal anything about the roof framework, and it is believed that more whale bones must have been utilized. One interesting feature of the two mandibles was that each had had its proximal end (which consists of the massive spherical articulating condyle) neatly removed, apparently by chiselling.

House 10 also had an outer ring of rocks, presumably to weigh down the skins used as a roof covering. This is seen clearly only on the west side of the house due to the proximity on the north and east of Houses 7 and 9.

Contents

House 10 was found to contain a total of 52 artifacts (see Appendix 1), some of which are illustrated in Figure 30.

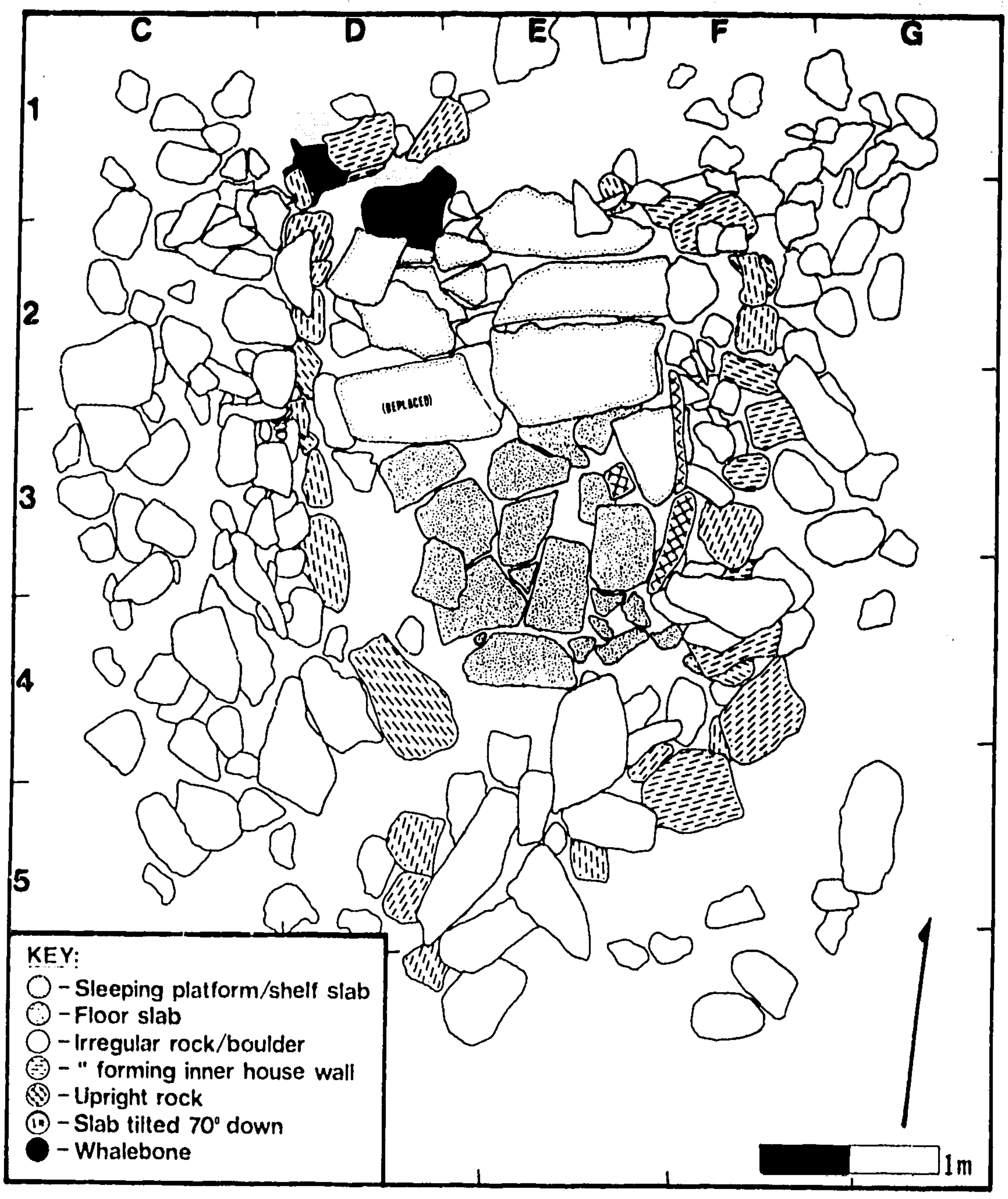


Figure 28 . RbJr-1 House 10: Excavation plan.

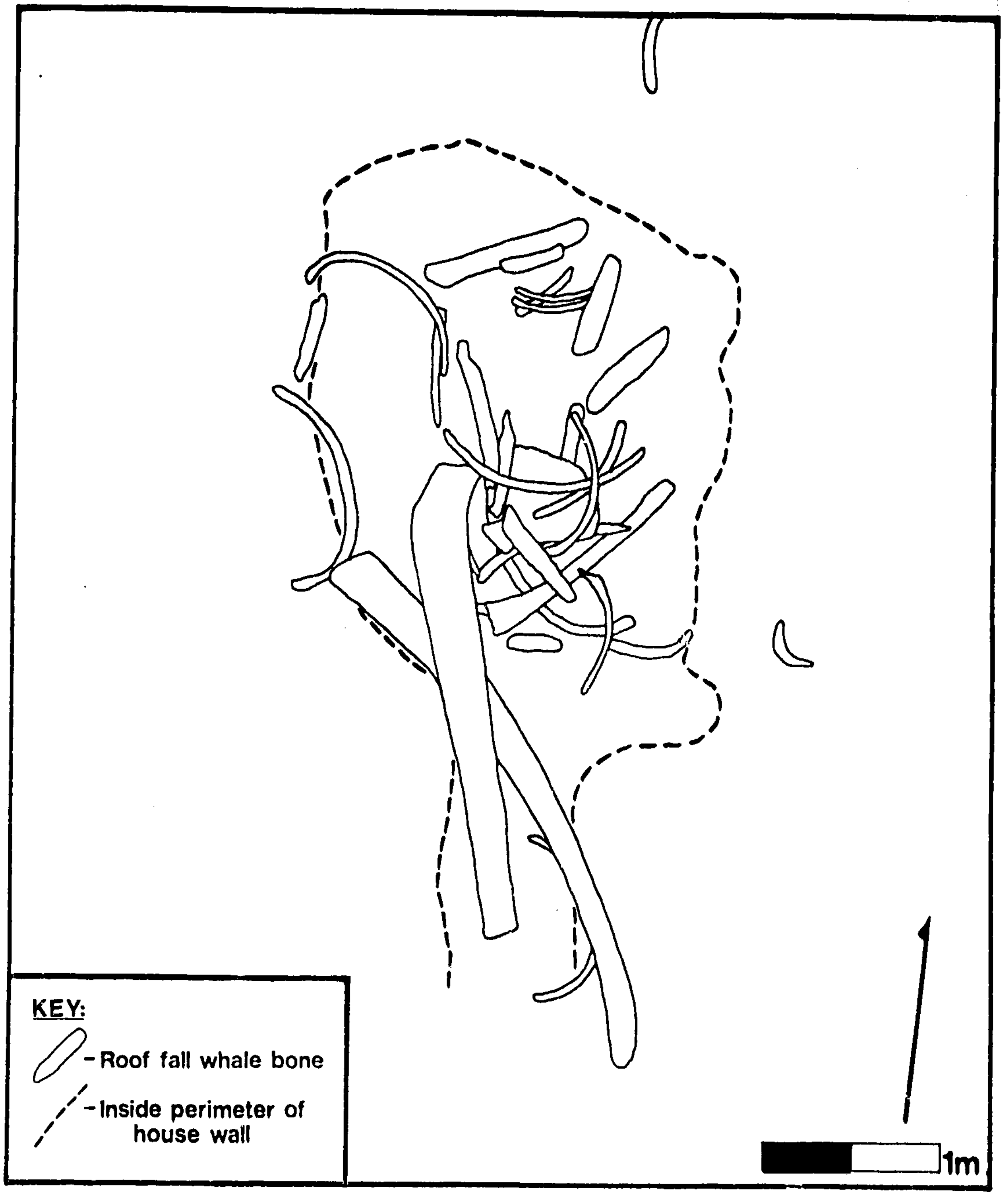


Figure 29. RbJr-1 House 10: Roof fall whale bones as found.

Figure 30 captions: RbJr-1 House 10 Artifacts

Catalogue #	Description
a..........716	Damaged whale bone harpoon head
b...........765	Broken whale bone harpoon head
c...........920	Broken whale bone harpoon head
d..........715	Antler arrowhead
e...........919	Antler arrowhead tied with sinew
f...........768	Antler arrowhead (?)
g..........907	Antler leister prong
h........ 1057	Whale bone harpoon socket piece
i...........767	Ivory harpoon finger rest
j...........882	Whale bone (?) pendant
k..........850	Broken whale bone man's knife handle
l...........950	Broken ivory man's knife handle half
m.........677	Bear canine pendant
n..........787	Tied wooden amulet case
o...........788	Wooden figurine
p......... 1055	Drilled ivory fragment
q..........981	Antler fish hook with iron barb
r...........982	Antler arrowhead (?)

Figure 30. RbJr-1 House 10 artifacts.

Other structures at RbJr-1

Twelve other structures were identified at RbJr-1 (#'s 11 through 22). They all consisted of very low gravel rings surrounding shallow depressions. These central depressions varied in diameter from 0.6 m to almost 2.0 m, and some of them appeared to be paved with small rocks. One of the structures (#20) also appeared to have its central depression ringed with rocks.

None of these structures were excavated but a seal radius fragment and a piece of whale bone were found on the rim of #11. Bowhead whale skull fragments were also found in a mossy area between structures 13 and 16 along with a notched piece of whale bone (RbJr-1-1021). Another artifact, a snow knife (RbJr-1-1020), was found on the rim of #13. Parenthetically, it might be noted that another snow knife (RbJr-1-604) was found on the beach approximately 150 m west of RbJr-1 at roughly the same elevation, but not associated with any feature.

***RbJr-4: The Porden Point Pond Village site** (Figures 31 & 32)*

RbJr-4 is located just southwest of RbJr-1. It consists of four winter houses, three of which are located in a low marshy area amongst several ponds. The fourth is located to the northwest of the rest, at the opposite end of a long pond. None of these houses appeared to be associated with any substantial midden deposit.

Robert McGhee excavated House 2 in 1976 and 1977. Houses 1 and 4 were excavated in 1984, while House 3 was done in 1985.

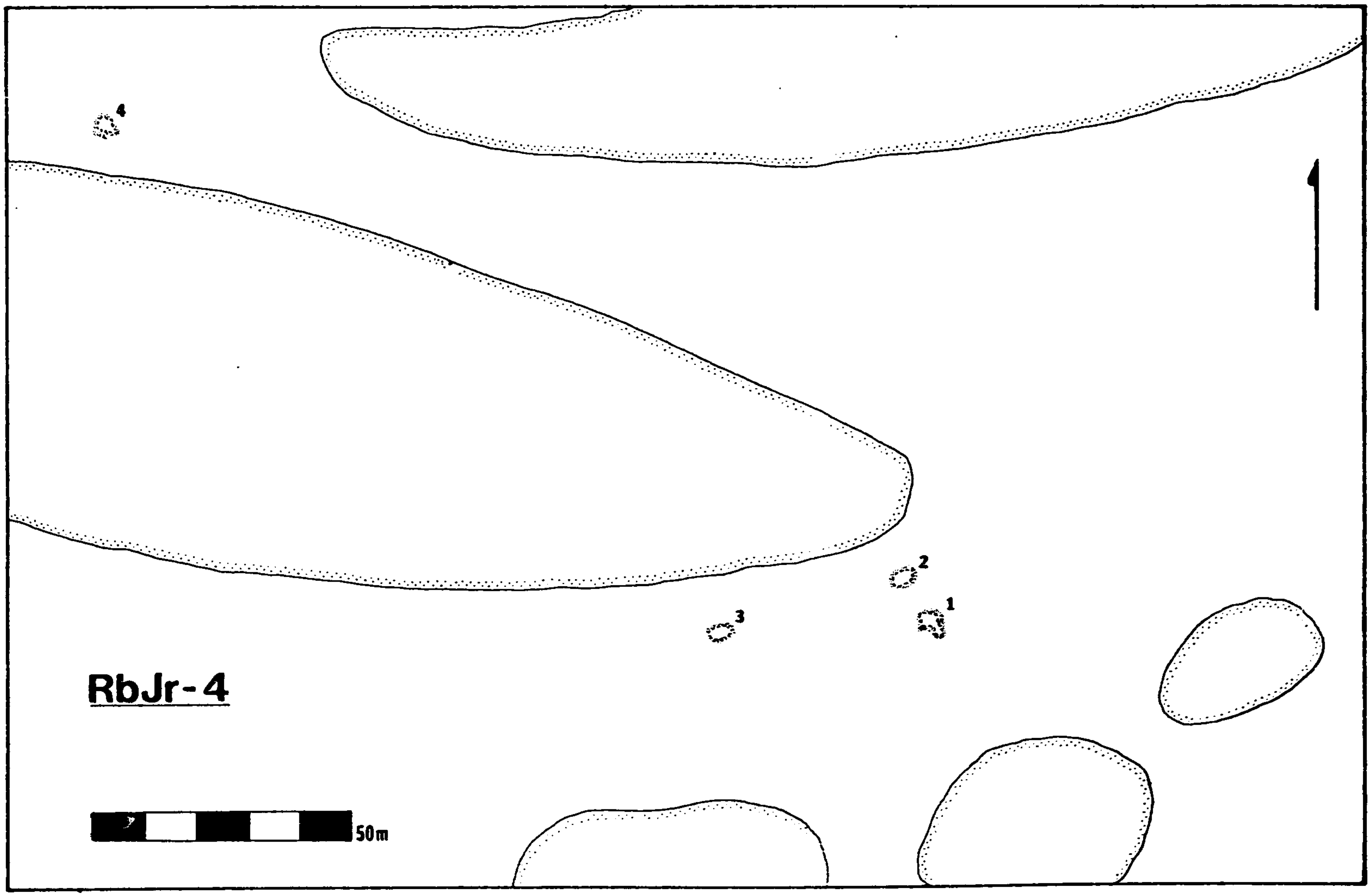


Figure 31 . RbJr-4: The Porden Point Pond Village site.

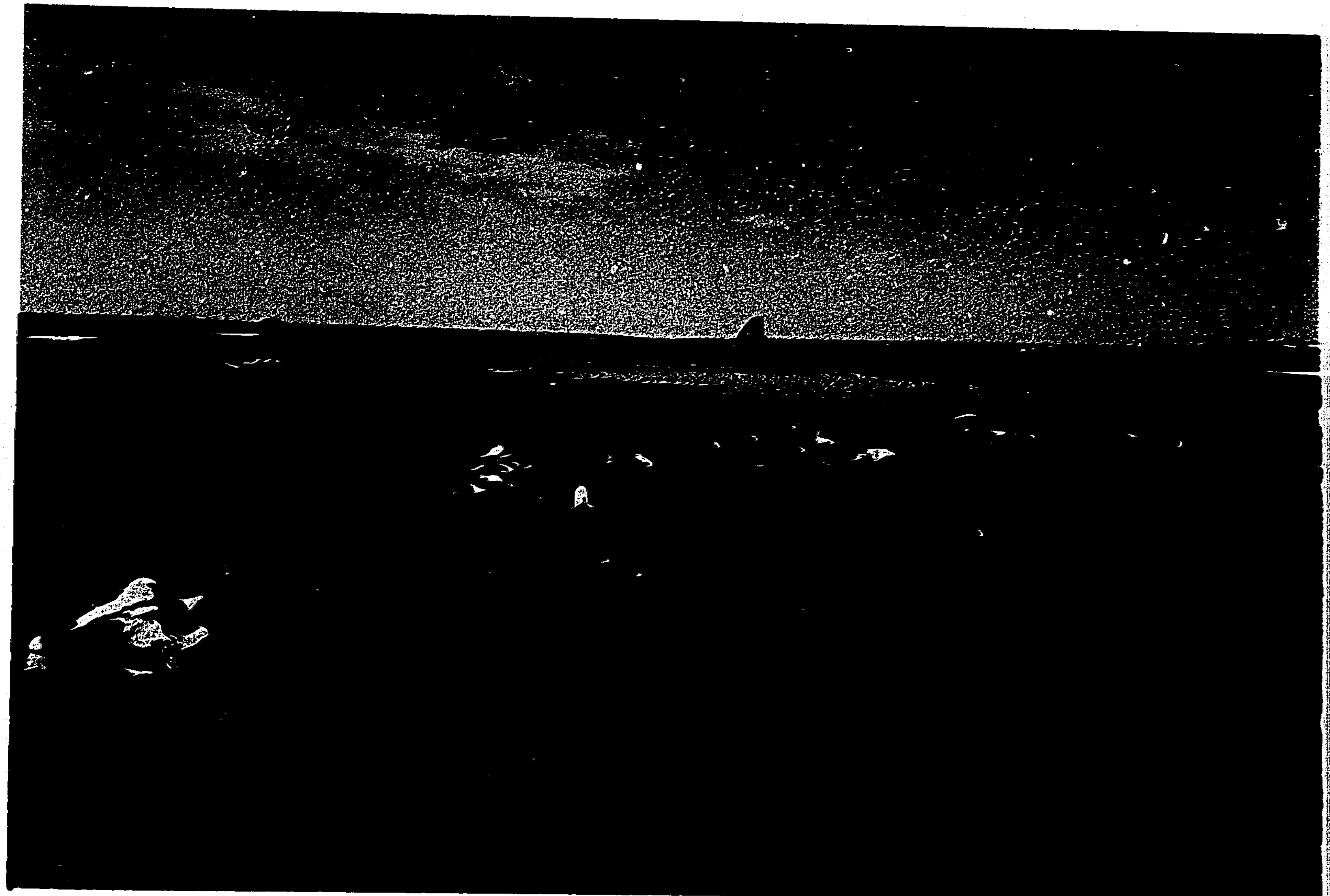


Figure 32. RbJr-4, looking northwest. The location of each house is indicated by its number.

RbJr-4 House 1 (Figure 33)

House 1 at RbJr-4 was the most easterly of the houses at the site. Prior to excavation this house was simply a heavily vegetated jumble of boulders, and when first viewed it appeared totally incomprehensible structurally. It was only upon excavation that some sense could be made of it in spite of what appears to be extensive disturbance. Although difficult to calculate accurately, the house seems to have had an internal living area of approximately 9.4 m^2.

Substructure

House 1 appears to have been bilobate in outline with two raised sleeping platforms, one in the west end and one in its southeast corner. The entrance passage opened to the east. The house was constructed so as to utilize two bedrock outcrops as part of the house walls. Elsewhere they were made of piled boulders. Except for the entrance passage, the house was not deeply excavated into the ground. Rather, the walls were built up above the level of the surrounding terrain.

Both sleeping platforms appear to have had some of their flat slabs removed or displaced. There is some indication that they were constructed so as to create storage lockers beneath them, but this could not be determined with certainty. The rocks supporting the west platform were set on top of a thick layer of peat, apparently deliberately placed there by the builders of the house during its construction. The floor was paved with somewhat jumbled flat slabs. A solidly-packed concentration of seal bones and charred fat found by the wall between the two platforms (southwest corner of square E4) may indicate that this was a cooking area, and/or perhaps the former location of a lamp platform.

The entrance passage of the house was only discovered part way through the excavation, as there was no indication of its presence on the surface. Rather, the presence of a whale skull in square F8 initially suggested that the entrance passage might open to the southeast, based on the whale skulls found over the entrances of the nearby Houses 2 and 3. However, the actual passage proved to be located in squares F3-G3, descending approximately 45 cm below the level of the house floor. The passage was lined by upright columnar boulders but not paved, and had a length of approximately 2.0 m.

Superstructure

Nothing can be said about the roof of this house as only 15 pieces of whale bone were found, of which the largest were two ribs and three small mandible and maxilla fragments.

Contents

House 1 was found to contain 110 artifacts (Appendix 1; Figure 34). Curiously, four of the five harpoon heads found in the house derived from the Dorset culture as did three lithic implements, but there was no other indication of a previous Dorset occupation here. This suggests that the Dorset harpoon heads might have been collected elsewhere by the Thule, and may actually have been used by them.

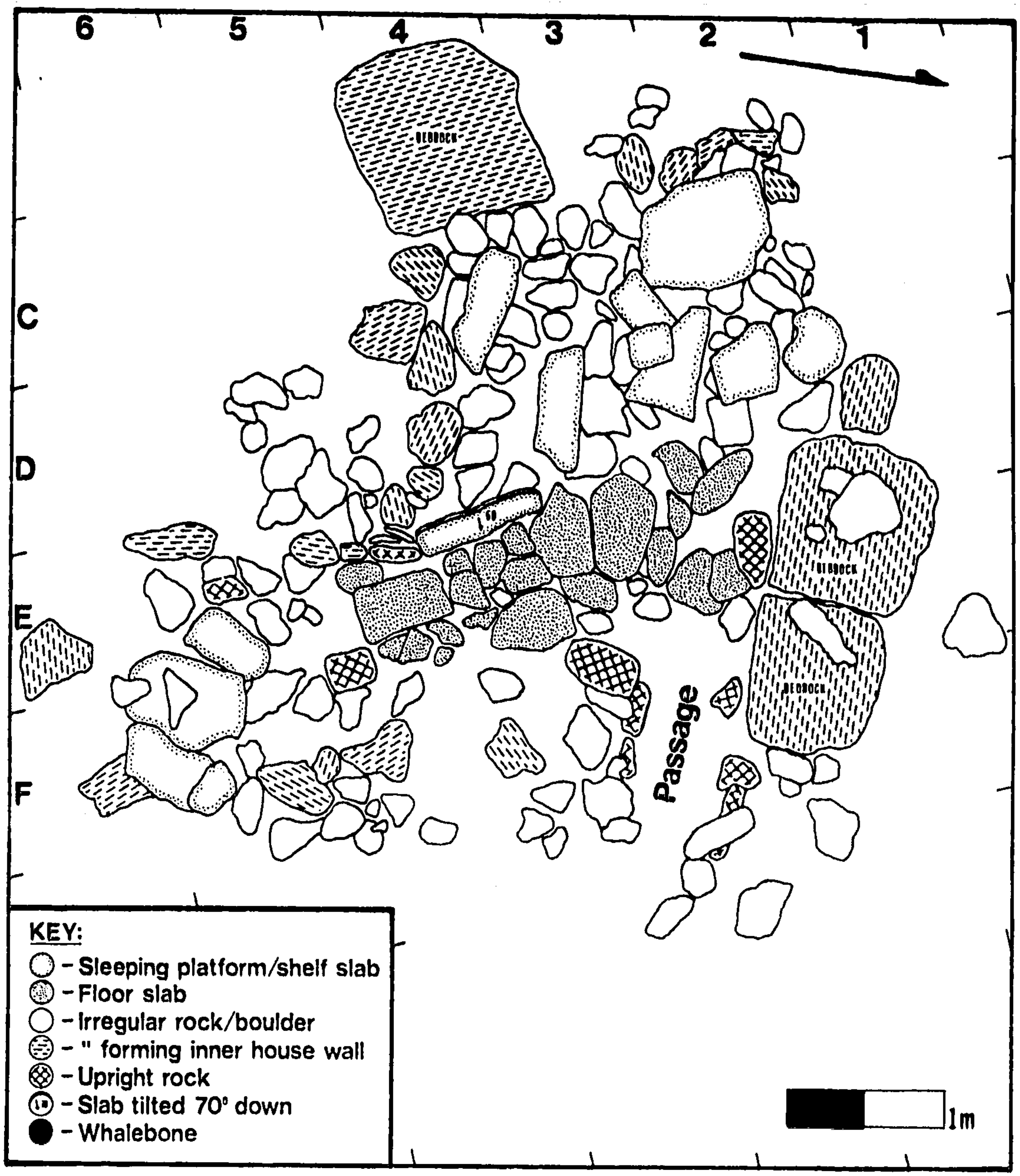


Figure 33 . RbJr-4 House 1: Excavation plan.

Figure 34 captions: RbJr-4 House 1 Artifacts

Catalogue #	Description
a..........154	Antler Dorset culture harpoon head
b..........65	Antler Dorset culture harpoon head
c..........155	Whale bone (?) Dorset culture harpoon head
d..........100	Ivory Dorset culture harpoon head
e..........121	Wooden toy harpoon head
f..........70	Whale bone harpoon head fragment
g..........83	Antler arrowhead
h..........130	Whale bone arrowhead
i..........152	Broken whale bone lance head
j..........156	Broken whale bone harpoon foreshaft
k..........94	Broken whale bone harpoon socket piece
l..........166	Antler leister prong
m..........168	Wooden gull hook shank
n..........180	Broken wooden bow end-piece
o..........137	Wooden arrowshaft fragment
p..........145	Dorset chert end-blade
q..........64	Dorset chert end-blade
r..........181	Dorset chert side-blade
s..........74	Whale bone marline spike
t..........118	Ivory artifact
u..........171	Whale bone trace buckle
v..........185	Baleen toy bow
w..........174	Wooden cup (?) base
x..........167	Wooden cup (?) base
y..........119	Antler man's knife with iron blade
z..........146	Ivory man's knife with iron blade
aa..........153	Antler man's knife handle half
bb..........73	Bird bone needle
cc..........182	Wooden engraving tool handle

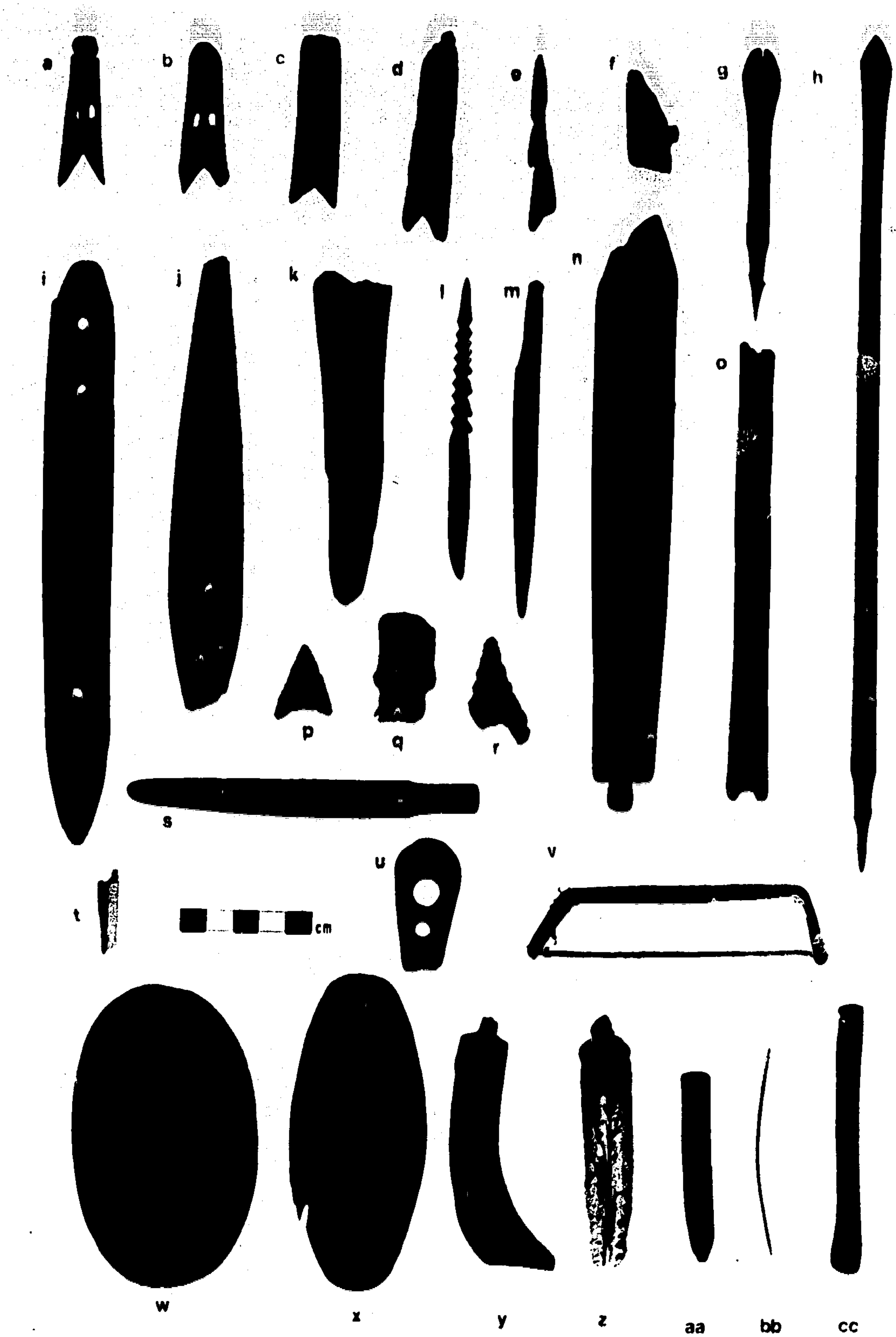


Figure 34. RbJr-4 House 1 artifacts.

RbJr-4 House 2

House 2 at RbJr-4 was located just a few metres to the the northwest of House 1. This house was the third to be excavated by McGhee in the summers of 1976 and 1977 (Park 1983). It had an internal living area of approximately 9.3 m^2, and its entrance passage opened to the northeast.

Substructure

House 2 was oval in outline with a single large rear sleeping platform 20 cm above the level of the flagged floor. The walls were constructed of heaped boulders and sod, up to 1.0 m thick. A possible cooking alcove or pantry was identified to the left of the entrance passage. Two whale skulls found in the passage may have been mounted above the lintel of the house, a feature seen in RbJr-4 House 3.

Superstructure

Approximately 60 whale bones were found in the house depression, including four mandibles. In addition, the stumps of two whale mandible roof supports were found, but the roof form could not be determined.

Contents

RbJr-4 House 2 was found to contain 88 artifacts (see Park 1983 for descriptions).

RbJr-4 House 3 (Figure 35)

House 3 was located third from the east at RbJr-4, approximately 30 m west of Houses 1 and 2. Its entrance passage opened to the northeast. This was an extremely well preserved winter house with an internal living area of approximately 7.1 m^2.

Substructure

House 3 was oval in plan view with a single rear sleeping platform. Like RbJr-4 House 1, it was built to take advantage of a bedrock outcrop which forms part of the north wall. The rest of the walls were constructed from large boulders. And also like nearby

Houses 1 and 2 at RbJr-4, the walls of this house were built up above the level of the surrounding ground. The sleeping platform was constructed in the usual fashion with two storage lockers beneath it. The floor was somewhat haphazardly paved with flat slabs, and this paving extended under the platform. Small raised shelves were present in the two front corners of the house, to the left and right of the entrance passage. Small flat slabs set into both walls just beyond the front edge of the platform may have been lamp platforms.

The most distinctive feature of the house was a whale skull resting on the lintel stone over the entrance passage. The lintel was still standing on top of the two upright rectangular boulders that formed the inner end of the passage. The passage itself was not excavated for fear of causing the collapse of this structure.

Superstructure

A total of 99 identifiable whale bones were found in and immediately around House 3, of which the largest were two mandibles, four mandible fragments, 39 ribs and 32 fairly short maxilla fragments. However, the position of the bones found in the house could not be used to satisfactorily reconstruct the roof form (Figure 36). The one mandible found inside the house had had its proximal end neatly removed (like those from House 10 at RbJr-1). In addition, four of the cut-off proximal ends of mandibles were found, none of which fit that mandible. Given that the mandible found just outside the house had not been modified, at least six mandibles may have been utilized in the house roof.

Contents

Artifact preservation was very good, and a total of 102 artifacts were found (Appendix 1; Figure 37).

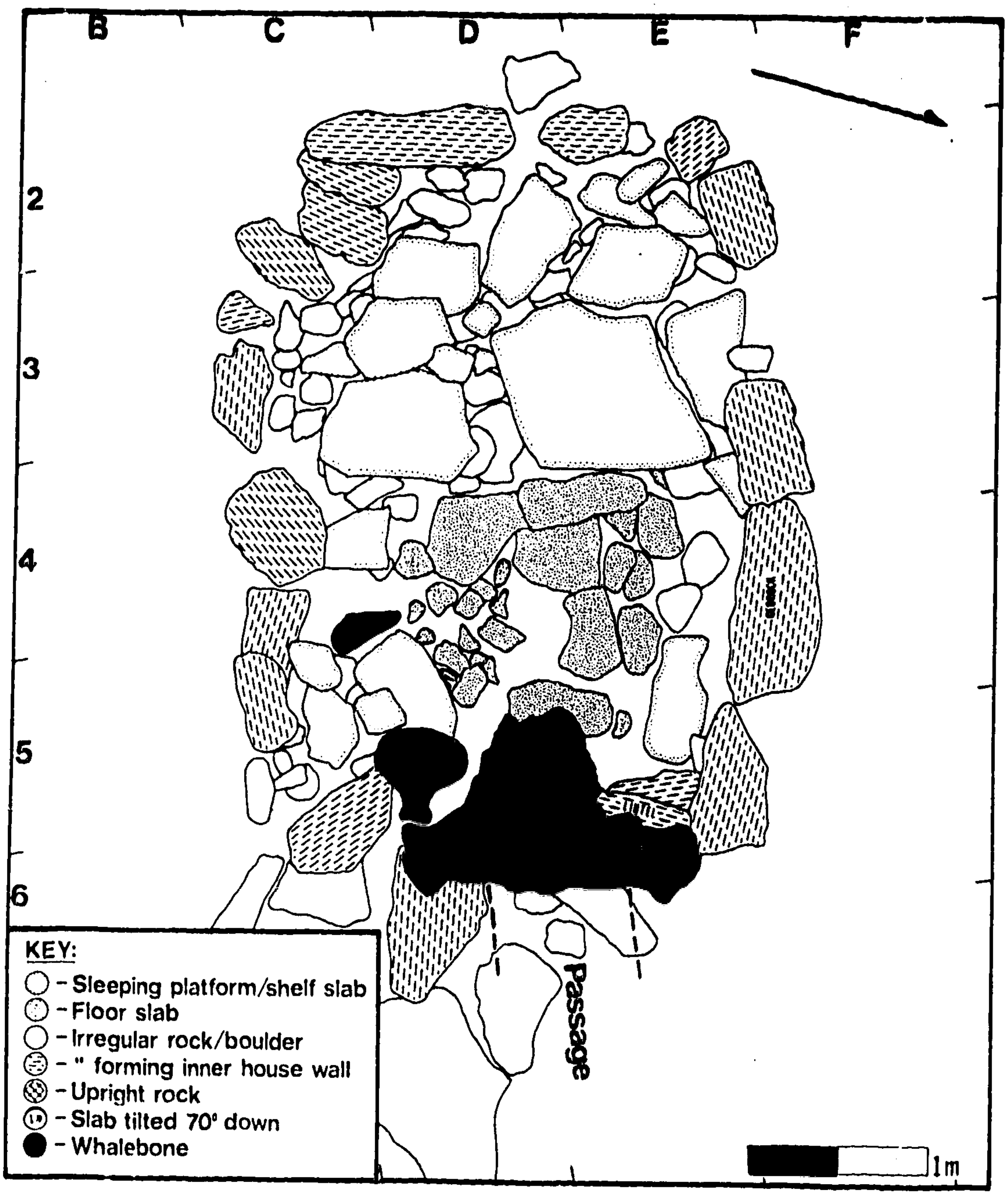


Figure 35 . RbJr-4 House 3: Excavation plan.

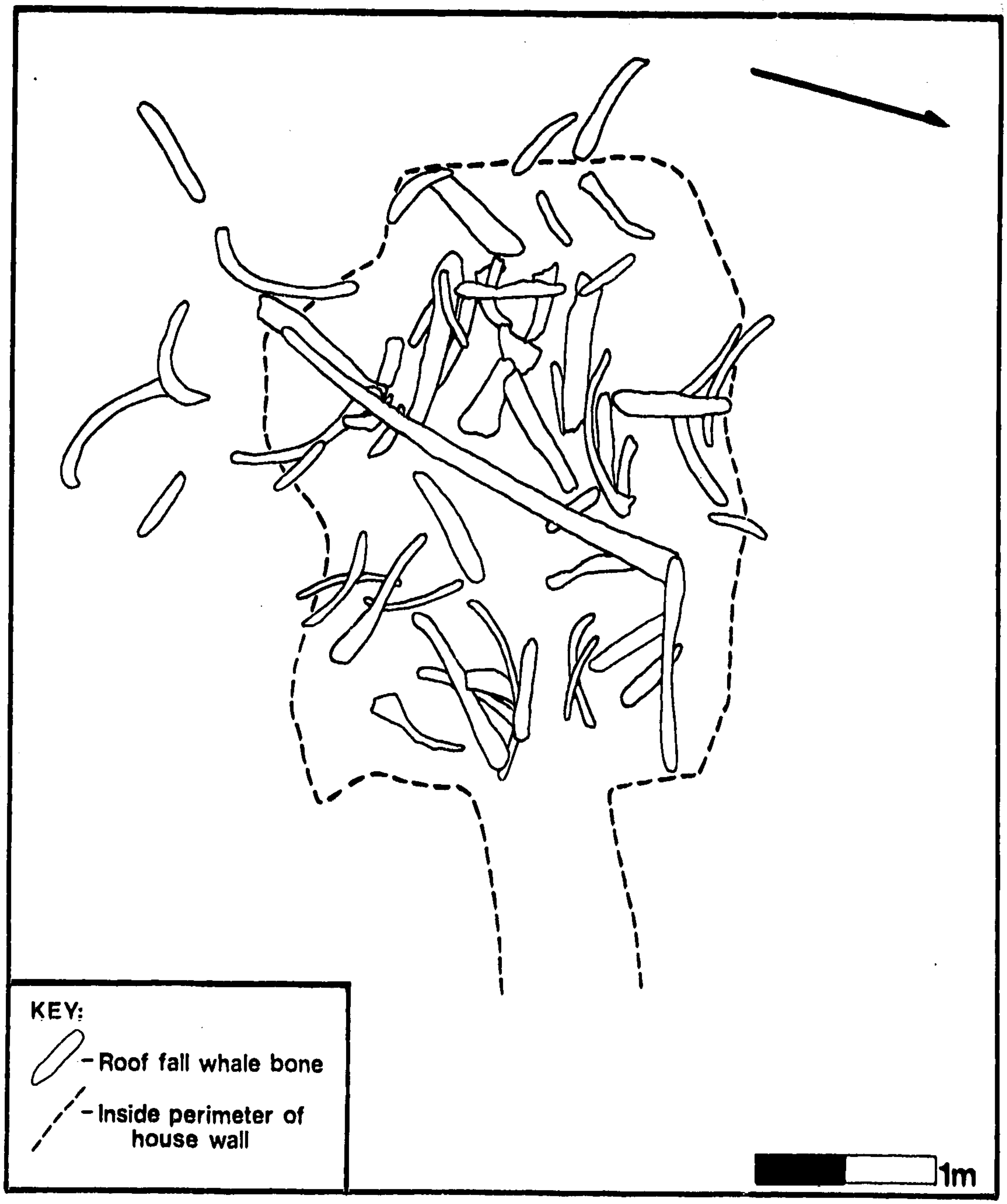


Figure 36. RbJr-4 House 3: Roof fall whale bones as found.

Figure 37 captions: RbJr-4 House 3 Artifacts

Catalogue #	Description
a..........234	Whale bone lance head with iron blade
b..........317	Whale bone harpoon head
c..........262	Ivory harpoon head
d..........297	Wooden gull hook shank
e..........298	Broken whale bone harpoon foreshaft
f..........236	Broken whale bone fish spear side prong
g..........286	Toy baleen arrow
h..........319	Antler man's knife handle
i..........286	Broken stone lamp
j..........301	Whale bone artifact
k..........247	Bent-baleen cup side
l..........244	Whale bone adze head
m..........227	Whale bone adze head

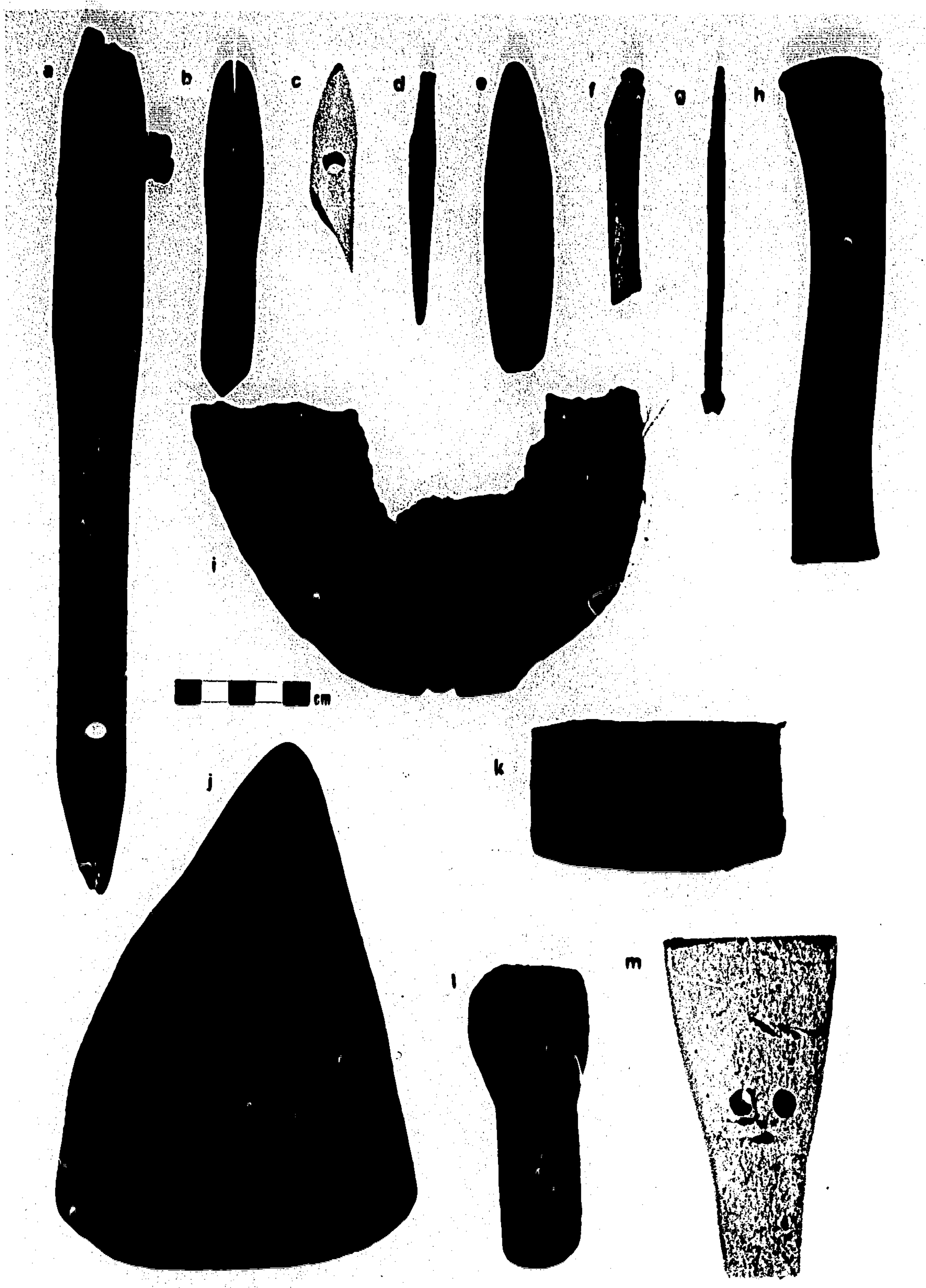


Figure 37 . RbJr-4 House 3 artifacts.

RbJr-4 House 4 (Figure 38)

House 4 was located well to the northwest of the other houses at RbJr-4, at the opposite end of a long pond. Its entrance passage opened to the south, away from the coast. The house was found to be only moderately well preserved, having apparently been stripped of many of its platform slabs. It had an internal living area of approximately 7.2 m^2.

Substructure

In outline the house was almost square but with rounded corners, with a small offshoot on the right side of the house in front of the platform. The walls were constructed primarily of upright columnar boulders. As mentioned above, most of the platform slabs were missing so the form of the platform could not be determined. The offshoot gave the appearance of being an additional, tiny sleeping platform, being raised approximately 25 cm above the level of the floor and surfaced with flat slabs. Whether this was indeed its function, however, is not known.

The floor was sparsely paved with flat slabs. Because the house was built into a beach ridge that sloped sharply down from the front of the house to a pond, the entrance passage appears to have simply sloped down from the level of the floor as well.

Superstructure

Essentially nothing can be said about the form of the roof. The only whale bones found in it consisted of three rib fragments and three vertebrae.

Contents

A total of just 53 artifacts were found, including a well-used ivory man's knife with an incised drawing of an umiak (Appendix 1; Figure 39).

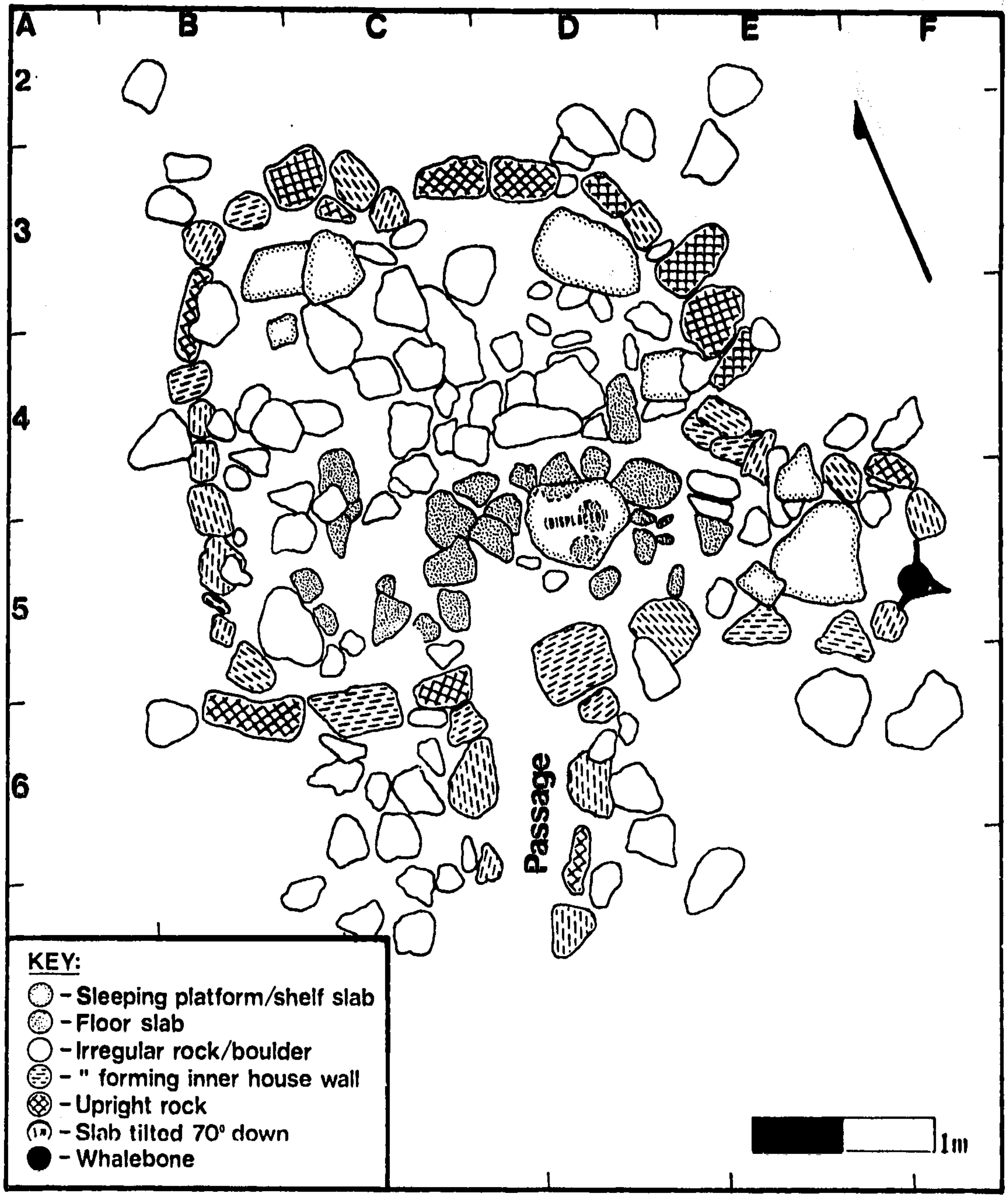


Figure 38. RbJr-4 House 4: Excavation plan.

Figure 39 captions: RbJr-4 House 4 Artifacts

Catalogue #		Description
a	147	Antler harpoon head
b	160	Whale bone harpoon head
c	200	Antler Dorset culture harpoon head
d	219	Ivory Dorset culture harpoon head
e	132	Ivory Harpoon socket piece
f	122	Antler arrowhead
g	217	Antler arrowhead
h	158	Whale bone harpoon ice pick
i	199	Wooden sling handle
j	208	Slate end-blade
k	206	Broken Dorset chert end-blade
l	103	Whale bone marline spike (?)
m	203	Ivory snow probe ferrule (?)
n	124	Ivory thimble holder
o	184	Whale bone adze head
p	138	Antler leister prong
q	157	Whale bone bird dart side prong
r	192	Ivory man's knife with incised drawing
s	161	Stone vessel fragment
t	201	Antler ulu handle
u	193	Broken slate knife blade
v	123	Slate ulu blade
w	207	Slate ulu blade
x	195	Broken slate ulu blade

Figure 39. RbJr-4 House 4 artifacts.

RbJr-5 (Figure 40)

RbJr-5 is located on the south coast of Porden Point, approximately 1.3 km from the tip of the point. The site consists of two clusters of structures separated by roughly 300 m. All of the structures are thought to be Thule in origin. The eastern cluster consists of 11 structures while the western one comprises 47 structures, not including the many isolated hearths which were too numerous to count and map in the time available. In all, nine structures were excavated: #'s 2, 4 and 5 in 1984, followed by #'s 1, 3, 6, 26, 29 and 33 in 1985. In the following descriptions the two clusters will be treated separately since the types of structures found in them were fairly different.

Eastern cluster structures (Figures 41 & 42)

Three winter houses were located in this cluster (#'s 2, 3 and 5) along with eight other structures of various types. All of the winter houses were excavated, along with three of the others.

RbJr-5 House 2 (Figure 43)

This winter house was located near the north end of the site, built into the inland-facing slope of a gravel beach ridge approximately 10 m west of House 3, which was built into the sea-facing side. It seems that the construction of these houses facilitated the formation a a frost-wedge bisecting the beach ridge and both houses, considerably damaging them in the process. For this reason, the structural features of House 2 are difficult to determine. However, it appears to have been roughly oval in outline with a single raised sleeping platform. Its entrance passage opened to the west, away from the coast. The internal living area of the house would have been, very approximately, about 4.7 m^2.

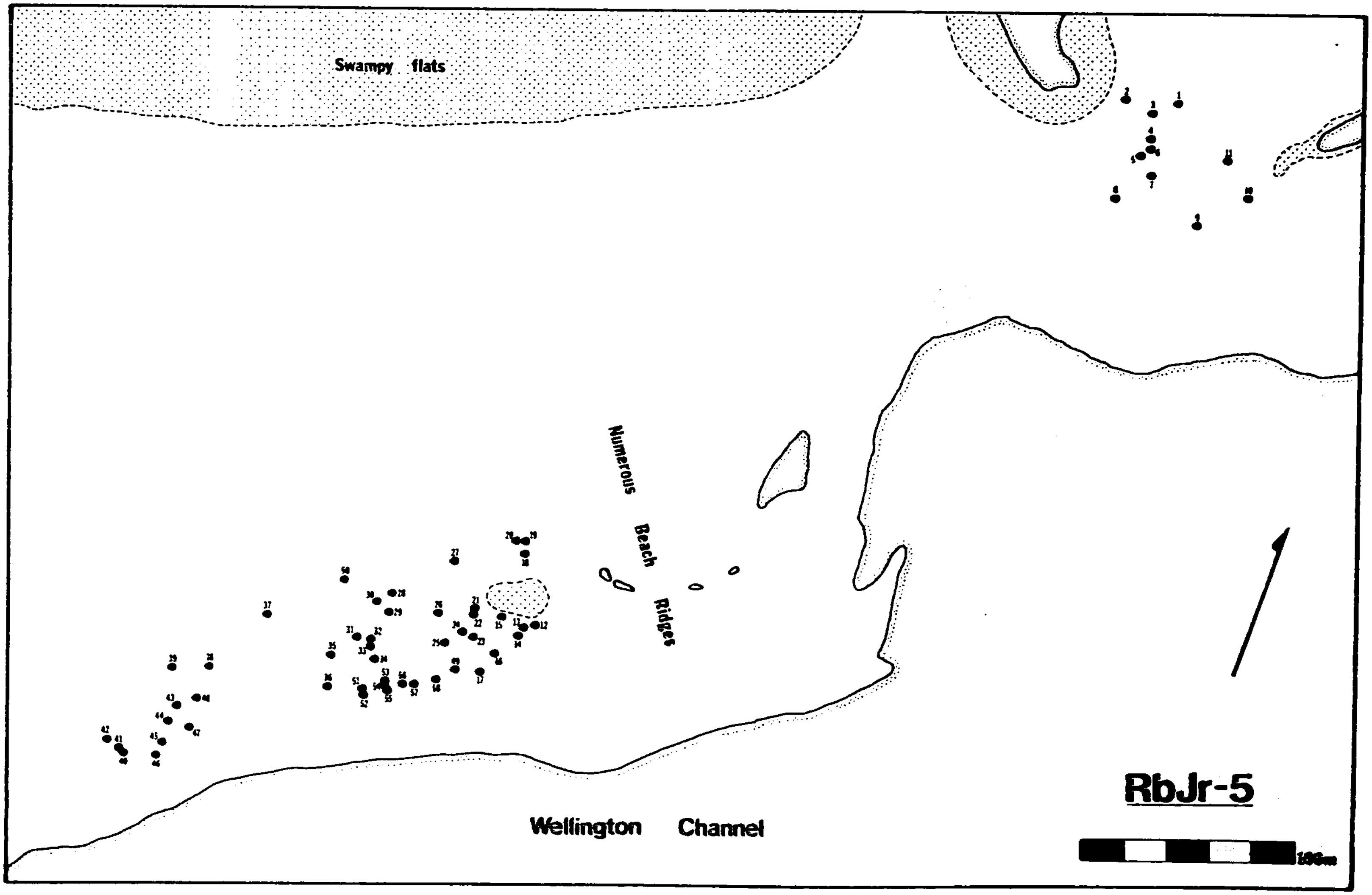


Figure 40. RbJr-5 site map.

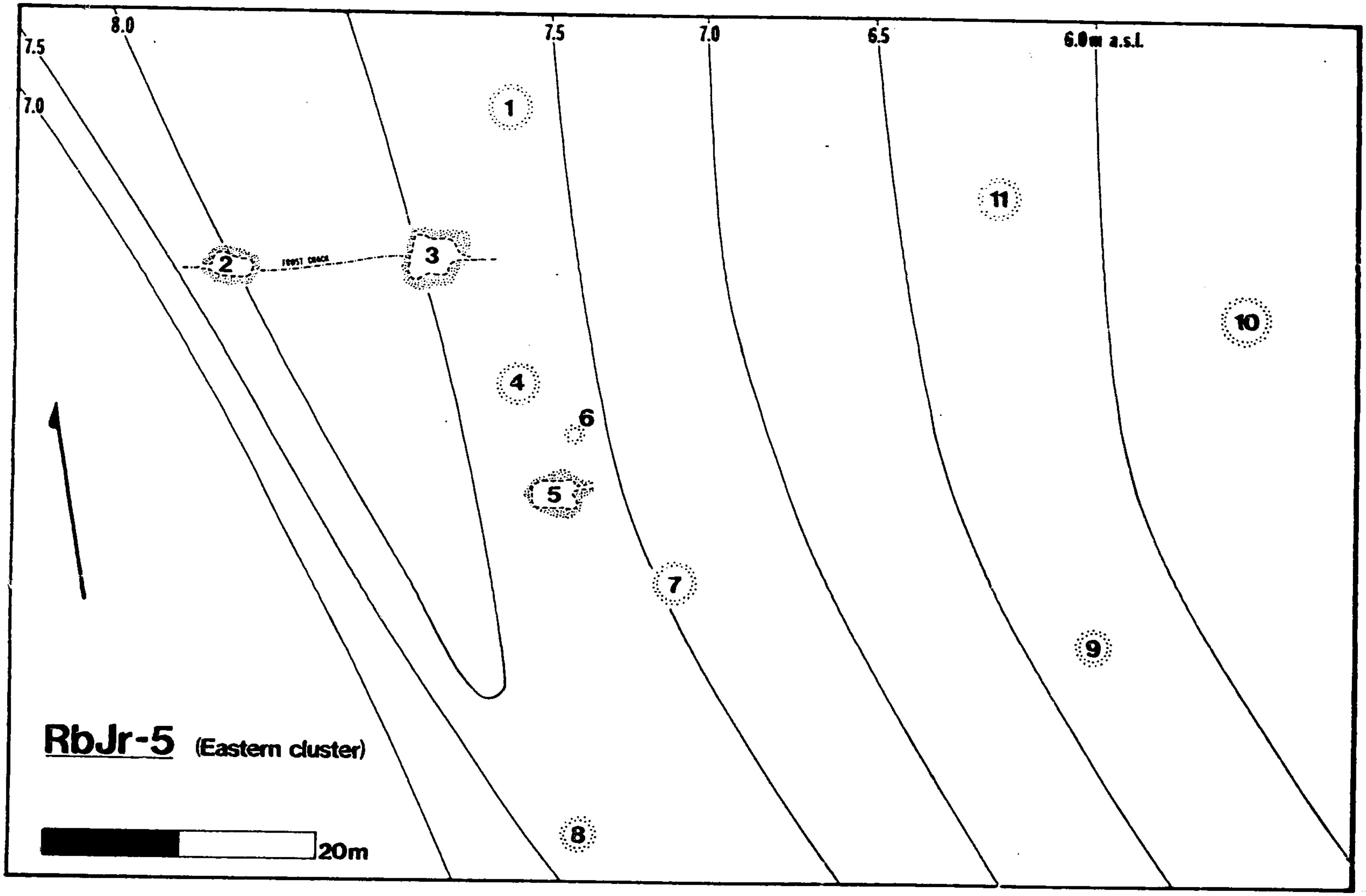


Figure 41 . RbJr-5 detail, showing the relationship of the winter houses (2, 3 & 5) to each other.

Figure 42. RbJr-5 Houses 5 (foreground) and 3 (background), looking north.

Substructure

The walls appear to have been constructed largely of upright rectangular boulders, most of which had pitched forward into the house interior due to the frost crack. The house was surrounded by a raised gravel ring, presumably the material removed when the house pit was constructed. The floor appears to have been paved with flat slabs but the action of the frost crack had shattered most of them and tilted the rest substantially. Not much can be said about the sleeping platform as almost no platform slabs were found. Indeed, no platform support structure could be identified so it is possible that the platform slabs (if any) rested on a gravel bench, but this is purely speculation. The entrance passage appeared to have been considerably damaged by the frost crack so it was only partly excavated.

Superstructure

Very little can be said about the roof that would have covered House 2. Only four small pieces of whale bone were found during the excavation. However, it is possible that the raised gravel ring surrounding the house could have served to weigh down the edges of a skin roof covering.

Contents

A total of 46 artifacts were found, including an exquisite ivory bead figurine (Appendix 1; Figure 44).

Midden

Unlike most of the other winter houses at Porden Point, House 2 had a thin midden scatter in front of its entrance passage. Quick test excavations were carried out in this area but little was recovered.

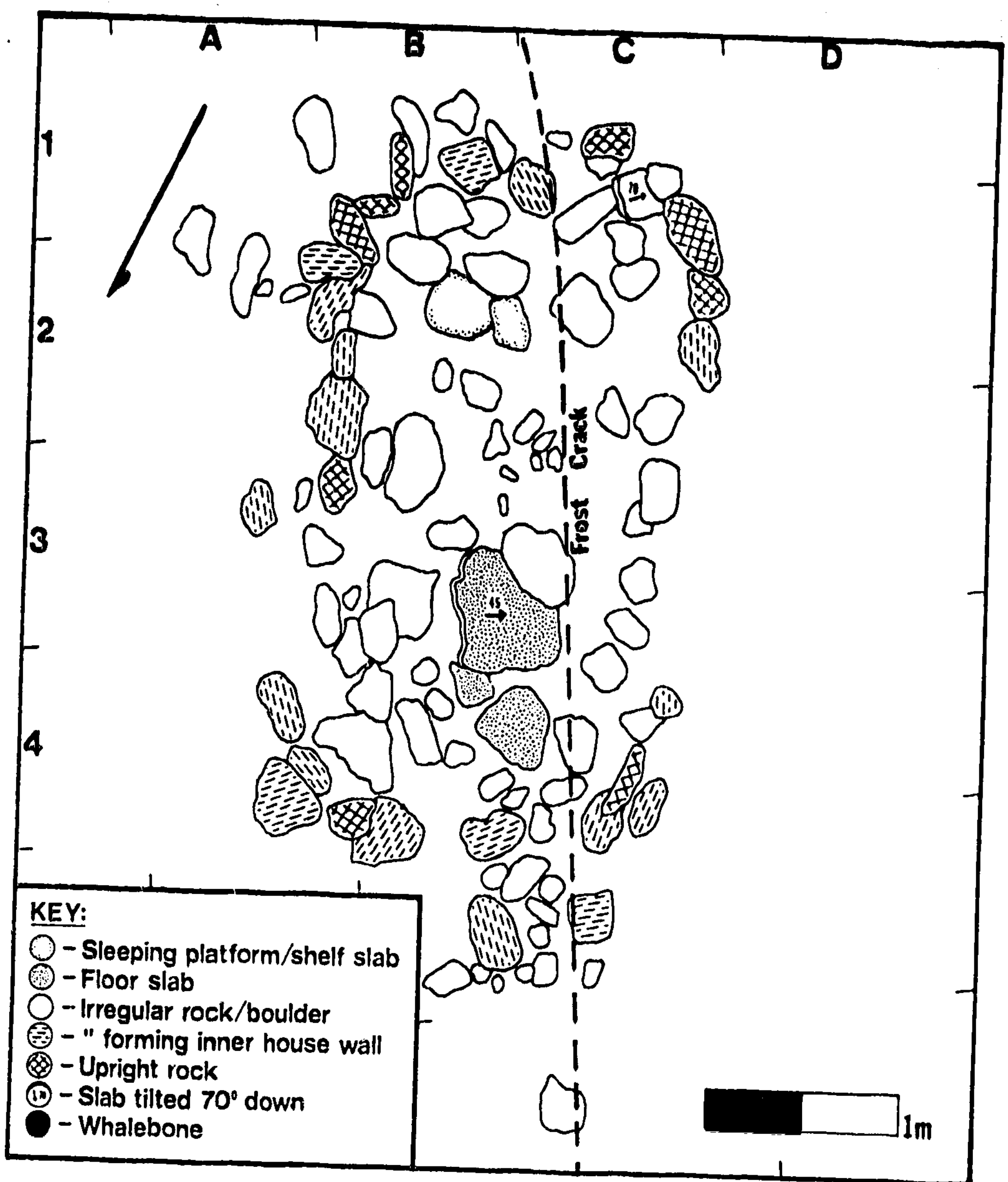


Figure 43 . RbJr-5 House 2: Excavation plan.

Figure 44 captions: RbJr-5 House 2 Artifacts

Catalogue #		Description
a	78	Broken ivory dart (?) head
b	72	Ivory fish spear side prong barb
c	91	Broken whale bone harpoon foreshaft
d	62	Broken drilled antler strip
e	85	Ivory bead figurine
f	81	Flaked chert fragment
g	86	Broken slate end-blade
h	149	Caribou astragalus bow drill mouthpiece
i	79	Antler wedge
j	70	Unfinished whale bone trace buckle (?)
k	76	Broken slate ulu blade
l	67	Whale bone handle fragment

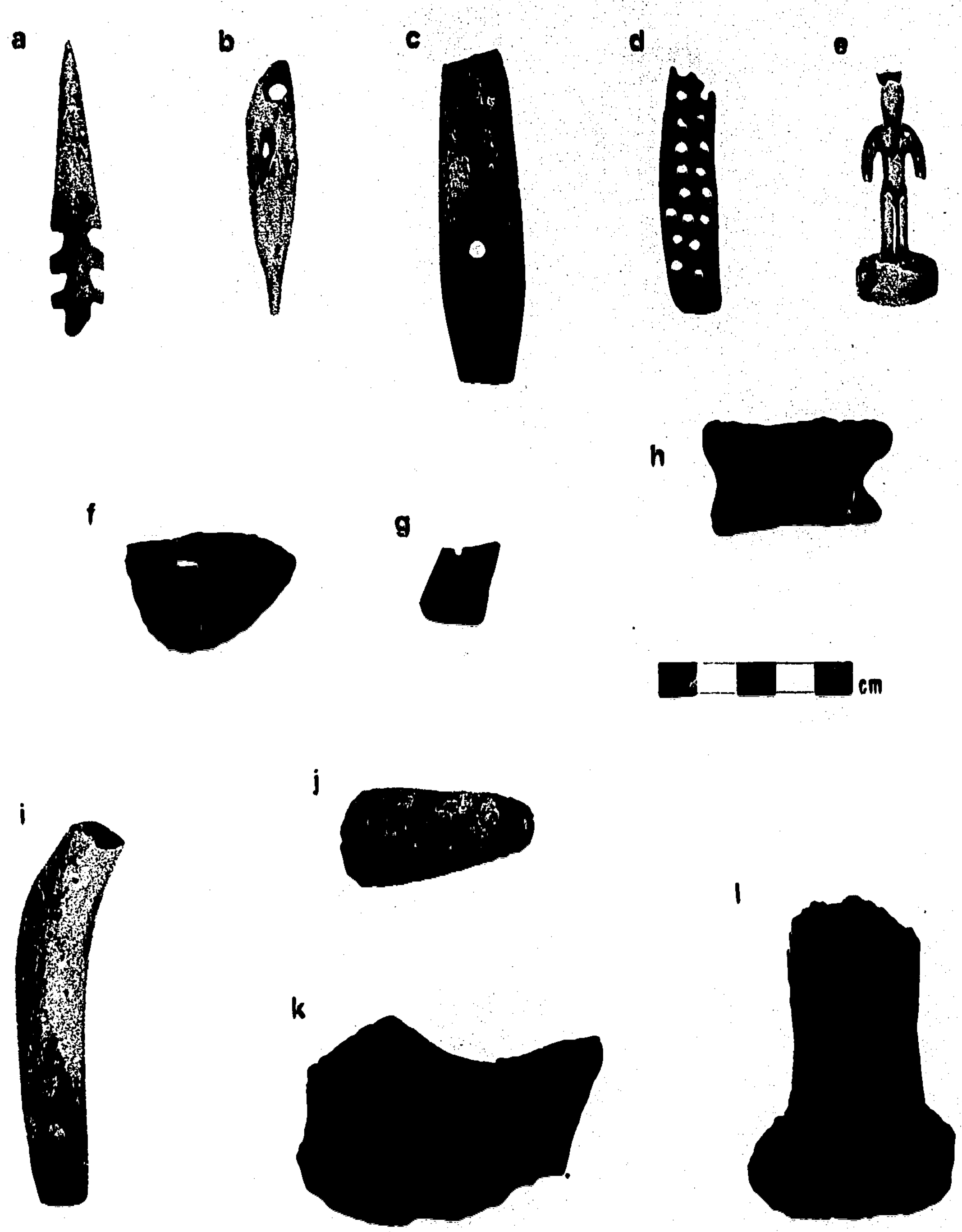


Figure 44. RbJr-5 House 2 artifacts.

RbJr-5 House 3 (Figure 45)

House 3 was located near the north end of RbJr-5, on the sea-facing slope of a gravel beach ridge. It was a large house, irregular in outline, with its entrance passage opening to the east, towards the coast. Like House 2, it was badly disturbed by the frost crack that bisects them. Thus, its structural features were extremely difficult to ascertain. It had an internal living area of approximately 9.7 m^2.

Substructure

Although badly damaged at the back of the house, its walls appear to have been primarily constructed of upright columnar boulders. However, very little can be said about the interior. A few small flagged areas may indicate that the entire floor was flagged. A slightly basin-shaped flagged area to the left of the entrance passage (square B5) was blackened, suggesting that it may have been used for cooking. Another small area of flagging (west half of square B4) in a position that suggests that it should have been under the sleeping platform might indicate that the platform had paved storage lockers beneath it. But nothing else can be said about the platform. Almost no flat slabs thought to be suitable for a platform were found, and in fact the house interior was filled with 76 fairly large boulders in an incomprehensible jumble (not shown on excavation plan). Some of these undoubtedly derived from the back wall but the others may have served as platform supports or been part of some sort of raised rock rim around the house

Superstructure

Nothing can be said about the roof of House 3. No pieces of whale bone were found.

Contents

The excavation of House 3 produced only 25 artifacts, most of which were simply worked fragments (see Appendix 1). The few recognizable items are illustrated in Figure 46.

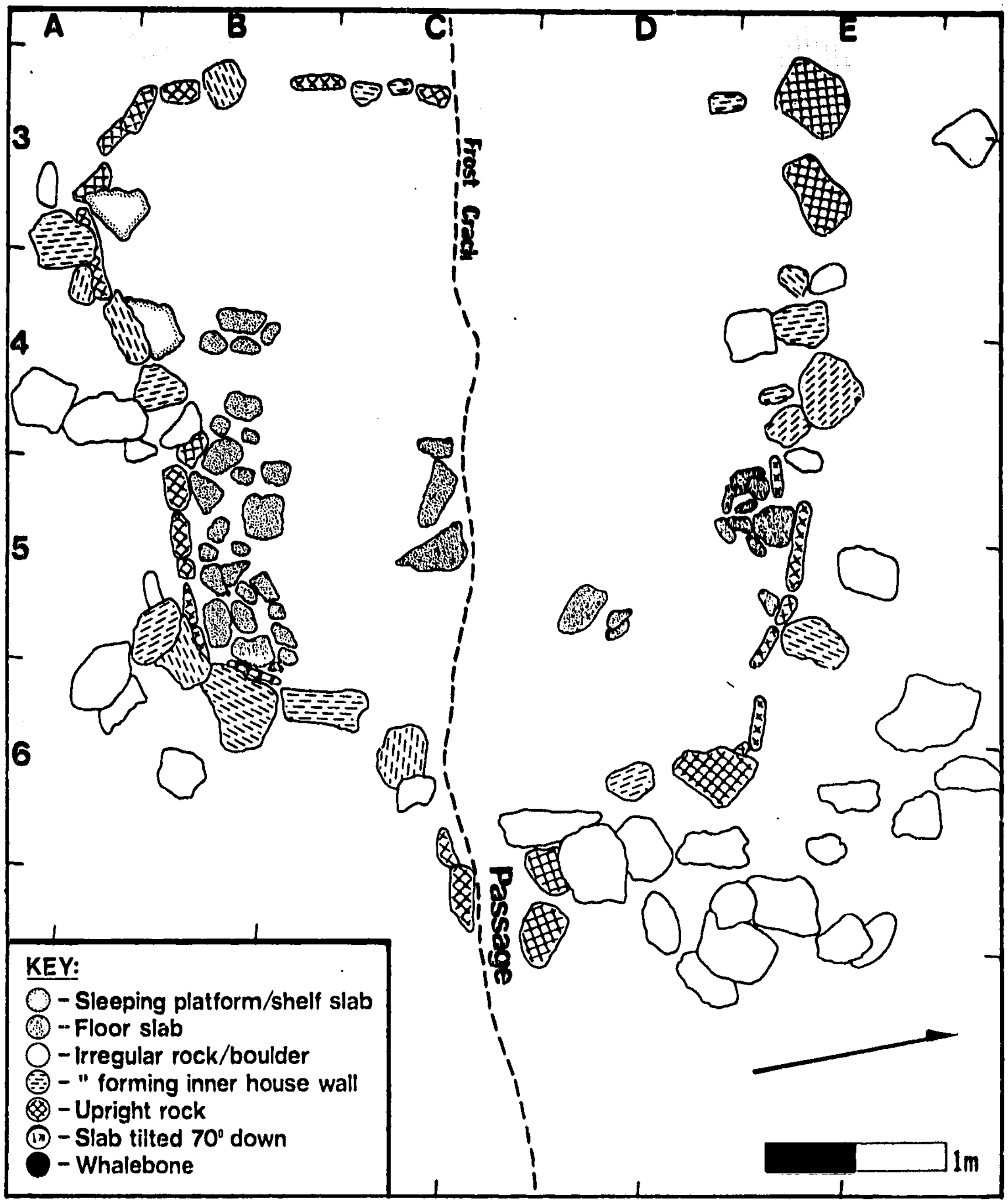


Figure 45. RbJr-5 House 3: Excavation plan.

Figure 46 captions: RbJr-5 House 3 Artifacts

Catalogue #	Description
a..........106	Unfinished (?) whale bone arrowhead
b..........111	Antler bird dart side prong
c..........102	Antler scoop (?) fragment
d..........110	Whale bone mattock blade
e..........181	Drilled fox premolar fragment
f..........115	Whale bone harpoon head (?) tip fragment
g..........103	Whale bone snow knife blade fragments
h..........104	Whale bone gull hook barb (?)
i..........152	Whale bone awl (?)
j..........156	Ivory artifact fragment

Figure 46. RbJr-3 House 3 artifacts.

RbJr-5 House 5 (Figure 47)

House 5 at RbJr-5 was located approximately 15 m south of House 3. Its entrance passage opened to the east, towards the coast. The house was roughly rectangular in outline with an internal living area of approximately 6.8 m^2. It had a single raised rear sleeping platform.

Substructure

The house walls around the floor area were constructed of upright columnar boulders, but around the sleeping platform there was almost no evidence of rock walls. The sleeping platform itself consisted of a gravel bench surfaced in places by flat slabs. Its surface was slightly below the surrounding ground level but 15 cm above the level of the floor. The front edge of the platform was formed by rectangular boulders laid lengthwise. The house floor was rather haphazardly paved with flat slabs. A long rectangular boulder laid lengthwise set off the left front corner of the house (square C4-B5), and this part of the house may have served as a pantry or cooking area. The entrance passage was fairly shallow, extending only 10 cm below the level of the house floor.

Superstructure

Only four pieces of whale bone were found in the house, all rib fragments. The house contained very little fill and had no raised gravel ring surrounding it. All of this suggests that the house would not have had a heavy sod roof, but beyond that not much can be said.

Contents

A total of 73 artifacts were found in House 5, including a rather battered snow knife with an incised picture of a whaling scene (Appendix 1; Figure 48).

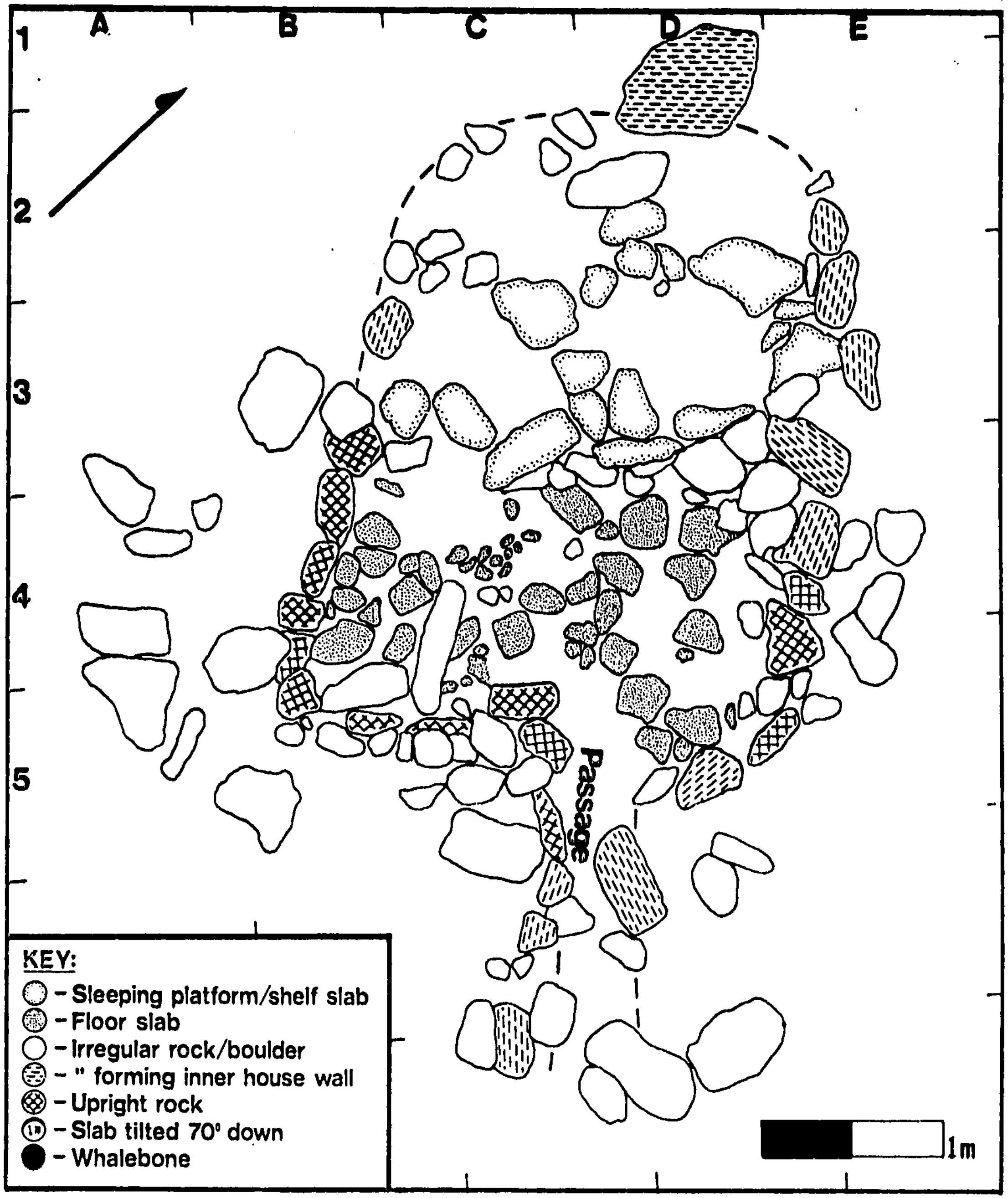


Figure 47. RbJr-5 House 5: Excavation plan.

Figure 48 captions: RbJr-5 House 5 Artifacts

	Catalogue #	Description
a	39	Broken whale bone harpoon head
b	59	Broken whale bone lance head
c	37	Broken antler harpoon socket piece
d	19	Whale bone harpoon ice pick
e	28	Broken whale bone snow probe
f	45	Whale bone ulu handle
g	38, 40	Perforated caribou teeth
h	61	Ivory carving
i	32	Whale bone wedge
j	29	Unfinished whale bone trace buckle
k	17	Wooden bladder float toggle
l	21	Whale bone man's knife with iron blade
m	31	Spherical stone
n	3	Whale bone snow knife inscribed with whaling scene

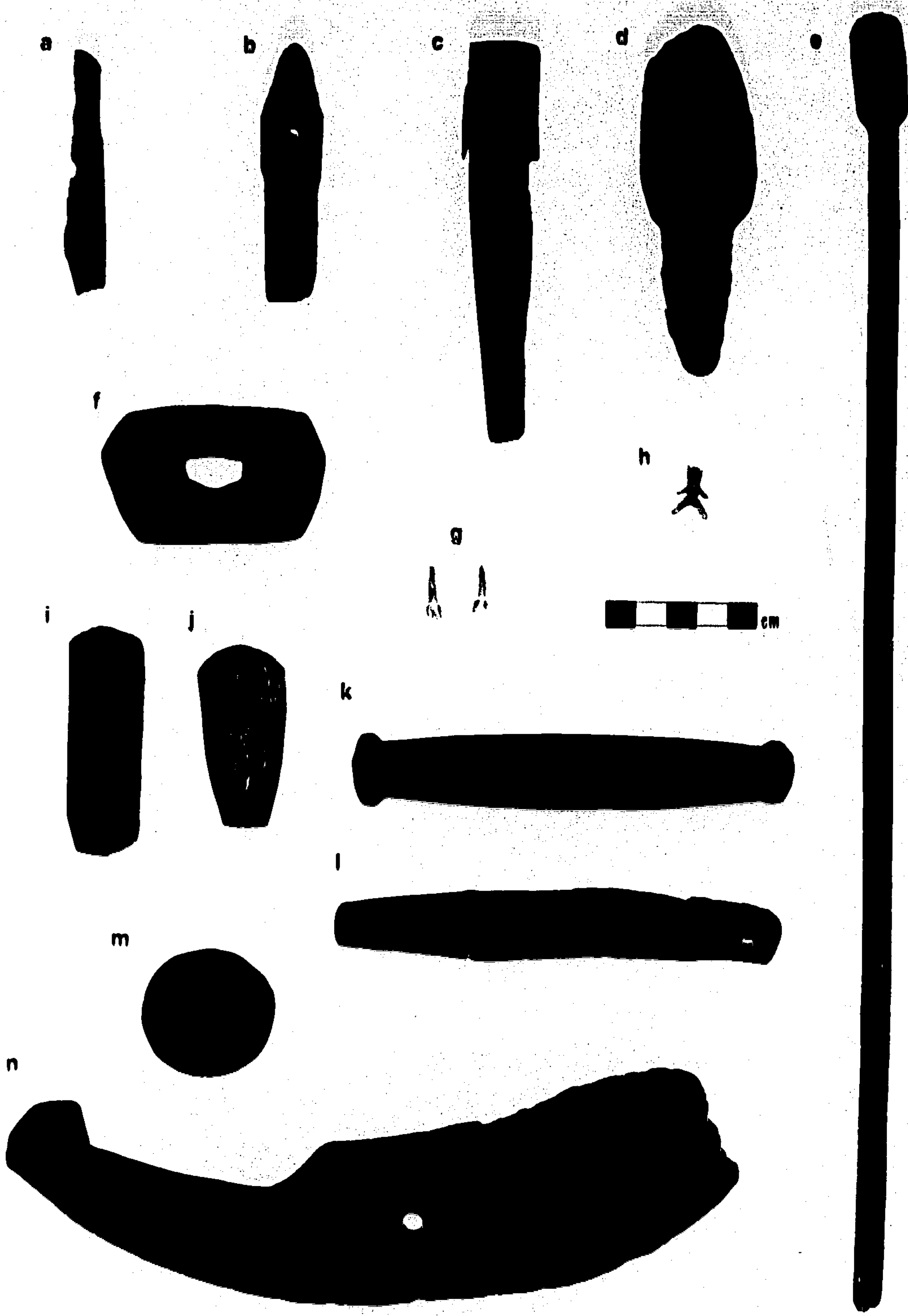


Figure 48. RbJr-5 House 5 artifacts.

Other structures

Three other structures were excavated in this part of RbJr-5, selected on the basis of their proximity to the winter houses:

RbJr-5 Structure 1 (Figure 49)

This structure was located at the north end of RbJr-5. It appeared as a small ring of boulders encompassing an area slightly larger than 1.0 m^2, surrounded by a number of scattered rocks. It may have been a small cache. No artifacts and only a small quantity of faunal remains were found in it.

RbJr-5 Structure 6 (Figure 49)

This structure was located a few metres north of House 5. It took the form of a small oval semisubterranean rock ring covering an area of less than 1.0 m^2. It may have represented a small cold storage pit. Like Structure 1, it contained no artifacts and only a few faunal bones.

RbJr-5 Structure 4 (Figure 50)

Structure 4 was situated between Houses 3 and 5. It consisted of a double ring of boulders, the outer one being much more substantial. The recovery of one artifact, a squared piece of whale bone (Figure 54:a), along with a large quantity of bone shavings from this structure might suggest that the outer ring served to weigh down a tent.

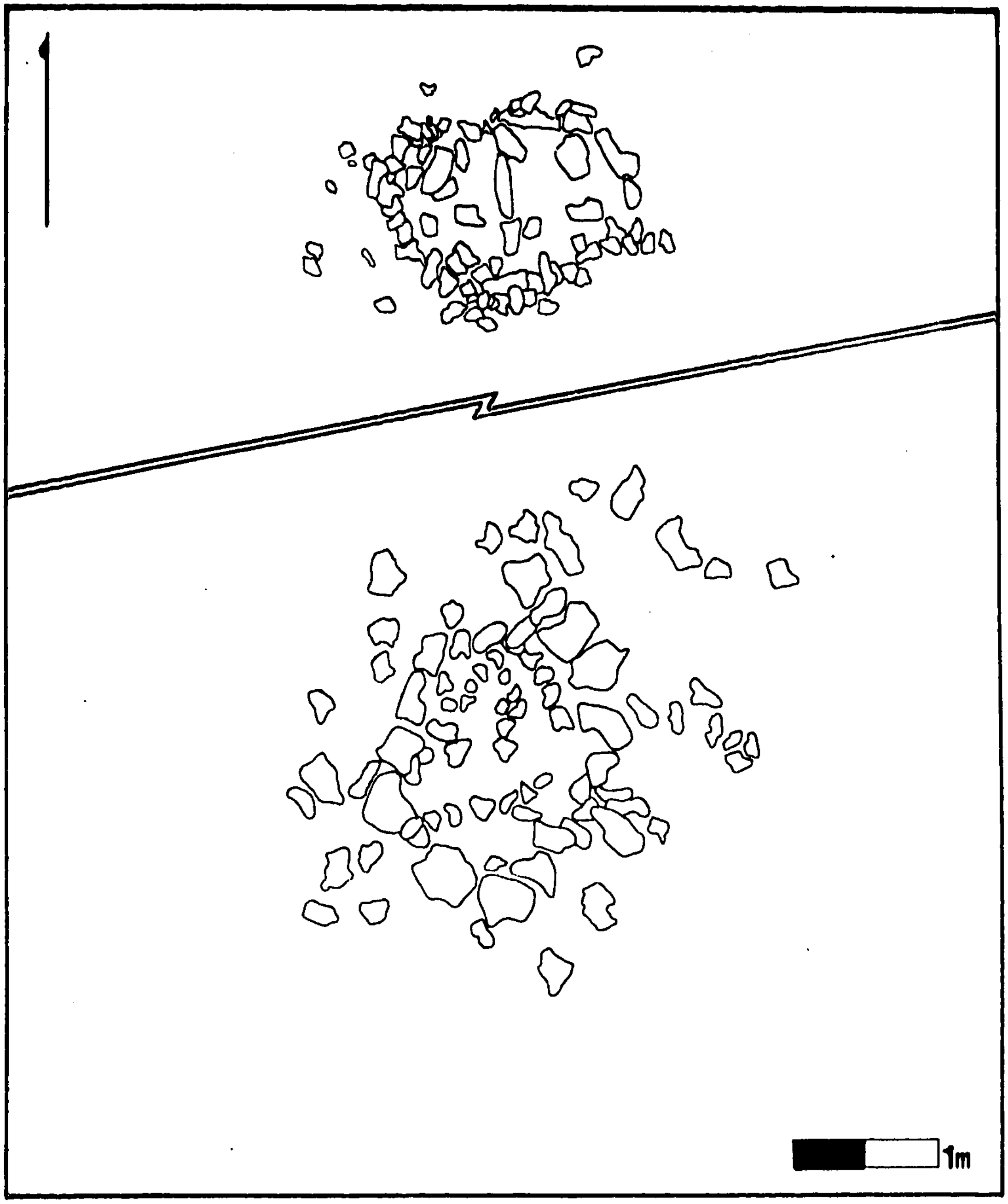


Figure 49. RbJr-5 Structure 6 (top) and Structure 1 (bottom): Excavation plans.

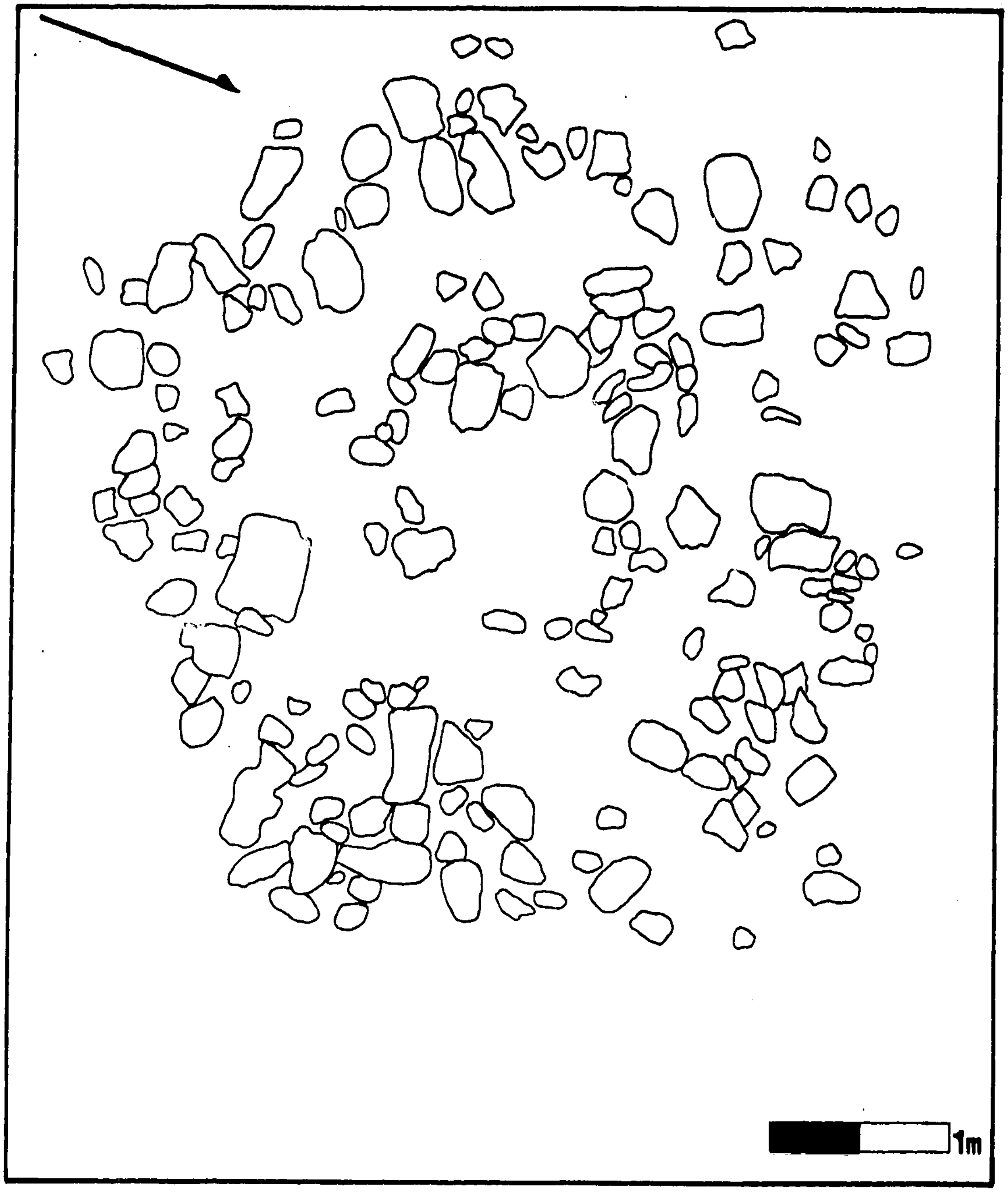


Figure 50. RbJr-5 Structure 4: Excavation plan.

Western cluster structures

The structures in the western half of RbJr-5 are situated among a series of somewhat convoluted beach ridges and rocky outcrops. Time constraints allowed the excavation of only three of the forty-seven structures identified here. That number does not include small hearths, which were too numerous to map or count in the time available. The three structures that were excavated were chosen on the basis of the fact that on the surface they appeared to be reasonably intact structurally, and could thus be compared with structures excavated by Rochelle Allison at RbJq-5 and RbJq-6.

RbJr-5 Structure 26 (Figure 51)

This semisubterranean dwelling was located in the western cluster of structures on a moderately coarse gravel beach ridge. It appears to have been subrectangular in outline with an internal living area of approximately 6.7 m^2, although collapse of the wall in the south corner of the structure may make this estimate a bit too low. The style of construction of the two ends of the structure differ rather dramatically from each other. The northwest end was built utilizing quite small rocks stacked on top of one another, many of which appear to have collapsed into the structure's interior, while the southeast end was walled with rectangular boulders laid on edge. The walls forming the sides of the structure were not complete, particularly the south side, suggesting that the entrance was there. No evidence of paving was evident within the structure but there appeared to be one or perhaps two compartments set off in the southeast end, suggesting that the northwest end may have represented the sleeping area.

Contents

Ten artifacts were found in Structure 26, including a Dorset culture 'spatula' and a fragment of a Thule harpoon head (Appendix 1; Figure 54:b-g).

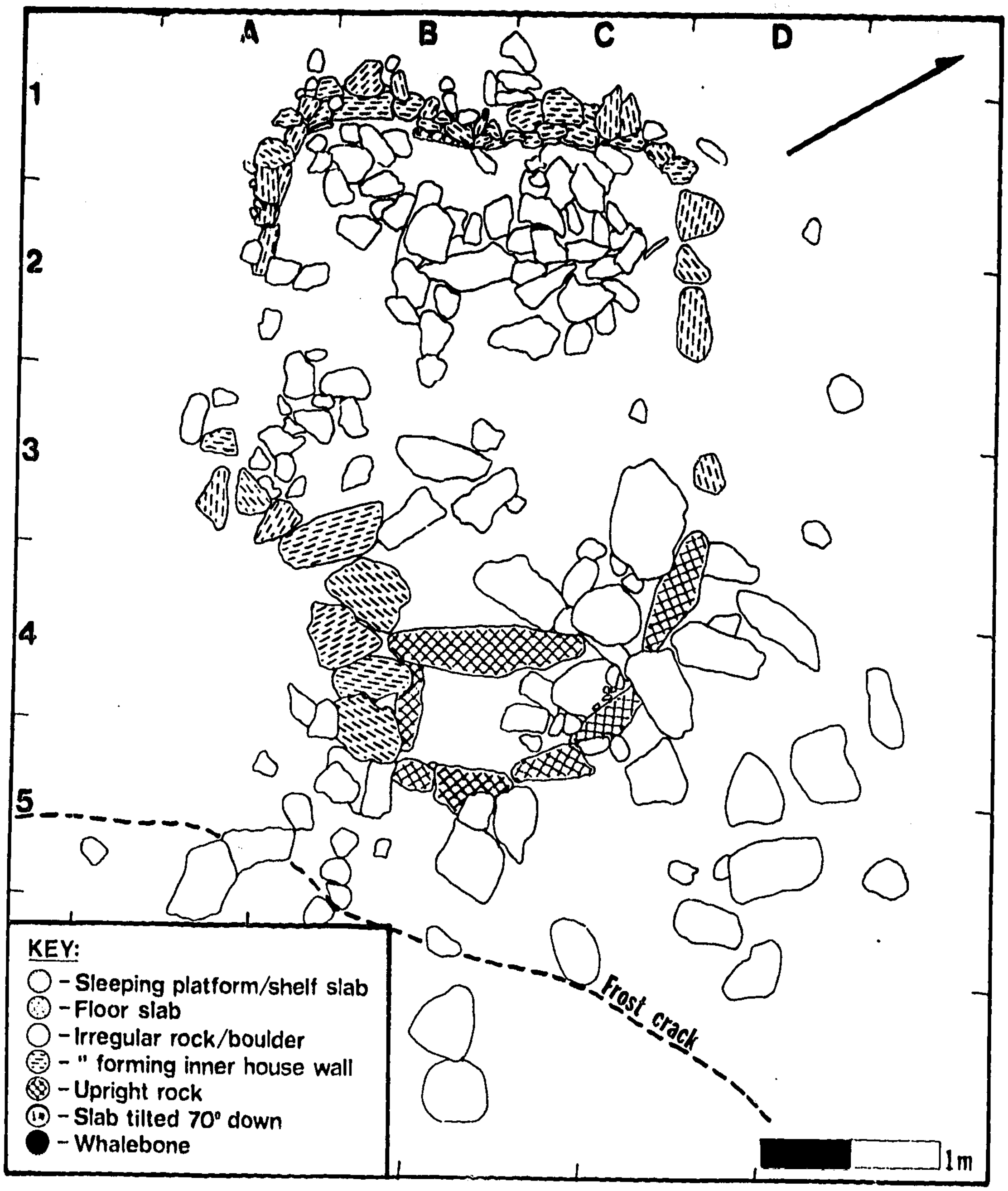


Figure 51. RbJr-5 Structure 26: Excavation plan.

RbJr-5 Structure 29 (Figure 52)

This semisubterranean dwelling structure was located approximately 20 m west of #26. Like the latter, it is very roughly subrectangular in outline with an internal living area of about 6.6 m^2. Also like Structure 26, the walls forming its sides were not complete. The end walls were constructed of boulders, upright columnar boulders, and flat slabs laid on edge. The north half of the structure was partially paved with flat slabs

Contents

Two arrowheads were the only identifiable items among the eight artifacts found (Appendix 1; Figure 54:h-k).

RbJr-5 Structure 33 (Figure 53)

Structure 33 was located approximately 20 m south of #29. Subrectangular in outline, it had an internal living area of roughly 4.2 m^2, although the collapse inward of some wall rocks may make this estimate somewhat too low. The wall rocks appear to have almost all been rectangular slabs set on edge, although the semisubterranean structure was constructed so as to take advantage of a massive boulder by using it for much of one wall. The structure is divided into halves by a line of rocks, with the southeast half at a slightly lower level than the northwest half. The southeast half was also paved with a few flat slabs and, perhaps, with four whale vertebral epiphyses.

Contents

The two definite artifacts found in Structure 33 were an unusual arrowhead tip and a marrow spatula (Figure 54:l-m).

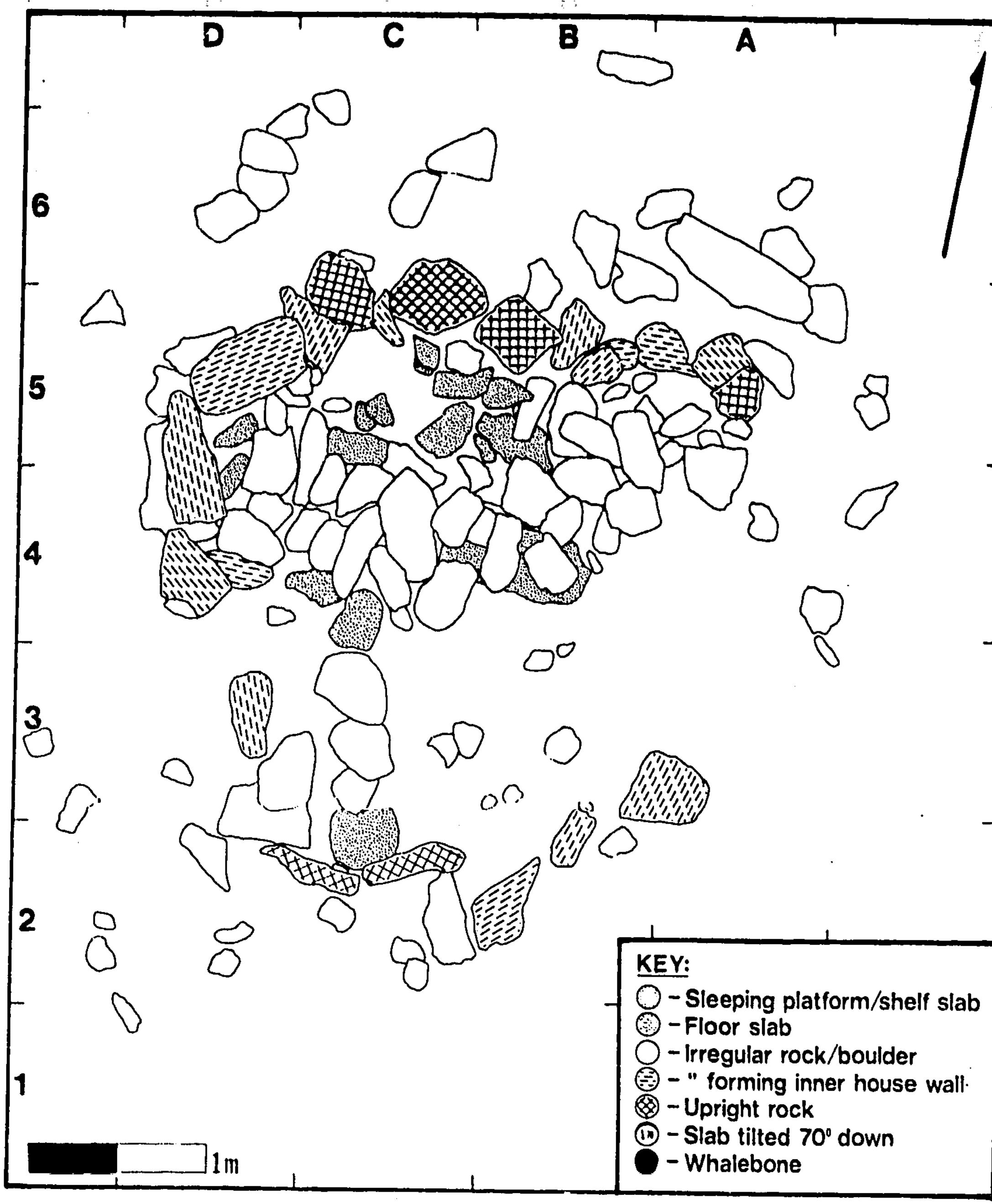


Figure 52 . RbJr-5 Structure 29: Excavation plan.

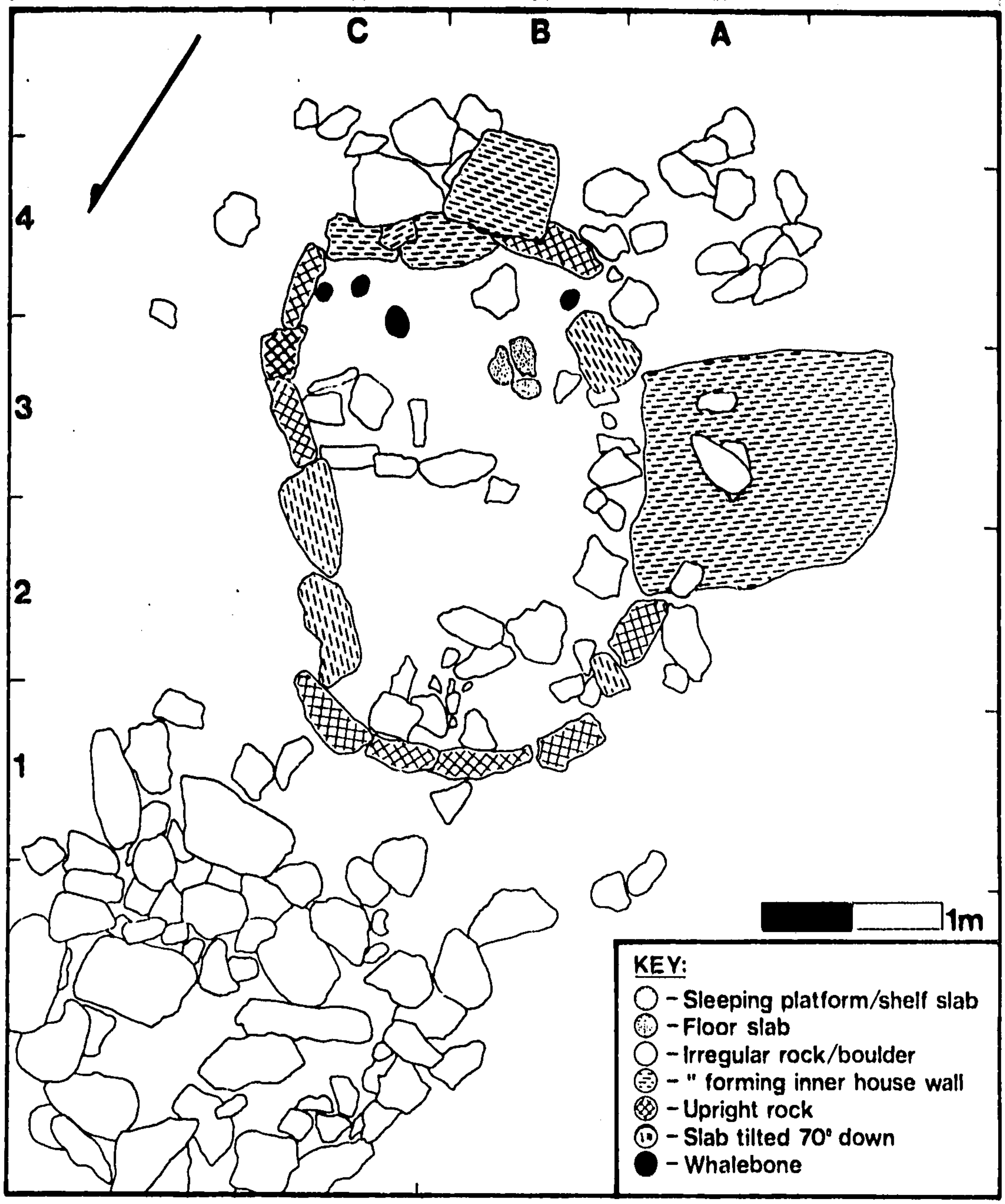


Figure 53. RbJr-5 Structure 33: Excavation plan. Structure 32 is visible to the north of Structure 33.

Figure 54 captions: RbJr-5 Structures Artifacts

Catalogue #	Description

RbJr-5 Structure 4:

a. . . . . 89 . . . . Squared whale bone fragment

RbJr-5 Structure 26:

b. . . . . 121 . . . . Ivory Dorset culture 'spatula'
c. . . . . 129 . . . . Ivory harpoon head tip fragment
d. . . . . 131 . . . . Antler plaque
e. . . . . 130 . . . . Whale bone artifact fragment
f. . . . . 116 . . . . Ivory bladder inflator plug
g. . . . . 177 . . . . Worked antler fragment

RbJr-5 Structure 29:

h. . . . . 122 . . . . Broken antler arrowhead
i. . . . . 180 . . . . Ivory artifact fragment
j. . . . . 117 . . . . Drilled whale bone artifact fragment
k. . . . . 123 . . . . Broken antler arrowhead

RbJr-5 Structure 33:

l. . . . . 125 . . . . Whale bone arrowhead tip (?)
m. . . . . 126 . . . . Ivory marrow spatula (?)

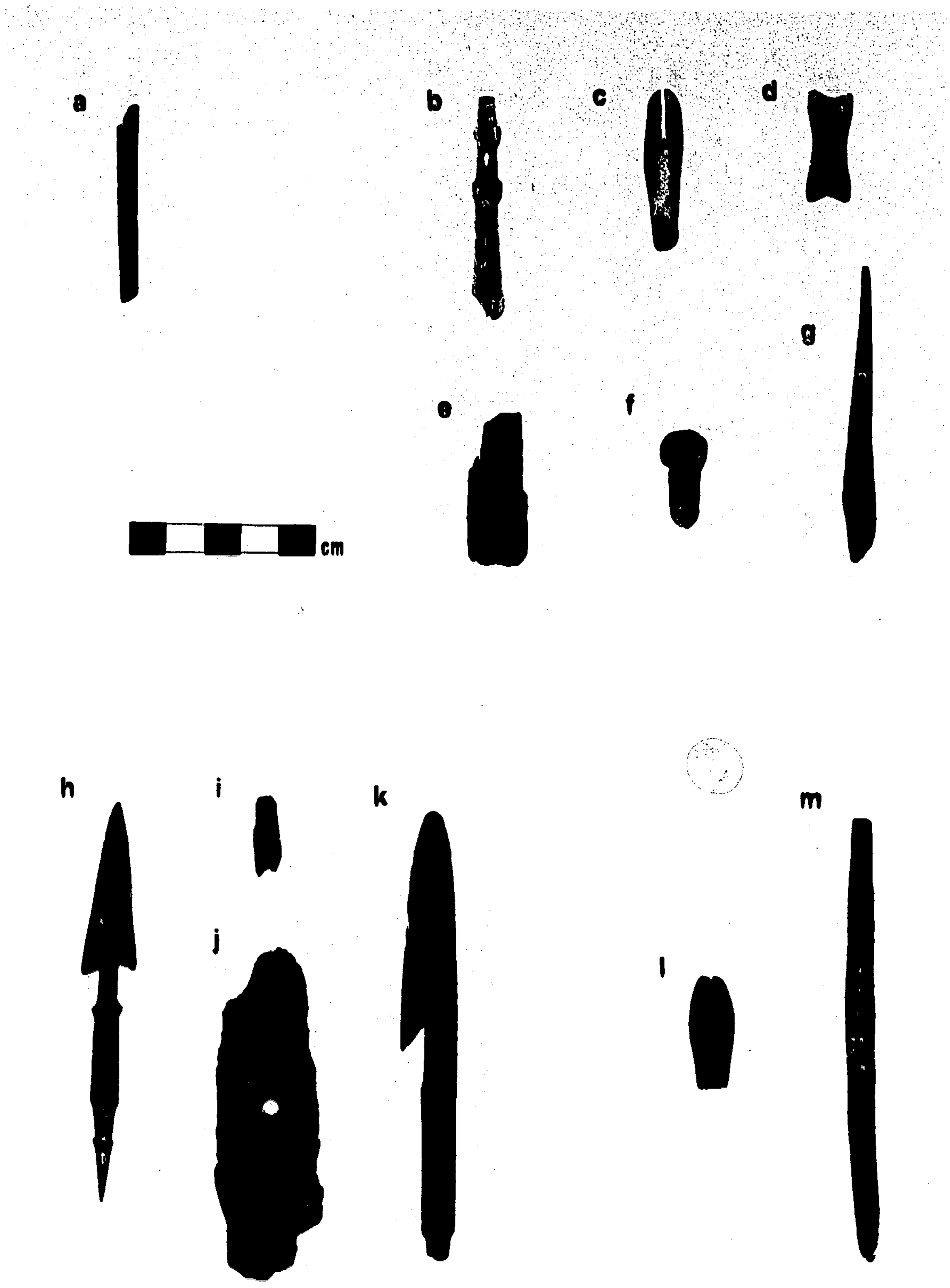


Figure 54. Artifacts from RbJr-5 Structures 4, 26, 29, and 33.

Other structures at RbJr-5

Of the 44 remaining structures in the western portion of RbJr-5, nine (#'s 15, 23, 24, 28, 35, 38, 39, 41 and 56) appear to have had the same general form as #'s 26, 29 and 33. Two other structures (#'s 20 and 46) consisted of roughly circular shallow semisubterranean dwellings. Three simple surface rock rings (#'s 14, 31 and 37) were present, while two other surface rock rings had a dividing line of rocks bisecting them (#'s 12, 42). One structure appeared to be a combination hearth/windbreak (#34) while another appears to have been designed to hold down an umiak (#25). The possible function of a further seven structures (#'s 16, 19, 22, 30, 40, 45 and 50) could not be ascertained, but the final 19 appear to have been caches.

Other Thule remains at Porden Point

Five additional Thule sites were identified around Porden Point. Brief descriptions are presented here in order to provide a complete inventory of the Thule remains there.

RbJq-5

First discovered by Robert McGhee in 1976 (McGhee n.d.a), this site was investigated by Rochelle Allison during the summer of 1984 (Allison n.d.a). It is located on the north-facing shore of Porden Point approximately 600 m from its eastern tip (Figure 2). A total of 35 features were identified at RbJq-5, including two semisubterranean houses constructed of large boulders, 11 smaller semisubterranean structures exhibiting various configurations of paving stones and sleeping platforms but generally similar to structures 26, 29 and 33 at RbJr-5, and three surface tent rings. The remaining features that were identified included windbreaks, hearths, and cold storage pits (Allison n.d.a:6).

RbJq-6

Also found by McGhee during the summer of 1976 and investigated by Allison during the summer of 1985 (Allison n.d.b; McGhee n.d.a), this site is located on the south-facing beach ridges approximately 600 m from the eastern tip of Porden Point, just across a small pond from RbJq-5. 116 features were identified here. These included nine semisubterranean dwelling structures of various types (but roughly similar to structures 26, 29 and 33 at RbJr-5) along with 28 surface dwelling structures, probably various types of tent rings. The remaining structures included windbreaks, caches, cold storage pits, a possible umiak storage place, and a large number of isolated hearths (Allison n.d.b:4).

RbJr-7

Found by Robert McGhee in 1976, this site consists of a single cache-like boulder structure, one of a number of apparent boulder caches on the beach ridges behind and to the west of RbJr-5. A collection of 66 objects, mostly hunting implements, was discovered in its interior under a thin cover of dry moss. While such a find might suggest a burial, no bones were found (McGhee n.d.a; Park 1983:101-115).

RbJr-13

This site is situated on the south-facing beach ridges approximately 2.0 km west of Porden Point and contains two Thule tent rings along with some Dorset culture remains (McGhee n.d.b).

RbJr-24

This site was found during the summer of 1985 and consists of three large tent rings and three fairly substantial boulder caches. It is located approximately 4.2 km from the tip of Porden Point, about 200 m from its north coast.

4. CHRONOLOGY

Introduction

The purpose of this chapter is to deal with the question of the chronological position of the Porden Point remains. The most important goal is not to place the sites in the context of any chronological scheme that has previously been developed for Thule as a whole, although that will be attempted; rather, it is to 'relatively' date the Porden Point structures internally. The rationale behind the focus on the latter approach over the former is based on what I believe to be the very weak control any of the present schemes allow over Thule chronology.

However, it is unrealistic to ignore decades of research into the chronological ordering of Thule sites without providing reasons for doing so. Also, as this reasoning shaped to a great extent the decision not to obtain additional ^{14}C dates for the sites, it requires some explanation. Therefore, the chapter will begin with a brief assessment of all of the site data from Porden Point, based on the analysis of generally accepted temporal markers, followed by a discussion on Thule culture dating in general. The chapter will end by returning to the Porden Point data and attempting to assess whether internal differences in age are in fact evident.

Dating the Porden Point sites

The primary means of dating Thule sites have traditionally been radiocarbon dating and the seriation of particular artifact types. The rationales and problems with both of these techniques will be outlined in some depth later, but first it seems worthwhile to examine where the Porden Point sites fit chronologically, based on these criteria.

Radiocarbon dates

Following McGhee's completion of the excavation of House 7 at RbJr-1 he had five dates run on separate materials found in the lowest parts of that house: willow twigs, *Dryas* leaves, moss, whalebone, and seal bones. The results were published in Rutherford *et al* (1981:120-121), and discussed at some length in Park (1983). The resulting age estimations were 550±70 radiocarbon years before present for the willow twigs, and between 1380±90 and 1000±110 b.p. for the other four materials. Given the known problems with the radiocarbon dating of marine materials (see below), and the wide discrepancies between the three dates on terrestrial materials, I thought that these dates could not be accepted without a better understanding of the causes of the observed differences (Park 1983:165-170). Therefore, I did not attempt to obtain any further radiocarbon dates from the 1984 and 1985 excavations, although samples were collected for future reference.

Artifact seriation

Harpoon heads are widely considered to be one of the most sensitive chronological markers among Thule artifact types (see below). A total of 47 Thule culture harpoon heads were found in the course of the excavations at Porden Point, although several are too fragmentary to provide the desired stylistic information. Almost all of the remaining harpoon heads are characterized by attributes that would link them with those found at the sites of McGhee's (1984:91) Resolute phase. These attributes include such things as Thule type 2 and type 3 harpoon heads with cut lashing slots, stepped lateral ridges and occasional incised face decoration; type 2 harpoon heads with symmetrical barbs; 'Sicco-like' type 3 harpoon heads; and Thule type 4 harpoon heads with dorsal and ventral ridges (see Mathiassen [1927b:11-28] for the basic classification system for harpoon heads; see also Arnold and Stimmell [1983:12-14] for a recent discussion of Sicco and Sicco-like harpoon heads).

A small number of harpoon heads from Porden Point do not, however, fit this pattern. Drilled lashing holes are generally believed to be a later phenomenon than cut lashing slots on open-socketed harpoon heads, and three of the 21 open-socketed harpoon heads for which this feature could be assessed had drilled holes (see below for a more extensive discussion of these temporally sensitive characteristics). House 6 at RbJr-1 produced a complete Thule type 2 harpoon head with drilled holes set into stepped lateral ridges (Figure 18:a). From House 1 at RbJr-4 there is a basal harpoon head fragment also having drilled lashing holes and stepped lateral ridges (Figure 34:f), while at House 5 at RbJr-5 there is a basal fragment with drilled lashing holes but no lateral ridges (Figure 48:a). In addition, one type 3 harpoon head from Feature 28 at RbJq-6 was found to have a cut lashing slot on the left side of the socket and drilled lashing holes on the right side, in effect thumbing its nose at all of our dating conventions (Allison n.d.b: Plate 1:e).

Even if all our generalizations concerning changes over time in harpoon heads are correct, harpoon heads can by no means be used to date all of the structures at Porden Point. This is even true of just the winter houses. Of the 16 houses that were excavated, four produced no harpoon heads (RbJr-1 Houses 1 and 5, and RbJr-5 Houses 2 and 3), and two other houses produced none exhibiting any features considered temporally sensitive (RbJr-1 House 8 and RbJr-4 House 2). The two harpoon heads found in House 3 at RbJr-4 (Figure 37:b,c) do not really aid in assessing its age since they appear to be highly unusual with regard to those in published collections. However, one is a flat harpoon head, and these are usually considered to be more common late in the Thule phase. But one must conclude that, based on harpoon heads and following the usually accepted conventions, there is no evidence that any *substantial* part of the Thule occupation at Porden Point occurred later than what is usually referred to as Classic Thule (e.g., McCartney and Savelle 1985:39).

Dating and the Thule culture

In order to assess adequately the practice of dating as it applies to the Thule culture, and in the process evaluate the conclusion just made as to the age of the Porden Point sites, it will be necessary to go back to some basic principles for a moment. To begin with, all inferences concerning the absolute or relative ages of archaeological materials require the invoking of a fixed criterion against which the age can be assessed. Generally, inferences concerning the age of Thule sites rest on three basic criteria: (a) ^{14}C dates, (b) stratigraphic correlations, and (c) inferred changes over time in artifact styles. These approaches will be treated in turn.

Radiocarbon dating:

Realistically, radiocarbon dating must be considered of somewhat limited utility in Thule archaeology. A very large percentage of the datable material usually found at coastal Thule sites consists of products deriving from sea mammals (since they often took a prominent position in the Thule economy) or driftwood, and real problems exist in utilizing either of these for ^{14}C dating. Driftwood could float in the ocean for decades and then be preserved on a raised (through isostatic uplift) beach for centuries before being picked up and incorporated into a Thule site. Thus, the radiocarbon date would reflect only the date of the tree's death, and not have anything to do with the occupation of the site. Sea mammal products are subject to two major distorting factors: isotopic fractionation (for which new dates and, to a lesser extent, dates run in the past, can be corrected) and reservoir effect, which involves the recycling of fossil carbon into the marine food chain (Arundale 1981; McGhee and Tuck 1976). An average correction curve for worldwide marine samples has been published (Stuiver *et al* 1986), but it is unable to account for the apparent extreme present-day geographical variation in reservoir effect even within the Arctic. For example, it has been suggested that areas of upwelling can result in greater reservoir effect (Stuiver *et* *al* 1986:982) so one can only speculate on the influence of features such as polynyas. Given the great likelihood that it also fluctuated over time in the past, it would appear that the reservoir effect is essentially impossible to correct (Tuck and McGhee 1983).

Problems, some of them possibly unique to the Arctic with its permafrost conditions, have also been encountered when running dates on terrestrial materials that can be considered local (i.e., other than driftwood). The slow growth of northern trees can mean that the specific part of a log that is dated (i.e., interior vs. exterior) could have some effect on the age obtained. And Thule winter houses are often found to contain considerable quantities of sea mammal oil, which seems to permeate everything in them. This could contaminate terrestrial materials such as wood for the purposes of radiocarbon dating (Morrison 1983a:206). Moreover, other distorting processes may also be operating. Schledermann and McCullough (1980:840) have noted a consistent discrepancy between dates run on willow twigs and ones run on heather from similar (i.e., inferred to be contemporaneous) structures at the Skraeling Island site, and other terrestrial materials have been observed to produce what were thought to be aberrant dates (e.g., McGhee and Tuck 1976:14; Park 1983:166-168).

These aberrant dates usually take the form of widely varying age estimations on different materials from a single site or component. They may reflect the fact that the Arctic terrestrial environment also contains fossil carbon which some organisms incorporate differentially (Maxwell 1983:83; 1985:253). Research in Alaska has revealed that modern sedges, woody plants, and standing dead grasses have appreciably higher ^{14}C activity than do annual grasses and leaves (Schell 1983:1071). Some plants are known to take up a large proportion of their carbon dioxide from the soil or groundwater by means of their root system (e.g., Olsson 1985:434; Sveinbjornsson and Oechel 1981:119), and if quantities of 'fossil' carbon from peat or other sources are maintained for long periods of time in parts of the terrestrial reservoir due to the cold climate, this might tend to produce distorted or at best incompatible dates from different terrestrial plant materials, or from the remains of the animals that fed on them. This phenomenon does not appear to have been studied in any detail so at the moment it is possible only to speculate on how much impact it might have on our data base, but it seems unlikely that this terrestrial reservoir effect is of nearly the same magnitude as that in the marine reservoir. However, there does seem to be enough evidence to warrant caution in the use of any Arctic ^{14}C dates for more than coarse-grained chronological interpretations.

In conclusion, it must be acknowledged that it is difficult to use radiocarbon dating in the sense of an independent, *fixed* criterion because the reservoir effect renders it a sliding scale. Since the presumed goal of obtaining radiocarbon dates in the first place is to help resolve problems of culture history, we must turn to other dating techniques for answers.

Stratigraphy

The relative dating of stratigraphic layers in a site is based on the geological principle of superposition. When an analysis of the geology/taphonomy of the site indicates that no other processes have disturbed the depositional sequence, then more recent levels *must* be higher up in the stratigraphic column than older ones.

The analysis of stratified sites has played a fairly limited role in the establishment of Thule chronologies in the Canadian Arctic and Greenland. Some moderately deep midden deposits have been excavated (e.g., Holtved 1944a:144-149; 1954:107; Mathiassen 1927a:21-23; Schledermann 1975:84-95) as have a number of stratified houses (e.g., Collins 1955:24; McGhee 1984:8-39; Park 1983:17-21; Stenton 1983:57-69) but little effort has been made to use the stratigraphic data to develop seriational sequences for artifact types or styles, mostly because the amount of identifiable stylistic change within any one of these shallow stratigraphic sections has generally been fairly limited. Rather, accepted artifact seriation sequences (discussed below) have usually been used to 'anchor' these stratigraphic sections in time, based on the styles of artifacts found in them.

However, in the part of the Arctic where the Thule tradition developed — the Bering Strait region and northwestern Alaska — the excavation of more deeply stratified sites has been used to chart cultural and stylistic changes over time in the Thule culture and its antecedents (Collins 1937; Ford 1959; Geist and Rainey 1936; Stanford 1976). There the approach was to use the stratigraphy to relatively date the stylistic changes. The products of this research have been drawn upon heavily by archaeologists working in the Canadian Arctic and Greenland.

In the Eastern Arctic a rather different type of site stratigraphy, based on the elevation above sea level of sites and different structures within sites, has been employed as a relative dating technique for Thule sites. It relies on the fact that the isostatic rebound of most of this part of the Arctic region since the last glaciation has resulted in the raising of former coastlines above and back from present-day coastlines. Based on the assumption that people would tend to live quite near the ocean's edge, older sites or older structures within individual sites should now be at a higher elevation than younger ones. This was one of the major lines of evidence that Mathiassen (1927a:197, 254) drew upon in chronologically ordering his sites, and it has also been employed more recently (Andrews *et al* 1971). However, given the fact that the pattern and amount of uplift appears to have varied greatly even within quite restricted regions (e.g., Dyke 1979; England 1976), correlations between sites must be viewed with great caution. And the assumption that people must necessarily have lived uniformly close to the shoreline seems unwarranted, particularly when dealing with sites that might have been occupied at different times of the year. Again with this approach, there are more than enough unknown quantities combining to produce the present-day elevation of sites to make any chronological inferences based on this factor of very limited utility.

Seriation:

Dating based on seriation is a more complex process than ^{14}C dating or stratigraphy. Relative or absolute age estimations based on a series of artifacts displaying stylistic variety rely on the archaeologist first having reason to believe that the styles did indeed change over time in a directional manner, and that this temporal change was the only way in which the observed variability in style was introduced (i.e., the archaeologist is not sampling from contemporaneous regional variants). Usually, the necessary independent evidence comes at least in part from radiocarbon dates or stratigraphic evidence.

Most chronological interpretations made for Thule sites and artifacts have been based on the assessment of seriational sequences of artifact styles and types, particularly harpoon heads:

> ...The arguments rest heavily on stylistic variation of harpoon heads, which fortunately alter in regular progression. (Maxwell 1980:171)

A more pessimistic view is also prevalent, however:

> Neither do we have a very clear idea of how stylistic distance (subjectively determined degree of stylistic difference between Thule assemblages) relates to distance in space and time, and our knowledge of stylistic change during the Thule period is limited to a few untested generalizations... (Taylor and McGhee 1981:51).

In the absence of extensive stratigraphic excavation data from the Canadian Arctic and Greenland, the sequence of stylistic changes that is accepted (to varying degrees) by archaeologists working with the Thule culture appears to rest on two basic lines of evidence. The first and most important is the recognition that Thule developed in northwestern Alaska and the Bering Strait region, and its bearers then spread into the Canadian Arctic and Greenland through a population movement. Therefore, harpoon heads and a few other artifact types from sites in the latter region that exhibit stylistic elements very similar to those found in stratified Alaskan sites from the time period thought to immediately precede the Thule migration are presumed to be older than ones that do not show such similarities. Likewise, Canadian and Greenland Thule artifacts that exhibit stylistic elements very similar to those that were in use by the Inuit inhabitants of this region at the time of historic contact are presumed to derive from the most recent manifestation of the Thule culture.

Stated in this way, the scheme obviously has some merit. We can recognize the stylistic types of the earliest Thule inhabitants of the area *and* those of their most recent descendants, so all that is necessary is to fit unknown finds into a seriational sequence extrapolated from that knowledge. On this basis Jordan (1979) has chronologically ordered the Thule sites in Greenland using the proportions of the various harpoon head types found at them. However, there are a number of problems involved with doing this, even if we just restrict ourselves to harpoon heads. One of these is the problem of amalgamating the harpoon heads from many structures at a site into a collection which can then be compared with similar collections from other sites. Given that a site may have been used over a period of centuries, the varying percentages of individual harpoon head types in the amalgamated assemblages may not reflect their relative importance in use at any one time.

An equally serious problem is what may be our poor understanding of the functions of the various harpoon head types (Park 1983:171, 176; but see Aroutiounov and Sergeev 1972), many of which were no longer in use at the time of the earliest ethnographic research (e.g., Mathiassen 1927b:17, for Thule type 2 harpoon heads, the single most common type from most Thule sites). For this and for more basic reasons, we have a problem in even beginning to separate stylistic from functional attributes (Sackett 1977; 1986). And given this lack of knowledge concerning function, we are largely unable to interpret the varying proportions of the different types when they are found in sites (i.e., are the different percentages of the types related to site function, and/or do they represent types going in or out of use?).

At least as critical as those problems, however, is the fact that such a simple seriational scheme must necessarily assume that the initial Thule inhabitants of the

Canadian Arctic and Greenland shared a single unified set of stylistic ideas and that subsequent regional differentiation did not become a significant factor by producing contemporaneous regional variants. However, based on the analysis of sites containing stylistically 'early' artifacts and comparison of them with two known contemporary regional variants (Birnirk and Punuk) from Alaska and the Bering Strait region around the time of the Thule migration, it has been suggested that there may have been more than one migration into the Canadian Arctic within a reasonably short period of time by groups having somewhat different stylistic ideas (McCullough 1986:449-455). Thus, observed stylistic differences in the archaeological record may not all derive from change over time. Even if this were ultimately proven not to be the case, we are now beginning to learn enough about the complexities of 'stylistic behaviour' (e.g., Hodder 1982; Plog 1983; Sackett 1977, 1982, 1986; Wiessner 1983; Wobst 1977) to realize that we cannot use observed stylistic variation as simple temporal or geographical markers without strong corroborative evidence.

The second most important factor in the establishment of our current seriational sequence for harpoon heads is the work of Therkel Mathiassen (1927a & b). His process of chronologically ordering his five sites was based on two main factors: (1) harpoon head styles (Mathiassen 1927b:11-14), coupling his knowledge of the styles still in use historically with an at least partly evolutionary model going from simple to complex, and (2) inter- and intrasite differences in elevation above sea level (Mathiassen 1927a:197, 254). Even the most optimistic researchers today recognize that the factor of site elevation is not accurate enough to relatively date Thule sites (Andrews *et al* 1971:225) so Mathiassen's inferences based on that factor, insightful as they were at the time, cannot be accepted today at face value. And excavations in Alaska and the Bering Strait region have since demonstrated that many of the evolutionary assumptions underlying Mathiassen's seriational sequence for harpoon heads are not valid, or at least that the evolutionary changes he argued for had already taken place by the time the Thule arrived in the Canadian Arctic or

Greenland (e.g., Maxwell 1985:270-272; Yamaura 1979) and so are not useful as chronological indicators there.

Therefore, when present-day researchers use Mathiassen's conclusions as justification for determining whether a harpoon head exhibits 'early' or 'late' stylistic attributes (e.g., Park 1983:178; Savelle 1987:99; Schledermann 1975:242), they are at the same time accepting and validating the evidence that Mathiassen drew on to develop his seriation. But given that no researcher would now use Thule winter site elevation to seriate sites, or accept for Canadian Thule Mathiassen's relatively simple evolutionary scheme having harpoon heads changing from technologically simple to complex, they shouldn't uncritically accept conclusions that were based on them.

The use of dating methods in Thule research

In spite of these problems and until a major re-analysis of Thule seriational schemes is undertaken, our present harpoon head sequence will undoubtedly continue in use since, even though it has not been tested, it is more or less internally consistent. However, one example will be presented to illustrate some of its potential shortcomings.

A number of individual harpoon head attributes, along with several harpoon head types, have been identified as being useful chronological markers. On open-socket harpoon heads (Thule types 1, 2 and 3) these attributes include the use of cut lashing slots as opposed to drilled lashing holes (e.g., Maxwell 1985:272). Researchers recognize that lashing slots and lashing holes were in use during the Early Thule period in Alaska (Stanford 1976:105), so both should have formed a part of the stylistic (functional?) repertoire of the earliest Thule inhabitants of the Canadian Arctic and Greenland. However, it is argued that slots went out of use quite soon afterwards (e.g., Savelle 1987:99; Schledermann 1975:241). This assertion is difficult to confirm or deny, however, as any arguments tend to be somewhat tautological in nature, something like: *drilled holes are later than slots because they are the only type of lashing found in sites that have been determined to be 'late'* *due to the presence in them of harpoon heads having drilled lashing holes...* This is of course a caricature of the arguments. However, the actual archaeological data do not stand up well under any rigorous examination.

To digress for a moment, it must be realized that if an archaeologist *hypothesizes* that some particular stylistic variability was introduced through chronological change rather than regional variation or any other cause, then he/she is under an obligation to test that hypothesis, either at sites that have been dated radiometrically, in a stratified site, or some other way. If the hypothesis is shown to be correct, then when that particular pattern of stylistic differences is seen at other sites the archaeologist can infer that they are due to differences in the ages of the sites. However, the rationale for that inference remains the specific radiometric dates or the stratigraphic separation initially used to conclude that the hypothesis was correct. No matter how many times the same stylistic differences are seen elsewhere, the inference that they represent *chronological* differences of a certain magnitude rests on the radiometric or stratigraphic data. Given this, what are the data for the chronological priority of lashing slots over drilled lashing holes in the Canadian Arctic and Greenland?

Harpoon heads with lashing holes are found in small numbers alongside those with lashing slots at some of the sites that are generally considered to be 'early' in the Canadian Arctic (e.g., Brooman Point on Bathurst Island [McGhee 1984], and Crystal II at the head of Frobisher Bay, Baffin Island [Collins 1950]), and given their co-occurrence in Early Thule levels at the Walakpa site in Alaska (Stanford 1976:105) this should not be unexpected. However, a good stratigraphic separation between slotted (earlier) and drilled (later) harpoon heads has been noted in one stratified but undated house containing a large number of harpoon heads at the Peale Point site (Stenton 1987:27). In addition, a number of other sites, each producing three or more harpoon heads, have been found that only contain examples exhibiting drilled lashing holes (Qilalukan on northern Baffin Island [Mathiassen 1927a], the B1 site and the upper levels of the A1 site in Cumberland Sound, Baffin Island [Schledermann 1975], and the Developed Thule and Historic era occupations of the Peale Point site at the head of Frobisher Bay, Baffin Island [Stenton 1987]). By the time ethnographic studies were being made they were not in use. Therefore, accepting that harpoon heads with lashing slots did go out of use at some point in time, we might now state that sizeable assemblages containing lashing slots only, or slots and lashing holes together, are older than those exhibiting lashing holes only. In order to use this fact on more than that extremely coarse-grained scale, however, it is necessary to find out *when* harpoon heads with lashing slots went out of use, and this is where the real problem arises.

Of the sites exhibiting just drilled lashing holes, only the B1 site is radiometrically dated, unfortunately on seal bones, and most of the harpoon heads come from a stratigraphic position considerably *above* the level producing the older of the two dates. However, the dates are 780±90 b.p. and 500±90 b.p. (Schledermann 1975:85, 90). Ignoring for the sake of argument what was said above about the futility of trying to correct for reservoir effect in sea mammal materials, and employing the correction factors advocated by Arundale (1981), the dates would be approximately 1455±100 A.D., and 1735±100 A.D. Thus, one might argue that lashing slots were no longer in use by sometime in the fifteenth century.

This is certainly possible, although a number of Thule sites containing harpoon heads with lashing slots have each produced at least one radiocarbon date in the fifteenth century or later on local terrestrial materials (e.g., Learmonth [Savelle 1980:29], Malerualik [Savelle 1987:97], and Porden Point [Park 1983:166]). However, lashing holes are present on ten of the thirteen harpoon heads found at the Silumiut site from northwestern Hudson Bay, which is radiometrically dated (on an unstated type of wood) to the thirteenth century (Kigoshi *et al* 1973; McCartney 1977:220). Therefore, on the basis of the Silumiut data one might argue that lashing slots were becoming uncommon quite a bit earlier. If the Silumiut wood were driftwood or perhaps contaminated with sea mammal oil then the actual date could be somewhat later, which might fit the stylistic evidence better. However, this cannot be resolved with the available data.

Up to this point, the discussion has only been about one particular attribute seen on open-socket harpoon heads: the type of perforation through which the lashing is passed. However, a number of other attributes have also been proposed as temporal indicators. These include the shape of the apex of the socket (square or round), the profile of the base of the harpoon head (smoothly curving into the spur or having a sharp angle between the base and the spur), and the shape of the lateral edges of the harpoon head's base (smooth or having stepped lateral ridges) (e.g., McCartney 1977:226-227; Savelle 1987:99; Schledermann 1975:241-242). The presence or absence of lateral ridges, like the type of lashing perforation, is already a variable feature in the Early Thule levels at Walakpa (Stanford 1976:20). However, the harpoon heads from the 'late' sites discussed above (Qilalukan, A1, B1, Peale Point) exhibit a standard constellation of characteristics: drilled lashing holes, curved base, round socket apex, and the absence of lateral ridges. Given this regularity of association of these attributes (which elsewhere occur in much lower frequency and much less consistently), a plausible alternative hypothesis to the one that proposes that they just represent a late chronological position might be that they represent a particular regional variant.

McGhee (1984) has recently proposed a number of regional-temporal 'phases' for the Early Thule occupation of the Canadian Arctic. While the sites referred to above would not fit McGhee's (1984:89-90) definition of a phase on geographical grounds (and a phase certainly would not be defined on the basis of harpoon heads alone), given our present degree of chronological and regional control over the Thule archaeological record this alternate hypothesis would explain the data that we have almost equally well. I am not arguing that this alternate hypothesis is true. Like all hypotheses, it would require appropriate testing. However, I believe that this shows that the accepted model is also simply an hypothesis that requires testing, and is not a demonstrated truth.

Unfortunately, many of our present ideas about the settlement and subsistence patterns of the Thule culture and their change over time are all caught up between ^{14}C dates and our notions about stylistic changes over time. Some radiocarbon dates have been accepted *in spite of* their association with stylistically (i.e., chronologically) 'incompatible' artifacts (e.g., Allen McCartney, in Kigoshi *et al* 1973:64), while other dates have been rejected *because of* their association with 'incompatible' artifacts (e.g., Savelle 1987:95). In many cases either course of action could be entirely justifiable; however, one must have a legitimate and explicit rationale.

Another permutation of this problem is illustrated by Schledermann's (1975:85-95) "correction" of his ^{14}C dates run on seal bones. Recognizing the problem with sea mammal dates but rejecting as inadequate the then-available options for correcting for the reduced ^{14}C presence in the marine reservoir, Schledermann (1975:85-86) stated that

> ...any corrections of such dates should be attempted only in combination with stylistic trait comparisons. Judging from the harpoon head styles taken from the lower levels of 7-M and T.A.1 (Fig. 39) I am inclined to reduce the foregoing radiocarbon date by about 200 years...

Schledermann is admirably explicit about what he is doing: based on the styles of the harpoon heads found he believes that the site dates to a certain period, and the 'correction' of the radiocarbon date by a 200 year reduction will bring it into accordance with how old he thinks the site is. There is nothing wrong with this, since the goal of the exercise is obviously to learn how old the site is. What is wrong, however, is to term the resulting age estimation a corrected radiocarbon date — it is in fact an estimation primarily based on Schledermann's ideas concerning the timing of certain stylistic changes in harpoon heads. The major weakness of his approach is that he does not reference the other (presumably) dated sites with whose harpoon heads he is comparing his own finds, and from whose ages he is inferring the age of his site.

However, the problem is compounded when Schledermann's estimated ages are then used to help corroborate the age estimations made for other assemblages exhibiting similar styles of harpoon heads:

> ...Similar harpoon heads have been recovered by Schledermann from sites in the Cumberland Sound region of Baffin Island, radiocarbon dated between A.D. 1220 and 1650 (Schledermann, 1975: 85-93). [Sabo and Jacobs 1980:493]

While no archaeologist should be criticized for trying to determine the age of a site, the obvious problem here is that the age estimations for other sites now depend on the accuracy of Schledermann's ideas concerning the timing of certain stylistic changes in harpoon heads and not on the radiocarbon dates. The immediate problem is not really whether the age estimations are correct, although that is of course the ultimate problem. Rather, at issue are the methods that were used to obtain those age estimations, and the types of inferences that we can now allow ourselves to build upon them. It is fundamentally tautological to say that a site dates to a particular century because it contains harpoon heads stylistically similar to ones found at another site which has been dated to that century because of the styles of its harpoon heads. Schledermann may very well be exactly correct in his age estimations, but his conclusions now need to be *tested*, not used to date other sites.

This is by no means the only instance of this type of approach to chronology-building in Thule archaeology (another example is Park 1983:165-183). It is presented as an illustration only because the 'paper trail' is very clear. An earlier but more comprehensive critique of how Thule chronologies have been built may be found in Savelle (1980:18-38), which is partly summarized in McCartney and Savelle (1985:39-40).

Summary

The purpose of this whole discussion of Thule chronology was a rather negative one. Its first goal was to demonstrate that our present grasp of the subject is very loose, and dependent to a disturbing extent on very subjective types of interpretation. This situation could be remedied to some extent given our existing data base, but that would require rethinking and reassessing almost everything that we believe we know about Thule chronology, and that is far beyond the scope of this study.

The second goal of this discussion is to call into question some of our conclusions regarding Thule culture variability, which rely so heavily on change over time as an explanatory factor (e.g., owing to change over time in the climate [McGhee 1969-70; Schledermann 1976], in the availability of bowhead whales [McCartney 1977:24-29; Schledermann 1975:253-258], in the availability of seals [Stanford 1976], and in technology [Morrison 1983a; 1983b]). The diversity of Thule adaptations has long been recognized (e.g., Taylor 1966; 1968), but many of our explanations for variability in the archaeological record resort to particular types of change over time as the cause without examining the possibility of alternative explanations. Often the cause will indeed have been some sort of change over time, but at least part of the variability that we currently ascribe to chronological differences may in fact represent essentially synchronous variation or segmentation within a more complex settlement system than we would presently recognize. I believe that it is only by acknowledging the weakness of some of our *chronological* inferences that we can begin to look at alternatives, and to improve our approaches to chronology and to Thule studies in general.

Porden Point: chronology discussion

As was stated above, if one follows the generally-accepted scheme of harpoon head seriation then there is no evidence to indicate that any substantial portion of the Thule occupation of Porden Point took place substantially later than Classic Thule times, although the exact dates proposed for "Classic Thule" tend to vary somewhat (e.g., McCartney 1977:218-224; Morrison 1983a:17). However, that phase could certainly have lasted several centuries. But if one accepts the arguments presented here, to the effect that the usual scheme of harpoon head seriation is at best rather less sensitive than usually claimed, then the possible time span represented by the Porden Point sites may be even greater.

Therefore, what can be said about the *internal* chronological ordering of the Porden Point sites, if any? In a situation such as the present one the most desirable goal would be knowledge about which structures were occupied contemporaneously, but there are no archaeological methods by which it would be possible to differentiate structures occupied one winter from other structures occupied the next winter. Also, the use of at least some structures probably spanned more than one winter, so the occupation of certain houses may have only partially overlapped the occupation of others. Therefore, the primary 'chronological goal' of the research must shift from any attempt to establish exact contemporaneity to the use of circumstantial evidence to see if certain of the structures were likely *not* occupied at the same time during part or all of the period that the site as a whole was utilized.

A number of lines of evidence are of interest here. In Robert McGhee's intrasite analysis of the Brooman Point site (McGhee 1984) he relied very heavily on styles of construction to cluster the houses at that site into groups. While McGhee believed that several of these groupings reflected temporal styles and had stratigraphic evidence to demonstrate that some houses indeed pre-dated others, his analysis of artifact styles led him to conclude that the whole Thule occupation of the site spanned a relatively short time. At Porden Point little can be said about the exact span of time represented by the Thule occupations, and unlike Brooman Point there were no stratigraphically-superimposed houses providing incontrovertible evidence for temporal succession. And it is apparent that the architectural differences identified at Porden Point do not fit the groupings identified at Brooman Point.

However, if one accepts both the argument that already-abandoned structures at a site might have served as sources of building materials during the construction of later ones, and the assumption that any subsequent removal of materials from the site (especially whale bones) following the final abandonment of the site by the Thule would have likely affected all houses at the site equally, then the relative amount of disturbance of each house (i.e., removal of whale bones and/or structural rocks) might provide a rough approximation of the order in which the structures were abandoned and indicate which structures *could not* have been contemporaneous. The use of this approach at Porden Point is facilitated by the fact that this part of the Arctic appears to have been abandoned by the Inuit some time prior to historic contact; thus, the period of time following its abandonment during which the site might have served as a source of whale bones for groups residing nearby was probably limited.

There are obviously several serious potential flaws to this approach. First, it assumes that we can accurately predict the arrangement of the roof framework and structural rocks that a house *would have had*, in order to be able to determine how much has been removed; this will by no means always be the case (e.g., Park 1988:167-168). Second, it requires that the house abandonment process be consistent between houses: each should have been left essentially intact by its occupants, who did not take any of these materials with them to a new location away from Porden Point. Third, it assumes that all abandoned houses would have been considered 'fair game'; i.e., that particular houses would not have been left untouched because it was known that someone had died in them, or perhaps because it was thought that there was a chance that the former occupants would return in subsequent winters. It may be that unoccupied structures would have been differentially subject to being dismantled based on the social status of their 'owners'. Fourth, although by no means finally, it cannot take into account a scenario in which two houses were occupied contemporaneously for several years, followed by the abandonment and looting of just one of them; the fact that they had been occupied concurrently for a long period would thus be effectively obscured.

Acknowledging all of these problems, it still seems a worthwhile starting point in attempting to break down the sequence (if any) of occupation of the Porden Point winter houses. Therefore, Table 1 presents the status of each of the houses with regard to the condition of its substructure and superstructure, as well as whether or not each house gives evidence of having been substantially refurbished during the course of its occupation. What becomes evident immediately is that for most of the sixteen houses under consideration, the degrees of substructure and superstructure removal are highly correlated. RbJr-1 Houses 1, 2, 5 and 10, along with RbJr-4 Houses 2 and 3 are all substantially intact as far as their substructures go, and each house was overlain with a fair amount of whalebone presumably deriving from its roof. In contrast to that pattern, Houses 4 and 6 at RbJr-1, numbers 1 and 4 at RbJr-4, and 2 and 3 at RbJr-5 all exhibited signs of structural rocks having been removed and essentially no trace remained of any superstructures. RbJr-1 House 7 also fits this pattern, having had the uppermost level of its substructure partly removed, and essentially no remaining superstructure. Similarly, RbJr-1 House 9 had had the uppermost level of its substructure partly removed but this house did contain some whale bones, although probably not enough to construct a complete roof.

Only two houses run counter to this pattern, by being essentially intact in terms of their substructure but lacking any superstructure: RbJr-1 House 8 and RbJr-5 House 5.

Based on these data, and following the line of reasoning presented above to its chronological conclusion, the houses that appear to be missing significant proportions of their roof framework and structural rocks do so because those houses were abandoned *prior to* the construction of some of the other houses at Porden Point, while the houses that appear to be essentially intact were the last to be abandoned (or were left undisturbed for unknown reasons). What that means is that RbJr-1 Houses 1 and 2 were probably among the last houses to be abandoned, and RbJr-1 Houses 5 and 10 and RbJr-4 Houses 2 and 3 were also abandoned near the end of the Thule stay at Porden Point. The houses that appear to have suffered the most disturbance, and which on that basis appear to have been the first to be abandoned, include RbJr-1 Houses 4 and 6, RbJr-4 Houses 1 and 4, and RbJr-5 Houses 2 and 3. The remaining houses, RbJr-1 Houses 7, 8 and 9, and RbJr-5 House 5, appear to fall

PORDEN POINT WINTER HOUSE STATUS

HOUSE		SUBSTRUCTURE	SUPERSTRUCTURE	REBUILT?
RbJr-1	H1	Essentially intact	Essentially intact	No
RbJr-1	H2	Essentially intact	Essentially intact	No
RbJr-1	H5	Essentially intact	At least partly intact	No
RbJr-1	H10	Essentially intact	At least partly intact	No
RbJr-4	H2	Essentially intact	At least partly intact	No
RbJr-4	H3	Essentially intact	At least partly intact	No
RbJr-1	H9	Partly removed (top level)	At least partly intact	Yes
RbJr-1	H8	Essentially intact	Missing	No
RbJr-5	H5	Mostly intact	Missing	No
RbJr-1	H7	Partly removed (top level)	Missing	Yes
RbJr-1	H4	Partly removed	Missing	Yes
RbJr-1	H6	Partly removed	Missing	?
RbJr-4	H1	Partly removed (?)	Missing	No
RbJr-4	H4	Partly removed	Missing	No
RbJr-5	H2	Partly removed	Missing	?
RbJr-5	H3	Partly removed (?)	Missing	?

Table 1. The Porden Point winter houses, grouped on the basis of their structural condition.

somewhere in between; they have suffered some disturbance since being left, but not as much as the second group of houses.

Some slight corroboration for this sequence may be drawn from harpoon head styles, *pace* what has been stated above. The only harpoon head exhibiting commonly accepted 'early' stylistic attributes (a Sicco-like harpoon head from RbJr-1 House 4 - Figure 16:d) comes from the earliest group of houses, while the only harpoon head having 'late' attributes (a flat harpoon head [Mathiassen 1927b:12-13] from RbJr-4 House 3 - Figure 37:b) comes from the latest group of houses.

One other source of information which might tend to corroborate the sequence of occupations defined on the basis of house disturbance is found in the fact that the houses of the last group to be abandoned are somewhat larger in size than those of the first group of houses to be abandoned, having an average internal living area of 8.3 m^2 as opposed to 6.7 m^2. This is particularly true of RbJr-1 House 1, at 14.2 m^2. One is tempted to suggest that RbJr-1 House 1 was so large because its builders had the whale bones and perhaps structural rocks from previously-abandoned houses at their disposal. Therefore, while the differences are not dramatic, there may also be some reason to believe that some of these houses were *constructed* after the abandonment of some others, and not just abandoned at a later date.

A final factor relating to the houses themselves may provide some insight into the sequence of their construction, as opposed to the sequence of their abandonment. It appears that the Thule builders at Porden Point preferred to dig their houses into a reverse slope with the entrance passage opening downhill. This limited the amount of excavation necessary to produce the 'stepped' profile characteristic of the houses' architecture: down from the raised sleeping platform to the floor, and from there down into the entrance passage. At RbJr-5 the need to find a slope into which the winter houses could be built does not appear to have been a constraint, and three of the four houses at RbJr-4 were constructed in a fairly level area, presumably to take advantage of isolated rock outcrops there. But at RbJr-1 10 winter houses are squeezed into a fairly small area, apparently in part to take advantage of a convenient slope (see Figure 5). They cluster along a small rise bisected by the channel for a small stream draining the pond in the centre of the point. Three of the four RbJr-1 houses from the third group (last to be abandoned, and perhaps last to be constructed) are at the outer (and least inclined) edges of the cluster: Houses 1, 2 and 10. Only House 5 is located in a more central position. This evidence thus tends to parallel the sequence inferred from the degree of substructure and superstructure removal.

However, such an approach obviously ignores significant social factors potentially shaping the placement of structures, and therefore cannot be accepted as conclusive. In fact, it can be argued that

> ...the main factor that influences the individual choices of location in a settlement or geographical space consists of social relationships. This applies particularly to small family units or clans or similar small groups of people. (Agorsah 1988:235).

In a situation such as that at Porden Point, it is possible to imagine that the presence even of abandoned structures that had belonged to known individuals of differing status could influence the placement of new houses. Therefore, any attempt to unravel what appears to be a complex sequence of occupations in a predictive fashion from spatial data is fraught with problems. However, later in the study such data may provide insights into the results of other analyses.

Conclusions

From this chapter it should be evident that the course of chronological changes that took place within the Thule culture is not yet understood *in detail*, and equally apparent that one cannot use any previously-established scheme of cultural changes over time to interpret the Porden Point data, at least not without the danger of providing unwarranted confirmation for as-yet untested inferences. However, it should also be evident that something *can* be said about the *internal* chronological ordering of the structures at this site. One immediate implication is that not all of the structures were occupied concurrently. But any inference that most or all of the observed differences between the houses represent *chronological* differences remains just that: a plausible inference. In the next chapter a number of other differences between the houses and their contents are explored, in an attempt to ascertain their causes.

5. INTRASITE VARIABILITY AT PORDEN POINT

Introduction

In this chapter the excavation data from the Porden Point sites will be examined in an attempt to explore the nature of the Thule occupations there. Following an introductory discussion of the basic methodologies employed, the chapter is divided into four major sections covering the identification of appropriate units and levels of analysis, site seasonality, an analysis of the patterns of seal element representation and their correlations to other aspects of the data, and the conclusions concerning Thule settlement/subsistence at Porden Point.

Artifact identification

The analysis of each worked item from the excavations began with the identification of its function, and the material from which it was made if possible. Functionality was ascribed on the basis of ethnographic analogy, and by comparison with the identifications made for other Thule artifacts in numerous site reports. While there may be some weaknesses in following the latter approach too closely (McGhee 1983:21-22), it is believed that the excellent ethnographic data base available for this part of the world allows functionality to be ascertained with a high degree of confidence (although the utility of such functional types for some kinds of analysis will be discussed below). Items whose function could not be identified were classed either as 'artifact fragments' (i.e., parts of broken artifacts) or as 'worked fragments' (i.e., pieces of material that had been worked but were not parts of finished artifacts). Finally, the condition of each item whose function could be ascertained was assessed to determine as far as possible if it was still serviceable or had been broken, either during manufacture or use.

Faunal identification

The faunal assemblage from each excavated structure was analyzed as a unit. The varying degrees of structural integrity of the winter houses meant that in some cases the provenience of the faunal bones relative to the house's architectural features could not be ascertained with sufficient accuracy to allow effective intra-house comparison. However, because a significant proportion (approximately 25%) of the faunal bones came from the sod layer of the houses, the possibility was recognized that these bones might not derive directly from the occupation of that house. Therefore, a comparison was made between the relative percentages of each species in the sod layer and its percentage in the subsurface layers, but no substantial discrepancies were discovered.

Of the 15,532 bones and bone fragments in the faunal collection (again excluding bowhead whale), 10,782 were identified to at least the family level. These data are summarized in Appendix 2. For each winter house or other structure, the calculated values that are presented include the total number of identified specimens (NISP) per species, along with the percentage (by NISP) of that species in the total collection from that house, and the minimum number of individuals (MNI) represented. For the three houses excavated by McGhee in 1976-77 (RbJr-1 Houses 5 and 7, and RbJr-4 House 2), the NISP figures were abstracted from the faunal analysis carried out on the bones from the 1976 excavations (Andrews 1978: Table 7; Park 1983). However, these figures do not include bones from the lowest levels of each house as these were excavated in 1977. Therefore, no MNI values were calculated.

A few initial observations can be made concerning the overall representation of species. Small seals dominate the assemblage in almost every house. As far as could be determined, only ringed seal is represented, although harp seal certainly could be present. Larger sea mammals such as bearded seal, walrus, and beluga are present in only very small quantities. Large land mammals (muskox and caribou) are also present in quite small numbers and form a very small percentage of any winter house assemblage. In fact, arctic fox is by far the most abundant land mammal, forming a sizeable percentage (by NISP) of the faunal assemblage from several houses. Dog is also present in small quantities in most of the houses, but wolf was only identified in one case. Bird bones are present in most of the houses, with gull remains somewhat more numerous in a few of them. Finally, a very small number of fish remains, probably quite small arctic char, were found in three of the winter houses and two of the other structures.

Bowhead whale bones from the Porden Point sites are presented in Appendix 3. They were excluded from Appendix 2 not because these whales would not have contributed to the diet of the occupants of the houses — they certainly may have. But it is apparent that, unlike most of the bones in Appendix 2, whale bones did not arrive at the sites themselves in the context of food — abundant ethnographic examples and simple common sense confirm this. Therefore, given that whale bones reached the sites in the context of construction materials or perhaps for symbolic reasons (e.g., whale skulls over the entrances of houses), they cannot contribute to a discussion of subsistence in exactly the same way as the bones of other species.

Intrasite patterning and Thule archaeology

In any attempt to draw inferences from the discovery of variability between separate excavation units, it is necessary to have some rationale for arguing that the observed differences between units are significant, or somehow pertinent to the problem at hand. To be more specific, it is necessary to be able to argue convincingly that specific human behavioural factors pertinent to the study objectives, and not other factors such as natural or other cultural processes and/or archaeological sampling strategies, are responsible for the existence of these differences.

For a number of reasons this problem is especially important in the present case. Intrasite analyses of Thule sites are not numerous, and are usually confined to a limited range of data (examples include Stenton 1987b and McGhee 1984). Thus, there is not presently any sizeable body of data or interpretations upon which to draw to corroborate assertions of significance. In fact, the most common analytical approach to the study of Thule sites has been to amalgamate the individual artifact collections from each structure at a particular site into a single assemblage which is then compared with similarly constituted assemblages from other sites (two exceptions are Green 1975 and McCartney and Scholtz 1977). Two factors are relevant to this approach. The first has been outlined most concisely by Taylor and McGhee (1979:115):

> The statistical techniques of artifact comparison developed for use in other archaeological areas are based on situations in which one recovers large numbers of artifacts which can be grouped into a few classes. In the Thule situation, we have a large number of functional or stylistic classes, with generally very small numbers of artifacts in each class. Any attempt to measure statistical resemblance between such assemblages is highly influenced by sampling error, and the resulting correlations are probably not very useful.

Therefore, comparisons are made either on the basis of the stylistic attributes of individual artifacts present in both collections under study, by which means the sampling problem is at least partially sidestepped, or on the basis of the amalgamated collections referred to above, to lessen as much as possible the factor of sampling error. However, the amalgamation approach involves the assumptions (sometimes implicit) that all or most of the structures at a site would have been occupied contemporaneously or approximately so (e.g., Jordan 1979, McCartney 1980:525-526; Savelle 1987:229), and that there would have been no significant differences of any sort between the types of occupation represented by each house. In Chapter 2 it was argued that these assumptions have not been justified, and in an intrasite analysis such as the present one the above assumptions, so necessary for the amalgamation approach, would constitute answers to the very questions being asked here.

Therefore, for the purposes of this research it became necessary to operate at the level of the house, and to demonstrate that the specific problem outlined by Taylor and McGhee with regard to artifact analysis can be overcome. The Porden Point data exhibit the same characteristics that they describe for other Thule sites: a large number of specific functional/stylistic types (134 in all) with few representatives of each (see Appendix 1). On just a statistical level, comparisons between the structures at the level of these types are nearly impossible to make because almost none are represented in even a majority of the structures.

But even leaving aside the statistical problem, traditional culture-historical research utilizing these types has tended to take little advantage of our ability to know their function through ethnographic analogy (Hickey 1986:78-80). In fact, for most purposes, such research might be carried out almost as effectively in the absence of such knowledge, simply by comparing the presence or absence of items with similar formal characteristics in various assemblages. The ethnographically-ascribed functions have for the most part simply provided convenient names with which to identify objects of a certain form.

Therefore, the central problem for the present research became one of finding artifact categories (or 'types') that could be considered relevant in the answering of questions concerning subsistence and settlement, *and* that would contain large enough numbers of items that sampling error could be reduced to an acceptable level even when dealing with the generally small house assemblages.

The approach settled upon in this research project was to explore the utility of grouping the many Thule artifact types into larger categories on the rationale that more inclusive categories might prove more amenable to some kinds of analysis and data manipulation, and because such categories might be better able (initially at least) to take advantage of our knowledge of the functions of the individual types. While such an approach has elsewhere been used successfully in a formal economic analysis on an intersite level (Hickey 1976), it has not been used with collections as small as those from individual houses.

In the traditional amalgamation approach, the categories used have been the specific functional types that were identified in Mathiassen's (1927a) study based on Inuit informant data. These categories can be considered firmly based in the sense that both the excellent ethnographic data base available from the North American Arctic and Greenland as well as the close cultural relationship between the aboriginal inhabitants of these areas and their ancestors of the Thule culture allow the function of most Thule artifacts to be ascertained quite confidently on the basis of formal similarities. Thus, there can be little question of the 'reality' or comparability of these categories.

In terms of more inclusive categories, however, one encounters a potential problem. In the work that set the pattern for most subsequent Thule site reports, Mathiassen (1927a) organized his description of Thule artifacts into a number of broad functional classes such as *Hunting Implements*, *Means of Conveyance*, and *Household Utensils*. With a few modifications, mostly sub-divisions of classes, these are still in use (e.g., McCullough 1986, McGhee 1984). The exact classes used in this study and the individual artifact types that fit into each are presented in Appendix 1. For descriptive purposes and for organizing a site report, such categories are useful and firmly based on the ethnographic data referred to above. For comparative purposes, however, such categories suffer from at least one potential weakness, deriving from the nature of Thule technology itself (Hickey 1976).

A great deal of Thule material culture technology is based on complex compound implements such as harpoons, which may be made up of as many as seven or more archaeologically-recoverable parts. When comparing two structures on the basis of a category such as 'Harpoon parts', one could easily find a situation where one structure produced three harpoon socket pieces while the other produced one harpoon head, one finger rest, and one ice pick. Each structure would have produced three 'Harpoon parts', but the archaeologist might be quite justified in questioning whether an equivalent type (or an equal amount) of harpoon use was represented by this finding. Therefore, before employing categories such as harpoon parts it is necessary to be able to demonstrate that they do indeed produce relevant and comparable data. In effect, one needs some sort of 'argument of relevance' to justify the categories as defined.

A similar situation is encountered when attempting to use the faunal data from individual structures to make comparisons between them. One must ask whether the representation of bones from each house adequately reflects in any way the dynamics of the economic activities of the people who lived in them. Even given the marvelous preservation afforded by permafrost, it is highly probable that the bones recovered from the house interiors do not represent the entire universe of anatomical portions introduced to the site, and the absence of accessible midden deposits (if any ever existed) compounds this problem. Also, in order to compare houses, one must assume that the faunal remains found in each house reflect in some way the particular subsistence practices of the occupants of that house, and not communal activities carried on between houses (although that certainly could be a conclusion of any such analysis). Finally, in the case of the Thule culture, no researchers have come up with any convincing way to take into account the contribution to the subsistence economy of the largest sea mammals, particularly bowhead whales (e.g., Freeman 1979, but see McCartney 1980 and McCartney and Savelle 1985). Therefore, one might also question whether the much more numerous bones of smaller species reflect an important part of the subsistence economy of the Thule, and, for all of these reasons, whether they provide suitable data for making comparisons between houses.

An exploratory approach to intrasite analysis

In attempting to demonstrate that these two bodies of data (i.e., artifacts and faunal remains) can indeed provide significant information for the comparison of the occupations of individual structures, the approach followed here takes advantage of the fact that technology (as manifested in the artifacts) and subsistence (as manifested in the faunal remains) should be related to each other in certain specific ways. For example, it is possible to hypothesize that certain aspects of the technology will be more directly involved in subsistence procurement activities than others, and should therefore correlate more closely with the evidence of subsistence procurement (i.e., the faunal remains) than others. Going further, it can be expected that certain parts of the subsistence procurement technology will be more closely associated with the acquisition of certain types of game, and thus should correlate most closely to the faunal remains of those species. If these predictable relationships can be identified in the archaeological data, then one may conclude that the categories employed are indeed relevant, and then proceed to use them to explore for less predictable relationships.

A strength of this general approach is that it is primarily based on patterning internal to the archaeological data, but within two separate realms of it — hence, it is internal consistency between these separate types of data that becomes the test, rather than externally imposed and potentially arbitrary standards. Equally importantly, it requires few assumptions. The first major assumption is that one is dealing with a single population and not sampling several separate populations. Given that the latter possibility must be theoretically possible on some level for an intrasite analysis to make any sense, this is a potential problem. The other major assumptions that need to be brought to the data are those concerning the functions of the artifacts, and for the Thule culture those assumptions appear to be well-grounded in ethnographic data. Given that knowledge, the artifact data can then be compared with the faunal data on a house-to-house basis to see if the correlations predictable on the basis of our assumptions as to artifact function do indeed show up. If they do, then this will show that both the faunal data and the artifact data (at the level of functional classes) can confidently be used to compare houses, the problems of sampling error and compound technology notwithstanding. If they do not, this may indicate that the level of analysis is indeed inappropriate, or that one is not dealing with a uniform population.

The particular method chosen to explore the correlation between the artifact data and the faunal data was to calculate the coefficient of determination (r^2) between the various classes of artifacts and the various species of animal, employing the data from each house. This simple statistic is a good measure of the degree to which the assumption of a linear correlation between two variables is justified (Mendenhall 1979:353-354). A perfect linear correlation between the variables would produce a value of one, while a value of zero would be produced when the variables related in a completely random fashion, or when there was a decidedly non-linear correlation. A more realistic value might be 0.557, which would indicate that 55.7% of one variable's deviation about its sample mean could be explained on the basis of that variable existing in a linear relationship with the other variable. Parenthetically, it should be noted that the coefficient of determination does not indicate the direction of the correlation, i.e., whether it is positive or inverse; unless otherwise stated, all correlations in the following discussion are positive.

Given that it is unlikely that any phenomenon in anthropology would be a direct function of just one other variable, and also taking into account the vagaries of archaeological sampling, one would not need to find a value of one to demonstrate that two variables were strongly correlated. Any human social phenomenon is certainly multivariate, but until we explore certain bivariate relationships we will not know what is appropriate for further study.

Analytical categories

The functional classes of artifacts listed in Appendix 1 will be the minimal units of analysis in the following discussion. However, these classes will also be grouped together into several more inclusive categories to facilitate the exploration of certain questions. Thus, the major categories selected for analysis included, for the artifact data, *Sea mammal hunting* and *Other Hunting and Fishing*, the latter catchall category including bow and arrow parts as well as specialized bird hunting and fishing implements. Three additional categories were also utilized: *Manufacturing*, which includes men's and women's knives and men's and women's manufacturing implements; *Non-hunting*, which includes all artifact types other than hunting; and *All Classes*, which incorporates every artifact type.

Six categories of faunal remains were employed: ***Small seal***, which is primarily ringed seal but may contain some harp seal; ***B.s/Wal/Bel'***, which incorporates bearded seal, walrus and beluga, the large sea mammal species represented in the faunal assemblages; ***Caribou/M'ox***, i.e., caribou and muskox, the two large land mammal species represented; *Arctic fox*, *Bird*, and finally *Non-small seal.*, which represents the aggregate of the preceding three categories plus fish. The amalgamated faunal categories were employed for two main reasons. Each incorporates generally similar species in terms of ecology and hunting techniques, based on ethnographic data. More important, however, was the fact that the species included in the amalgamated categories tended to be present in very small numbers in individual houses, so the amalgamation was an attempt to produce statistically useful samples. It should also be noted that the faunal data from RbJr-1 Houses 5 and 7, and RbJr-4 House 2 were excluded from this analysis, as only a part of the total faunal sample from each house was identified. Therefore, the NISP and MNI values tabulated for those structures would not be comparable to those from the rest of the houses. However, those houses were included in calculations involving artifact data only. In no case did this appear to significantly alter the results. As will be discussed, that fact will have important ramifications for the extension of the research beyond Porden Point.

Levels of analysis

Before proceeding further, it is important to return to the question of levels or hierarchies of analysis. Because this research project was explicitly designed to explore intrasite variability within the Porden Point Thule remains, the individual structures and their artifact/faunal assemblages represent the most important units of analysis. However, as already noted, the artifact assemblages have the potential of being analyzed on more than one level (individual functional types or combined functional classes), as do the other types of data. The rest of this chapter takes advantage of that fact in places by contrasting the results obtained on one level of analysis with those derived on another. For instance, results based on the analysis of the combined functional classes represented in individual houses will later be interpreted in the light of results obtained by combining the collections from several houses and then analyzing the occurrence of individual functional types in the resulting assemblage. This is by no means a novel approach to archaeological data, but when using it, it is necessary to be aware when units/levels of analysis are shifting, and to ensure that the data are still relevant on the new level. For that reason, some care has been taken to explicitly note such shifts.

House size and the artifact/faunal collections

One of the first concerns to be addressed relates to the degree to which the size and nature of the artifact and faunal collection from each house might be affected by the factor of house size, which varied substantially. In many archaeological circumstances it has been observed that the nature and diversity of a sample can depend to a great deal on the sample size (e.g., Thomas 1986:242), and it is to some extent on this basis that the use of amalgamated samples has been justified in Thule archaeology. Therefore, in order to assess the extent to which the variable of absolute house size (and therefore excavation size) influenced the size and nature of the artifact and faunal remains found in them, the *Living area* of each house was determined by calculating the internal area of the house in square metres, including both the sleeping platform(s) and floor. Presumably, the living area would be a fair measure of the number of people to occupy the house. This value was then plotted against various sets of artifact and faunal data.

A second measure of house size was also calculated, by multiplying the living area of each house by the number of superimposed floors in the house (i.e., the living area value of a house that had been rebuilt twice would be multiplied by three) on the rationale that houses that were rebuilt might have been occupied over a significantly longer period than ones that were not rebuilt. McGhee (1984:78-79) has advanced the possibility that each floor of the rebuilt houses at Brooman Point could represent as little as a single season's occupation, in which case RbJr-1 House 9 would have been occupied for five seasons, or five times as long as the houses that were never rebuilt. Obviously, this cannot be taken for granted; however, these modified values *may* more accurately reflect the relative lengths of occupation of the houses.

The results of these analyses are presented graphically in Figures 55 through 57. Figures 55 and 56 illustrate the fact that there is very little correlation between 'living area' and the total number of artifacts, or between living area and specific categories of artifacts. However, a definite linear relationship does appear between the numbers of artifacts in each house and the value for the living area multiplied by the number of floors. This appears to be true for the total number of artifacts from each house, the number of non-hunting artifacts, and for the number of non-sea mammal hunting artifacts. Significantly, however, this is not the case for sea mammal hunting artifacts, whose numbers exhibit little correlation with house size measured either way. This will prove to be important, as sea mammal hunting artifacts will be found to correlate with other factors.

There are several possible explanations for this. One is that artifacts would tend to be lost or abandoned in the houses at a fairly regular rate, and those houses that had more floors were occupied longer and therefore accumulated more artifacts. However, it may also be that renovations involving the laying of new floors and sleeping platforms simply sealed in lost or abandoned artifacts, making them inaccessible to [illegible] recovery. Therefore, an unmodified house occupied over the same period during which another house was renovated several times might be found to contain fewer artifacts simply because there were more opportunities during its lifetime for lost items to be found, or removed during cleaning.

Unlike the situation observed for the artifacts, however, the number of faunal bones found in each house is not related in any consistent way to house size. Figure 57 illustrates this for both the total number of faunal bones from each house, and for the number of non-

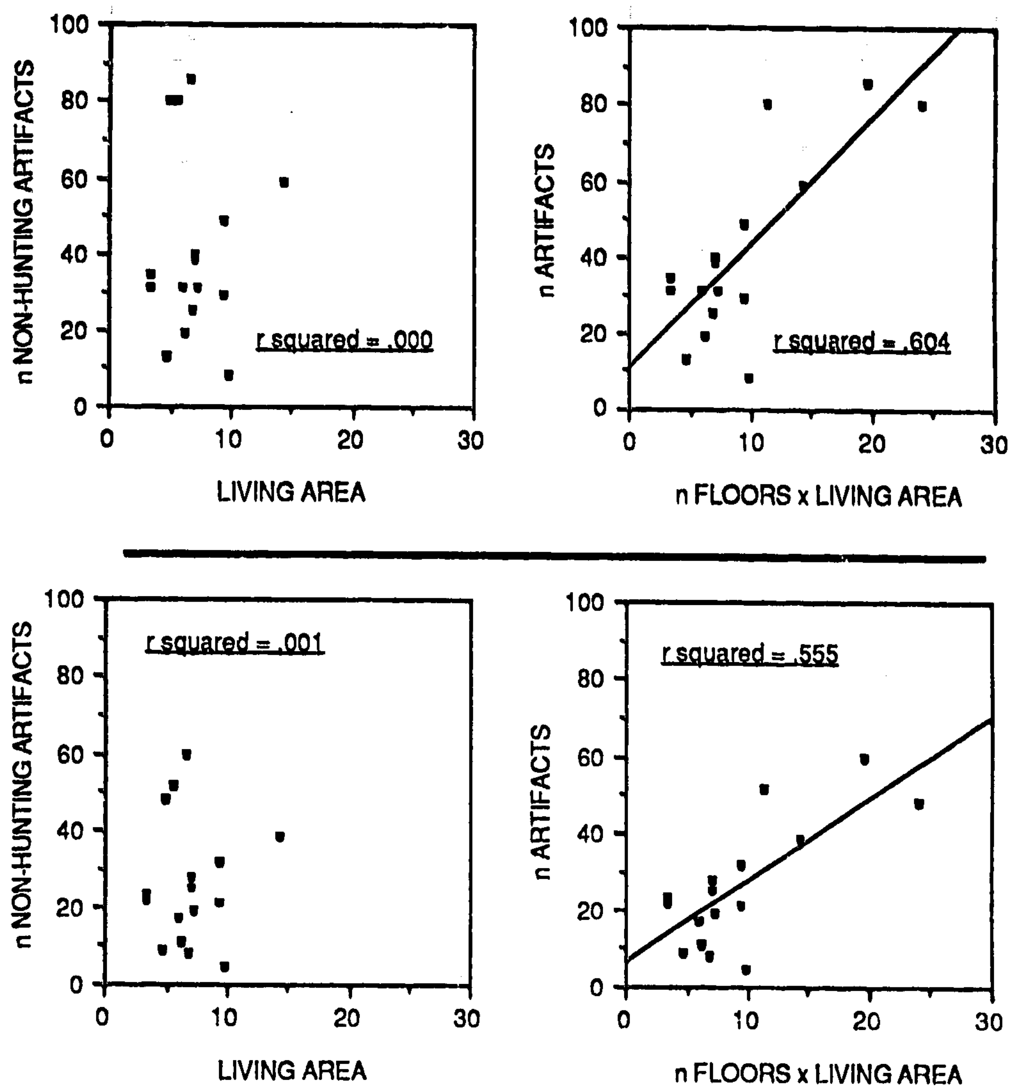


Figure 55. Scatter plots illustrating the relationship between each house's living area and: (Top) the total number of artifacts found in it, and (Bottom) the number of non-hunting artifacts found in it.

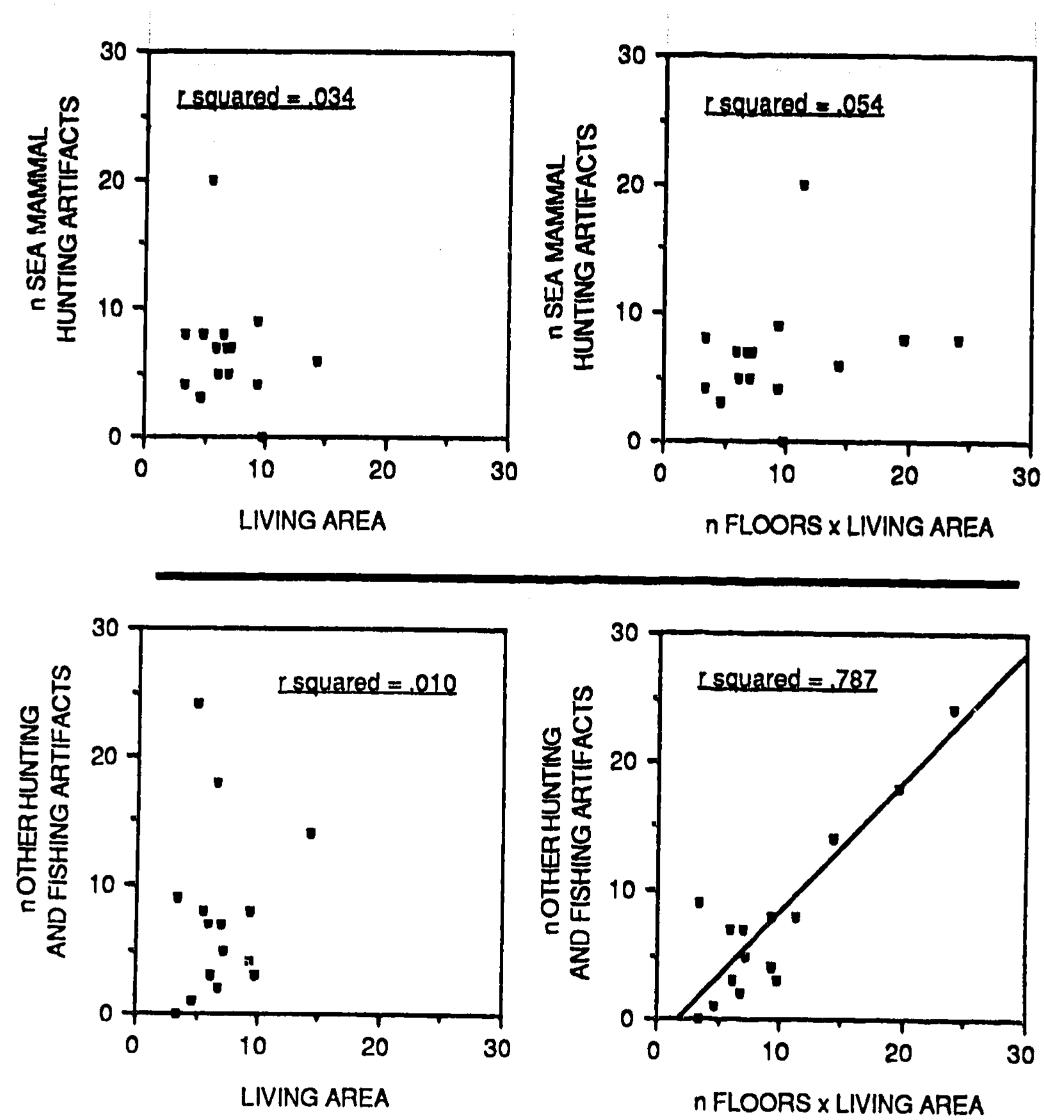


Figure 56. Scatter plots illustrating the relationship between each house's living area and: (Top) the total number of sea mammal hunting artifacts found in each, and (Bottom) the number of hunting artifacts not associated with the hunting of sea mammals.

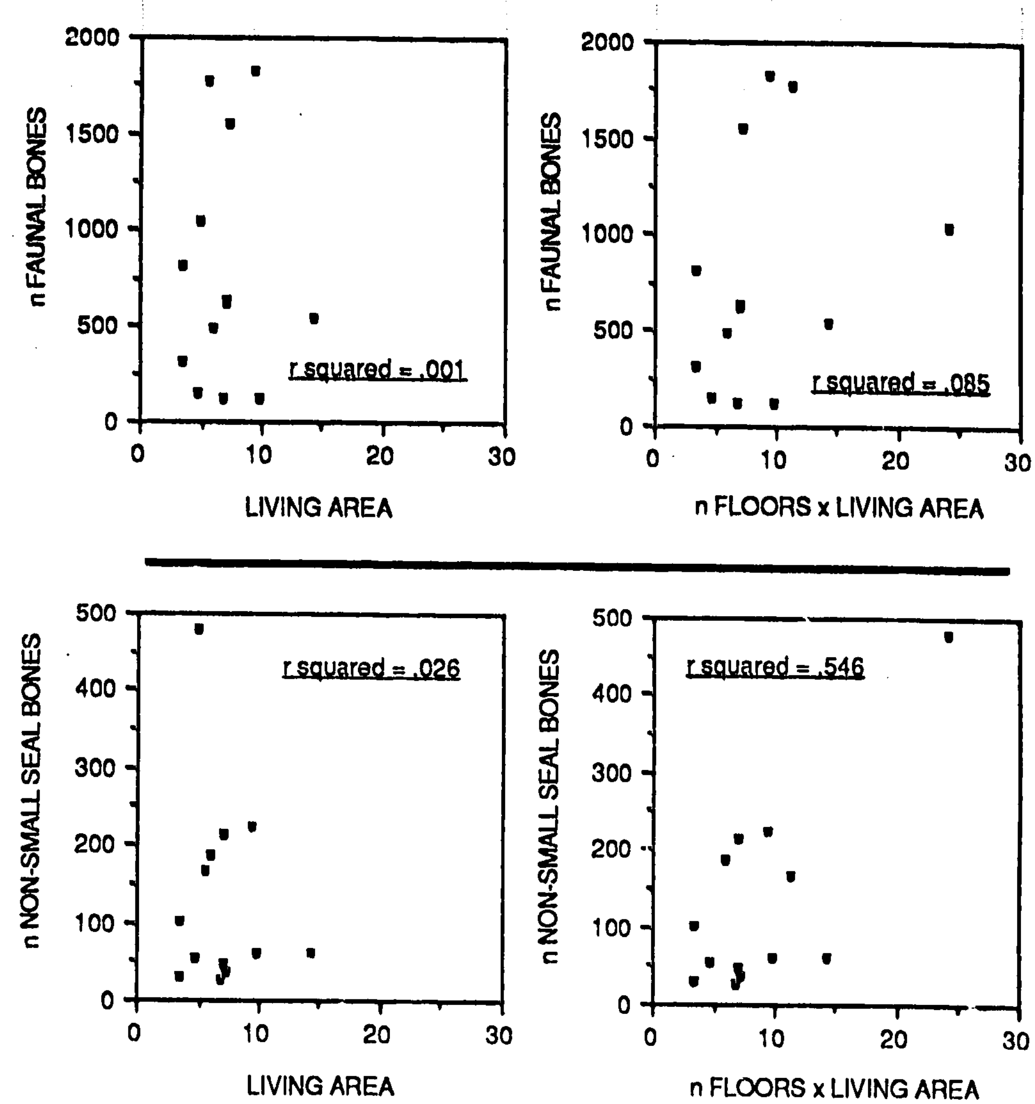


Figure 57. Scatter plots illustrating the relationship between each house's living area and: (Top) the total number of faunal bones found in it, and (Bottom) the number of faunal bones just from non-small seal species found in it.

small seal bones. Parenthetically, it should be noted that the value for r^2 of .546, obtained for non-small seal bones correlated with the living area multiplied by the number of floors, does not accurately reflect the nature of the relationship between these two variables, as can be seen in the scatter plot. Rather, this high r^2 value reflects the vulnerability of that statistic to outliers (Hartwig and Dearing 1979:34-35); hence the need to examine the scatter plot. In this case one unusually large value for non-small seal bones (from RbJr-1 House 9) causes the high r^2 value; excluding that house, the value for r^2 would be .027.

Discussion

This difference in the way that house size correlates with artifacts and with faunal remains suggests that the processes leading to these two classes of items entering the archaeological realm may have been rather different. Following up what was discussed above concerning the entry of artifacts into the house deposits, it may be that faunal bones accumulated at a much faster rate in the houses, and were therefore more thoroughly or more often cleaned out during the period the house was occupied. Conversely, it may be that rather more complicated processes were involved in the entry of faunal remains into the houses in the first place, processes not tied to or governed by house size or (presumably) the number of occupants of the houses.

Whatever the case, however, there does appear to be reason to believe that at least some aspects of both the faunal and artifact data are related to factors other than just sample size, so further exploration of the data, excluding for the moment differences between the architecture of the houses themselves, is warranted.

Artifact/faunal data correlations

The next step in the analysis involves exploring the relationship *between* various categories of the faunal and artifact data from each house. As outlined above, we can hypothesize that certain aspects of the faunal data and certain artifact categories should co-vary. Therefore, we are trying to determine if behaviour as reflected in the archaeological record fits certain predictable patterns.

The results of the analyses are presented graphically in Figures 58, 59, and 60. Figures 58 and 59 show the two combined categories of hunting artifact graphed against the six categories of faunal remains. However, the faunal remains are tabulated on the basis of NISP (number of identified specimens) in Figure 58, and on the basis of MNI (minimum number of individuals) in Figure 59. What can be seen from both of these graphs is that sea mammal hunting artifacts correlate much more strongly with small seal remains than they do with any other faunal category. Similarly, *Other Hunting and Fishing* artifacts correlate very strongly with Arctic Fox, Bird, and total non-small seal, but almost not at all with small seal. This suggests that the correlation obtained between *Other Hunting and Fishing* artifacts and house size may not be indicative of a simple cause and effect relationship. The faunal categories *B.s / Wal. / Bel* and *Caribou / M'ox* do not appear to be related in a linear fashion with either category of hunting implement, but those species are represented by only very small numbers in any of the faunal assemblages. No negative correlations were obtained. Various logarithmic transformations of all of the data were performed to explore for the presence of simple non-linear correlations, but without success.

Figure 60 shows the same faunal categories (by NISP) graphed against the three amalgamated artifact classes. It is apparent that the categories *All classes* and *Non-hunting* do not differentiate significantly between small seals and non-small seals in the same way that the two hunting implement categories do (in other words, they produce moderately weak linear correlations with both faunal categories). Thus, these correlations may simply reflect a correlation with overall sample size. By implication, this appears to confirm that the correlations obtained for the different categories of hunting implement are valid, and not simply a function of sample size. However, the results for the combined

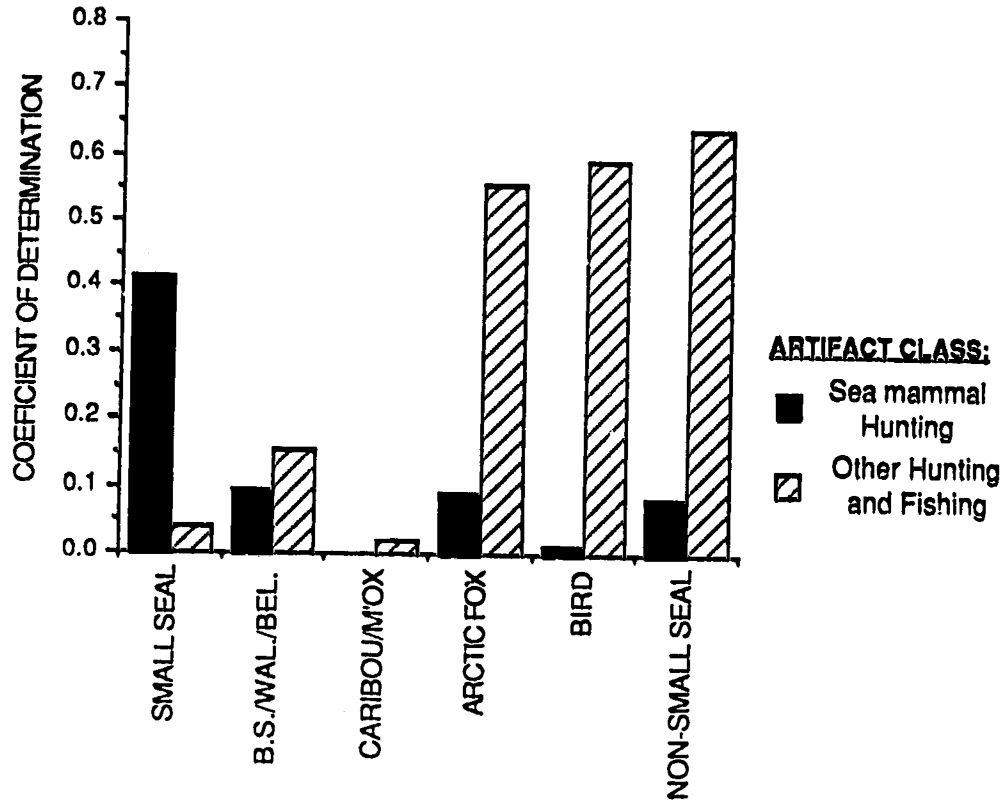


Figure 58. Graph showing the coefficient of determination (r^2) between the faunal remains from each house (tabulated on the basis of NISP) and the two combined categories of hunting implements.

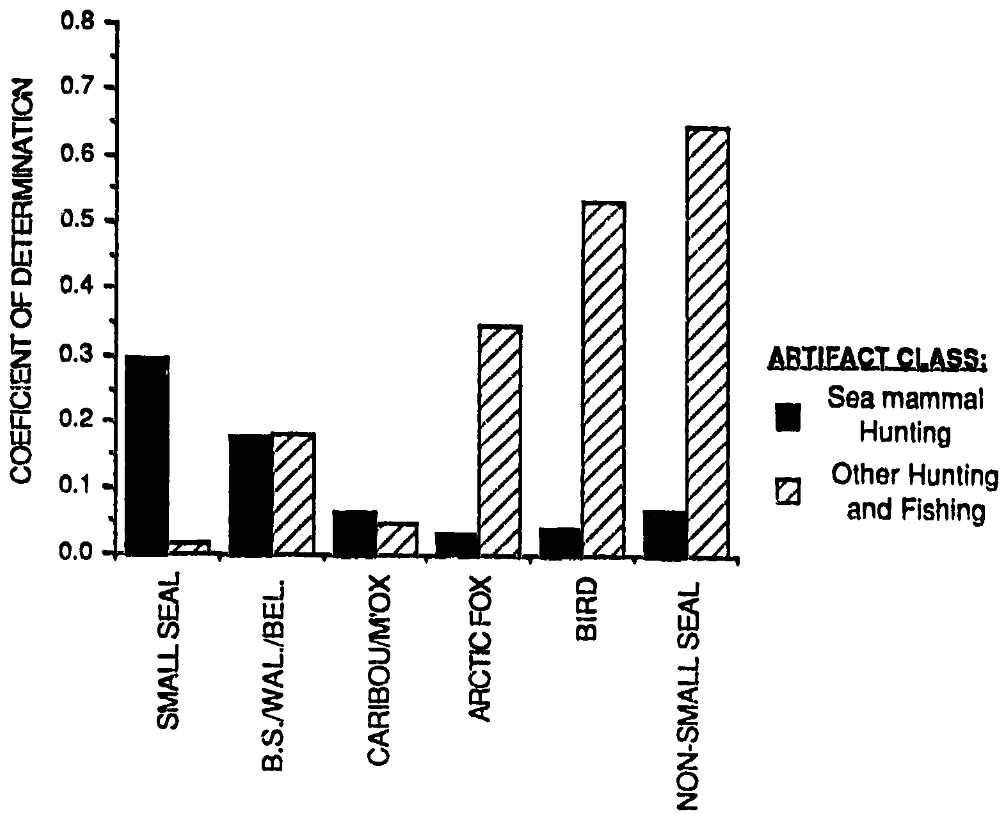


Figure 59. Graph showing the coefficient of determination (r^2) between the faunal remains from each house (tabulated on the basis of MNI) and the two combined categories of hunting implements.

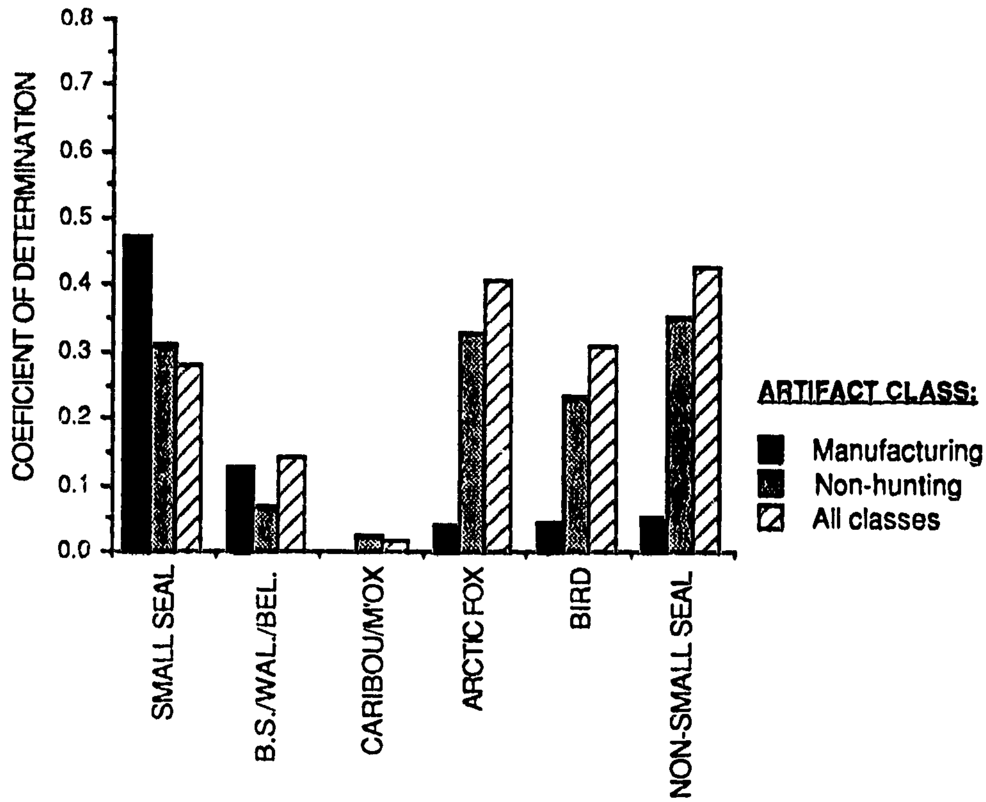


Figure 60. Graph showing the coefficient of determination (r^2) between the faunal remains from each house (tabulated on the basis of NISP) and three combined categories of implements.

category ***Manufacturing*** (consisting of men's and women's manufacturing implements along with men's and women's knives) are interesting in that they parallel the results for sea mammal hunting implements: a high correlation with small seal remains. In fact, the ***Sea mammal hunting*** and ***Manufacturing*** artifact categories correlate with each other very strongly, having a coefficient of determination of .614, while the values of each with the category *Other Hunting and Fishing* are .054 and .191 respectively. What this seems to indicate is that the proportion of *Other Hunting and Fishing* implements in the houses is largely independent of those other categories of artifact, but correlates quite strongly with the presence of non-small seal remains. A rather speculative interpretation of these results might be that the first two categories reflect artifact types most closely associated with activities actually carried out during the time that the winter houses were occupied, while the activities reflected by the *Other Hunting and Fishing* category took place independently of the winter house occupation.

Discussion

All of these results are interesting in themselves, and will be explored more fully below. But in the present context their primary importance lies in what they tell us about the reliability of the data base. Most of the results could have been expected on the basis of ethnographic analogy or intuition; none of them contradicts anything that might be predicted on the basis of these 'traditional' sources. Accepting therefore that they are valid *and* that the data are internally structured and coherent *on this level*, it is possible to assert with a fair degree of confidence that some of the data categories as defined are indeed sensitive enough to utilize on a house-to-house basis.

However, the approach that has been followed so far, involving the calculation of the coefficient of determination to ascertain if certain predictable relationships are indeed present in the data, assumes that each of the individual structures comes from a single population. In as much as they are all Thule culture structures of roughly the same age (see chapter 4), that assumption may be justified. However, the goal now must be to actually assess just how similar these structures are to each other in terms of the settlement strategies that they represent. An additional type of data that can be introduced at this point relates to the specific season of occupation of the structures, and that will be discussed in the next chapter.

6. SEASONALITY

Introduction

The thin section analysis of seal teeth has come into relatively widespread use in archaeology as a means of determining the season of death of the animals, and hence of learning something about the season(s) of occupation of the sites (e.g., McCullough 1986; Morrison 1983a, 1983b; and Stenton 1983, 1987b, for Thule culture studies). The exact methodology employed varies, but basically the process involves the preparation from the tooth of a thin section which is then examined for the presence of differentially-textured bands that form annually in the cementum and dentine. By knowing at what time of the year the different bands form (through the examination of comparative specimens whose date of death was recorded) one can estimate the season during which an archaeologically-recovered animal was killed. The maximum degree of resolution obtainable by these techniques is usually taken to be a three or four month period (e.g., McCullough 1986:498; Presley 1987; Spiess 1976:53), although some researchers do make estimates down to the month.

Thin-section analysis: Porder[illegible]nt

In the archaeological studies of the Thule culture in which this method has been employed, the use of amalgamated samples has been the rule in order to avoid statistical sampling error (e.g., McCullough 1986:497; Morrison 1983b:71). Given that some of the structures producing the teeth could have been occupied over a significant portion of at least one year the desire for a large sample is not unwarranted. But because the present research has the explicit goal of examining intrasite patterning in the data, the amalgamation approach could not be followed and the results from each house must be considered independently.

However, quite apart from the fact that at least some significant patterning does exist in the house data as demonstrated above, a number of aspects of the particular methodology employed in this thin section analysis render the sampling problem less critical. First, in order to ensure that there was no duplication (i.e., the analysis of more than one tooth from the same animal), only right mandibular canines still set in the mandible were selected for thin sectioning on the basis of their abundance. Thus, the twenty-six teeth actually sectioned represent twenty-six separate animals. The 1984 and 1985 excavations produced a total of only sixty-four right mandibles with canines, so over 40% of these teeth were analysed. Secondly, the goal was to section up to three teeth from each house; from the ten houses that produced teeth, fully twenty-nine of the thirty-eight teeth not sectioned came from just three houses (House 4 at RbJr-1, and Houses 1 and 4 at RbJr-4). For the remaining seven houses, the teeth actually sectioned represent on average 72% of the teeth that were found. Thus, while only a small number of teeth were sectioned from each house, for seven of the ten houses they represented almost three-quarters of the eligible teeth that were recovered.

For this analysis, the teeth that were selected were decalcified, cut on a microtome, stained and mounted on slides. Several sections were prepared from each tooth, stained to differing degrees. The sections were then examined under a high power microscope to locate the most clear annuli in both the cementum and dentine. These were then photographed and the seasonality determinations made from the enlarged photographs (see Morrison [1983a:265] for an example of such a photograph). Wherever possible, separate readings were made on both the dentine and cementum for each tooth. Following generally accepted practice (Smith 1973:8; McCullough 1986:497), where there appeared to be some disagreement between the dentine and cementum readings somewhat more reliance was placed on the former.

Unfortunately, none of the structures at RbJr-5 produced canines for sectioning. Of the twenty-six teeth from RbJr-1 and RbJr-4 that were sectioned, four produced no useable readings from the cementum or dentine (from RbJr-1 Houses 2, 4 and 6). The results from the remaining twenty-two are shown in Table 2. The individual dentine and cementum readings for each tooth are presented, followed by the derived estimation of the season of death. Readings made from thin sections judged to be of poor quality are followed by a question mark, as are season of death estimations based on them.

Following the generally accepted usage, season of death estimations are expressed as either spring, summer, fall, or winter. Quite approximately, spring is defined as the period from March through May, summer is June and July, fall is August through October, and winter is the period from November through February. These seasons can be looked at in a somewhat more relevant way by expressing them in terms of the ecological factors that presumably would have been most crucial during each for seal hunting. Winter at the latitude of Porden Point is a four-month period during which the sun remains below the horizon and the ocean is covered by an essentially unbroken expanse of ice; breathing-hole sealing would presumably have been the only effective method during this time in the absence of polynyas. Spring and summer see the return of daylight but the ocean's ice cover is still largely intact except at polynyas; breathing-hole, ice-edge and basking seal hunting would have been the most feasible methods during this part of the year. Finally, fall would have been the period of open water; open-water techniques of seal hunting would have been the most effective. Figures 61 and 62 illustrate the thin section data presented in both of these ways.

Taken as a group, the results of this thin section analysis are generally consistent with those from other Thule sites that have been studied, in that winter kills are rare and summer kills are the most numerous. However, spring kills are somewhat more common here than at those other sites while fall kills are less numerous (McCullough 1986; Morrison 1983b; Stenton 1987b).

THIN SECTION ANALYSIS RESULTS

HOUSE		TOOTH	AGE	DENTINE	CEMENTUM	SEASON OF DEATH
RbJr-1	H1	78	1	-	Spring	Spring
		79	15	Fall	Fall	Fall
		80	5	Summer (?)	-	Summer ?
RbJr-1	H2	81	9	Summer	-	Summer
RbJr-1	H4	84	10	-	Spring (?)	Spring ?
		85	29	Early spring (?)	Spring	Spring
RbJr-1	H6	88	<1	Summer	-	Summer
RbJr-1	H8	89	4	Early spring	-	Early spring
RbJr-1	H9	90	11	Early summer	Late spring(?)	Early summer
		91	8	Early summer	Spring	Early summer
		92	13	Spring	Winter (2 rdgs)	Late winter
RbJr-1	H10	93	5	-	Winter	Winter
		94	10	Winter (?)	Fall (?)	Early winter ?
RbJr-4	H1	95	3	Early summer (2 rdgs)	-	Early summer
		96	3	-	Late spring	Late spring
		97	3	Summer	-	Summer
RbJr-4	H3	98	15	Late winter	Late spring	Spring ?
		99	9	Summer	Early summer	Summer
		100	<1	Spring	-	Spring
RbJr-4	H4	101	13	Spring	Winter (?)	Spring
		102	2	Fall	-	Fall
		103	3	Summer	Late spring	Early summer

Table 2. Thin section data from the 1984 and 1985 excavations at Porden Point.

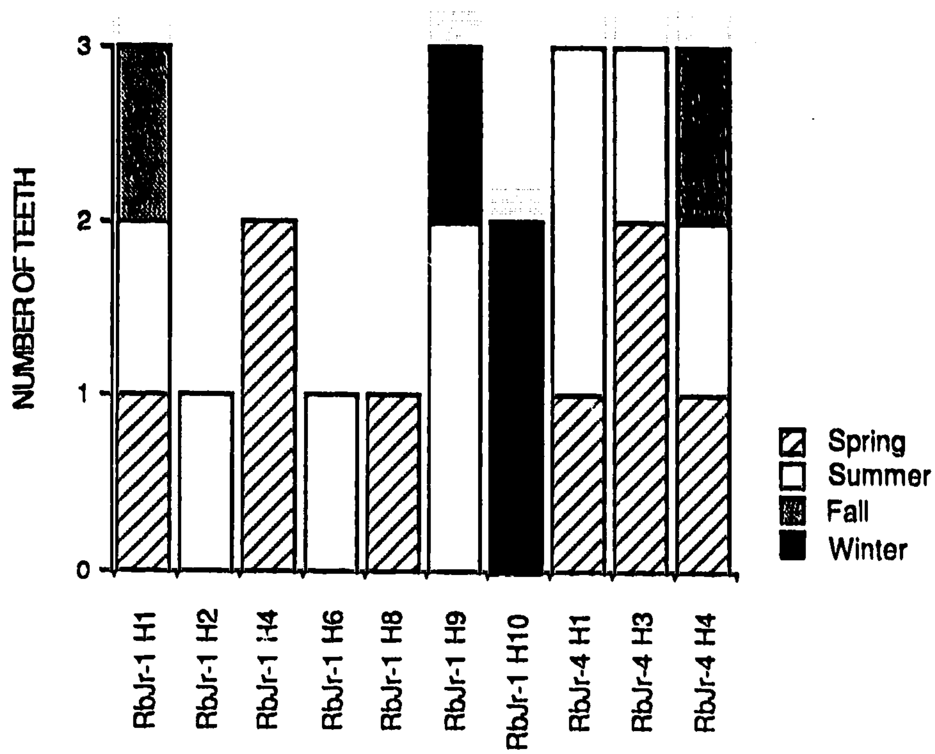


Figure 61. Graph showing the season of death determinations from the Porden Point seal canine sample.

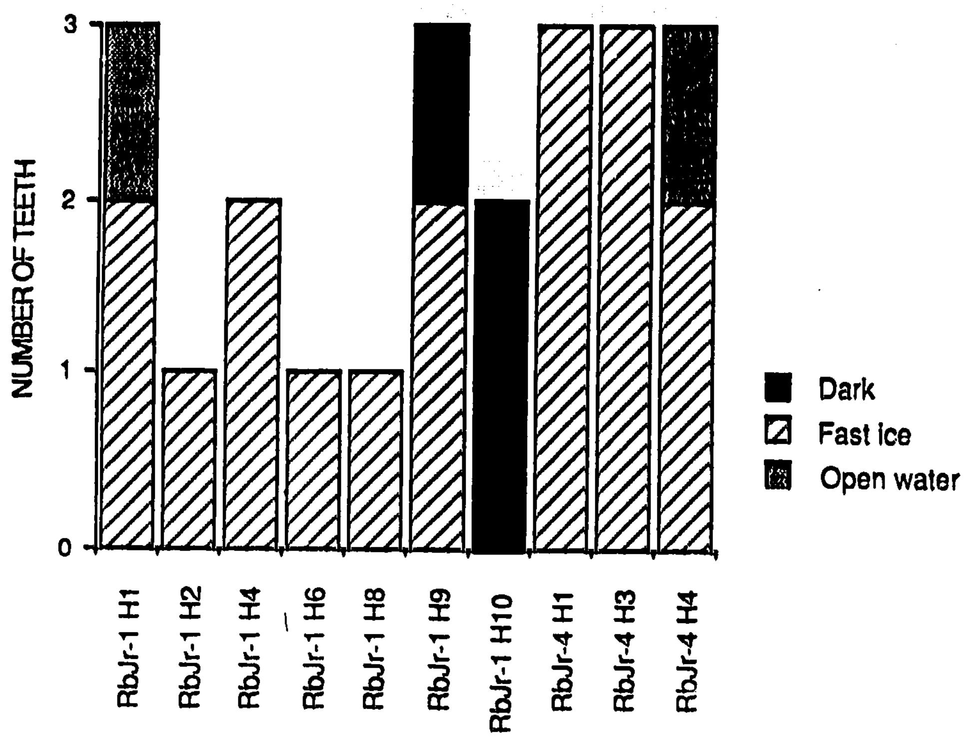


Figure 62. Graph showing the thin section results expressed in terms of the ecological factors most relevant to seal hunting.

Moving to the analysis of the data on the basis of the results from each individual house, however, and bringing in artifact and other faunal data as well, a number of interesting correlations were observed in spite of the small number of readings. Seals killed during the summer were found in seven of the houses, while spring-killed animals were found in six. However, two of the four houses that did not yield any spring kills produced only one readable section each. Winter-killed seals were only found in two of the houses, but these also happened to be the remaining two houses that did not produce spring kills — hence, spring and winter kills are mutually exclusive in this sample. This certainly could be viewed as an artifact of the very small sample size. However, this pattern does correlate quite closely with another aspect of the data: the proportion of the faunal sample from each house formed by small seals. The two houses that produced winter-killed seals had the lowest percentage of small seal remains while the houses producing spring kills had much higher proportions. This relationship is illustrated in Figure 63. The values for the coefficient of determination between the percentage of small seal remains and the number of winter and spring kills are .536 and .529 respectively, but the winter kills/% small seal relationship is inverse in direction.

Some of the thin section results correlate in a quite interesting way with the artifact data as well. Figure 64 illustrates the relationship between the season of death data and the proportion of each house's total artifact assemblage consisting of three different functional classes of hunting implement: bow and arrow hunting, sea mammal hunting, and bird hunting. It can be seen that no significant linear correlations are present for fall and winter kills, and that only weak inverse correlations are present for bow and arrow hunting and bird hunting during the spring. However, there is a strong negative correlation between the number of summer kills and the percentage of sea mammal hunting implements. In other words, the more summer kills there are, the lower the percentage of sea

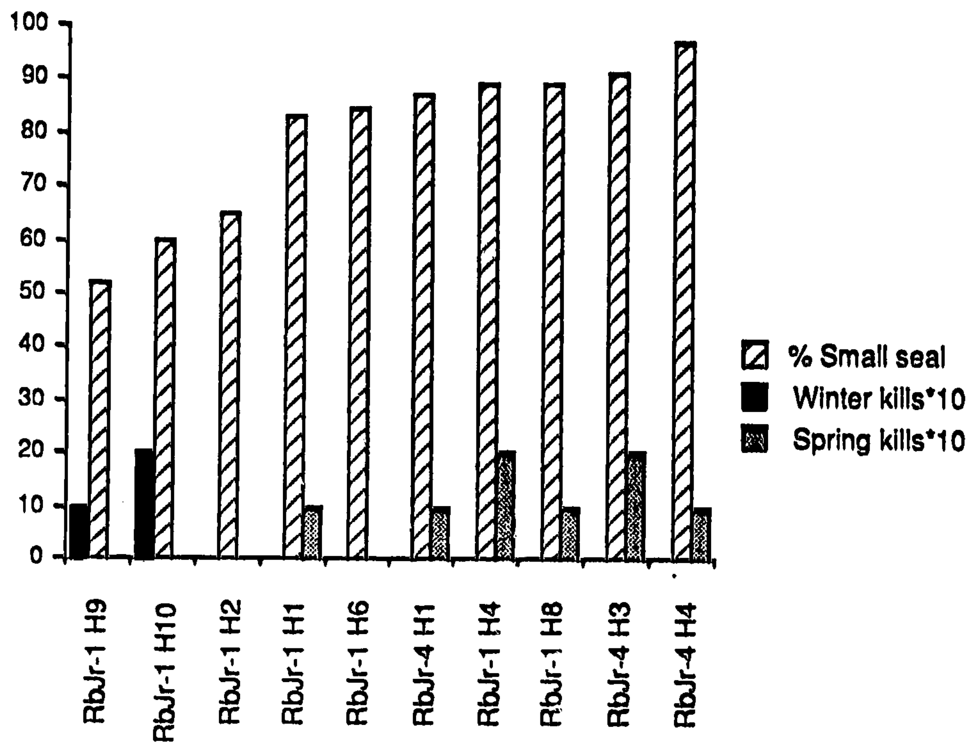
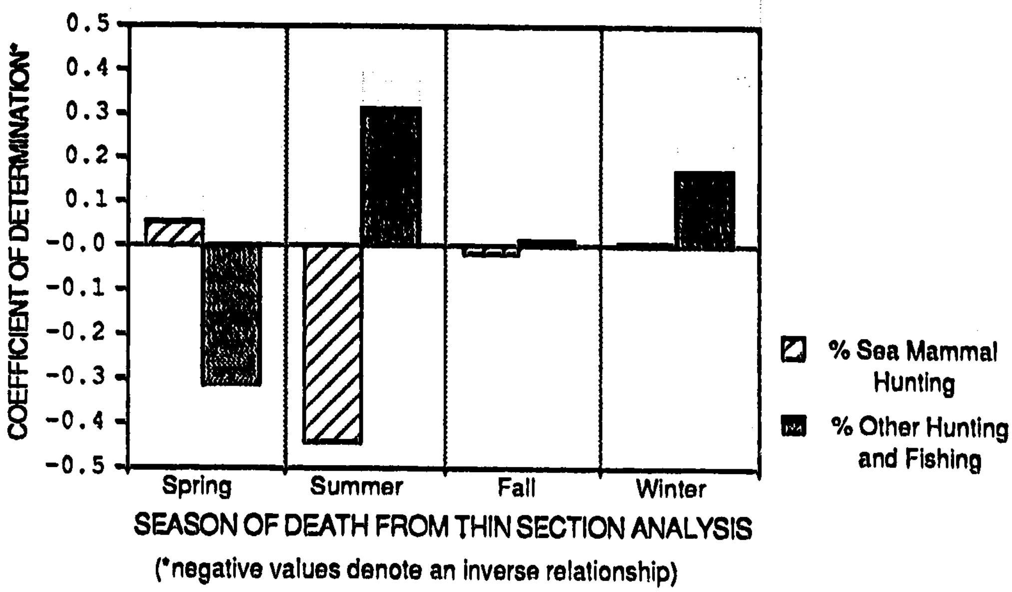


Figure 63. Graph showing the relationship between the percentage abundance of small seal remains in each house, and the number of winter and spring seal kills (multiplied by ten for visibility) based on analysis of the thin sections.



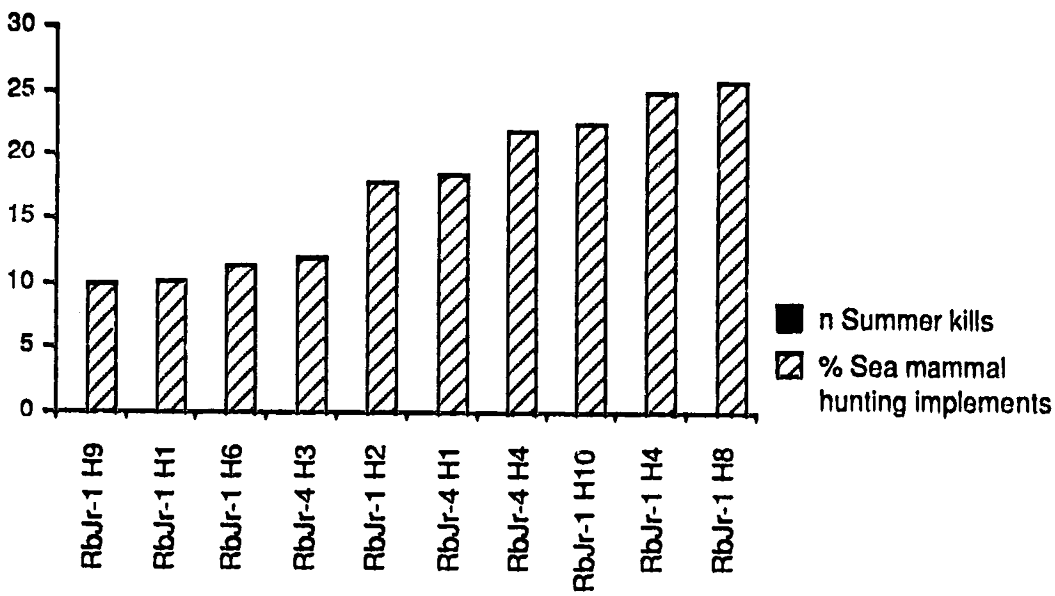


Figure 64. Graphs showing (Top) the relationship between two classes of hunting implements and the season of death data, and (Bottom) the numbers of summer-killed seals and the proportion of sea mammal hunting implements in each house.

mammal hunting implements in the artifact assemblage, and vice versa. This situation is contrasted with moderately positive correlations between the number of summer kills and the percentage of bird hunting and bow and arrow implements.

Discussion

A number of factors will have to be considered before further attempting to assign significance to these results. Among them is the question of whether the seal hunting carried out during any given season was taking place in the vicinity of the winter house site itself or from distant hunting camps, and also the question of whether the seal carcasses were being stored for extended periods or whether their consumption was more or less immediate.

7. SEAL BONE ANALYSIS

Introduction

Small seal remains represent the most abundant class of data by far in the Porden Point faunal collection, and partly for that reason they were subjected to the most intensive analysis. Another reason, however, is the fact that the small seal data provide a means of studying the underlying organizational principles of the subsistence strategies employed by the Thule occupants of the site. The first major question to be answered concerns the settlement strategy employed during the seasons when the hunting was carried out: were collecting or foraging strategies represented? Specifically, one would like to learn whether the seals were being obtained locally in the vicinity of the winter site or whether they were being obtained at some distance from it, in which case the factor of transportation becomes relevant. If transportation was a significant factor, particularly when large numbers of seals might have been caught, would the seals have been butchered beforehand to reduce their mass? In other words, what were the circumstances surrounding their acquisition, and what were the economic decisions made under these circumstances?

The second question concerns Thule food storage practices. During the cooler weather of autumn, temperatures would presumably have allowed seals to be stored essentially intact if desired, as was certainly done during the historic period in the course of winter breathing-hole sealing (e.g., Balikci 1970:77; Jenness 1922:113; Van de Velde 1956). However, it is likely that seals which were caught in the spring or summer but destined for winter consumption would have required some form of processing prior to storage so as not to be totally unpalatable by the time they were to be eaten.

In order to provide a context for the assessment of the data from Porden Point, relevant ethnographic data relating to both of these questions will first be reviewed, followed by a discussion of archaeological approaches to answering these questions.

Ethnographic data on storage

Dealing first with the question of storage, it has been noted that ethnographic studies of subsistence practices world-wide have tended to concentrate on hunting techniques and devote little attention to the techniques of storage (e.g., Testart 1982:534), and this is certainly true for the Arctic. However, it is evident from some ethnographic accounts that seals were processed for summer storage during the historic period. Two principal means of storage can be identified. The first and apparently most important relates to the storage of blubber from seals caught during spring hunting. Large sealskin bags or 'pokes' were filled with blubber and then cached for the summer; when they were collected again in the autumn the blubber had liquified and was then either consumed or used as fuel for lamps. This storage technique appears to have been practiced throughout the North American Arctic and Greenland (e.g., Balikci 1970:85-86; Fabricius 1962:109; Jenness 1922:101; Mathiassen 1928:45; Petersen 1984:631; Spencer 1984:330).

The second means of summer storage for some seal products was drying. A few sources simply mention that seal meat was dried (e.g., Mathiassen 1928:206; Petersen 1984:631; Saladin d'Anglure 1984:491), while others provide a few more details:

> ...Seal meat is strung and dried. (Spencer 1959:373)

> Dried [seal] meat is called *Nivko*. For drying purposes it is cut into flat slices as far as this can be done on account of the bones, which are allowed to remain; the slices are then laid upon bare rocks in the sun and wind in summer; a small amount of blubber is also left on to make it tasty, and afterwards they have this wind-dried meat for winter supplies; good housekeepers collect as much of it as they can in summer. (Fabricius 1962:108-109)

It should be noted that a third method for the summer storage of small seals was possible although seemingly not widely used: in cold storage facilities. In North Alaska, these took the form of ice cellars. Until recently, though, they were apparently only used for the storage of meat from larger animals (Spencer 1959:141, 373; Nelson 1969:301-302).

Turning to the question of transportation, there is a similar lack of relevant ethnographic data. Much of the available information relates to winter hunting, particularly breathing-hole sealing (e.g., Balikci 1970:77; Jenness 1922:113), during which few seals are acquired at any one time, and the intact seal constitutes an extremely convenient unit to drag back to camp over the ice, often by dogs. For this purpose a thong is inserted through the jaw, but no other modifications are necessary. However, bearded seals can be partially butchered before being dragged back to camp (Nelson 1969:298-299). What information we do have from other seasons suggests that seals could have been cached near the place where they were caught if this was distant from the camp (e.g., Steensby 1910:304-305). However, it is not known to what degree they would first have been butchered and otherwise prepared (dried?) for the purpose of storage, or, given a very large number of seals or a considerable distance to the base camp, whether under some circumstances they would have been systematically butchered in order to transport only the most highly valued portions.

Butchering and storage

At this point it is necessary to discuss in more detail some of the factors that might account for the differential representation of anatomical parts from seals in Thule sites. This therefore brings up the complex issue of the 'economic anatomy' of seals, and also what might be termed their 'social anatomy'. For the latter, considerable research has been carried out on the sometimes complex rules governing the butchering of seals and the sharing of the various cuts of meat from them, primarily in relation to seals caught through breathing-hole hunting (Balikci 1970:133-137; Damas 1972; Rasmussen 1931:164; Rasmussen 1932:106-107; Van de Velde 1956). However, as far as can be determined, all of these butchering and sharing rules apply to seals destined for essentially immediate consumption (i.e., in a foraging context), and not to cached resources (e.g., Rasmussen 1931:163). Cached meat could certainly be shared when brought into the camp (e.g., Jenness 1922:90; Steensby 1910:305), but it seems unlikely that exactly the same rules governing division and distribution would apply. However, even knowledge of these 'typical' patterns tells us very little about how much variability would have been allowed or practiced in these situations, and more importantly it does not tell us how patterns of initial butchering would have differed in situations where storage and/or selection for only the most valued parts would have been a factor.

A few researchers have attempted to deal with the differential occurrence of various anatomical portions of seals in archaeological collections by trying to determine what situations might produce identifiable patterns of element representation (see Figure 65). Based on ethnographic data, mostly from Spencer (1959), Stanford (1976:76) proposes that the parts of small seals most worth transporting (i.e., the portions with the highest differential value) would be the head, shortribs, and hind limbs. On that rationale he argues that a seal bone assemblage containing a high percentage of cranial bones, ribs, lumbar vertebrae and hind limb bones compared to the other parts of the anatomy should be characteristic of a base camp occupation, with these portions being transported there from hunting camps elsewhere. Conversely, assemblages characterized by a relatively low percentage of these portions should represent the hunting camps.

For a number of reasons, the significance of transportation as a factor shaping the relative presence of the various anatomical portions of seals in Thule sites is difficult to assess, due to the possible effects of storage. Stanford does not really deal with the problem of storage in his discussion except to mention ice cellars, which presumably would not have required any special treatment of the carcass. However, if the ice cellars were only located back at the base camp, and if at a distant hunting camp there was a surplus of seal carcasses relative to available transportation, then there certainly would be incentive to transport only the most valued anatomical segments back to the base camp.

For Thule sites in the Eastern Arctic the only suggestion of analogous cold storage facilities comes from the gravel rings seen on many sites, which McCartney (1980:535)

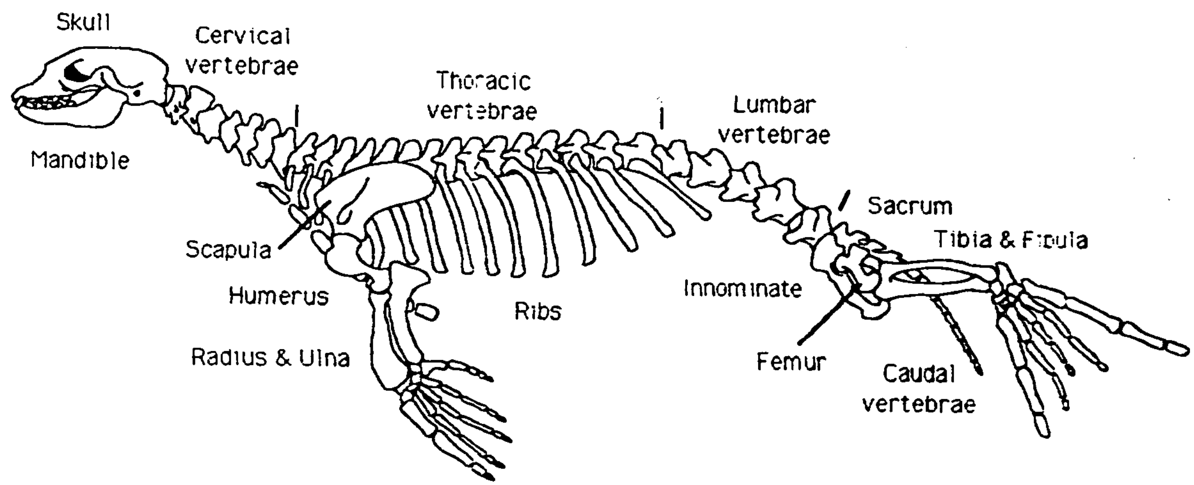


Figure 65. Illustration of the skeleton of a phocid seal (which includes ringed and harp seals) showing the anatomical segments referred to in the text. Redrawn from King (1983:Fig. 6.11) and from figures in Howell (1929).

considers to be the functional counterparts of the ice cellars of north Alaska. Therefore, if seals were being obtained at hunting camps at some distance from these winter base camps, differential butchering for transportation might be a factor. However, if the seals were being obtained locally then this might be irrelevant. In this respect, it is interesting to note that some researchers (e.g., McCartney and Savelle 1985:49; McCullough 1986:525) believe that summer occupations usually took place in close proximity to the winter sites. Also, the use of rock caches built in the vicinity of distant hunting locations, with the meat only being collected in the winter when it was needed and when the use of sleds would render this quite simple, might also eliminate the factor of transportation as a cause for differential butchering.

Turning to butchering done for the purpose of storage, however, Savelle (1984) suggests that a certain pattern of butchering might be specific to situations where seals were to be stored:

> ...Seal meat consumed during the early winter is often obtained from summer-killed seals, of which the upper trunk and associated elements are sometimes removed for consumption prior to caching. Late winter seals, however, are generally obtained fresh through breathing-hole hunting, and the entire seal is consumed at the winter residential site. (Savelle 1984:520)

From this, one could expect that assemblages containing a low relative percentage of body parts from the upper trunk (head, cervical and thoracic vertebrae, ribs [?], scapula, humerus, etc.) should derive from cached seals. However, it is not stated whether this pattern reflects a cultural norm or whether it reflects certain exigencies in the way seals need to be butchered for storage. Nor does it indicate what might happen in a situation where all of the seal was to be prepared for storage (i.e., none of it was to be consumed immediately).

Beyond Savelle's suggestions, however, there appear to be very few data on how seals might have been butchered for the purpose of storage. Therefore, in the absence of hard ethnographic or actualistic data from which we might derive expectations for our archaeological data, we must turn first to the archaeological record and attempt to determine if there is any patterning present in it which *might* indicate whether selective butchering for whatever purpose was being carried out. Our inferences must be based primarily on knowledge of the differential utility of the various portions of the anatomy of small seals. If such patterning could indeed be shown to be present on the basis of that knowledge, we can then attempt to ascertain its source.

Approaches to the differential representation of elements

If various researchers studying Thule are correct in arguing that the Thule occupants of winter sites relied primarily on stored resources derived from animals caught earlier in the year (a collecting strategy with regard to seals), evidence for this might be present in the faunal data and made accessible through the application of Binford's (1978) 'economic anatomy' concept. Through this approach, inferences concerning the differential utility of various anatomical portions of a typical animal carcass from a given species (ratio of bone to meat, nutritional value, etc.) can be applied to the varying proportions of the anatomical portions represented in archaeological faunal assemblages, in order to gain information regarding the economic behaviour of the people who produced the assemblages. This assumes that the way in which carcasses were treated was based on the conflicting considerations of maximizing the net nutritional benefit obtained while minimizing the costs of processing and transportation (O'Connell and Hawkes 1988:143).

When Binford first outlined his approach, he argued that a detailed 'actualistic' study of the economic anatomy of every species being considered was very desirable, since this would differ from species to species given different body proportions, etc. (Binford 1978:474-475). Although he has since carried out similar analyses in the absence of such detailed studies (e.g., Binford 1987:456, for kangaroos), it is important to note that such a study has not been carried out for small seals, so inferences concerning the differential utility of the various parts of their anatomy must be based on less satisfactory non-quantifiable data.

A commonly-used means of approaching archaeological faunal assemblages for the purposes of determining the representation of the various anatomical portions is to count the number of each element (e.g., humerus, mandible, etc.) in the faunal collection. These *observed* frequencies are then expressed as a percentage of the total number of that element that would have been present in all of the animal carcasses or portions thereof that originally contributed to the assemblage: that latter quantity is usually the 'minimum number of individuals', or MNI. The MNI is calculated by dividing the quantity of each anatomical element in an archaeological assemblage by the number of times it occurs in the body — the largest value produced is the MNI. For example, if an assemblage contained 12 left humeri and 9 right humeri, and no other unique bone occurred in greater numbers, the MNI would be 12, on the rationale that at least 12 animals contributed to the assemblage.

To determine the *observed of expected* frequency in this case, one would divide the total number of humeri found (12 + 9 = 21) by the number of humeri that would be found in 12 animals (24) and then multiply the result by 100. Thus, 88% of the expected number of humeri would have been found. And if, from the same assemblage, 6 right and 9 left femora were recovered, then the occurrence of femora in the assemblage would be 15 of the 24 that should be expected from 12 animals, or 63%.

In this approach the MNI is taken to be an absolute measure of the initial abundance of anatomical elements at the time the animals were killed. In other words, if the MNI is calculated to be 12, then one can be sure that initially there were 24 humeri, 24 femora, 12 skulls, 84 cervical vertebrae, and so on. When one measures the actual occurrence of the various bones in the archaeological assemblage against these known values one can identify anatomical elements that occur in higher or lower frequencies than other elements. Therefore, after eliminating the effects of any destructive natural taphonomic processes, if some behavioural or cultural process has altered the relative frequencies of the body parts (through selective butchering or transportation, for example), then this should be apparent from the study of the frequencies, which are most readily and typically compared in the form of graphs.

It is worth noting at this point that Binford (1978:69-72) objects to the use of what might be termed 'standard' MNI's, which take into account the siding of the bones (left or right), and the degree of epiphyseal fusion, etc., when determining the most frequently occurring element. It is this technique that would produce the MNI value of 12 for a collection of 12 left and 9 right humeri. However, Binford argues that meat is not normally dealt with in whole-carcass units, so that for some purposes MNI's may produce inaccurate or inflated results. Therefore, he prefers to deal with smaller anatomical portions. He has recently coined the term "minimal animal unit" (MAU) for these portions. The MAU value is calculated by dividing the observed frequency of a bone (without considering side, etc.) by the frequency of that bone in the body (Binford 1987:458-459). Calculated in this fashion, the 12 left and 9 right humeri mentioned above would produce a MAU of 10.5 (21 divided by 2, since there are two humeri in the body). From this value, Binford then produces an 'indexed MAU', which is calculated by dividing the MAU of each anatomical element by the largest obtained value of MAU, and then multiplying the result by 100.

It is important to note that the indexed MAU values produced by this method tend to be somewhat larger than the percentage values derived by the method employing MNI's, *but the shape of the graph that is produced is essentially identical.* The MNI value, or the largest MAU value, are simply constants by which all of the observed values are divided, and division by a constant does not alter the relationships between the individual values. This is important because it is largely the shape of the graph — the relationship between the occurrence of the various anatomical portions — that is significant. To demonstrate this, Figure 66 presents identical data calculated on the basis of its MNI and indexed MAU values. This figure also illustrates the typical configuration of the graphs used here and elsewhere to exhibit these kinds of data. The various anatomical elements are listed along the

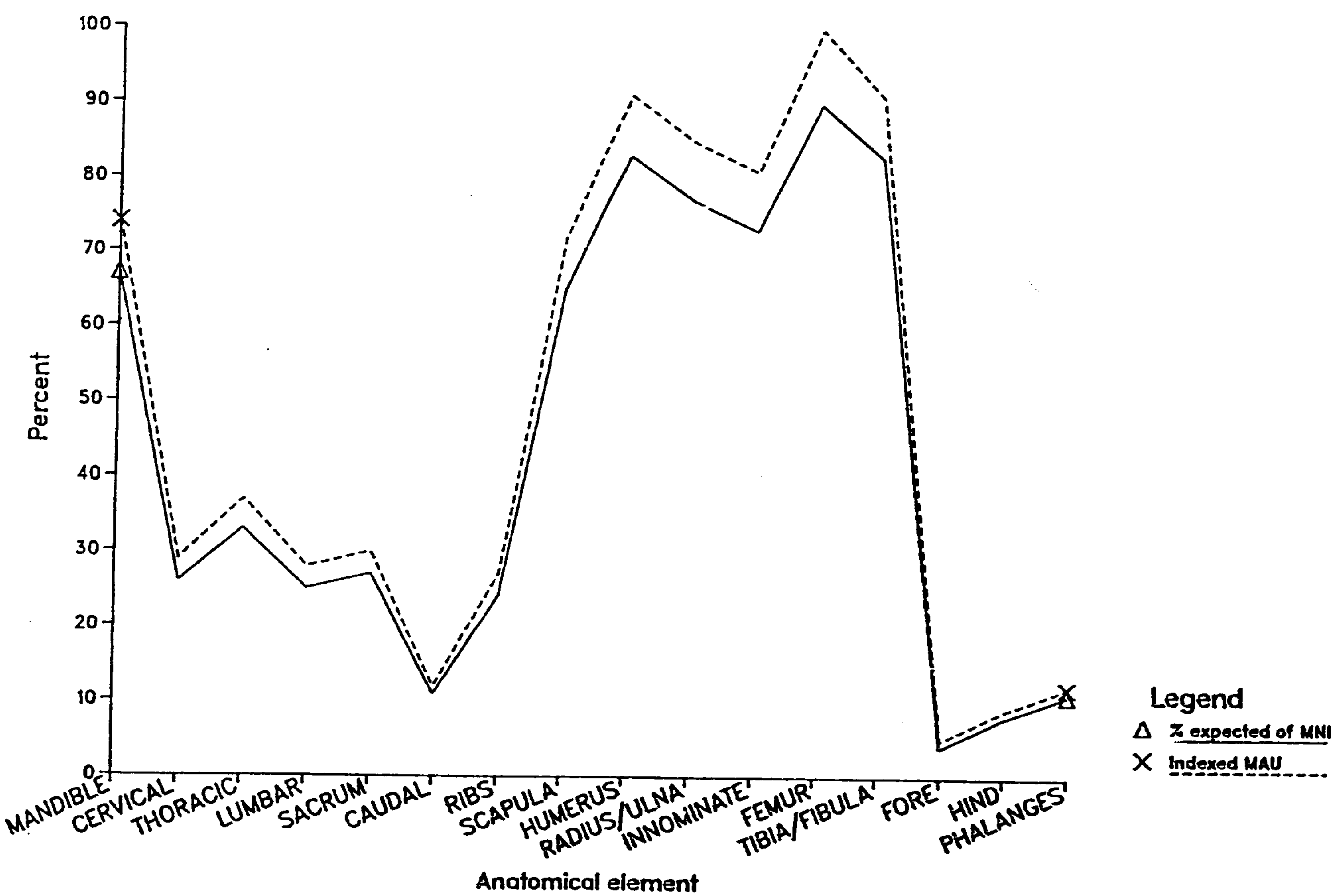


Figure 66. Graph illustrating a single set of element data (from RbJr-1 House 4) calculated on the basis of MNI and of 'indexed MAU'.

x-axis, while along the y-axis there is the percent observed of the number that would be expected given the calculated MNI or MAU value. The points along the graph from each case (usually the assemblage from a house) are joined by a line to facilitate comparisons with the data from other cases.

Thule culture seal element analyses

With all of these factors in mind, one of the principle goals of this part of the analysis of the Porden Point faunal assemblages was to ascertain if one common pattern of element representation would be found in all of the winter houses which, by virtue of being given that designation, presumably fit in the same way into the Thule settlement/subsistence pattern. If that assumption were true, one might expect the pattern of economic activities, and the overall economic 'strategy' employed, to have varied little from one household to another, and that assumption has indeed been made in the past (Savelle 1987:91). Therefore, one might reasonably expect the pattern of seal hunting and the basic treatment received by seal carcasses to have been the same in all of the houses. A secondary goal of the analysis would be to try to ascertain the factors bringing about this particular pattern.

One potential weakness in the data from the Porden Point excavations and from the excavation of most of the other Thule sites for which these types of data are available relates to the fact that only the houses themselves were excavated and not any associated middens (with one minor exception at Porden Point: RbJr-5 House 2). One therefore has to assume that the representation of elements found within each house structure accurately reflects the overall pattern of elements as they were discarded — in other words, certain anatomical parts were not selectively removed from the house and consigned to a midden. An obvious test for this would be to excavate midden areas associated with each house and compare the results for the two different excavation units. However, at the Porden Point sites three factors prevented this. The first was the fact that three of the houses (RbJr-1 Houses 7, 8 and 9) fronted onto an active stream channel, so that any midden deposit has been completely eroded away. Several others also fronted onto ponds or swampy areas (RbJr-1 Houses 1 and 2; RbJr-4 House 4) so that any midden deposits are now under water and effectively inaccessible. Of the remaining houses, two (RbJr-5 Houses 3 and 5) fronted onto gravel areas and had no associated middens, and six (RbJr-1 Houses 5, 6 and 10; RbJr-4 Houses 1, 2 and 3) had no discernable middens. Only two midden deposits were identified: at RbJr-5 House 2, which had a thin midden scatter beyond its entrance, and a shallow midden in front of RbJr-1 House 4. In 1976 Robert McGhee excavated a one metre square pit into this midden, which produced cinders and faunal bones (231 were identified, of which 124 were small seal and 96 were Arctic fox) but no artifacts (Park 1983:72-73). Unfortunately, no element list was available for the identified seal bones.

For these reasons, no comparisons could be made between the seal bones from any house and its associated midden at Porden Point. However, these types of data are available from two houses at other Thule sites. From the site of Silumiut the data from House 14 and its associated midden are presented in Figure 67. Unfortunately, vertebrae were treated as one category for the purposes of the analysis but in spite of this it is apparent that the only dramatic difference between the representation of elements from the house and from the midden is in the mandible. However, the data from a late historic house and its midden at the Sermermiut site in Greenland are somewhat less consistent (Figure 68). Fairly dramatic differences in representation are seen for the mandible, scapula, innominate and femur (although the author of the study comments on the high degree of similarity between the house and midden for the distribution of anatomical parts [Møbjerg 1983:42]).

Differences between the representation of elements in houses and their associated middens could be explained in a number of ways. One reason might be that certain anatomical parts were consistently entering either the midden or the house at a dispropor-

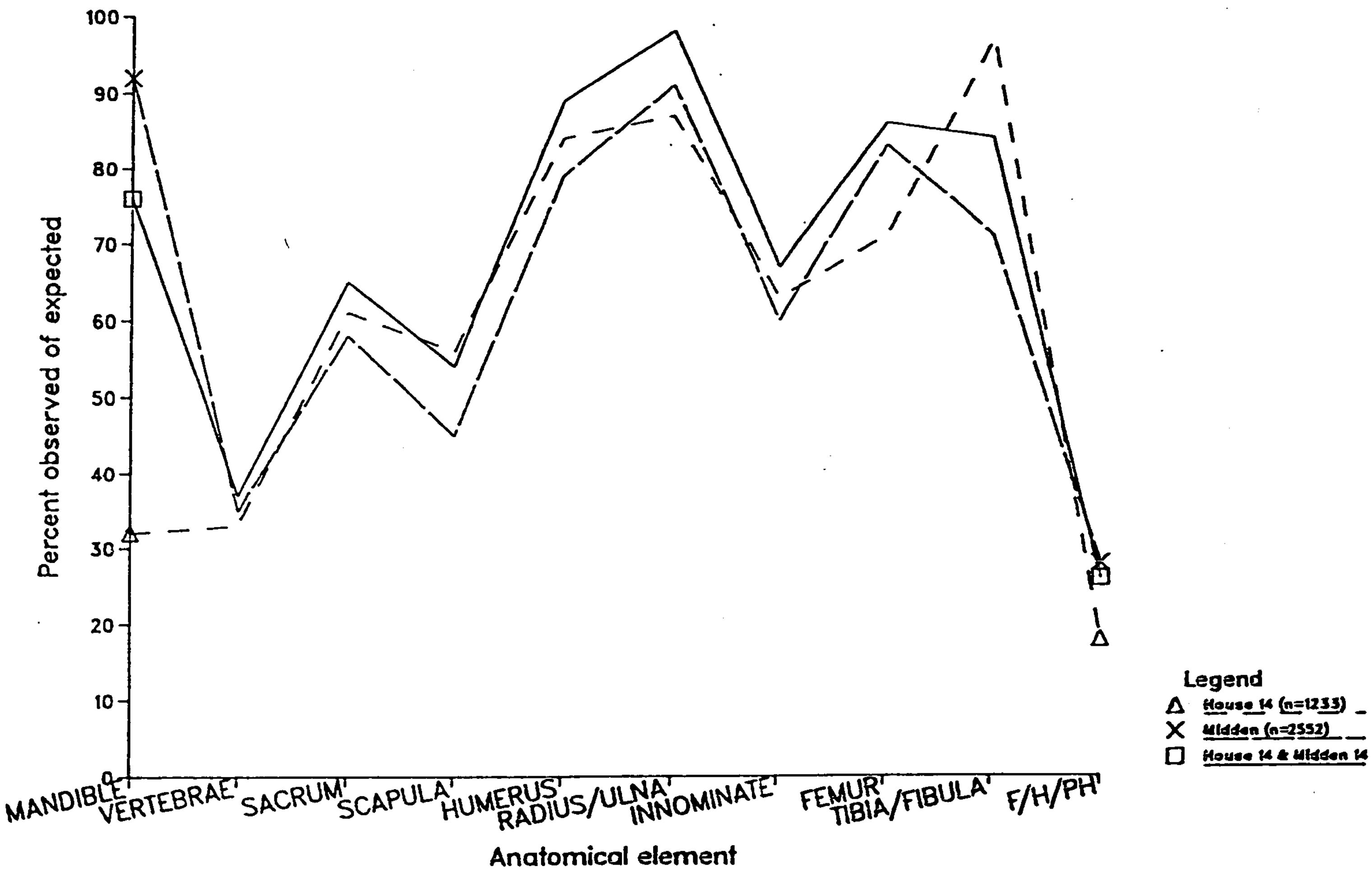


Figure 67. Graph showing the seal element data from the house interior and from the associated midden of House 14 at the Silumiut site (adapted from Staab 1979:Table 2).

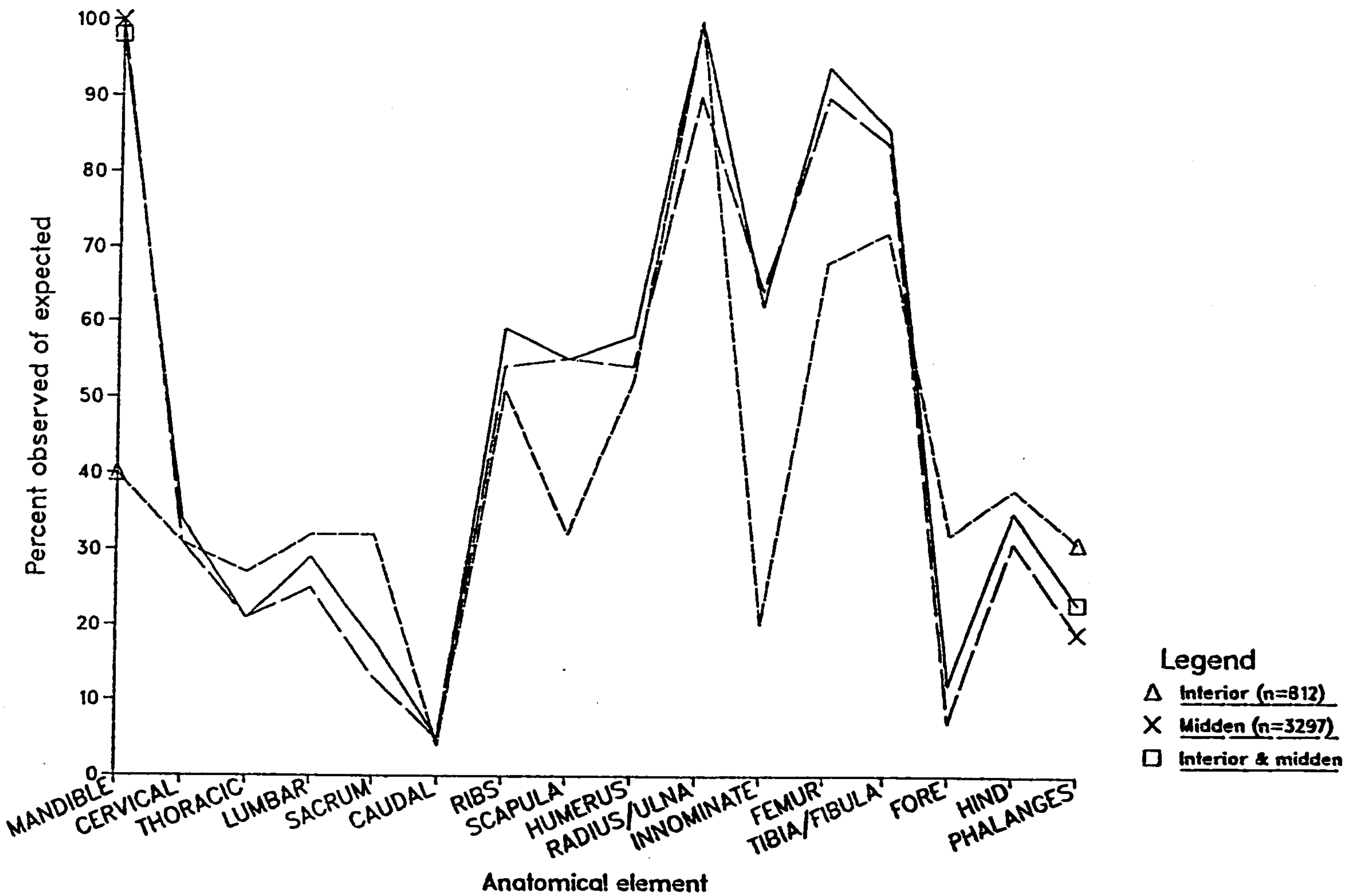


Figure 68. Graph showing the seal element data from the house interior and midden from House 69v2-II-13A at the Sermermiut site (adapted from Møbjerg 1983:Table 3).

tionate rate relative to the rate at which they were initially entering the site. Conversely, if the midden accumulated over a long period of time during which butchering patterns changed, even if just seasonally, the representation of anatomical parts in the total midden assemblage might not reflect the actual economic decisions made at any one time. In the absence of midden data the former scenario cannot be tested at Porden Point. However, by only using data from house excavations the latter possible problem is avoided for the most part.

In order to place the Porden Point data into context, it is valuable to look first at the data available concerning patterns of seal element representation from other Thule sites. Substantial bodies of data are available from three Thule sites: Walakpa, near Point Barrow, Alaska, Peale Point, at the head of Frobisher Bay, Baffin Island, and Silumiut, on the northwest coast of Hudson Bay. Some data are also available from the Union River Site on Somerset Island, and from the Sermermiut site house mentioned above (Figure 68).

At the Walakpa site the data come from the excavation of deeply stratified midden deposits rather than from house structures, so comparisons with house excavation data from other sites must be undertaken with some caution. For the moment, the one feature of the Walakpa graph (Figure 69) that is worth noting is the fact that two levels of the midden (B9 and B10) exhibit a pronounced peak for lumbar vertebra with comparison to the rest of the spinal column, while the other three levels do not exhibit this to the same degree. On the basis of this and several other characteristics, Stanford (1976:76) concluded that two distinct patterns of element representation were identifiable at Walakpa.

From the Peale Point site (Figure 70) a highly consistent pattern is seen in almost every anatomical region. This is especially noteworthy if one takes into account the fact that the four houses may represent an intermittent occupation of this location over a span of as much as seven hundred years (Stenton 1987b:28). Only two anatomical portions exhibit significant variability: mandible and innominate. The lumbar peak seen in some of the Walakpa midden levels is not present.

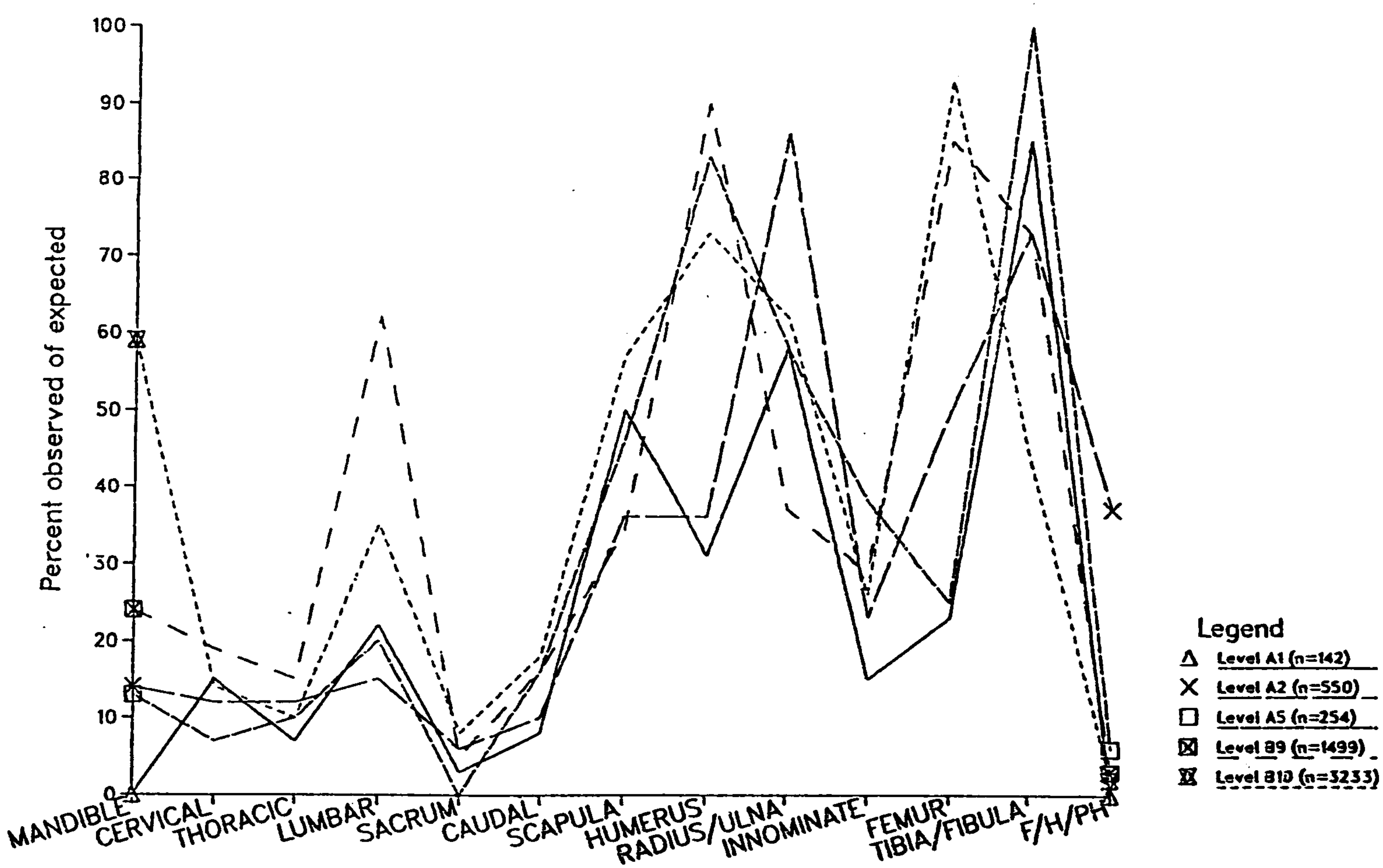


Figure 69. Graph illustrating the seal element data from five levels of the Walakpa midden (adapted from Stanford 1976:Figures 12-16).

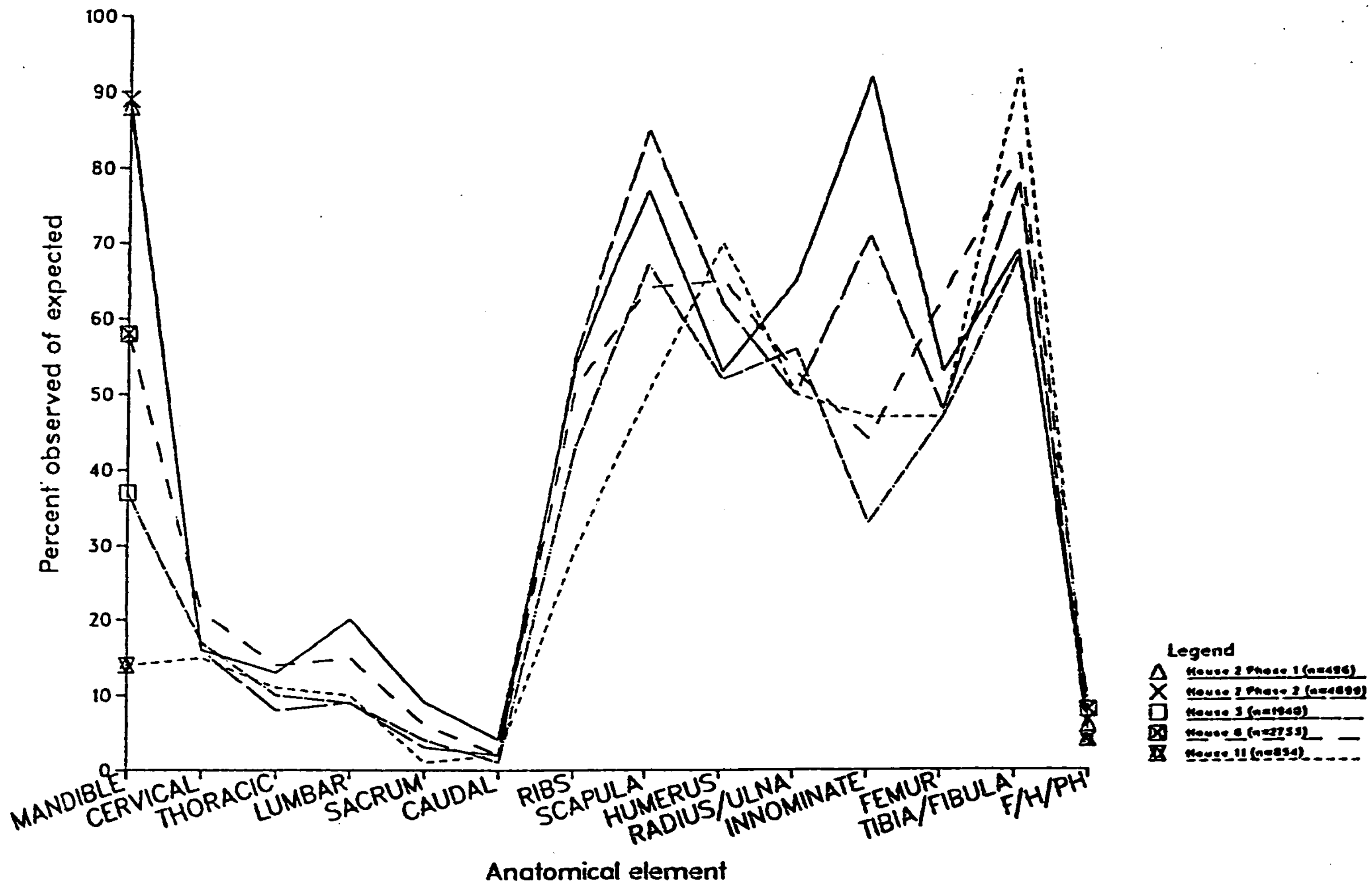


Figure 70. Graph illustrating the seal element data from Houses 2, 3, 8 and 11 at the Peale Point site (adapted from *Stenton* 1983:Figures 25-29).

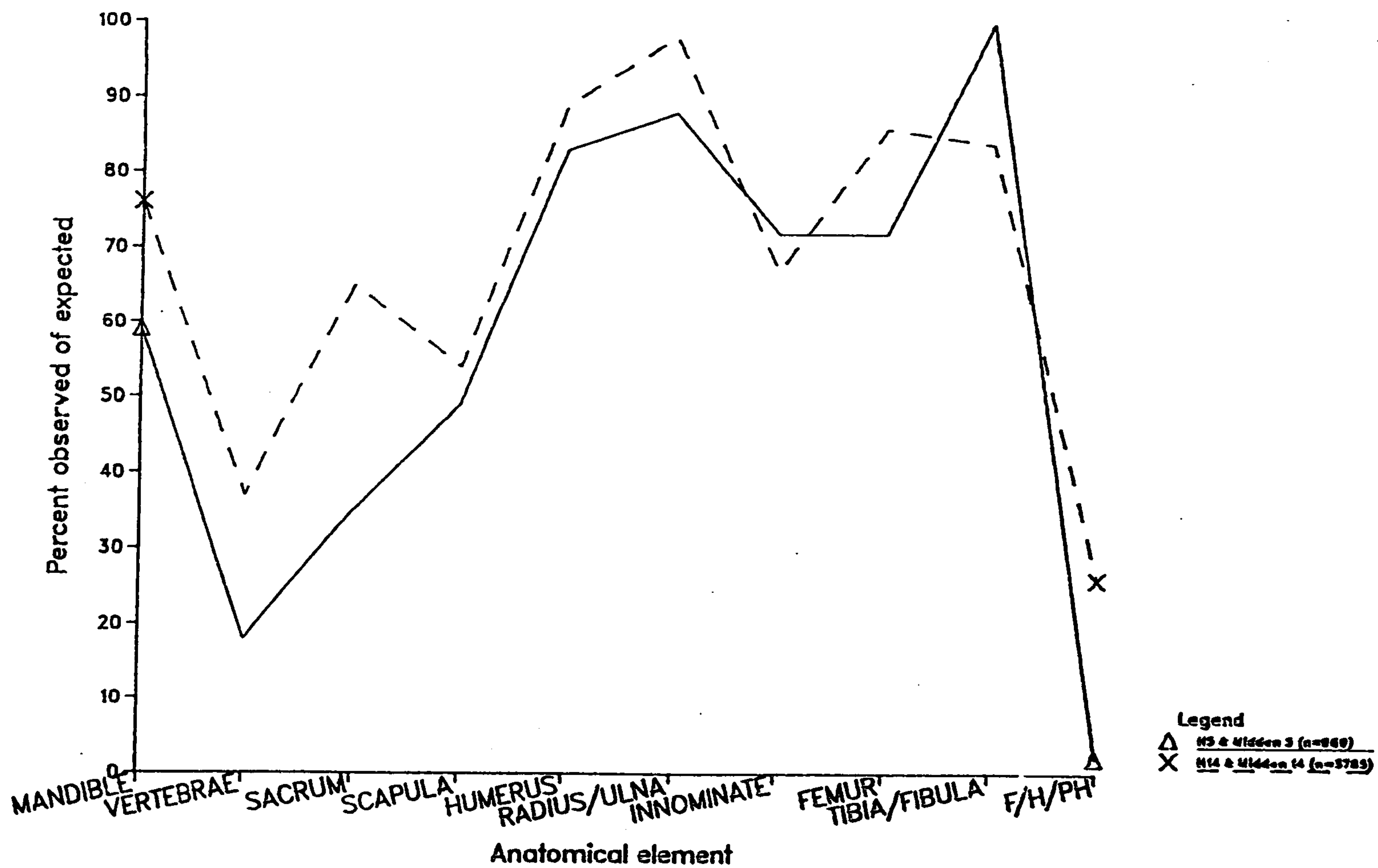


Figure 71. Graph illustrating the seal element data from Houses 5 and 14 at the Silumiut site (adapted from Staab 1979:Table 2).

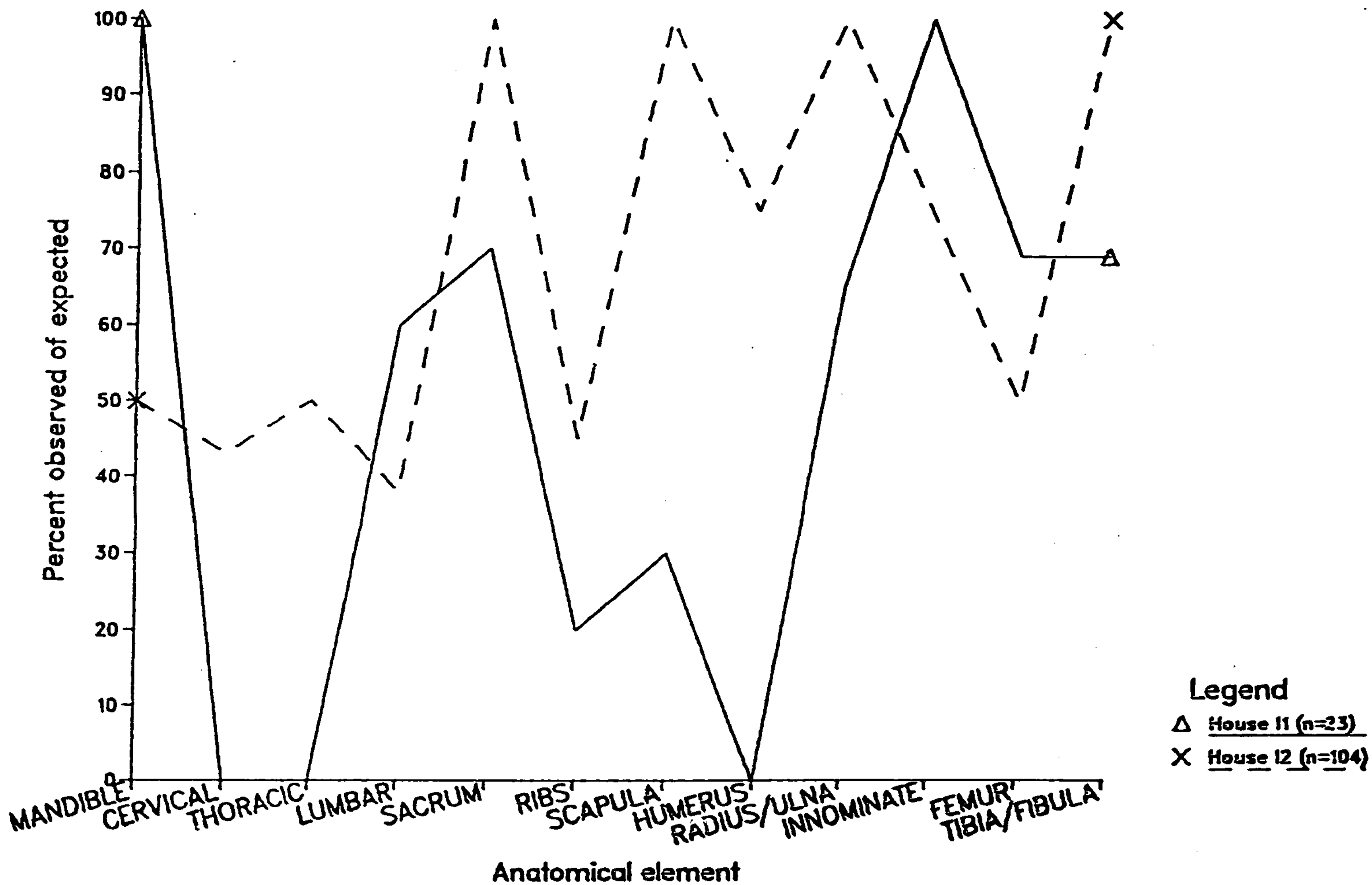


Figure 72. Graph illustrating the seal element data from Houses 11 and 12 at the Union River site (adapted from Savelle 1984:Figure 14).

The faunal analysis of the Silumiut site (Staab 1979) lumped all vertebrae into one category, so the presence or absence of the lumbar peak could not be assessed (Figure 71). Only one house was excavated at Sermermiut (Figure 68), without any strong lumbar peak, while the number of identified bones at the Union River site was almost prohibitively small (Figure 72).

Porden Point seal bone data

The graphed data from the ten houses at Porden Point for which we have substantial numbers of seal bones exhibit considerable diversity (Figure 73), particularly when compared with the much more consistent pattern seen for the five houses at the Peale Point site. However, comparison of the Porden Point seal bones graph with one illustrating the arctic fox bones from the six Porden Point houses containing substantial numbers (Figure 74) suggests that a fair degree of patterning is indeed present in the representation of seal bones between houses, and not present for the fox bones. In fact, two separate patterns of element representation could be isolated from the houses producing substantial numbers of seal bones, particularly in the treatment of the vertebral column, ribs and scapula but also in the bones of the front and hind limbs. The first pattern is seen in RbJr-1 House 9 and in RbJr-4 Houses 1, 3 and 4 (Group A: Figure 75), while the second pattern is present in Houses 2, 6, 8 and 10 at RbJr-1 (Group B: Figure 76). These two groupings were identified from the graphs, but their composition was confirmed by running the percentage data from all of the houses through the cluster analysis function of the MIDAS statistical package on the mainframe computer at the University of Alberta. Based on the analysis of the graphed data, the remaining houses, numbers 1 and 4 at RbJr-1 (Figure 77), do not exactly fit either pattern (also confirmed by the cluster analysis of the data from the axial skeleton) and will be discussed separately. RbJr-5 Houses 2, 3 and 5 (Figure 78) all produced relatively low numbers of seal bones so they will be discussed separately as well.

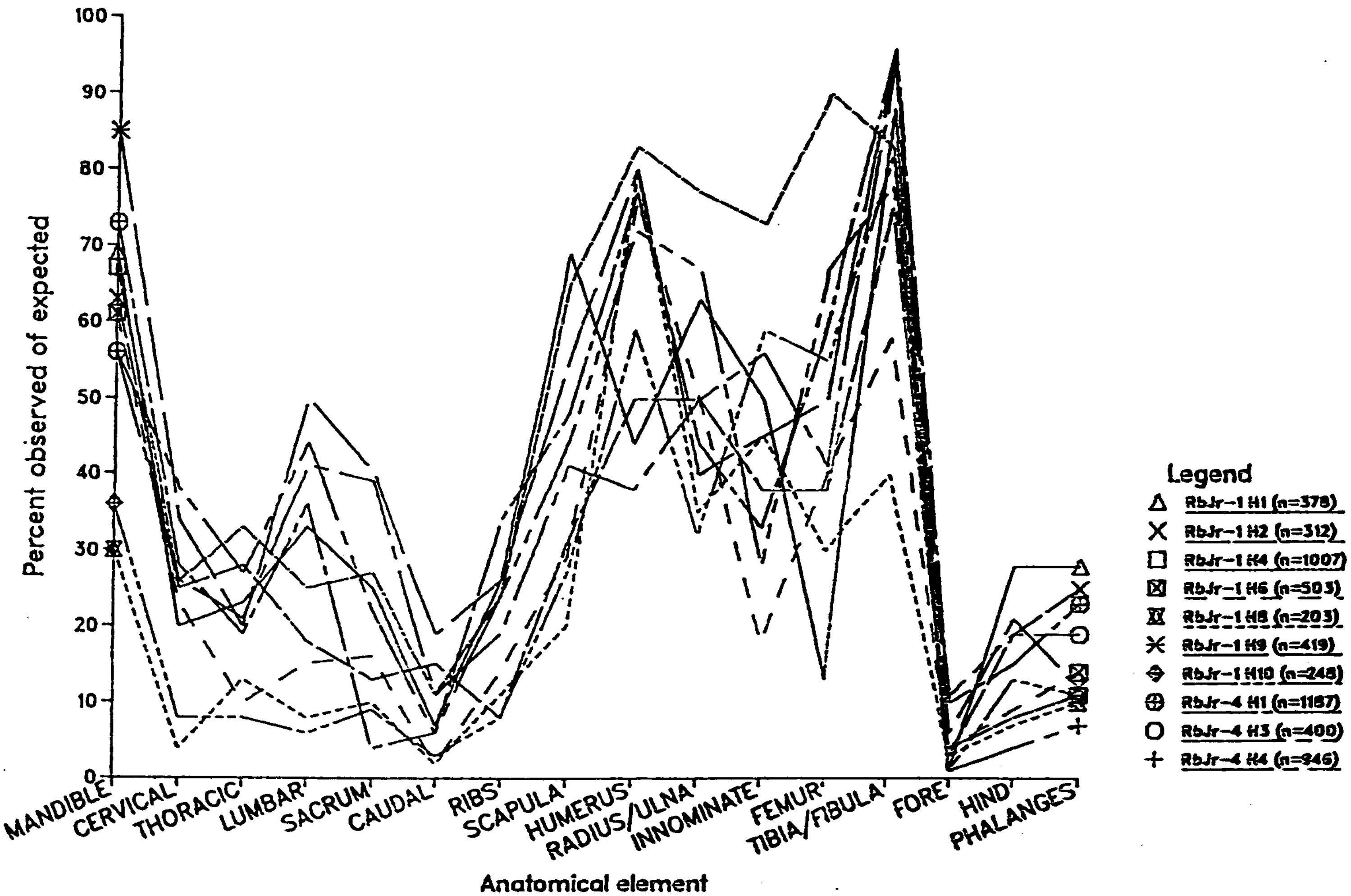


Figure 73. Graph illustrating the seal element data from the RbJr-1 and RbJr-4 houses at Porden Point.

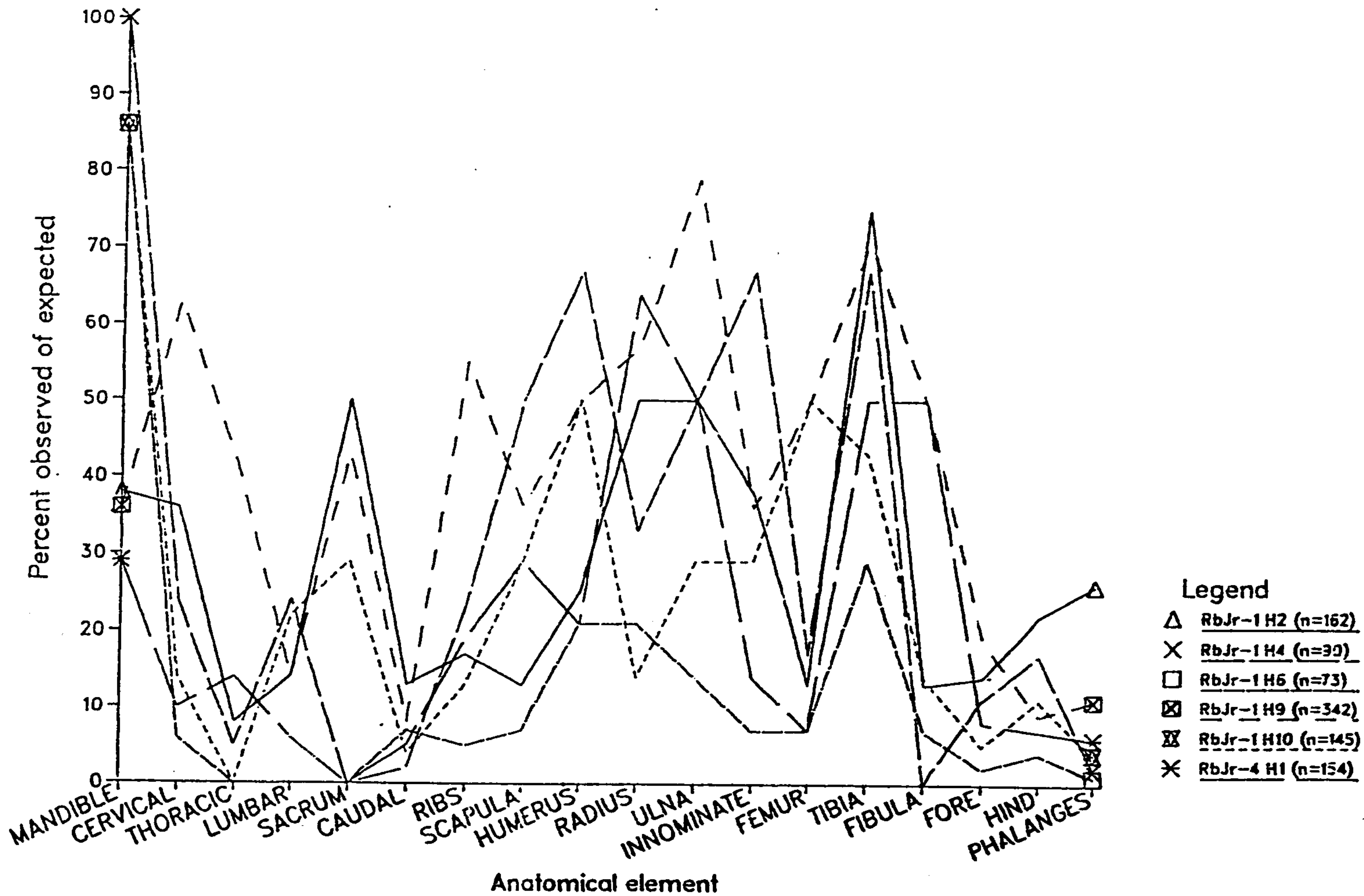


Figure 74. Graph illustrating the arctic fox element data from those houses at Porden Point having substantial numbers of fox bones.

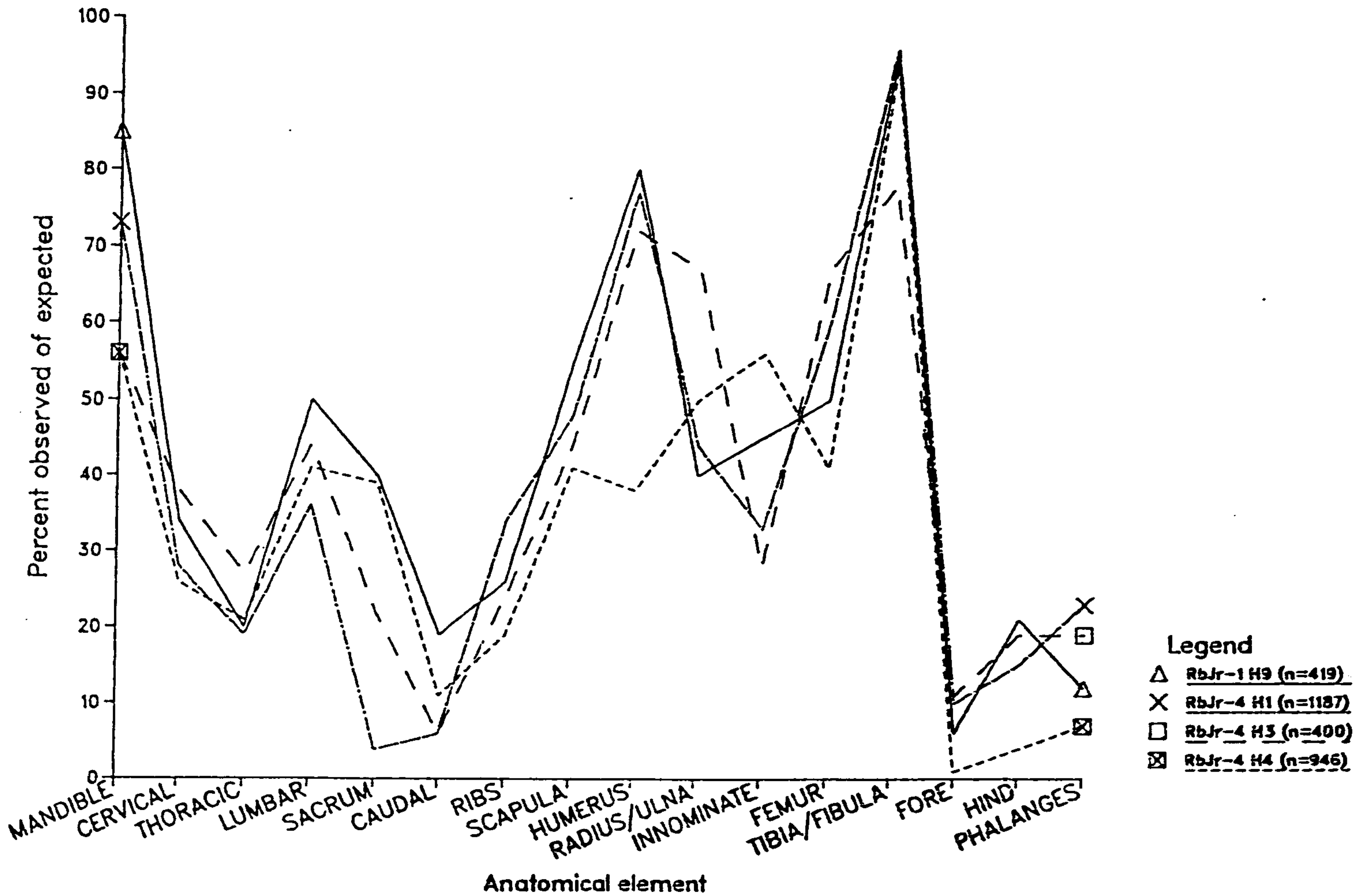


Figure 75. Graph illustrating the seal element data for the group of houses at Porden Point exhibiting the first pattern of element representation to be isolated (i.e., Group A).

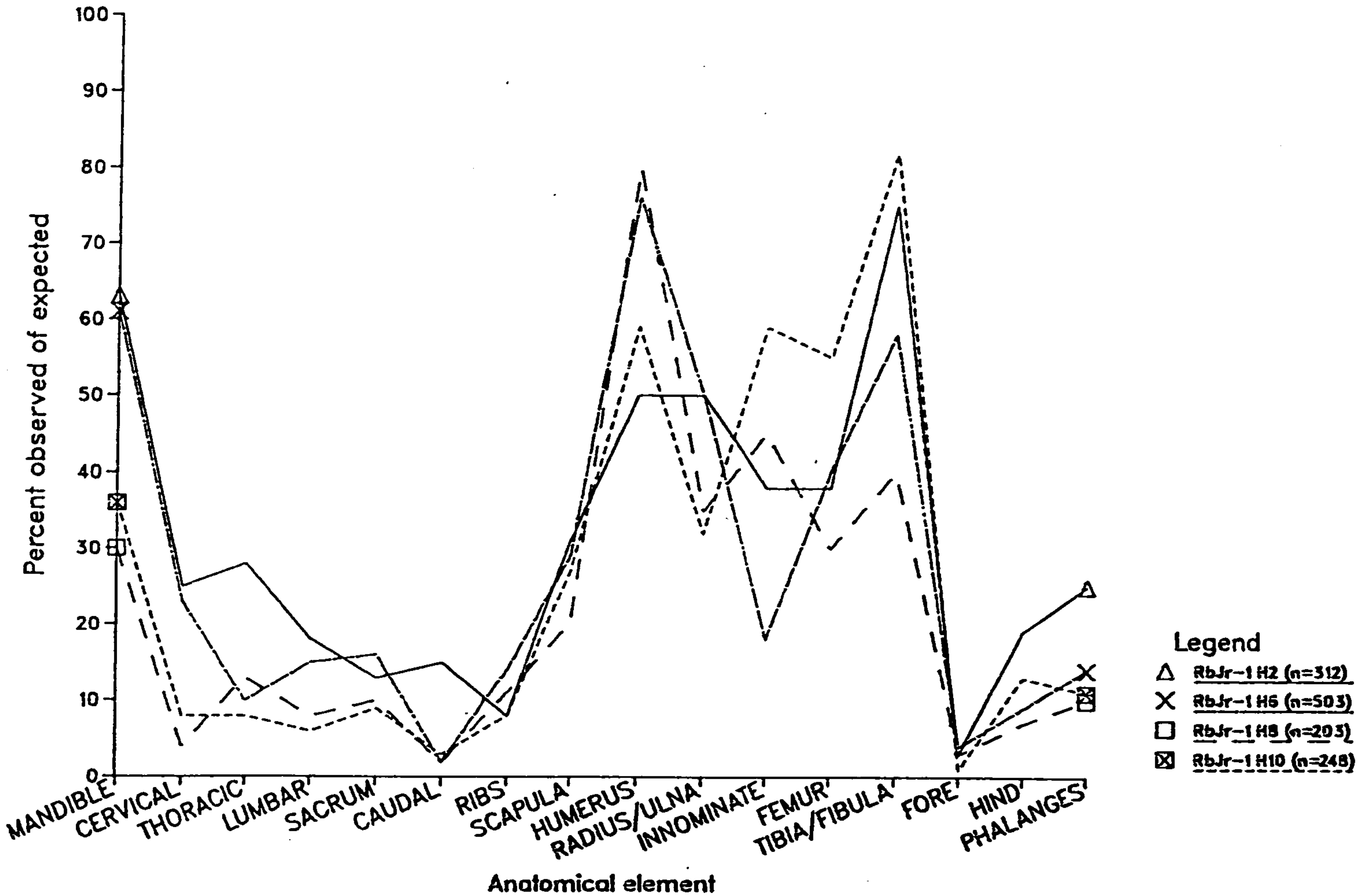


Figure 76. Graph illustrating the seal element data for the group of houses at Porden Point exhibiting the second pattern of element representation to be isolated (i.e., Group B).

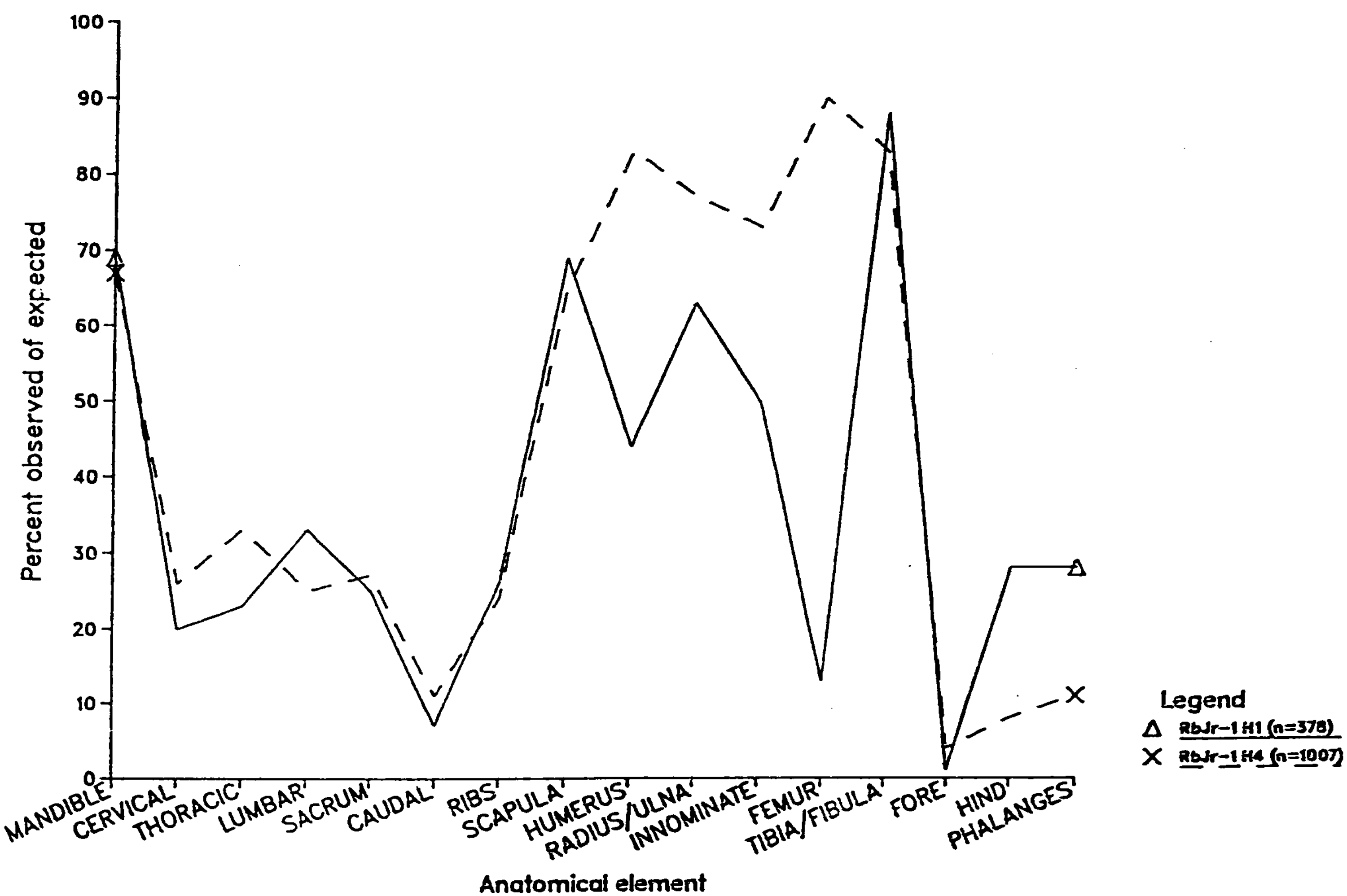


Figure 77. Graph illustrating the seal element data for RbJr-1 Houses 1 and 4, which do not appear to exactly fit either of the two patterns that were isolated.

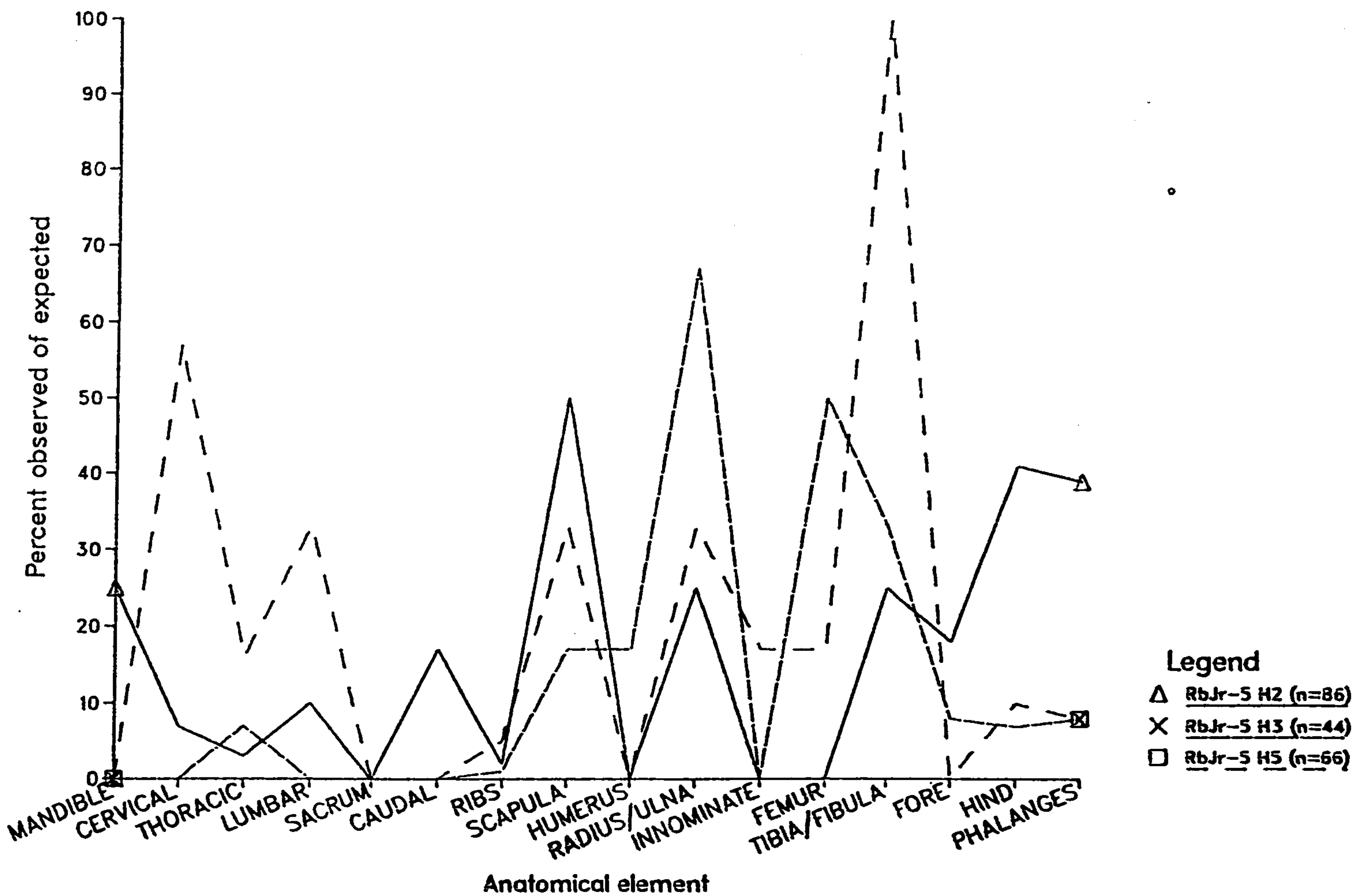


Figure 78. Graph illustrating the seal element data for the three houses at RbJr-5.

The treatment of the vertebral column in Group A is characterized by a pronounced under-representation of the thoracic vertebrae (average = 22%) in comparison to the cervical (32%) and particularly the lumbar vertebrae (43%). Group B is characterized by a lower overall representation of vertebrae, and no substantial difference in the representation of the different parts of the vertebral column (cervical = 15%; thoracic = 15%; lumbar = 12%). In addition, ribs and scapulae are present in significantly lower frequencies in Group B than they are in Group A.

It seems apparent (and logical anatomically) that the percentages of ribs and thoracic vertebrae are related to each other to some degree in all of the houses. In Group A, thoracic vertebrae average 22% and ribs average 26%, while in Group B the values are 15% and 10% respectively. Thus, it seems possible that the thoracic vertebrae and ribs were introduced or removed as a unit in all of the houses.

The values for the scapula, on the other hand, appear to indicate that this part of the anatomy may have been treated differently in the two groups of houses. In Group A the values for the scapula (average = 47%) are well above the values for the thoracic vertebrae and ribs, and much closer to the values for the humerus and radius/ulna (67% and 50%), perhaps suggesting that the forelimb and scapula were introduced as a unit independent of the ribs and thoracic vertebrae. In Group B the values for the scapula (average = 27%) are well below the values for the rest of the forelimb, particularly the humerus (66%). They are much closer to the values for the ribs and thoracic vertebrae, suggesting that the scapula may have remained with that anatomical unit while the rest of the forelimb was processed separately.

The final substantial difference between the two groups is seen in the representation of the hind-limb. The average values for the femur and the tibia/fibula are 55% and 91% for Group A, and 41% and 64% for Group B. The latter group does, however, display a great deal of variability in this regard.

As mentioned above, two houses did not really fit either pattern: Houses 1 and 4 at RbJr-1 (Figure 77). House 1 appears to fit somewhat better with the pattern exhibited by Group A, in as much as it does show a peak in the lumbar area, but the lowest representation is seen in the cervical vertebrae rather than in the thoracic vertebrae. It also has a high value for the scapula, consistent with that element being removed with the rest of the forelimb. However, it has a very low value for the humerus and for the femur.

RbJr-1 House 4 is even more difficult to relate to either of the two patterns that have been identified. There is very little difference in the representation of the cervical, thoracic and lumbar vertebrae, which is reminiscent of the situation seen in Group B. However, the value for the scapula is consistent with the values for the bones of the forelimb, as seen in the pattern exhibited in Group A. And unlike either group, the values for the bones of the fore- and hindlimbs, and the innominate, are all consistently high.

RbJr-5 Houses 2, 3 and 5 (Figure 78) produced 86, 44 and 66 seal bones respectively, so it is only with some caution that any conclusions can be drawn regarding them. However, based on higher obtained values for lumbar vertebrae as opposed to thoracic vertebrae, Houses 2 and 5 might very tentatively be aligned with Group A. No other characteristics appear to be diagnostic of either pattern, and nothing can be said about House 3, probably due to the extremely small number of seal bones recovered.

Given the isolation of these two patterns of element representation, it becomes appropriate at this point to consider the two groups of houses as the major units of analysis rather than individual houses when attempting to account for the observed differences.

Porden Point seal bones: discussion

Before attempting to further interpret these results, a number of factors should be considered. The average NISP and MNI for small seals is larger in Group A than in Group B. The mean number of bones present from each seal (NISP divided by MNI) is also larger in the Group A houses: approximately 40, as opposed to 27 for the Group B houses. On this basis it could be argued that the differences in representation of the various anatomical portions might be due to differing natural taphonomic factors. However, several facts seem to suggest that such is not the case. The ubiquitous permafrost and the excellent condition of the contents of all of the houses suggests that differential preservation was not a cause. Another possible factor might have been differential removal/destruction by dogs, since all of the houses contained dog remains. However, of all the faunal bones excavated from house interiors (i.e., excluding midden deposits), only one exhibited identifiable evidence of having been chewed or having passed through a dog's digestive tract, while several from the very limited midden excavation did so; this suggests that dogs were not a factor as far as the bones *inside* the houses are concerned. And finally, the widely varying degree of post-occupational disturbance within both house groups suggests that this factor was not a cause in producing the different patterns either. Therefore, it seems probable that factors internal to the subsistence/settlement system of the inhabitants of the houses were the cause.

Interpretations

Given that conclusion, what could those factors have been? One possibility is that the significantly different patterns of element representation seen between the two groups of houses represent differences in butchering procedures, which resulted from different patterns of small seal procurement, storage and/or utilization. As mentioned above, Stanford (1976:76) suggested that transportation was the crucial factor, and that the parts of a small seal having the highest differential utility with regard to transportation back to a base camp should be the head, shortribs, and hind limbs. Osteologically, these parts would be represented by the cranial bones and mandibles, ribs, lumbar vertebrae, femur, and tibia-fibula. These parts are all found in greater proportions in the Group A houses than in those of Group B. However, adopting Stanford's (1976:76) interpretation of a somewhat similar pattern of data from the Walakpa site would lead to the unorthodox conclusion that

Group A at Porden Point represents a base camp type of occupation, while Group B represents a hunting camp type of occupation. But leaving that interpretation aside for the moment, it might be possible that these different patterns could reflect seals obtained locally as opposed to ones obtained at some distance.

However, it seems unlikely that transportation would be the only factor to shape the relative proportions of the different osteological elements. For seals caught during the spring, summer or early fall and not immediately consumed the factor of storage could have had equally significant effects on the relative representation of anatomical elements. But here one must proceed with even more caution than with transportation when trying to predict just what the osteological correlates of the various types of storage would be. Undoubtedly, certain cuts of meat would have been more amenable to drying than others, and storage in caches near hunting locations during the summer might have encouraged certain patterns of butchering to ensure that the meat remained palatable. It can also be noted again that one of the references quoted above (Fabricius 1962:108-109) referred to the fact that cuts of dried meat (or at least some of them) were left on the bone.

In interpreting the Porden Point data it is of course assumed that the seal bones found in each house could and very probably did derive from several different patterns and/or episodes of acquisition and processing. For example, some of the seals may have been caught through breathing-hole sealing and immediately consumed while others may have been the stored product of open-water or basking seal hunting earlier in the season, with the result that the assemblages do not represent simple reflections of any single pattern of butchering or processing. However, based on the very limited data that have already been summarized concerning the differential utility of the various parts of a seal's anatomy, it seems possible to suggest that the pattern of element representation seen in the Group A houses (Figure 75) reflects a substantially different treatment of seal carcasses from that seen in the houses of Group B (Figure 76).

From Group B, the relatively flat line (at around ten percent) obtained for the vertebrae and ribs suggests that the ribcage and the entire spinal column above the pelvis were being treated as a unit. The closer fit between the value obtained for the scapula and that of the ribs, as opposed to that of the humerus, suggests that the scapula may often have remained with the ribcage. The remaining units (the head, forelimbs and hindlimbs) appear to have been treated independently.

The contrasts between various anatomical portions are somewhat more dramatic in Group A. Two of these units, the head and hindlimbs, appear to have been treated essentially similarly. Likewise, the forelimb also formed a unit, but this time often with the scapula. But one additional unit is present, incorporating lumbar vertebrae.

It is apparent that a particularly significant part of the variability in seal bone patterns, and not just at Porden Point, is to be found in the vertebral column. It may be that the vertebral column, or at least part of it, was a portion that was sometimes not transported to the winter camps. At all of the Thule sites for which data are available vertebrae as a group overwhelmingly occur at substantially lower percentages than the rest of the postcranial skeleton. There are a number of possible causes for this. One may be that vertebrae are among the smallest bones in the body apart from the carpal and tarsal bones, and their under-representation reflects the fact that they are being recovered at a lesser rate than other, larger bones. The consistent recovery (presumably) at Porden Point of smaller artifacts and smaller bones from animals of other species, however, seems to argue against this. Stenton (1983:157) has discussed the possibility that dogs may have been responsible for removing articulated vertebral columns, or that vertebrae may simply be differentially prone to destruction through geological processes. For reasons outlined above, dogs are not considered to have been a factor *inside* the Porden Point houses, and the extraordinary artifact preservation observed for most of the houses suggests that differential destruction through natural taphonomic processes is unlikely.

A possible internal corroboration of the accuracy of the Porden Point vertebral data may come from the values obtained for the ribs. For the two groups of houses, the average representation of ribs is quite close to the average representation of thoracic vertebrae. Given the obviously close anatomical relationship of these parts of the skeleton this may suggest that the thorax was being treated as a unit. However, a possible alternative explanation for the low representation of ribs might be their use as pegs for stretching hides, but that would still leave unexplained the low representation of thoracic vertebrae. Unfortunately, this correlation is difficult to explore with the data from other sites. Either ribs were not counted at all (e.g., Staab 1979, for the Silumiut site; Stanford 1976, for the Walakpa site), or rib fragments were counted in a different way from those at Porden Point, making intersite comparisons difficult (Douglas Stenton, personal communication regarding the Peale Point site; for the Porden Point collection seal rib fragments smaller than about five centimetres in length were not counted).

If it is true that the vertebral column was often not introduced into the winter camps then this argues for a very high degree of initial processing undergone by the seals, which are relatively small animals for such processing by many standards (Bunn *et al* 1988:417-418, 428; Smith 1973:11). On the basis of ethnographic analogies from the Arctic there is little reason to expect such a degree of processing of small animals just for the purpose of transportation prior to the final reduction of a small seal carcass for cooking or distribution (e.g., Damas 1972; Savelle and McCartney 1988:42; Van de Velde 1956). It is usually a given that larger sea mammals (e.g., walrus) would have been extensively butchered for the purpose of transportation from the hunting location to the living site or even just from the edge of the water to a caching location back from the shore. But ringed seals are of a size and shape that makes them relatively easy to transport on a small sled or by dragging, at least during the part of year when the ocean is frozen. Even during the open water season they can be carried fairly easily on a kayak or other watercraft. Therefore, one needs to argue either that they were being caught in such large numbers that only the most highly valued parts were worth the effort of transportation, or that the processing was undertaken not simply to reduce weight/bulk for the purpose of transportation but to fulfill some other purpose. And apart from the argument advanced by Stanford (1976:76) to the effect that only preferred portions were transported from hunting camps to base camps, one is left to conclude that at least some of this processing was undertaken for the purpose of storage.

Even if one accepts that inference, however, one must then query the significance of the two *different* patterns that have been isolated. Could they represent fundamentally different patterns of processing or do they just reflect the same basic pattern but taken to different degrees? A possibility, simply because the patterns are observed in structures all commonly identified as 'winter houses', might be that they represent two variations on the same theme: the differential reduction through butchering of seal carcasses principally for storage.

While it should be reiterated that for the purposes of this type of research our knowledge of the exact differential utility of the various parts of a seal's anatomy, particularly as this would be reflected osteologically, must be considered speculative, it is still possible to make some inferences as to what the two patterns indicate. The fairly consistent low representation of the vertebral column and ribs in the houses of Group B, coupled with the fact that fewer bones per seal were recovered from those houses, strongly suggests that the animals found there had undergone rather more substantial processing than those from Group A. This is also suggested by a comparison of the degree to which the long bones (humerus, radius, ulna, femur, tibia and fibula) were intact or broken. In Group A, an average of only 39.1% of the long bones were broken, while 55.7% of those in Group B were broken. This difference is likewise interpreted as indicating a greater amount of processing in Group B (with the apparent exception of RbJr-1 House 8, where only 39.6% of the bones were broken).

It therefore seems probable that the hindquarters, forelimbs (without scapulae) and, to a lesser extent the head, represent the osteologically-identifiable units most often introduced into Group B following a fair degree of processing. In contrast to that pattern of element representation, there appears to have been at least one additional anatomical portion introduced into the houses of Group A, a portion that incorporated at least some of the lumbar vertebrae. As the observed values for the lumbar vertebrae are very close to those obtained for the innominate, it may well be that the lower portion of the trunk including the hindlimbs was introduced as a unit. And in light of the fact that the scapula appears to have remained with the forelimb after butchering, the only portion of the anatomy that was not being introduced at the same rate appears to have been the thorax.

Very tentatively, therefore, it is concluded that the pattern observed in Group B reflects a greater reliance on stored seal meat, probably dried, since freezing would not necessarily have required nearly so much processing. In contrast, the pattern observed in Group A reflects a greater reliance on less-thoroughly processed seals. These might have been 'fresh', or stored through freezing.

Settlement/subsistence implications

At this point one must ask whether the observed differences reflect some sort of secular change in settlement/subsistence patterns at Porden Point. Common wisdom has it that climatic changes following the Thule arrival in the Canadian Arctic led to changes in the ecology of their primary prey species, including ringed seals, and that those factors were a primary reason for the development of the distinctive settlement/subsistence patterns of the Inuit of historic times. Therefore, it would seem reasonable to ask if the differences observed at Porden Point reflect some aspect of this change. But employing the tentative relative dating sequence developed in Chapter 5 for the occupation of the Porden Point houses, it appears that change over time is not a relevant factor. Representatives of both butchering patterns are found in each of the earliest-abandoned (RbJr-1 Houses 4 and 6; RbJr-4 Houses 1 and 4; RbJr-5 Houses 2 and 3), middle (RbJr-1 Houses 7, 8, 9; RbJr-5 House 5) and latest to be abandoned (RbJr-1 Houses 1, 2, 5, 10; RbJr-4 Houses 2 and 3) groups of houses (see Table 1). Therefore, it is inferred that these patterns do not reflect a change over time in subsistence practices at Porden Point. Some indirect corroboration for this conclusion might be drawn from the Peale Point site, where an apparently consistent pattern of element representation (at least for the vertebral column) comes from houses whose occupation is believed to span as much as seven centuries (Stenton 1987b:28).

Therefore, if one makes the assumption that at least *some* of the winter houses at Porden Point were occupied concurrently, then it appears quite possible that these patterns were produced by separate but adjacent household units — neighbours, if you like. If one follows the argument that far, then it becomes even more necessary and interesting to explore further the particular ramifications of these different patterns of element representation.

Several plausible scenarios could be advanced to account for the existence of these separate patterns in the winter houses at Porden Point:

(1) They could be due to chronological differences on a small scale, representing subsistence strategy changes from one year to the next. Perhaps an unsuccessful season for whale hunting or some other resource would lead to a need for and dependence on larger stores of dried or otherwise preserved seal meat to pass the winter or part of it. If this were the case, then the archaeological co-occurrence of these patterns in the Porden Point houses might easily be explained as the result of different houses being finally abandoned after different winters.

(2) They could reflect different treatments accorded to seals depending on their availability independent of other factors (i.e., just the use of preferred portions in circumstances of abundance and more complete usage under conditions of scarcity).

(3) They might reflect *seasonal* differences in the procurement, processing or consumption of seals, perhaps observable archaeologically at Porden Point because some families moved into or away from the winter houses earlier or later in the year than other families.

These possibilities cannot be framed as neat hypotheses with derived test implications. At present there are too many variables to juggle (for one thing, these possibilities are by no means mutually exclusive) and there is also too little in the way of useable archaeological data from other sites against which the Porden Point data can be assessed. However, a number of suggestions can be offered that are amenable to exploration with the Porden Point data. If the different patterns are the result of year to year differences in the availability of other resources, then there may be corresponding differences in the representation of other species in the faunal collections. These differences could take the form of a lower representation of some species (the ones in short supply) and/or the higher representation of other 'replacement' species. If, on the other hand, the different patterns represent seasonally different usage of seals, then obviously this might show up in differences between the groups of houses as far as seasonal or technological indicators go. The next chapter will therefore attempt to correlate the occurrence of these patterns of element representation with some of the other types of data explored in this chapter.

8. FAUNAL/ARTIFACT CORRELATIONS

Introduction

Having provisionally established the utility of the individual houses and their contained assemblages as the major units of analysis in Chapter 5, and then having explored differences between them based on seasonality and on anatomical element representation, in this chapter an attempt will be made to explore for correlations between various aspects of the data based on the two groups of houses isolated in Chapter 7. The amalgamated assemblages from the two groups of four houses continue to be the basic units of analysis.

Seasonality

Attempts to use the thin section seasonality data to correlate the two groups of houses with different seasons of occupation were difficult to assess, mostly because the number of teeth that were sectioned from the Group B houses was much smaller. However, it appears quite possible that there are no differences (Figure 79). A possible distinction lies in the greater number of winter kills from Group B, but the only two winter readings both came from just one house so their significance is questionable.

Other species

For the most part, the patterning between houses that was evident in the seal element data was not found to be present in other aspects of the faunal data. The various species and categories were broken down on the basis of NISP's and MNI's but little in the way of apparently consistent patterning was discovered. However, some success was obtained when correlating the house groups with one particular segment of the faunal data: the representation of bird bones in the faunal collections (Figure 80). With one exception among

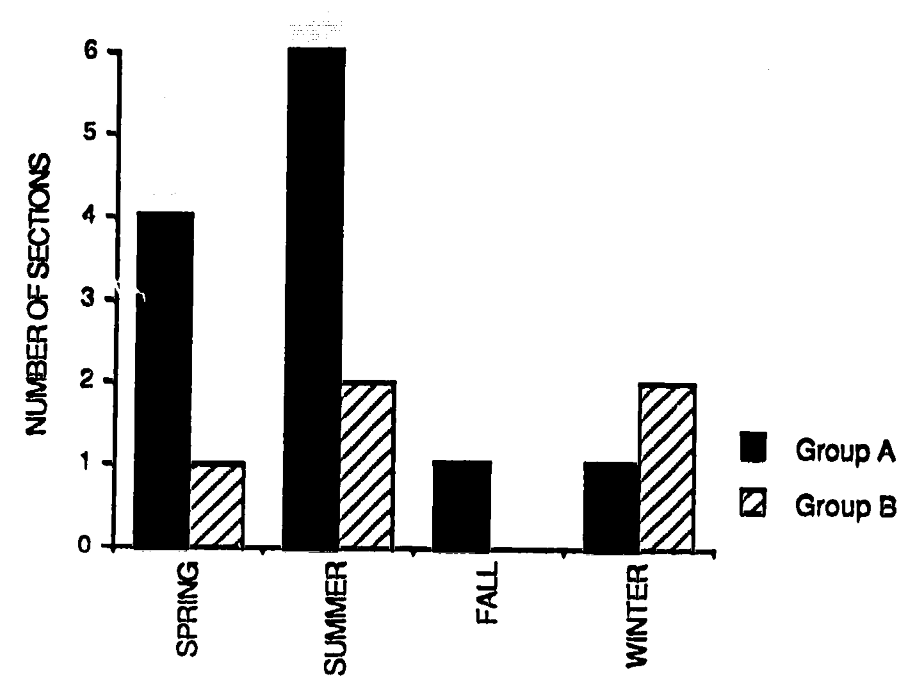


Figure 79. Comparison of the season of death results from the thin section analysis for the two groups of houses that were isolated on the basis of seal element representation.

the eight houses in question (RbJr-4 House 4), those houses from Group A had a substantially larger number of bird bones than the houses from Group B. This correlation also held true when the bird bones were measured as a percentage of each house's total faunal sample, and as a percentage of only the non-small seal portion of each faunal sample.

In terms of assessing the significance of this correlation, it should be recognized that the presence in sites of bones from migratory bird species cannot be taken as a simple indicator of a warm-season occupation there since birds were often stored for later use according to ethnographic sources. Therefore, it seems reasonable to interpret this pattern in the bird remains *either* as a reflection of differences in at least part of the season of occupation between the two groups of houses, *or* as a reflection of differences between them in terms of some aspect of their settlement/subsistence activities. The fact that the two patterns that have been recognized (of seal element representation, and of bird bone NISP) are fairly consistent within each group of houses does suggest that they relate to aspects of the settlement/subsistence system

This argument, that the differences observed in the bird remains from the two groups of houses do not necessarily reflect differences in the season of their occupation, might be corroborated to some extent by an inference made earlier in this chapter to the effect that sea mammal hunting and manufacturing activities appear to have been more closely linked and integral to the occupation of these houses than the constellation of subsistence activities loosely grouped within the category *Other hunting*, which appear to have taken place independently of the occupation of the winter houses. There are, however, several possibilities as to what 'independently' might actually represent in this context. It could mean that particular 'Other hunting' activities were sometimes carried out from the winter house sites and the rest of the time carried out from other types of sites, or that these activities were not necessarily carried out every year.

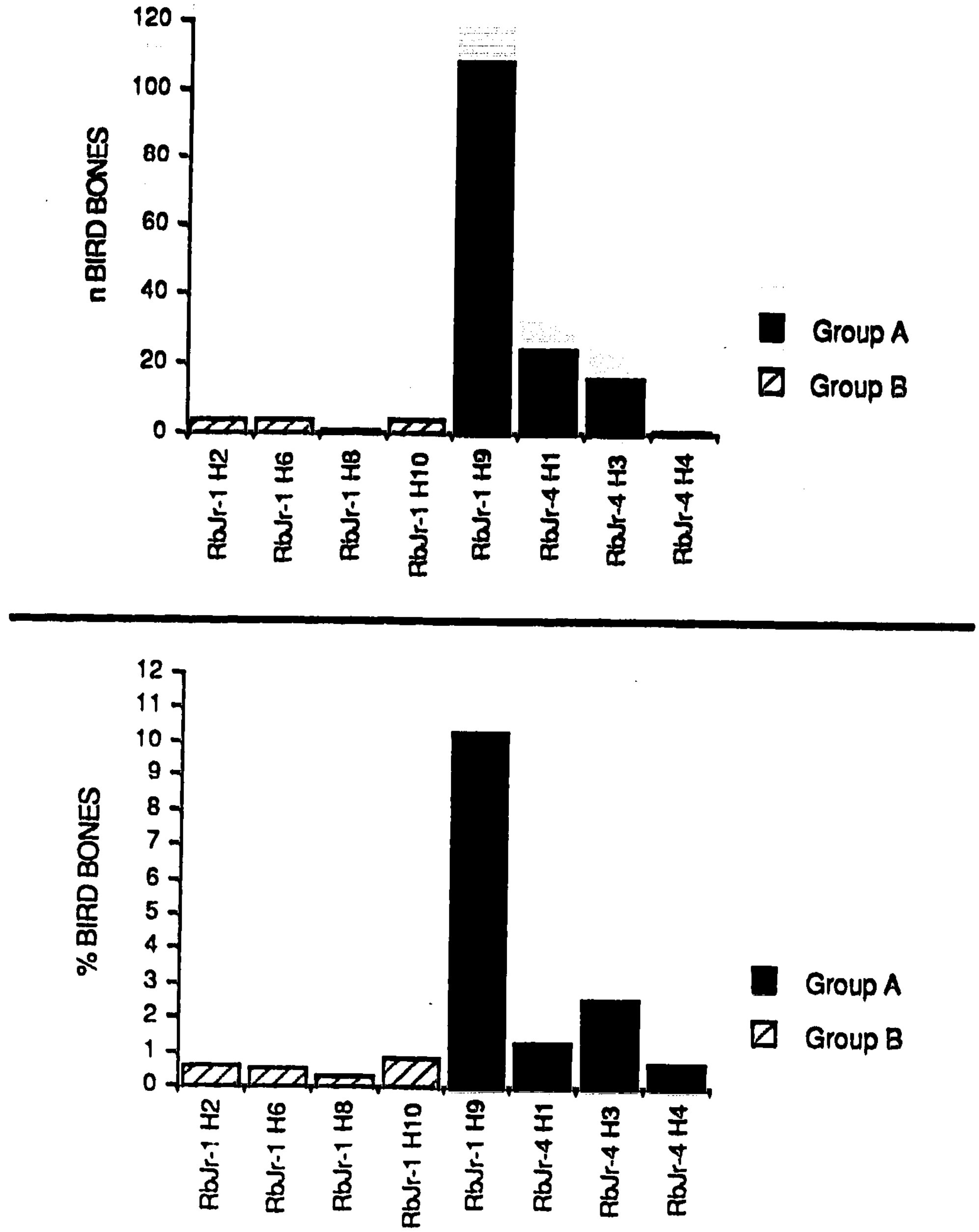


Figure 80. Graphs illustrating the difference between the two groups of houses based on the number of bird bones recovered from each house (top), and on the percentage of bird bones in the total faunal sample from each house (bottom).

Artifact classes

Moving beyond this analysis of the faunal data in isolation and turning to the data from the artifact analysis, a number of functional categories were found to correlate quite closely with the seal butchering data although none of these related directly to hunting, contrary to what might have been expected. The category of artifacts associated with transportation (primarily sledding) was, with one exception, found to be more numerous in the Group B houses than in those of Group A (Figure 81:top). The exception was RbJr-1 House 9, which had a relatively high number of transportation artifacts. However, when the percentage of each house's total artifact collection made up of transportation artifacts is considered, the two groups are clearly different (Figure 81:bottom).

A strong correlation was also found to exist with a category consisting of artifacts associated with the preparation of food and with general household activities (Figure 82:top; see Appendix 1 for the artifacts fitting within these categories). With one exception (RbJr-4 House 4 again) larger numbers of artifacts associated with these activities were found within the houses of Group A than in the houses of Group B. This correlation also held true when the percentage of each house's assemblage made up of artifacts from this category was calculated (Figure 82:bottom).

Discussion

When looking at the characteristics that appear to separate these two groups we are presented with a situation where the houses of Group B appear to be characterized by a greater reliance on stored seals than those of Group A, based on our inferences concerning the representation of seal elements. It is also characterized by a lower level of involvement with bird resources. To this we can add that Group B exhibits a greater emphasis on implements associated with transportation, primarily sledding, and a lesser emphasis on items associated with household activities (Table 3).

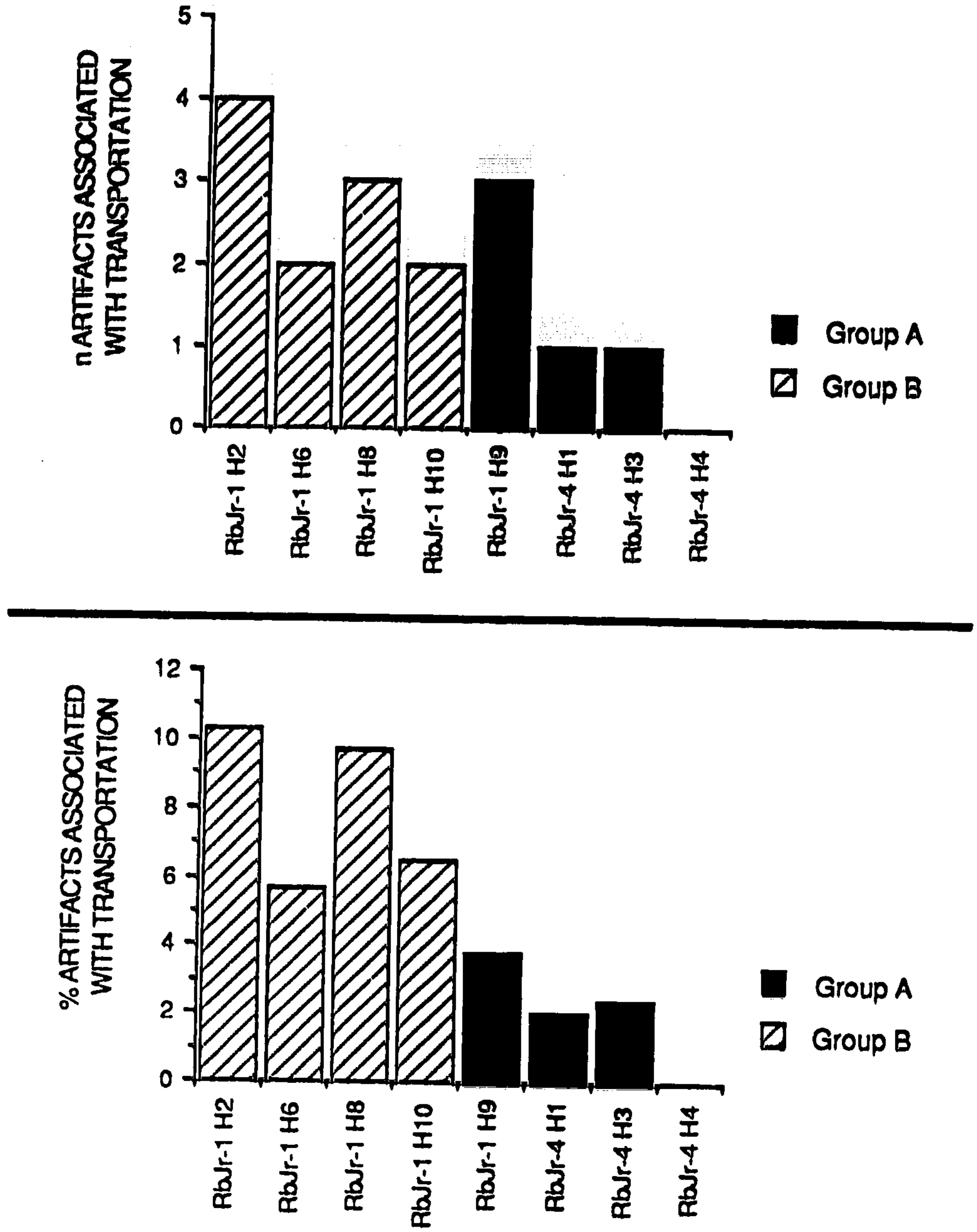


Figure 81. Graphs showing the difference between the two groups of houses based on the numbers of artifacts associated with transportation (top) and on the percentage of each house's total artifact collection formed by transportation artifacts (bottom).

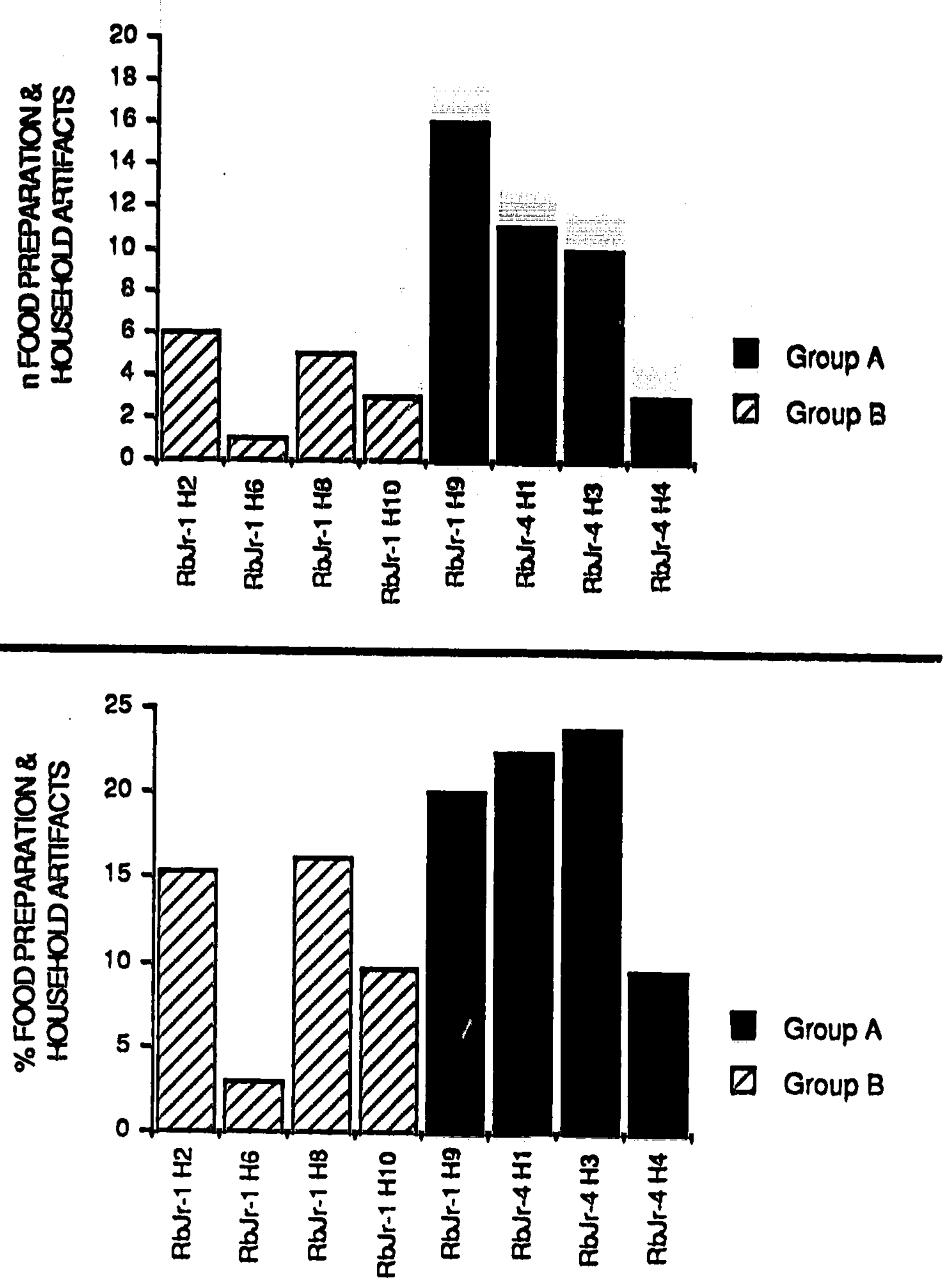


Figure 82. Graphs comparing the two groups of houses based on the numbers of artifacts associated with food preparation and household activities (top) and on the percentage of each house's artifact collection formed by items from those categories.

Within the original two groups of houses defined on the basis of seal element representation these other characteristics are remarkably consistent, with the apparent exception of RbJr-4 House 4. However, among the remaining houses there is somewhat more variability. Table 4 presents all of the houses from Porden Point, assigned on the basis of each characteristic to one or the other of the groups when this was possible. Among the houses for which faunal data are available, RbJr-1 House 1 appears to fall somewhere between both groups, while RbJr-1 House 4 aligns itself with Group A on most counts. The RbJr-5 houses did not produce large numbers of finds but RbJr-5 House 2 appears to be closer to Group B, while RbJr-5 House 5 is closer to Group A on most counts. Thus, of the thirteen houses that could be assessed, fully eleven exhibit a marked tendency toward one or the other of the groups. Interestingly, all of the three houses lacking faunal data are consistent in their group assignment based on transportation artifacts and on household/food preparation artifacts.

It is axiomatic that the simple existence of a correlation does not prove a common causation. However, given the fact that significant correlations were uncovered in particular realms of the data exactly where one would have hypothesized them to exist (e.g., sea mammal hunting artifacts correlating with small seal remains, and artifacts associated with other types of hunting and foraging correlating with the quantities of fox and bird remains) in the data from the individual houses, one can then conclude that the data obtained from the individual houses are indeed meaningfully patterned. It follows that these other consistent but less predictable correlations at the level of the house groups warrant close examination.

Could each of these four basic characteristics be related? The apparent inverse relationship between reliance on highly-processed stored seal meat and on birds (summarized in Table 3) is interesting. If it is assumed that none of these 'winter houses' would have been occupied during the summer when migratory birds would have been most

HOUSE GROUP COMPARISON

	Group A*	Group B†
Importance of stored seal meat	Lower	Higher
Importance of birds	Higher	Lower
Importance of transportation activities (mostly sledding)	Lower	Higher
Importance of household and food preparation activities	Higher	Lower

*RbJr-1 House 9; RbJr-4 Houses 1, 3 and 4

†RbJr-1 Houses 2, 6, 8 and 10

Table 3. Comparison of the two groups of houses that were initially isolated on the basis of seal element representation, on the basis of additional characteristics.

PORDEN POINT WINTER HOUSE GROUPINGS

	SEAL ELEMENT REPRESENTATION			OTHER HOUSE CHARACTERISTICS		
	Vertebrae	Ribs/Scapula	Hind quarters	Birds	Transportation	Food/Household
RbJr-1 H1	A	A	B	B	B	A
RbJr-1 H2	B	B	B	B	B	B
RbJr-1 H4	?	A	A	A	A	B
RbJr-1 H5	•	•	•	•	B	B
RbJr-1 H6	B	B	B	B	B	B
RbJr-1 H7	•	•	•	•	B	B
RbJr-1 H8	B	B	B	B	B	B
RbJr-1 H9	A	A	A	A	A	A
RbJr-1 H10	B	B	?	B	B	B
RbJr-4 H1	A	A	A	A	A	A
RbJr-4 H2	•	•	•	•	B	B
RbJr-4 H3	A	A	A	A	A	A
RbJr-4 H4	A	A	?	B	A	B
RbJr-5 H2	B (?)	A	B	B	B	B
RbJr-5 H3	B (?)	B	B	A	A	B
RbJr-5 H5	A (?)	A	?	A	A	B

Table 4. All of the Porden Point houses 'scored' according to the characteristics used to divide them into the two groups. The letter in each column indicates to which group the house belongs based on that criterion.

available, then it seems likely that at least some of these bird remains also derive from stored supplies. The differences between the groups could thus reflect some sort of scheduling conflict between the acquisition of these two resources, or indicate that the groups of houses represent partly or largely different seasonal aspects of a single annual round, or even suggest that the groups of houses being compared reflect somewhat different 'systemic situations' — i.e., should not be lumped together under the term 'winter houses' except perhaps in the very limited seasonality sense of the term, minus all of the connotations that presently go along with that designation.

Turning for a moment to the disparity in the importance of artifacts associated with transportation, it should again be noted that these artifacts relate overwhelmingly to sledding, being such items as trace buckles and sled parts. However, the only two artifacts associated with summer travel (a paddle and a rib from an umiak) from these eight houses also come from Group B houses (Appendix 1). The higher incidence of transportation artifacts in the Group B houses is thus juxtaposed with a higher reliance on highly processed stored seal, lower reliance on birds and lesser importance of artifacts associated with household and food preparation activities.

In attempting to interpret the transportation data in light of the seal element data, one plausible scenario presents itself. It may be that the seals consumed in the Group B houses were collected from over a much larger area than those from the Group A houses, increasing the need for winter mobility. It does not necessarily follow that the actual hunting was carried out during the part of the year that the sleds were in use — only that seals obtained earlier in the year would have been cached near where they were caught, probably at some distance from the winter site. The use of sleds may thus have been of particular importance in transporting the cached seal meat to the winter site. It may also be that the differences in the representation of artifacts associated with food preparation and general household activities reflects a less permanent [sic] type of occupation on a seasonal basis by the residents of the Group B houses — i.e., the occupants of these houses spent less of each year here than did the people residing in the houses of Group A. That may have involved a later initial occupation and/or earlier final abandonment of the site each season, or an intermittent occupation throughout the winter.

The inhabitants of the Group A houses appear to have been dependent to a lesser degree on such thoroughly-prepared stored seal resources, probably dried seal meat. That could, however, be interpreted in a number of ways. It may be that a larger proportion of the seal hunting was carried on into the autumn, requiring less preparation by drying since the colder ambient temperatures would remove the necessity for this. It might also be that seal only formed an integral part of the diet in these houses during the part of the winter when they were most available. In that situation, another resource (stored whale meat?) presumably formed the bulk of the mid-winter diet. An alternative hypothesis, though not born out by the thin section data and the transportation data, would be that breathing-hole sealing was more prevalent amongst the occupants of the Group A houses. That hypothesis would help explain the presence in them of seal remains exhibiting a lesser degree of processing.

Up until this point the data that have been considered from each of the two groups of houses have been fairly consistent internally, and the interpretations that have been offered have been based on that fact. Predictably, perhaps, those correlations do not tell the whole story. Further complicating matters, there is an interesting apparent internal contradiction between the faunal and artifact data from the Porden Point houses that has already been illustrated in Figures 63 and 64. Figure 63 shows that the percentage of small seal remains in the faunal collection of each house is related in what appears to be a rather interesting way to the season of death results obtained from the thin section analysis, but just for winter-killed and spring-killed seals. The two houses producing winter-killed seals had the smallest proportion of small seals within their faunal collections of all of the houses, while those producing spring kills had a much higher proportion of small seals (in fact the coefficient of determination between the percentage of small seals and the number of spring kills is .520).

There is obviously a problem in determining if the spring-killed seals in the faunal assemblages derive from seals killed late in the yearly occupation of the houses and consumed immediately, or whether they represent supplies caught in the late spring and stored over the summer for winter consumption. However, these possibilities do not appear to be equally likely. One line of reasoning, which would suggest that these spring-killed seals are more likely to have derived from the end of each year's occupation of the houses, is based on the fact that they (i.e., the spring kills) do not coincide with the winter-killed seals, which were undoubtedly caught during the part of the year that the houses were occupied. If the spring-killed seals represent stored supplies consumed during the winter then it would seem likely that they would be found alongside these winter-caught seals. On that rationale it might be argued that the spring-killed seals were caught and consumed prior to a house being vacated sometime in the late spring. Extending the argument even further, it could follow that the presence of winter-killed seals in other houses indicates that the stored supplies of their occupants ran short, prompting them to abandon the houses earlier in the new year than those houses containing spring-killed seals.

Whatever the case, a high proportion of small seal remains in a house appears to correlate with spring seal hunting and not winter hunting, while a low proportion of small seal remains correlates with winter seal hunting and a lack of spring hunting. Unfortunately, this relationship is very difficult to relate to the two house groups. Both produced winter and spring-killed seals, and although Group A has a slightly higher proportion of small seals on average (81.5% as opposed to 74.4% for Group B), there is a great deal of variability within each group.

The second interesting contradiction appeared in Figure 64, and relates to summer-killed seals. The top part of that figure compares the correlation coefficient values obtained between the season of death (as derived from the thin section data) and the proportion in each house's artifact assemblage formed by two different classes of hunting gear: *Sea Mammal Hunting*, and *Other Hunting and Fishing*. No linear correlations can be identified for the fall and winter but there is an inverse correlation between *Other Hunting and Fishing* artifacts and spring kills. By contrast, there is an equally strong positive correlation between this category of artifacts and the number of summer-killed seals along with a quite strong inverse correlation between summer kills and the proportion of *Sea Mammal Hunting* artifacts. In other words, the more summer-killed seals in any house, the smaller the portion of its artifact assemblage that is associated with hunting sea mammals.

Given that both bird hunting and land mammal hunting (which constitute the primary activities represented by the artifacts falling under *Other Hunting and Fishing*) would have been primarily warm season activities on the basis of ethnographic analogy and modern animal ethology, the positive relationship between artifacts pertaining to them and the number of seals killed dur. ; this part of the year probably reflects this similarity in time of year more than anything else. However, again based on ethnographic analogy, these winter houses would not have been occupied during the summer when such activities were being carried out. Therefore, what this correlation may be reflecting is the fact that these activities were more important for the occupants of some of the houses than for others, or, equally likely, that the winter settlement/subsistence strategies followed by the occupants of some of the houses resulted in these summer activities being more strongly represented in some houses than in others.

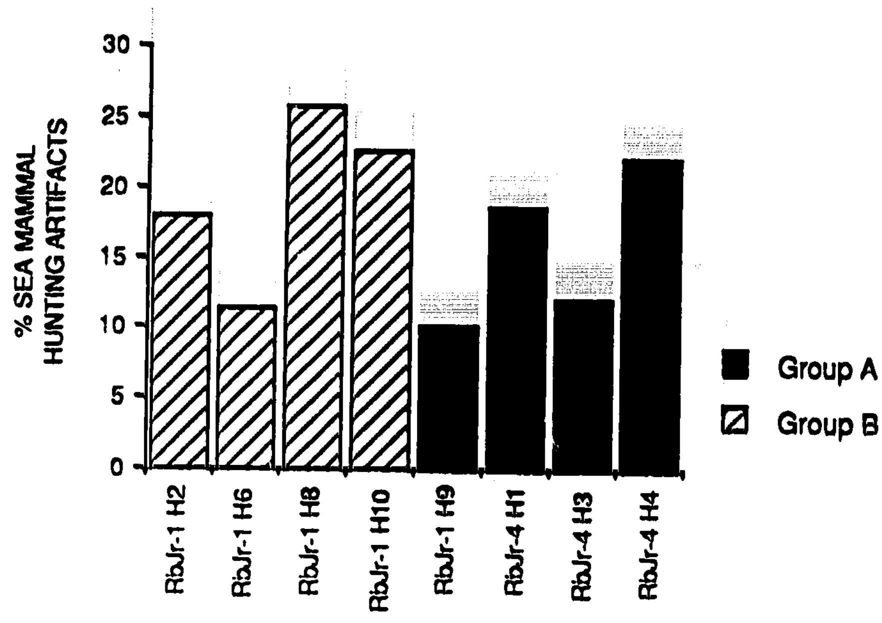
The inverse relationship between the numbers of summer-killed seals and the proportion of the artifact assemblages made up by sea mammal hunting artifacts is rather more curious. It may be that the houses having large quantities of stored summer-killed seals needed to rely less on sea mammal hunting during the part of the year that the winter houses were occupied. Looked at from another perspective, it may be that sea mammal hunting was primarily an activity carried on from the winter house sites themselves when there was not a sufficient quantity of stored supplies. Finally, this inverse relationship may also indicate that *all other* classes of artifacts (i.e., apart from sea mammal hunting) increase in importance when summer-killed seals are numerous.

Expressing this correlation in terms of the two groups of houses is rather difficult. As Figure 83 (top) shows, the average percentage of sea mammal hunting artifacts is lower in Group A than it is in Group B (15.6% as opposed to 19.4%), but there is a high degree of variability within each group. Similarly, there is a larger number of summer-killed seals in Group A than there is in Group B (Figure 83: bottom), but this may just relate to the larger number of readings available from Group A (see also Figure 79).

Sea mammal hunting: open-water vs. ice hunting

Returning to the concern with hierarchies of analysis that was expressed in the first chapter, it now becomes extremely desirable to examine these conclusions at different levels of analysis. If the results from Porden Point that were obtained at the level of functional classes are valid, it is possible (though not logically required) that further inferences (and confirmation) might be drawn by moving the analysis down to the level of the individual functional type. One can then attempt to explore whether the patterns identified at the level of the functional class have corollaries and/or ramifications that show up on this level. And the combination of the results from these two levels of analysis might then be used to develop hypotheses that could be tested with the data from other sites.

In order to take advantage of the results obtained at the higher level of analysis and at the same time mitigate the sampling problem associated with the individual functional types outlined earlier, the two groups of houses identified on the basis of the faunal element data and corroborated on the basis of the functional class data will initially be maintained as the minimal units of analysis (i.e., the amalgamated artifact collections from the two groups of houses will be compared, rather than the individual house assemblages).



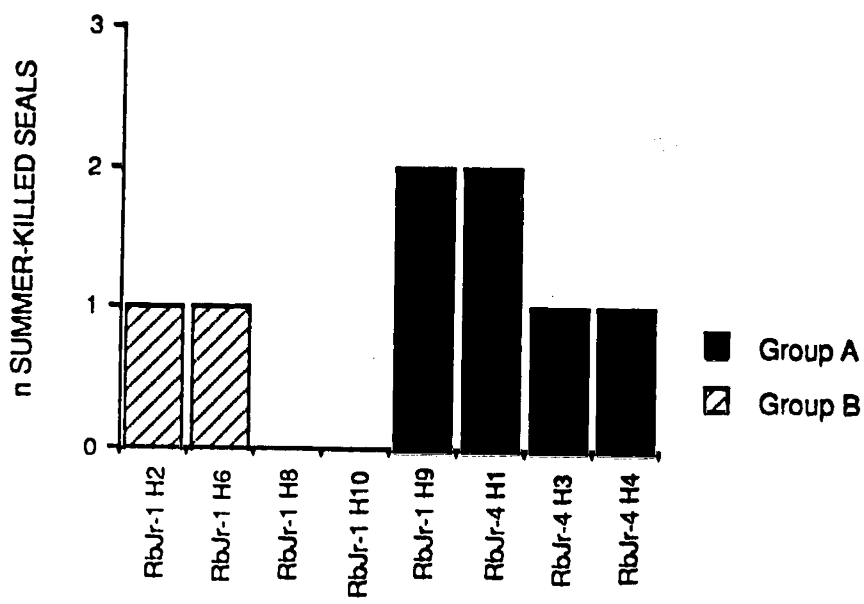


Figure 83. Graphs comparing the two groups of houses based on the percentage of each house's artifact assemblage made up of sea mammal hunting artifacts (top), and on the number of summer-killed seals (bottom).

It has been noted above on the basis of thin-section data that Group A appears to be characterized by more summer-killed seals, and also that the only autumn-killed seal from either group of houses also comes from Group A (Figures 79 and 83). It was also argued earlier that the more limited dependence on highly-processed stored seal meat apparent in Group A might indicate that seal hunting was carried on into the autumn, when colder ambient temperatures could have required a lesser degree of preparation of the carcasses for storage. A possible explanation of these results might be that Group A reflects a greater dependence on open-water hunting techniques. In fact, this interpretation appears to be consistent with the results of an analysis of the individual functional types associated with sea mammal hunting from the two groups of houses.

On the basis of ethnographic evidence, lances appear to have been used primarily (though not exclusively) in the course of open-water hunting of sea mammals (e.g., Fabricius 1962:55-58). Three of the four houses of Group A each produced a lance head while none were recovered from any of the houses of Group B (Appendix 1). Bladder floats are also diagnostic of open-water hunting and the houses of Group A produced a bladder float mending disk and a bladder float plug while no artifacts pertaining to floats were recovered from the houses of Group B.

It is more difficult to identify artifacts specific just to non-open-water hunting techniques. However, harpoon ice picks would seem to be limited to breathing-hole sealing or perhaps ice-edge sealing (Morrison 1983a:256-257). Four ice picks were recovered from the houses of Group B compared with just two from Group A. Another item associated with ice-hunting is the sealing stool (Birket-Smith 1924:325-326; Maxwell 1985:273; Murdoch 1892:255-256; Steensby 1910:294-295). Two of the Group B houses produced sealing stool parts compared with only one from Group A (Appendix 1). Another artifact perhaps diagnostic just of ice-hunting is the drag-line handle, two of which were recovered from Group B houses; Group A did not produce any (Appendix 1). Finally, there is the seal scratcher but none were recovered from the Group A or Group B houses.

There thus appears to be a marked difference in the representation of these specific artifact types between the two groups of houses, with Group A exhibiting many more open-water hunting implements and Group B exhibiting more ice-hunting implements (Figure 84). But as the number of artifacts being dealt with at this point is almost prohibitively small it is necessary to shift levels of analysis again, down to the level of the individual house in order to determine whether these results also apply on a case-by-case basis (Figure 85). On this level it is evident that, with the exception of RbJr-4 House 4, the results of the analysis at the level of the two groups of houses accurately reflect the results from the individual houses. Open-water hunting implements are not present in any of the Group B houses, and in three of the four Group A houses they exceed or equal the number of artifacts associated with hunting from the ice. Thus, there appears to be good reason to believe that this open-water/ice hunting distinction appears to hold true for the two groups of houses at Porden Point.

House placement

One issue might be reintroduced at this point. The factor of house placement was discussed in Chapter 4 as a means of attempting to break down the sequence of construction of the RbJr-1 houses. However, it was recognized that social factors could have a major role in determining house placement, making such a factor of questionable value in identifying the order in which the houses were built. But at this point in the analysis it is interesting to examine this factor in light of the two groups of houses identified on the basis of these other criteria. What is evident is that three of the four Group A houses (RbJr-4 Houses 1, 3 and 4) are relatively isolated while the four Group B houses are situated in the cluster of houses at RbJr-1. At least one model aimed at understanding the spatial placement of structures in a settlement argues that:

> To belong to a territory or place is a social concept which requires first and foremost belonging to a societal unit. ...when any such relationship results in the location of

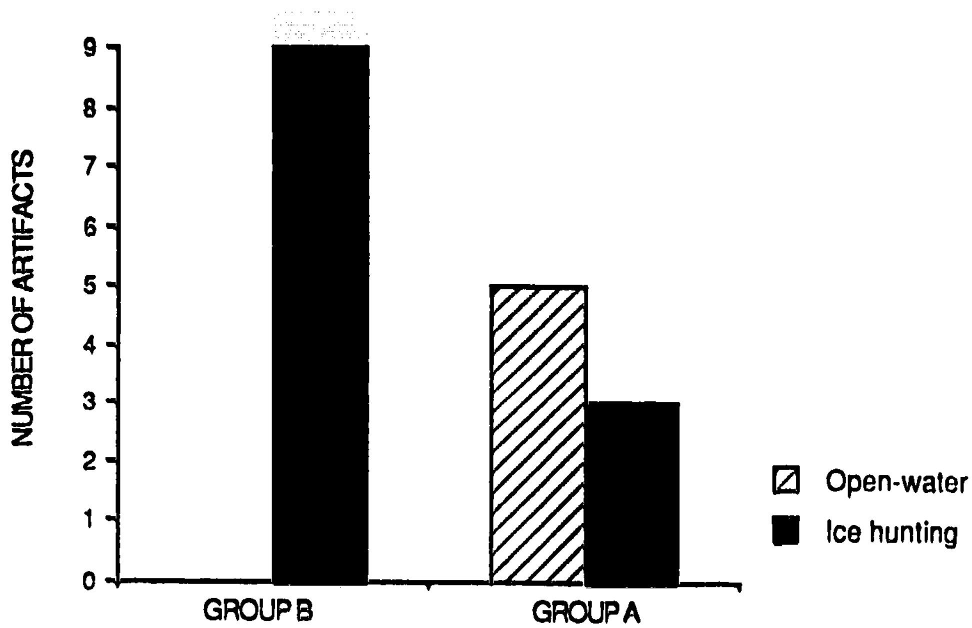


Figure 84. Graph comparing the two groups of houses based on the number of hunting artifacts from each that can be associated with open-water sea mammal hunting or with sea mammal hunting from the ice.

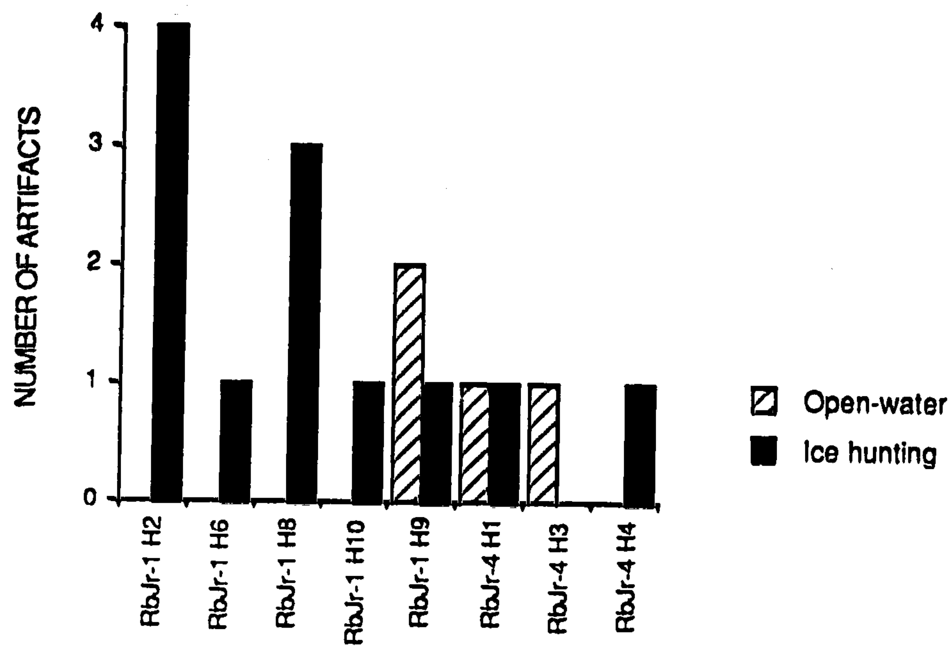


Figure 85. Graph comparing the individual houses from the two groups based on the number of hunting artifacts from each that can be associated with open-water sea mammal hunting or with sea mammal hunting from the ice.

> permanent structural features such as houses, storage facilities, burial grounds, and other fixed structures, they leave marks that cannot be altered with change in relationship. The structures or features thus become the symbols representing the relationship at a point in time. On the ground, the empirical evidence would indicate the formation of distinct areas or clusters of structures within a settlement or village... (Agorsah 1988:234-235)

In spite of the fact that we cannot know which houses were occupied in any given winter, it is still interesting in light of this argument to observe that it is the Group A houses that tend to be more isolated. This is interesting because the most dramatic of the open-water hunting techniques, the hunting of bowhead whales, is generally regarded as requiring close cooperation within a group of hunters (e.g., Freeman 1979; McGhee 1984:83). If social relationships established for the purposes of whaling did produce a clustering of structures it may be that this is only reflected at camps established during the open-water whaling season (RbJq-5, RbJq-6 or RbJr-5?) and was not carried over to the wintering sites. However, for the purposes of kayak hunting of smaller sea mammals, Damas (1969:56) points out that:

> ...kayak hunting of sea mammals, can... be carried out by a lone man or preferably by pairs of men. In all cases of cooperation in any of the areas there is no real necessity for the work force to be recruited from closely related personnel such as make up an extended family household.

Thus, the Group A pattern might be expected (or at least not unexpected) if extensive cooperation was not a requirement (i.e., no large-scale whale hunting).

The discovery that the two groups of houses can be differentiated on the basis of the importance of open-water as opposed to ice hunting has extremely important ramifications for understanding variability within Thule culture settlement systems and these will be discussed in the final chapter. But before proceeding any further, it becomes important to attempt to determine if similar variability can be found at other Thule sites. That will be attempted in the next chapter.

9. BEYOND PORDEN POINT

Introduction

Any attempt to explore other sites for correlations similar to or different from those found at Porden Point must be limited by the shortage of published data of the type used in this study. These data include detailed faunal analyses and complete artifact lists. The requisite faunal data (i.e., element lists for the seal bones) are available from only a small number of other sites, although useable artifact lists are somewhat more readily available. Therefore, two separate attempts will be made, one based on both artifact and faunal data and the other exploring for correlations just within the artifact data. However, it should be noted that differences in identification and reporting standards would make it extremely desirable to have all of the artifact collections re-analysed in a consistent fashion.

Faunal/artifact class correlations

The two groups of houses at Porden Point could be separated on the basis of a number of attributes, but the differential representation of portions of the vertebral column of small seals appears to be the most diagnostic characteristic. In particular, the presence or absence of a 'lumbar peak' appears to distinguish the groups, and it is that feature that will be used in this analysis. Only three sites other than Porden Point provide the necessary data on the vertebral column and on artifact types: Walakpa (Stanford 1976), Peale Point (Stenton 1983), and site QkHn-12 at Truelove Lowland, Devon Island (Park n.d.). Table 5 summarizes the relevant data from these sites and from Porden Point.

Figure 86 presents these data graphically. The degree to which a lumbar peak is present is quantified on the y-axis as the difference between the values for the lumbar and thoracic vertebrae — the greater the resulting value, the more pronounced the lumbar peak.

	VERTEBRAE %		n OPEN-WATER		n ICE HUNTING			
	Thoracic vertebrae	Lumbar vertebrae	Lance head	Bladder[1] float parts	Harpoon ice pick	Drag line handle	Sealing stool	Seal scratcher
Porden Point								
RbJr-1 H1	23	33	0	0	2	0	1	0
RbJr-1 H2	28	18	0	0	2	0	2	0
RbJr-1 H4	33	25	0	3	0	0	1	0
RbJr-1 H6	10	15	0	0	1	0	0	0
RbJr-1 H8	13	8	0	0	1	1	1	0
RbJr-1 H9	20	50	1	1	0	0	1	0
RbJr-1 H10	8	6	0	0	0	1	0	0
RbJr-4 H1	19	36	1	0	1	0	0	0
RbJr-4 H3	27	44	1	1	0	0	0	0
RbJr-4 H4	21	41	0	0	1	0	0	0
RbJr-5 H5	16	33	1	1	2	0	0	0
Walakpa[2]								
Level A1	7	22	0	0	0	0	0	0
Level A2	12	15	0	0	1	0	0	0
Level A5	10	20	0	0	0	1	0	0
Level B9	15	62	0	2	0	0	0	0
Level B10	10	35	0	1	2	0	0	0
Peale Point[3]								
House 2(1)	13	20	0	0	2	2	0	0
House 2(2)	8	9	6	7	3	3	0	0
House 3	10	9	1	1	0	0	0	0
House 8	14	15	0	0	1	1	0	1
House 11	11	10	0	3	0	0	0	0
Truelove (QkHn-12)[4]								
House 1	8	10	1	0	1	0	1	1

1 Bladder float toggle, mouthpiece, mouthpiece plug, or mending disk

2 Adapted from Stanford 1976:Table 2.

3 Adapted from Stenton 1983:Table 32.

4 Adapted from Park n.d.

Table 5. Distribution of seal thoracic vertebrae and of sea mammal hunting artifacts associated with either open-water or ice hunting, from the Porden Point, Walakpa, Peale Point, and Truelove sites.

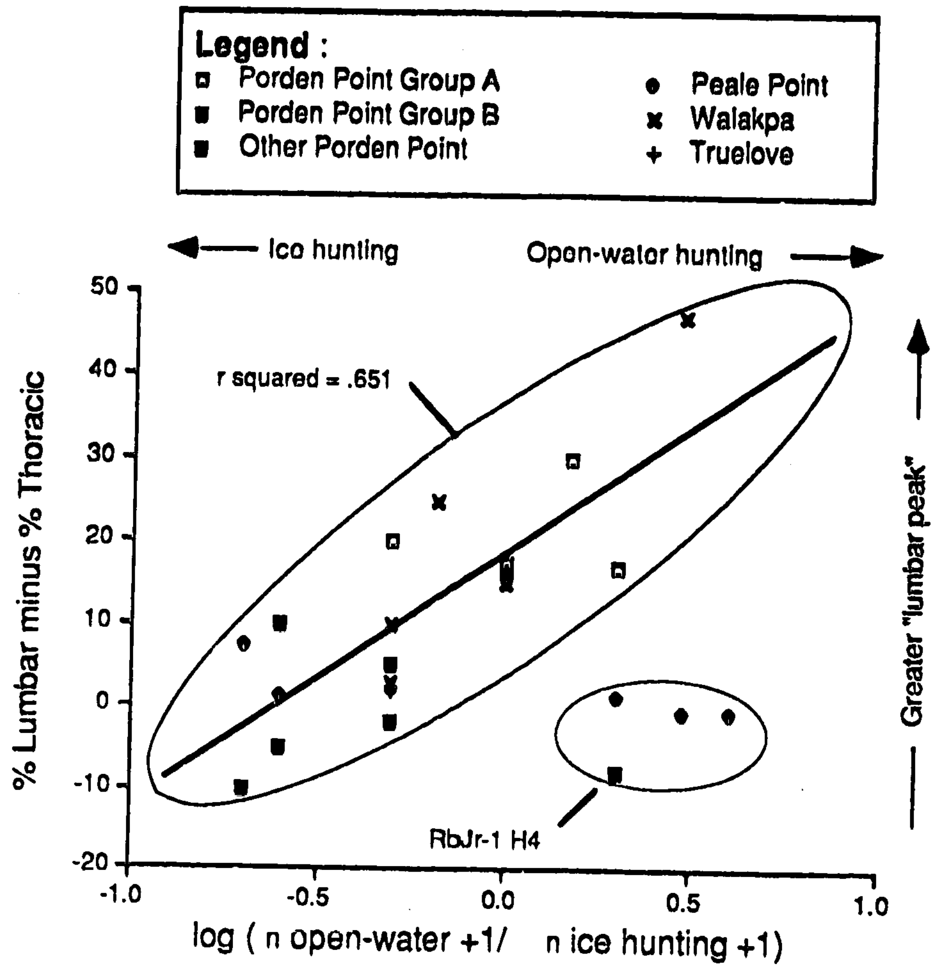


Figure 86. Scatter plot illustrating the relationship between (y) the degree to which a 'lumbar peak' is present, and (x) the relative importance of artifacts associated with hunting on the open-water and from the sea ice, at four sites.

The relative importance of the two kinds of sea mammal hunting artifacts is quantified on the x-axis in the form of the logarithm of the ratio of open-water hunting to ice hunting artifacts. The log transformation produced the highest degree of linear correlation between these variables; however, quite similar results were obtained without it.

In Figure 86 two clusters of cases are circled. The larger cluster consists of eighteen of the twenty-two houses/units in the data set (see Table 5). This cluster appears to demonstrate a strong positive correlation between the degree to which a lumbar peak is present and the importance of artifacts associated with open-water modes of hunting. The smaller cluster contains three houses from the Peale Point site along with House 4 at RbJr-1. These four houses are characterized by the absence of a lumbar peak but a predominance of artifacts associated with open-water hunting.

Figure 87 presents the same data but on separate graphs for the Porden Point, Walakpa, and Peale Point sites. The data from Porden Point (excluding RbJr-1 House 4) and Walakpa produce similar simple regression lines, contrasting sharply with the results from Peale Point. There, in spite of the high value obtained for r^2, the relative importance of open-water and ice hunting does not appear to correlate in a significant way with the degree to which a lumbar peak is present.

There appear to be two plausible interpretations for these differing results. One is that the artifact and faunal samples in the four houses in the smaller cluster were not created under the same systemic constraints as were the assemblages in the other houses, but under a different systemic situation where open-water hunting of sea mammals was important but not reflected in the butchering/storage of small seals. In this light it is perhaps interesting to note that House 4 at RbJr-1 was the only house represented on the graph to produce a whaling harpoon head (Figure 16h). This interpretation might tend to be corroborated by the fact that these four houses do cluster fairly tightly together — i.e., they do not appear to be randomly scattered.

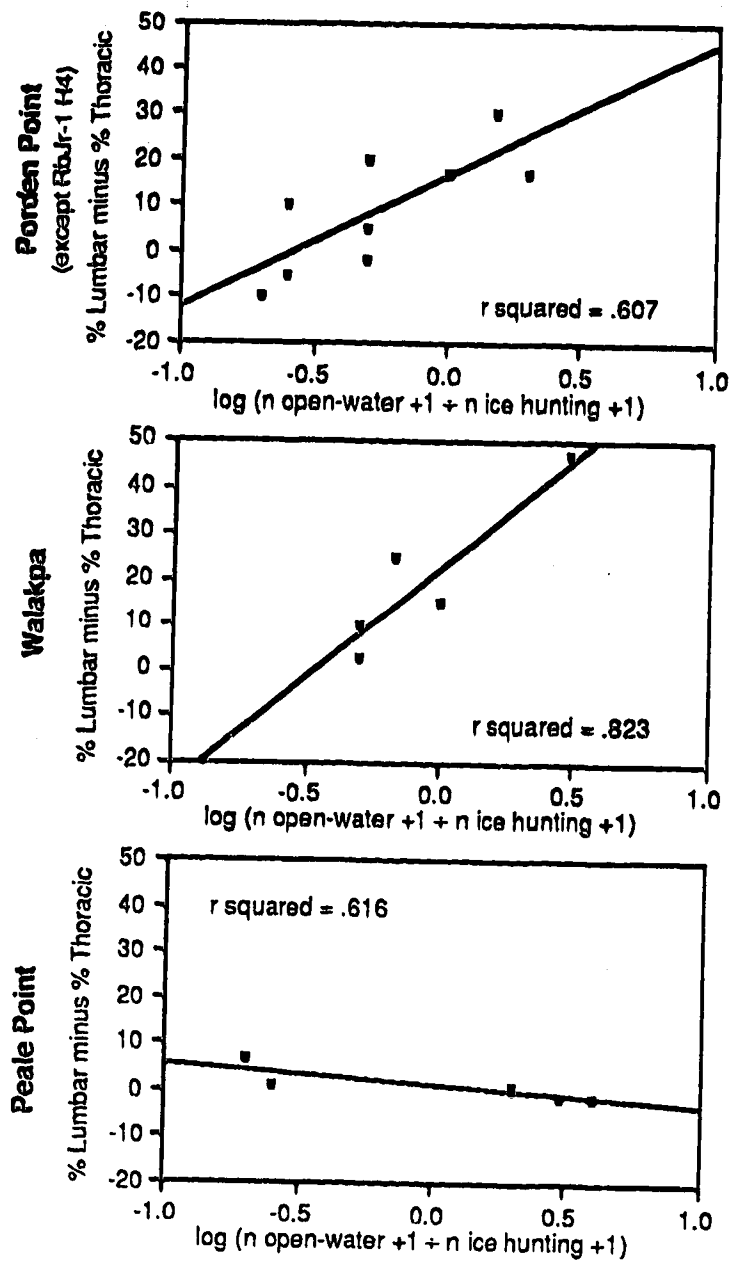


Figure 87. Scatter plots illustrating the relationship between (y) the degree to which a 'lumbar peak' is present and (x) the relative importance of artifacts associated with hunting on the open-water and from the sea ice at three sites.

The other plausible explanation for this patterning lies in the fact that the degree to which a lumbar peak is present does not appear to correlate in any of the Peale Point houses with the importance of open-water or ice hunting. Therefore, due to different geographical or climatic circumstances, all of the Peale Point houses may reflect a different pattern of sea mammal exploitation. In this case, House 4 at RbJr-4 simply represents an anomaly, perhaps reflecting repeated use by groups practicing different strategies.

Whatever the explanation, because approximately 82% of the houses/units examined appear to conform to the pattern of a lumbar peak correlating with a predominance of open-water over ice hunting artifacts, it seems reasonable to conclude that the way in which seals were butchered at each of these sites was indeed influenced by factors related to the relative importance of open-water and ice hunting of seals.

Artifact class correlations

Although the above results from other sites are extremely interesting and provide important corroboration for the reality of the results from Porden Point (if not for any particular explanation of their significance), the number of sites for which the requisite classes of data are available is obviously extremely small and it is desirable to widen the comparative sample. This is in fact possible because, while the faunal data were extremely important in the initial identification of the two groups of houses at Porden Point, two differences were subsequently identified between the groups of houses based on the representation of artifacts associated with transportation and with household/food preparation activities (Figures 81 and 82). Given the demonstrated correlation between the groups of houses and the different types of sea mammal hunting, it would seem probable that similar correlations should exist between these modes of hunting and the transportation and household/food preparation categories.

In order to test this, it is first necessary to explore these relationships within the Porden Point data. Figure 88 illustrates the relationship between the two modes of sea mammal hunting and the percentage of each house's artifact assemblage that is made up of household/food preparation artifacts. While that artifact category successfully distinguished between seven of the eight houses in the two groups (Figure 82), with the addition of the remaining houses it does not appear to correlate in a meaningful way with the two modes of sea mammal hunting. Similarly, when these factors are graphed for a sample of 41 houses from eight Thule sites there does not appear to be any meaningful correlation (Figure 89).

The other class of artifacts with which the two house groups were found to correlate consisted of artifacts associated with transportation (Figure 81). Figure 90 illustrates the relationship between the two modes of sea mammal hunting and the percentage of each house's artifact assemblage that is made up of transportation artifacts. It is evident that, with the exception of RbJr-4 House 4, a high degree of correlation exists between these two categories at Porden Point. The percentage of artifacts associated with transportation increases with an increasing reliance on the hunting of sea mammals from the sea ice. Figure 91 presents a similar graph for 51 houses from 11 Thule sites, and although the correlation is much weaker, that trend is still evident. Therefore, the relationship between these two variables may prove to be a useful tool with which to explore for patterning in other Thule sites in the absence of detailed faunal data.

Many of the sites in the sample do not show the tight internal patterning seen at Porden Point, although at the Peale Point site (Figure 92) four of the five houses fit the Porden Point pattern quite closely. However, interesting relationships are also very evident in some of the data from other sites. Figure 93 presents data from five site localities from northwestern Greenland and northeastern Ellesmere Island. The pattern of of transportation correlating with the increasing importance of ice hunting is weak but present. In this region there appears to be a fairly even balance between open-water and ice hunting of sea mammals. In contrast to this, Figure 94 presents data from two sites from

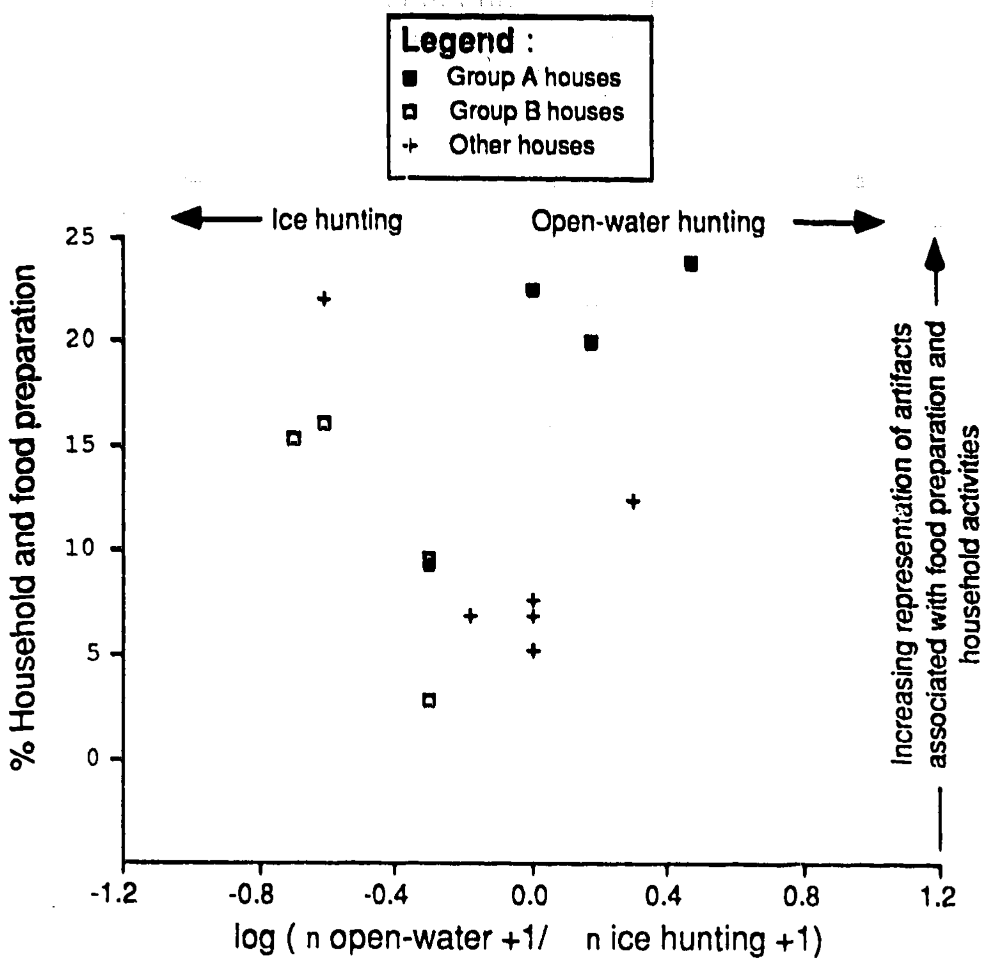


Figure 88. Scatter plot illustrating the relationship between (y) the percentage of each artifact assemblage made up of artifacts associated with household and food preparation activities, and (x) the relative importance of artifacts associated with hunting on the open water and from the sea ice, from the Porden Point houses.

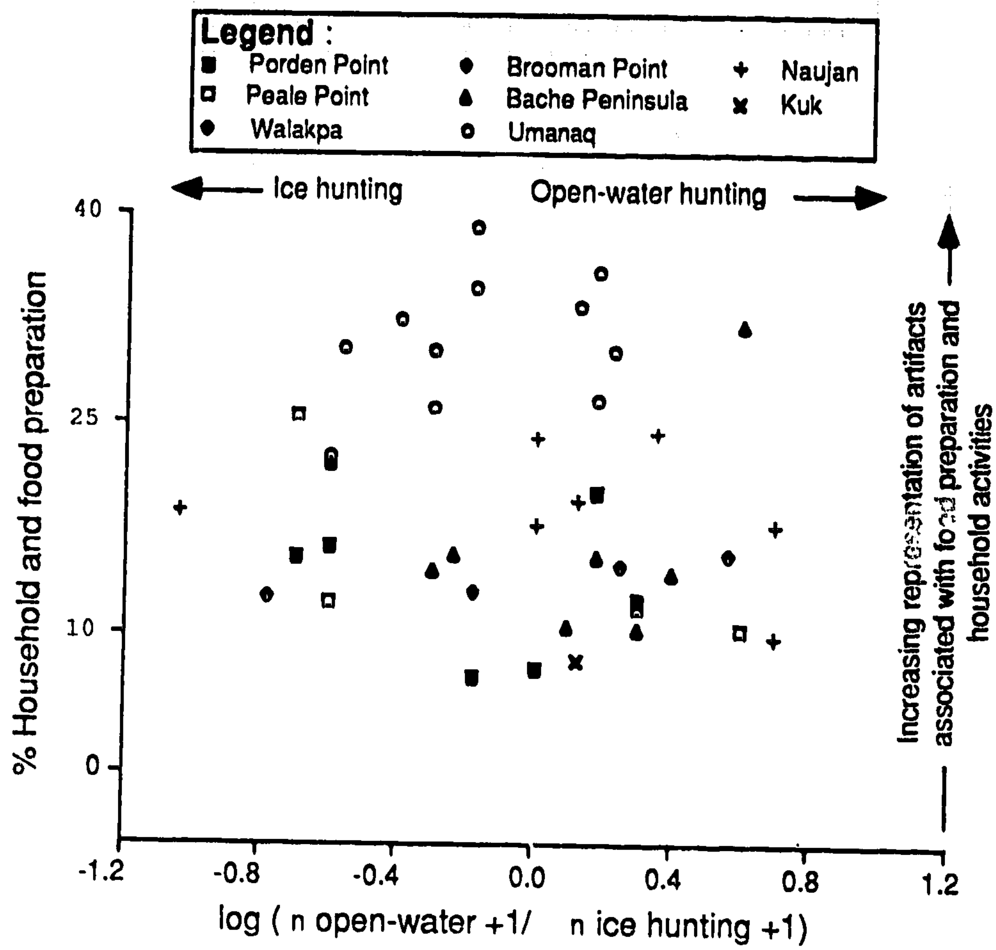


Figure 89. Scatter plot illustrating the relationship between (y) the percentage of each artifact assemblage made up of artifacts associated with household and food preparation activities, and (x) the relative importance of artifacts associated with hunting on the open water and from the sea ice, from 41 houses each having 20 or more artifacts, from eight sites. [Data from Holtved 1944a, Mathiassen 1927a, McCullough 1986, McGhee 1984, Stanford 1976, and Stenton 1983.]

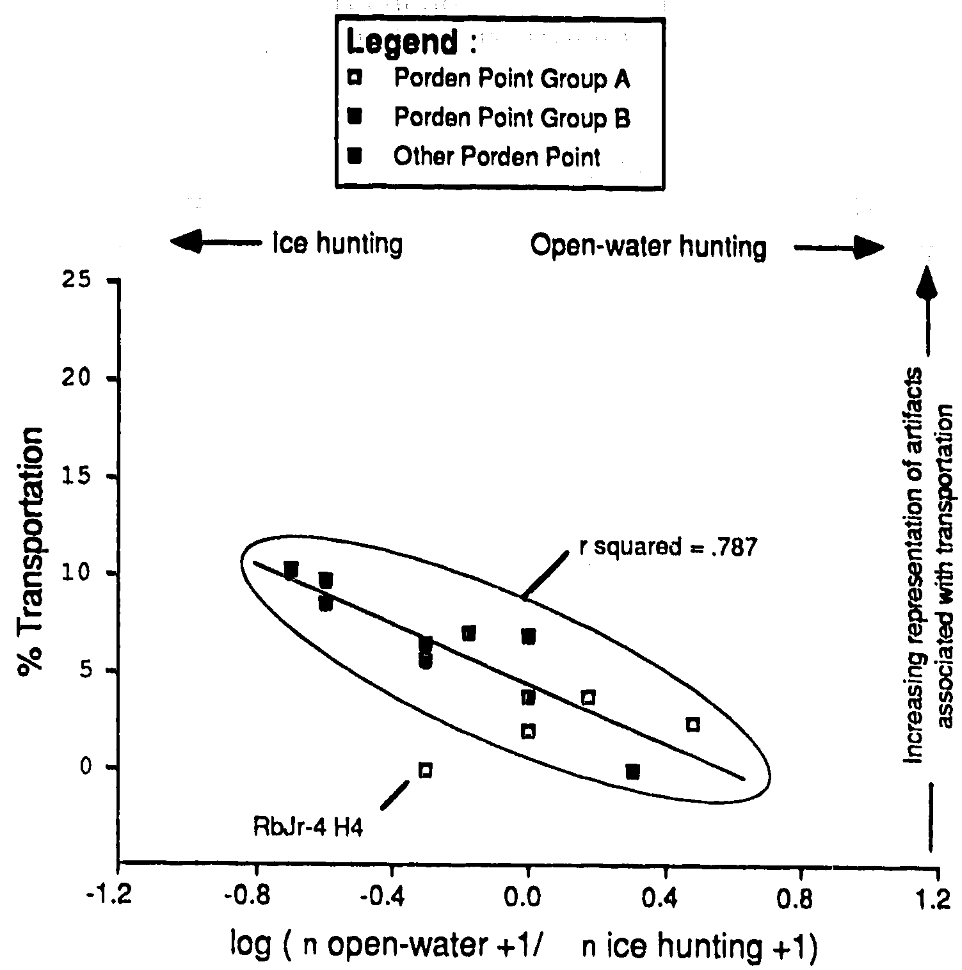


Figure 90. Scatter plot illustrating the relationship between (y) the percentage of each artifact assemblage made up of artifacts associated with transportation, and (x) the relative importance of artifacts associated with hunting on the open water and from the sea ice, from the Porden Point houses.

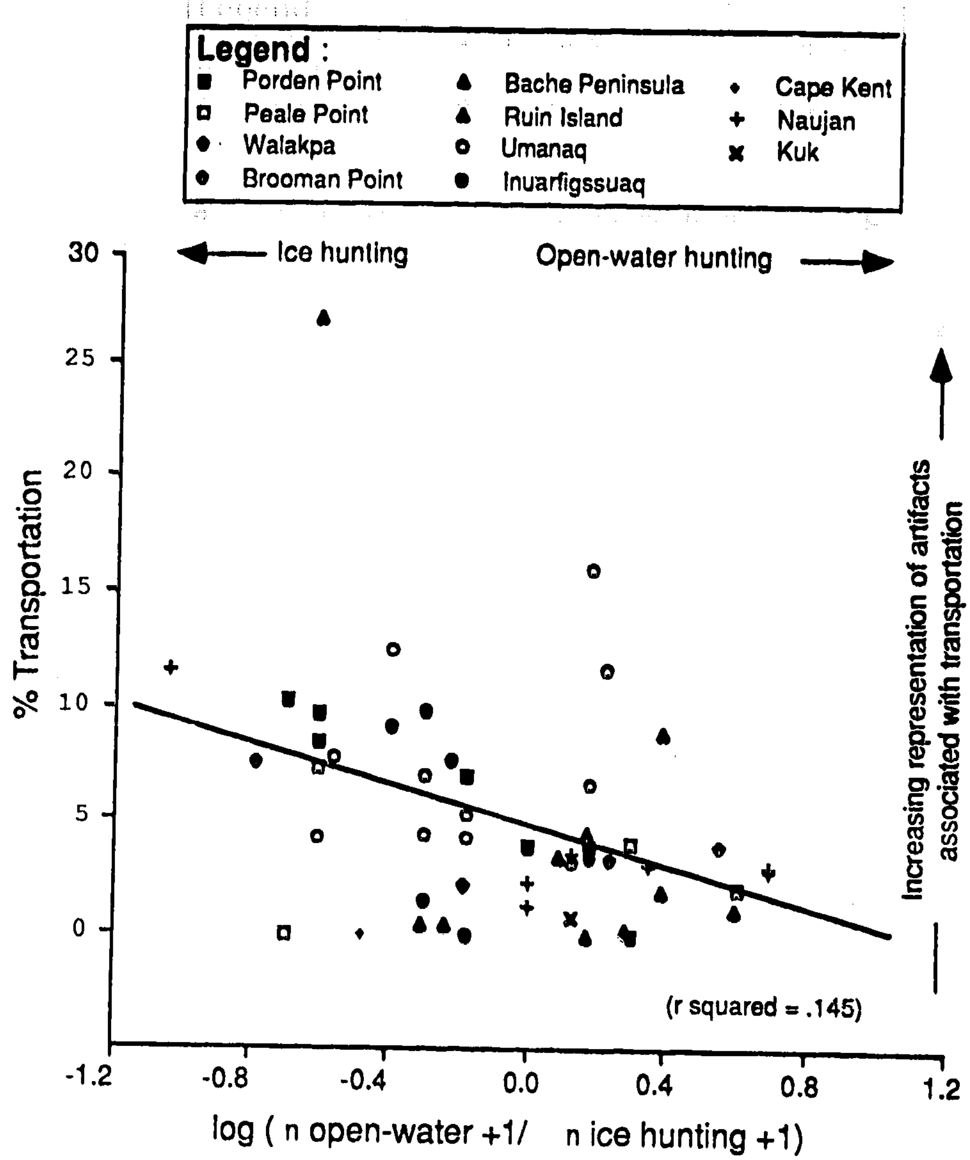


Figure 91. Scatter plot illustrating the relationship between (y) the percentage of each artifact assemblage made up of artifacts associated with transportation, and (x) the relative importance of artifacts associated with hunting on the open water and from the sea ice, from 51 houses each having 20 or more artifacts, from 11 sites. [Data from Holtved 1944a, Mathiassen 1927a, McCullough 1986, McGhee 1984, Stanford 1976, and Stenton 1983.]

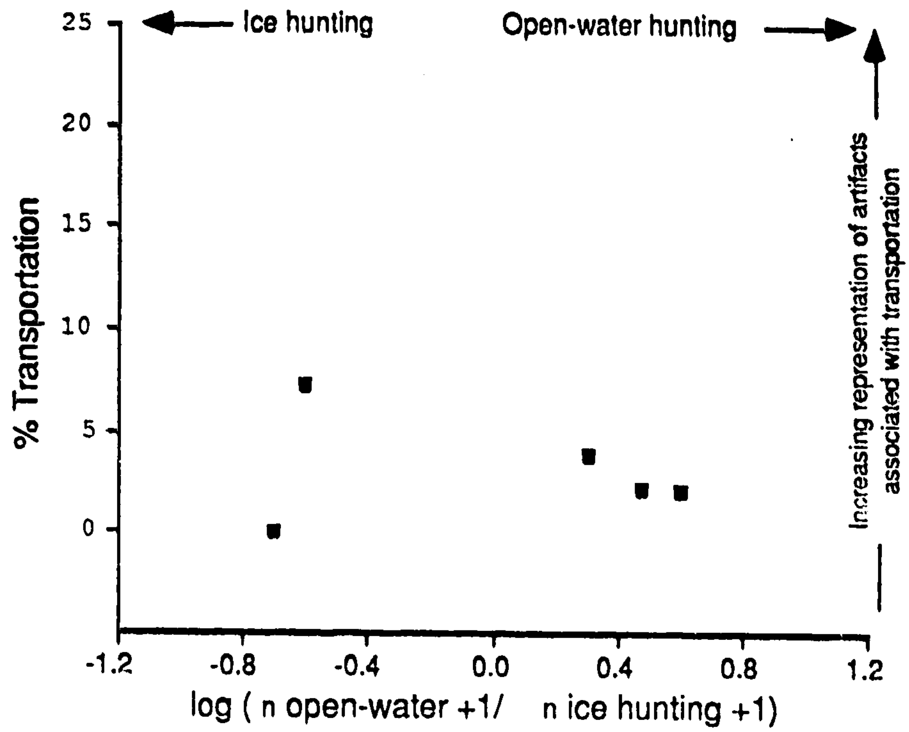


Figure 92. Scatter plot illustrating the relationship between (y) the percentage of each artifact assemblage made up of artifacts associated with transportation, and (x) the relative importance of artifacts associated with hunting on the open water and from the sea ice, at the Peale Point site (Stenton 1983).

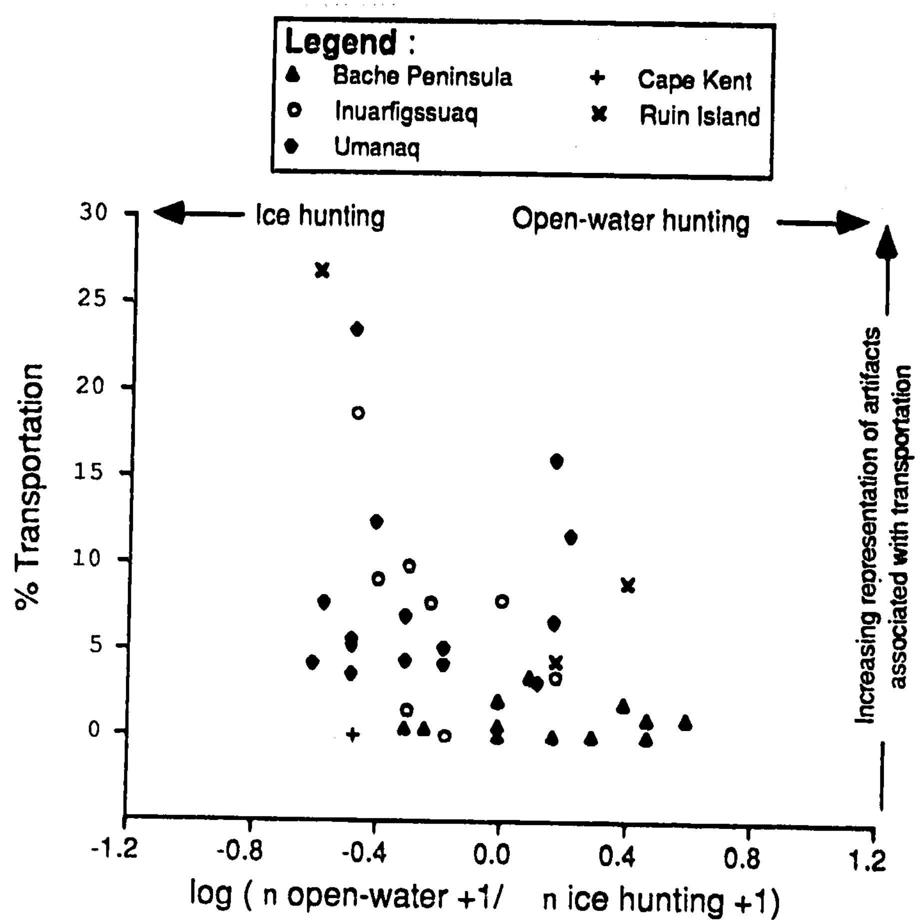


Figure 93. Scatter plot illustrating the relationship between (y) the percentage of each artifact assemblage made up of artifacts associated with transportation, and (x) the relative importance of artifacts associated with hunting on the open water and from the sea ice, at five sites in northwestern Greenland and northern Ellesmere Island. [Data from Holtved 1944a and McCullough 1986.]

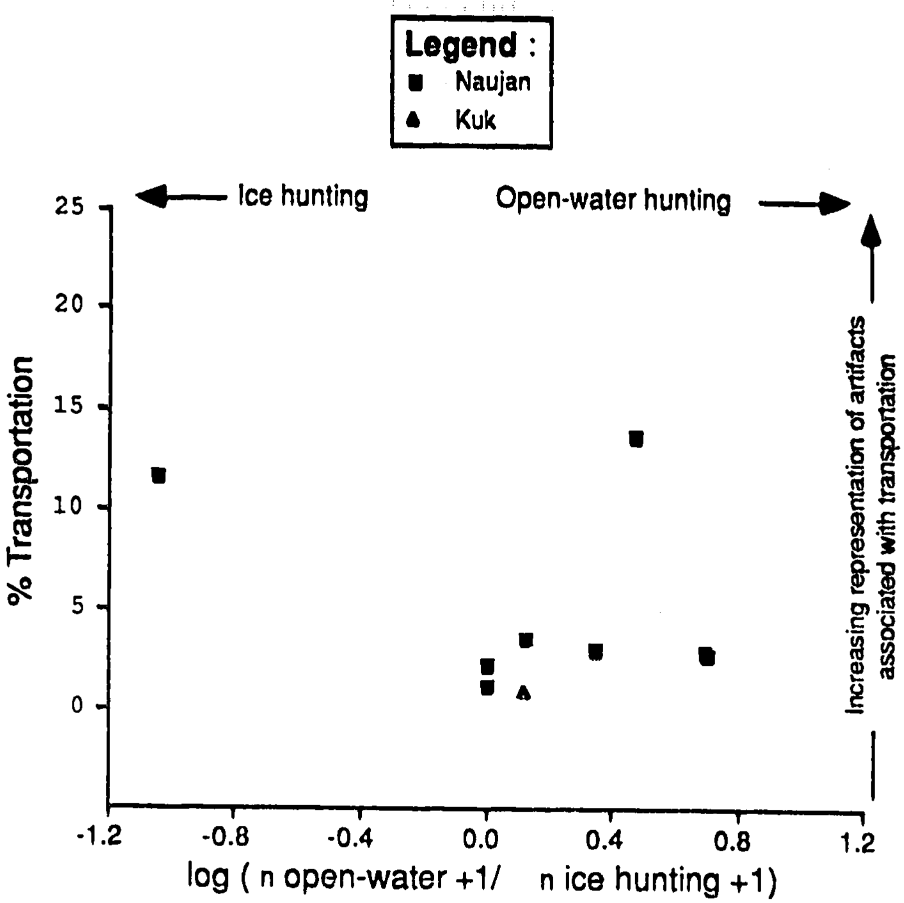


Figure 94. Scatter plot illustrating the relationship between (y) the percentage of each artifact assemblage made up of artifacts associated with transportation, and (x) the relative importance of artifacts associated with hunting on the open water and from the sea ice, at two sites in northwestern Hudson Bay (Mathiassen 1927a).

northwestern Hudson Bay. What is interesting here is that only one house shows a predominance of ice hunting implements (along with a high percentage of transportation artifacts). The majority of the houses exhibit a greater emphasis on open-water hunting. The differences between the sites from these two regions appear to be consistent with the ethnographic record (e.g., Mathiassen 1928; Steensby 1910), which also suggests that these correlations are genuine.

In the final chapter the implications of these results will be discussed, both for future studies of the Thule culture and for archaeological research strategies generally.

10. CONCLUSIONS

Introduction

The primary aim of this research was to explore the nature of variability present in the archaeological record of the prehistoric Thule culture of the North American Arctic and Greenland. Specifically, it was an exploration of intrasite variability and its relevance to the study of prehistoric settlement systems. The basic approach distinguishing this study from previous research strategies into sites of this type and in this geographical area was the deliberate attempt to explore for variability and to carry out the analysis of the data on levels different from those generally utilized.

The focus on settlement systems developed from a concern over the methodological approaches that have been used to generate inferences on the topic of Thule subsistence and settlement in past studies. The great majority of previous research into the Thule culture had primarily culture-historical goals and used methods appropriate to this, although inferences concerning subsistence and settlement were also advanced. Recent research specifically designed to study the nature of Thule settlement systems has largely been built upon the base of inferences concerning subsistence and settlement that were generated in the course of the culture-historical research.

To state that any inference drawn from archaeological data is only as valid as the middle range tools used to give meaning to those data is to repeat a truism. In a situation where all researchers shared common goals and a particular set of middle range tools to achieve them, this would hardly be worth mentioning. But new research questions are generated within the context of the answers to past questions which in their turn were generated within the context of previous answers, and so on. If theoretical ideas and approaches have changed in the meantime, any attempt to explore the theoretical heritage of these 'nth-generation' questions and answers becomes complicated indeed. Unless one has been extremely careful, the explicit cautious assumptions necessary to allow one approach to be employed will become incorporated implicitly into the newly-generated questions, to all intents and purposes as accepted truths. For example, such a situation has been recognized with reference to prehistoric population estimates generated for Monte Albán, Mexico:

> ...The same cannot be said for the population figures derived for Monte Albán, since the methods used to calculate the estimates do not allow us to determine the direction of bias. What has been done is to create a house of cards, with each level of reconstruction shakier than the level below. When the base level — the field techniques — is shown to be suspect, the entire house collapses. And yet the published reconstructions persist. (O'Brien *et al* 1989:198)

In that particular case the "field techniques" relate to sampling strategies on both the regional and site level and, by implication, to the middle-range linkages used to generate population estimates from them.

What this all means is that we constantly have to check our theoretical and methodological 'underpinnings' before surging off in new directions, and to recognize that everything that we know about the archaeological record and about the prehistoric past bears the imprint of the theoretical and methodological milieu in which it was generated. Therefore, for the present research into Thule settlement systems these underpinnings were explored in order to learn more about the Thule culture, and equally importantly to demonstrate that some tools already at our disposal are appropriate for this purpose but only if the context of their use is carefully examined.

Variability, hierarchy, and Thule settlement systems

From the discussion in Chapter 2 surveying Thule culture research and its results as they relate to settlement systems, and also from the discussion of Thule chronology presented in Chapter 4, it should be apparent that much of what has been put forward concerning Thule settlement patterns has not been subjected to evaluation in an appropriate theoretical and methodological context. The vast majority of research to date has had culture-historical goals and has utilized methods appropriate to questions of culture history. These methods included analyses carried out almost solely at the level of the site, utilizing the amalgamation of artifact and faunal assemblages from all of the structures at each site for the purpose of comparison with similarly constituted assemblages from other sites.

Therefore, many of the specific conclusions that have been advanced concerning the nature of the *change* from a characteristically Thule settlement/subsistence pattern into the patterns followed by the historic Inuit can be called into question. The fact that there were substantial changes, at least in many regions, appears inescapable on the basis of all of the available evidence. However, any inferences as to the exact *nature* of the changes depend on our having a fairly thorough understanding of the variability already present in the settlement system of the Thule, and the approaches we have employed to study that culture have for the most part not been appropriate to the development of such an understanding. It is meaningless to pretend to compare the highly variable ethnographic record with a static, monolithic Thule record in order to understand change if in fact Thule systems were themselves variable both regionally and — I would now argue — within individual sites.

Given all of these factors, it was recognized that we require research projects specifically designed to explore aspects of Thule settlement systems. This project has attempted to initiate that process with regard to Thule winter sites and to validate, at least provisionally, some methodological tools with which to continue it. However, the implications of this obviously go beyond research into the Thule culture in the Eastern Arctic. The nature of the Thule archaeological record is such that research of this sort has the potential of making contributions to hunter-gatherer archaeology generally.

The results of the Porden Point analysis

As stressed in Chapter 1, the usefulness of reconstructionist approaches to the understanding of prehistoric settlement systems is limited. Rather, the Porden Point research was designed primarily to explore for behavioural variability which might reflect differences in Thule settlement systems on an organizational level. On that level, what has been demonstrated is that not all of the 'winter houses' at Porden Point reflect similar behaviours, and that the observed consistent differences appear to reflect two regular patterns of seasonal settlement organization.

To sum up the specific conclusions from the analysis of the Porden Point data, it is proposed that two groups of four houses each can be identified that differ from each other in some aspects of settlement/subsistence behaviour as this is reflected in the archaeological record. All of these houses share to some extent a common collecting strategy of mobility based on the use during the winter of stored supplies consisting at least of small seals and birds. However, there appear to be differences between the two groups in the emphasis placed on open-water sea mammal hunting as opposed to the hunting of seals from the sea ice. The degree of processing of the seals also differed between the two groups of houses suggesting that there may have been differences in storage practices; one pattern of element representation is interpreted as indicating that storage by drying may have been important.

Specifically, the Group A houses reflect a generally greater emphasis on open-water sea mammal hunting but a lower emphasis on highly-processed stored seal meat than do the houses of Group B. The Group A houses do, however, reflect a greater use of stored birds. It is argued that the stored resources represented in the Group A houses were obtained in the late summer or autumn through open-water sea mammal hunting techniques, and were not subjected to extensive processing for storage (such as drying). Beyond small seals, these resources may have included larger sea mammals. Based on the evidence from artifacts associated with household activities and transportation, the occupation of the Group A houses may have been seasonally 'permanent' to a greater degree. The Group B houses reflect a greater emphasis on dog sledding and a lower presence of artifacts associated with general household activities, perhaps suggesting a shorter or more intermittent annual winter occupation of this location.

It may be that the emphasis on open-water modes of hunting seen in the Group A houses allowed more of the hunting to be done locally, and the numerous structures at the sites of RbJq-5, RbJq-6 and RbJr-5 might represent their residences during the open-water season. Any sea mammals caught and cached in the vicinity of these sites would have been very conveniently located when the families were residing in the winter houses. Returning to the bird remains it is possibly significant that, in addition to being more numerous, the bird remains from the Group A houses include small shore birds such as terns, plovers and sandpipers (Appendix 2) which are not seen in the faunal remains from the Group B houses.

In contrast to that pattern, it is argued that the stored resources of seal meat consumed in the Group B houses derived at least in part from more highly-processed seal carcasses, possibly in the form of dried meat. These seals were obtained through modes of hunting associated with the sea ice, outside of the open-water season. That may have entailed the exploitation of a large region both during the period when the hunting was carried out *and* during the period when the resources were retrieved from the locations where they were cached and brought to the winter site. The lower emphasis on artifacts associated with general household activities in the Group B houses and the higher emphasis on artifacts associated with transportation may indicate a less 'permanent' occupation seasonally; certainly that would be consistent at least with these houses being abandoned earlier in the spring than those of Group A.

A central factor linking together all of these differences between the two groups of houses may relate to scheduling, both in the spring and autumn. In the spring it could be that the pattern followed by the occupants of the Group B houses was similar to that observed among the Polar Eskimo, where a part of the wintering community moved away from the winter house site into snow house encampments with the return of daylight in February (Steensby 1910:296-297). It has been concluded that modes of sea mammal hunting from the sea ice were more important to the occupants of the Group B houses. Given this, it is interesting to note that polynyas appear annually in the spring approximately thirty kilometres west of Porden Point in the channel separating Dundas Island from Devon Island and between Dundas Island and Baillie-Hamilton Island (Lindsay 1977; Smith and Rigby 1981:21). Given the known importance of these polynyas for many species of marine mammals (Stirling *et al* 1981:51), it may be that such locations would have provided a strong attraction for sea mammal hunters in the months prior to break-up (Schledermann 1980). If so, however, one would have to question why people would choose to winter over thirty kilometres away; it must be that the Porden Point area held attractions for them at other times of the year.

Scheduling differences may also have been a factor in August and September, during the open-water season. While caribou do not appear in substantial numbers in the faunal assemblages from any of the houses at Porden Point (Appendix 2), caribou skins were utilized in many of the clothing pieces recovered from the Porden Point houses (Martha Segal, personal communication 1988). Hence, it can be assumed that caribou hunting was carried out by the families who lived there. However, caribou skins are generally thought to be most suitable for the preparation of clothing at the same time as open-water conditions would prevail (e.g., Stefansson 1913:333-334). Given the very limited open-water season at this latitude, this may have created a scheduling conflict between caribou hunting and open-water modes of sea mammal hunting. But in situations where an adequate store of dried seal meat had been cached prior to the open-water season the hunters from the Group B houses may have been able to concentrate on caribou hunting. However, if such was the case, it cannot be demonstrated from the representation of caribou remains in the faunal assemblages.

As a specific reconstruction of Thule lifeways at Porden Point the suggestions made above must be considered highly speculative. However, as a demonstration that significant behavioural variability exists within the class of Thule structures generically identified as 'winter houses' (and that this variability can be identified through the application of an at least partly exploratory approach) it must be considered much more firmly grounded.

But in spite of the similarities within each of the groups that have been emphasized here, their diversity needs to be re-emphasized. Within both groups there is a high degree of variability with regard to such things as house size, representation of hunting artifacts and of different species. In fact, several factors appear to have cross-cut any possible subdivisions that could be made on the basis of intrasite chronology or on the basis of house styles. It may be that houses constructed in a similar manner were indeed broadly contemporaneous — that can't be ruled out. However, if so, then significantly different economic options were being lived out in contemporaneous structures. Whether or not that was the case, it is apparent that somewhat differing settlement strategies were being employed at this one location. The inference that these differing strategies reflect somewhat different patterns of mobility, at least seasonally, seems the most parsimonious conclusion that can be reached based on the data from this site.

Other sites

The exploration of the data from a number of other Thule sites, based on several factors that were found to co-vary within the Porden Point data, produced extremely interesting results. Only three sites could be explored for exactly the same correlations (Peale Point, Walakpa, and Truelove) due to the absence of comparable faunal data from other sites. However, at these three sites the connections drawn at Porden Point between modes of sea mammal hunting and butchering patterns are also in evidence. The further exploration within a considerably larger sample of sites for connections within the artifact data between the modes of sea mammal hunting and the importance of transportation also appears to show that the patterning evident within the Porden Point sample is not unique.

Of equal importance was the discovery that correlations found within just the artifact data at Porden Point also appear to exist in other artifact assemblages. Given scarcity of detailed faunal analyses and the common practice in the past of leaving most or all of the faunal bones at the site, the exploration for correlations within artifact assemblages will undoubtedly prove more rewarding in as much as there are numerous Thule artifact collections, both published and unpublished, available for analysis.

There are two lessons that can be drawn from these initial results. First and most importantly, the intrasite variability that is evident at Porden Point within these realms is present at other sites as well although the exact patterning (and its significance) may be different. Thus, Porden Point is by no means unique in its internal differentiation. Therefore, the approach of exploring for intrasite variability can and should be applied to other sites in a more extensive manner than was possible in this study. Secondly, the intersite comparison of the results of such studies might produce a better grounded understanding of the causes of observed intrasite differences such as those at Porden Point.

Discussion

The variability that was identified and explored at Porden Point has been attributed tentatively to differences in a number of inter-related behavioural factors centering around seal hunting and transportation. However, even accepting the correctness of this inference, there are a number of possible explanations that could account for the existence of these differences at Porden Point. Very broadly speaking there are two likely classes of explanations: environmental and social.

A number of possible environmental factors could lead to the observed patterning at Porden Point. Probably the most obvious is climatic change over time, even just from year to year. This could affect the nature and duration of the sea ice and thus introduce significant variability into the relative availability of some species of sea mammals at different times of the year and from year to year.

Figure 95 illustrates two measures of prehistoric climate relevant to the present research: the 'oxygen isotope ratio', and the 'percent melt'. Both of these measures are described in Alt *et al* (1985:70) — for the purposes of this research, the oxygen isotope ratio is taken as a measure of the mean annual temperature, while the percent melt provides a measure of summer warmth (Alt *et al* 1985:73). For the oxygen isotope ratio, the higher (i.e., less negative) the value the higher the mean annual temperature, while summer temperature varies directly with percent melt values. The data presented in Figure 95 come from ice cores on the Devon Island ice cap, several hundred kilometres east of Porden Point. While there is some potential error inherent in geographically extrapolating paleoclimatic data of this sort (e.g., Jacobs 1989), the authors of the study believe that the results can be used in this fashion (Alt *et al* 1985:74-75).

Thus, Figure 95 illustrates the wide and repeated fluctuations in these two measures between approximately A.D. 1150 and 1600. The values used are five year means; presumably, based on modern experience (e.g., Lindsay 1977) there would have been at least equally great variability year to year. Given the problems with accurately dating the Porden Point houses there is no way that the prevailing conditions during the occupation of any of the houses can be ascertained. However, it is evident that there would have been substantial variability in the extent and duration of the sea ice during the summer and autumn which certainly might have influenced decisions as to which type of hunting might prove more productive or suitable in any given year.

The partly cyclical nature of the climatic changes evident in Figure 95 also brings into question what pattern we would expect to find from a 'stable' Thule adaptation to a location such as Porden Point over a period of as little as 100 years. Looked at from this perspective it is very possible that the two patterns identified among the Porden Point houses could simply represent the extremes of a single settlement system designed to take such climatic variability into account.

In the absence of house-specific indicators of paleoclimates and of accurate chronological indicators, however, it is impossible to test this inference at Porden Point. But the

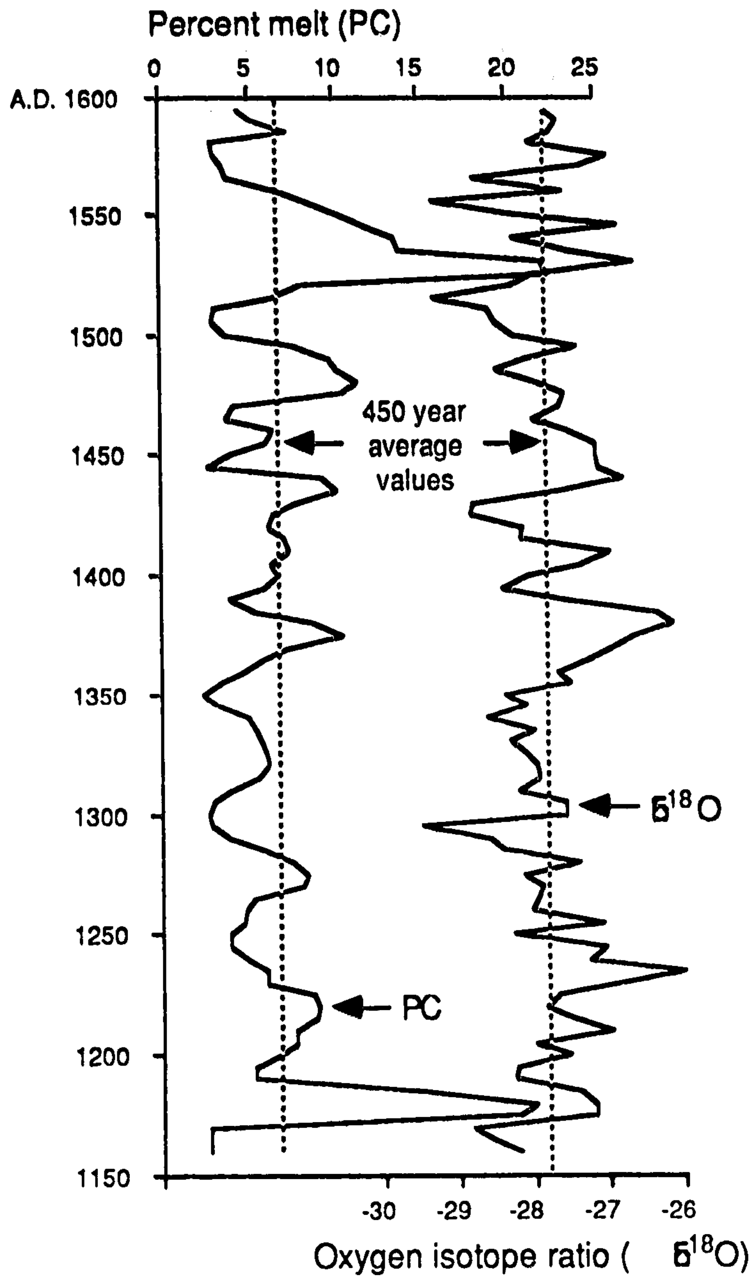


Figure 95. Comparison of percent melt (reflecting summer warmth) and oxygen isotope (reflecting mean annual temperature) values obtained from the Devon Island ice cap for the period between approximately A.D. 1150 and 1600 (Adapted from Alt *et al* 1985:Figure 2A).

demonstrated ability to explore for similar or contrasting patterning at other sites could allow this question to be examined. If done in a systematic fashion, the comparison of patterning evident at sites situated in different environmental/climatic zones could be used to help determine whether these factors play a part in shaping the patterns. Based on the results from Porden Point and from the limited comparisons carried out in this study, factors such as the yearly duration of open water in the vicinity of the site, the nature of the coastline and the distance to features like polynyas might be considered. If these intersite differences could be shown to affect the patterning evident at separate sites then it might be possible to infer that environmental differences due to climatic change could result in similar intrasite patterning at a single location such as Porden Point. A number of factors would have to be controlled for, but this approach deserves exploration.

However, environmental variables undoubtedly do not completely explain the differences observed at Porden Point and elsewhere, and it must be recognized that social factors probably also played an important role. Undoubtedly any attempt to view Thule semisubterranean houses simply as constructions within which people lived ignores a great deal of the significance of these structures to their builders. Such houses would have represented considerable investments in labour and in raw materials. Some previous discussions have used these facts to argue that they must have been occupied throughout the winter, but it seems unlikely that length of seasonal occupation could account for all of the effort that went into creating them. Rather, such structures undoubtedly reflect in some fashion the social relationships within the groups that created them (e.g., Agorsah 1988; McGhee 1984:82-84).

As was discussed in Chapter 2, detailed ethnographic data on the use of semisubterranean houses are not common. However, some information from the historic era Polar Eskimo is interesting when considered in relation to the Thule sites. Some prominent hunters are reported to have had houses in several locations within the Polar Eskimo region (Holtved 1967:13), which suggests that houses and status were linked. But it is also reported that in the early historic period anyone could move into a winter house if the former inhabitants had not stated their intention to return to it (Steensby 1910:286), though that rule might not have included the houses of highly respected individuals. Whatever the case for the Polar Eskimo, it would seem to be important that we try to consider social factors when dealing with Thule sites. It may be that social factors can also be explored though the analysis of variability in artifact assemblages between houses, although at least one attempt did not produce positive results (McGhee 1984:82-83).

The development of the historic Inuit

Models to explain the changes from a Thule pattern of subsistence/settlement into those of the various groups of historic Inuit have generally not been specific about the processes of such changes. McCartney and Savelle (1985:51) see the change in the Central Canadian Arctic as the eventual response to an inability to obtain bowhead whales each year due to adverse climatic changes, while Sabo (1981:328-330) sees the change from a Thule pattern in southern Baffin Island largely in terms of scheduling adjustments in a flexible subsistence/settlement system. However, while researchers recognize that the Thule were extremely flexible in their ability to adapt to different situations, the Thule appear to be seen largely as passive participants in the relationship between humans/cultures and the external environment. In other words, the Thule could adapt as they moved into new environmental zones or as climatic changes occurred but in a somewhat mechanistic and monolithic fashion. In that sense the Thule have been interpreted primarily according to a strict subsistence-settlement approach which, as noted in Chapter 1, cannot take into account the possibility that change can result from factors other than the external environment (Hodder 1982; Root 1983:198).

In a number of ways the results of this research may not be consistent with that picture. The existence of the two contrasting and chronologically-overlapping patterns of settlement/subsistence behaviour at Porden Point suggests that decisions may have been made between viable alternative settlement patterns. If such was the case throughout the development of the various historic Inuit groups in the Eastern Arctic then the process of understanding the changes may be more difficult but the conclusions that are generated may be more realistic.

Implications for future Thule research

This study has a number of specific implications for future research into the Thule culture. One of these must be in the area of sampling. The extensive excavation program followed at Porden Point was employed in an exploratory fashion but in retrospect was necessary to permit the isolation of consistent variation in subsistence/settlement organization between the houses there. It was only from a relatively large number of houses that the patterns could be identified. Unfortunately for future research, based on the Porden Point excavations there do not appear to be any ways to identify such variation from surface characteristics, prior to excavation.

On a more positive note, however, it is evident from the excavations at Porden Point is that it is possible to make use of the data from individual houses at a site in order to generate meaningful inferences concerning subsistence/settlement behaviour. Generally, traditional sampling strategies applied to Thule winter sites have involved the excavation of one or more houses at the site on the largely implicit rationale of obtaining a representative sample of the *artifacts* from the whole site. Thus, the population that was being sampled was the entire assemblage of artifacts at a site, not of houses.

The utility of analyzing faunal assemblages on a house-by-house basis to provide information on subsistence/settlement organization has previously been demonstrated (e.g., Stenton 1983), and the present research indicates that this approach can and should be extended to artifact and other types of data from houses. Therefore, future sampling procedures adopted for such sites should be designed explicitly to sample the population of *houses* at the site, and interpretations generated from such research should be based on that approach.

One of the major weaknesses of the research reported in this thesis was the focus on the winter houses. This was unintended but unavoidable, pending the completion of Allison's research. For the future, however, one of the avenues opened for exploration by this research should be the application of some of these inferences to the analysis of other kinds of Thule sites. In terms of the faunal analysis from such sites, substantially different patterns of element representation should be expected since stored supplies presumably would not have formed a large proportion of the diet.

Conclusions

Future research into the Thule culture along the lines adopted here is extremely desirable and should follow two separate but related avenues. Extensive analyses of Thule artifact and faunal collections need to be undertaken. In addition to those that have been published, the many unpublished or only partly published collections collections could provide a sizeable data base with which to explore both intrasite and intersite patterning. The basic approach of utilizing behaviourally-defined classes of artifacts should be employed, but refinements in the definitions of the classes could certainly be made. A separate line of research will also be required, further refining the middle-range tools employed in this study. If possible, such research should include ethnoarchaeological studies of small seal utilization in the Arctic and detailed studies of the 'economic anatomy' of ringed seals.

What has been the ultimate importance of the Porden Point excavations? In Chapter 1 it was argued that inferences concerning settlement systems that are generated at an intersite level of analysis are rarely tested on an intrasite level. The Porden Point research represents a response from the intrasite level to inferences advanced and utilized on the intersite level, since almost everything ever said about Thule settlement patterns has come from the intersite level. It has been shown that evidence which can only be gathered through an intensive and extensive intrasite analysis can contribute substantially to settlement system/pattern research.

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APPENDIX 1. ARTIFACT TYPE DISTRIBUTION

RbJr-1:

	House 1	House 2	House 4	House 5	House 6	House 7	House 8
SEA MAMMAL HUNTING							
Harpoon heads:							
Thule type 2	-	1	4	-	1	3	1
Thule type 3	-	-	1	-	-	-	1
Thule type 4	-	1	1	-	-	-	-
Closed socket variants	-	-	-	-	-	-	-
Flat	-	-	-	-	-	-	-
Whaling	-	-	1	-	-	-	-
Dorset	-	-	-	-	-	-	-
Fixed lance head	-	-	-	-	-	-	-
Moveable lance head	-	-	-	-	-	1	-
Dart head	-	-	-	-	1	1	1
End-blade	-	-	3	2	-	1	1
Moveable foreshaft	1	-	3	1	-	-	1
Dorset foreshaft	-	-	1	-	-	-	-
Socket piece (scarfed)	2	1	1	-	1	-	-
Socket piece (tubular)	-	-	-	-	-	-	-
Finger rest	-	-	1	-	-	-	-
Ice pick	2	2	-	-	1	2	1
Bladder float toggle	-	-	1	1	-	-	-
Bladder float mouthpiece	-	-	1	-	-	-	-
Bladder float plug	-	-	-	-	-	-	-
Bladder mending disk	-	-	1	-	-	-	-
Drag line handle	-	-	-	1	-	-	1
Sealing stool seat	-	1	-	-	-	-	-
Sealing stool leg	1	1	1	-	-	-	1
OTHER HUNTING AND FISHING							
Tanged arrowhead	2	1	3	-	3	9	-
Scarfed arrowhead	-	-	-	-	-	2	-
Misc. arrowhead	1	-	-	-	-	-	-
Arrowshaft	2	2	2	1	1	1	-
Complete arrow	-	-	1	-	-	-	-
Bow	1	-	-	-	-	-	-
Bow end piece	-	-	-	-	-	-	-
Bow brace	-	-	-	-	-	-	-
Quiver handle	1	-	-	-	-	1	-
Bird dart sideprong	2	-	-	-	-	1	-
Sling handle	1	-	-	1	1	2	-
Bolas ball	-	-	-	-	-	-	-
Gull hook	-	2	-	-	-	-	-
Gull hook shank	2	1	-	-	-	-	-
Gull hook barb	2	1	-	-	1	-	-
Leister prong	-	-	2	-	-	2	-
Fish spear sideprong	-	-	-	-	-	-	-
Fish spear centre prong	-	-	-	1	-	-	-
Fish spear barb	1	-	-	-	3	-	-
Dart shaft butt piece	-	-	-	1	-	-	-

ARTIFACT TYPE DISTRIBUTION (CONT.)

	RbJr-1: House 9	RbJr-1: House 10	RbJr-4: House 1	RbJr-4: House 2	RbJr-4: House 3	RbJr-4: House 4
SEA MAMMAL HUNTING						
Harpoon heads:						
Thule type 2	1	2	1	-	-	1
Thule type 3	-	-	-	-	-	-
Thule type 4	1	-	-	-	-	1
Closed socket variants	-	1	-	-	1	-
Flat	-	-	-	-	1	-
Whaling	-	-	-	1	-	-
Dorset	-	-	4	-	-	2
Fixed lance head	-	-	-	-	-	-
Moveable lance head	1	-	1	-	1	-
Dart head	-	-	-	-	-	-
End-blade	2	-	-	1	-	1
Moveable foreshaft	-	-	1	-	1	-
Dorset foreshaft	-	-	-	-	-	-
Socket piece (scarfed)	1	2	1	-	-	-
Socket piece (tubular)	-	-	-	-	-	1
Finger rest	-	1	-	-	-	-
Ice pick	-	-	1	1	-	1
Bladder float toggle	-	-	-	1	-	-
Bladder float mouthpiece	-	-	-	-	-	-
Bladder float plug	-	-	-	-	1	-
Bladder mending disk	1	-	-	-	-	-
Drag line handle	-	1	-	-	-	-
Sealing stool seat	-	-	-	-	-	-
Sealing stool leg	1	-	-	-	-	-
OTHER HUNTING AND FISHING						
Tanged arrowhead	1	2	3	-	-	2
Scarfed arrowhead	2	1	-	-	-	-
Misc. arrowhead	-	-	-	-	-	-
Arrowshaft	6	-	1	-	2	-
Complete arrow	2	-	-	-	-	-
Bow	2	-	1	-	-	-
Bow end piece	-	-	-	-	-	-
Bow brace	-	-	-	-	-	-
Quiver handle	-	-	-	-	-	-
Bird dart sideprong	-	-	-	-	-	1
Sling handle	3	-	-	-	-	1
Bolas ball	8	-	-	1	-	-
Gull hook	-	-	-	-	-	-
Gull hook shank	-	-	1	-	2	-
Gull hook barb	-	2	1	2	2	-
Leister prong	-	1	1	-	-	1
Fish spear sideprong	-	-	-	1	1	-
Fish spear centre prong	-	-	-	-	-	-
Fish spear barb	-	1	-	-	-	-
Dart shaft butt piece	-	-	-	-	-	-

ARTIFACT TYPE DISTRIBUTION (CONT.)

RbJr-5:

	House 2	House 3	Str. 4	House 5	Str. 26	Str. 29	Str. 33
SEA MAMMAL HUNTING							
Harpoon heads:							
Thule type 2	-	-	-	1	-	-	-
Thule type 3	-	-	-	-	-	-	-
Thule type 4	-	-	-	-	1	-	-
Closed socket variants	-	-	-	-	-	-	-
Flat	-	-	-	-	-	-	-
Whaling	-	-	-	-	-	-	-
Dorset	-	-	-	-	-	-	-
Fixed lance head	-	-	-	1	-	-	-
Moveable lance head	-	-	-	-	-	-	-
Dart head	1	-	-	-	-	-	-
End-blade	1	-	-	1	-	-	-
Moveable foreshaft	1	-	-	-	-	-	-
Dorset foreshaft	-	-	-	-	-	-	-
Socket piece (scarfed)	-	-	-	-	-	-	-
Socket piece (tubular)	-	-	-	1	-	-	-
Finger rest	-	-	-	-	-	-	-
Ice pick	-	-	-	2	-	-	-
Bladder float toggle	-	-	-	1	-	-	-
Bladder float mouthpiece	-	-	-	-	-	-	-
Bladder float plug	-	-	-	-	1	-	-
Bladder mending disk	-	-	-	-	-	-	-
Drag line handle	-	-	-	-	-	-	-
Sealing stool seat	-	-	-	-	-	-	-
Sealing stool leg	-	-	-	-	-	-	-
OTHER HUNTING AND FISHING							
Tanged arrowhead	-	1	-	-	-	2	-
Scarfed arrowhead	-	-	-	-	-	-	-
Misc. arrowhead	-	-	-	-	-	-	1
Arrowshaft	-	-	-	-	-	-	-
Complete arrow	-	-	-	-	-	-	-
Bow	-	-	-	-	-	-	-
Bow end piece	-	-	-	-	-	-	-
Bow brace	-	-	-	1	-	-	-
Quiver handle	-	-	-	-	-	-	-
Bird dart sideprong	-	1	-	-	-	-	-
Sling handle	-	-	-	-	-	-	-
Bolas ball	-	-	-	-	-	-	-
Gull hook	-	-	-	-	-	-	-
Gull hook shank	-	-	-	-	-	-	-
Gull hook barb	-	1	-	1	-	-	-
Leister prong	-	-	-	-	-	-	-
Fish spear sideprong	-	-	-	-	-	-	-
Fish spear centre prong	-	-	-	-	-	-	-
Fish spear barb	1	-	-	-	-	-	-
Dart shaft butt piece	-	-	-	-	-	-	-

ARTIFACT TYPE DISTRIBUTION (CONT.)

RbJr-1:

	House 1	House 2	House 4	House 5	House 6	House 7	House 8
TRANSPORTATION							
Trace buckle	1	1	-	1	2	3	1
Toggle	-	-	-	-	-	1	-
Sled runner	1	-	-	-	-	-	-
Sled shoe	2	2	-	-	-	-	1
Sled slat	-	-	-	-	-	-	1
Umiak part	-	-	-	-	-	1	-
Kayak part	-	-	-	-	-	1	-
Paddle	1	1	-	-	-	-	-
MEN'S KNIVES							
Side-bladed	1	-	-	2	2	6	-
End-bladed	-	-	4	-	-	-	-
Transverse	-	-	-	1	1	1	-
WOMEN'S KNIVES							
Ulu (w. or w/o blade)	1	-	2	2	1	2	1
Ulu blade	-	-	-	-	-	1	1
MEN'S MANUFACTURING							
Engraving tool	-	-	-	-	-	2	-
Bow drill mouthpiece	-	1	2	-	1	1	1
Drill shank	1	-	-	-	1	1	-
Marline spike	-	-	1	-	1	1	1
Adze head	-	-	-	-	3	2	1
Axe/adze head	-	1	-	-	-	-	-
Maul	1	-	-	-	-	1	-
Wedge	1	-	4	-	-	1	-
Pick	-	1	4	-	-	4	1
Shaft wrench	1	-	-	-	-	-	-
WOMEN'S MANUFACTURING							
Needle	-	-	2	-	-	1	1
Needle case	-	-	-	-	-	-	-
Needle case toggle	-	-	-	-	-	-	-
Skin thimble	-	-	7	-	-	-	1
Thimble holder	-	-	-	-	-	-	-
Awl	-	-	4	-	-	-	-
Beamer	-	1	-	-	-	1	-
Scapula scraper	-	1	-	-	-	-	-
SOD HOUSE CONSTRUCTION							
Mattock blade	1	1	-	1	-	1	-
Mattock handle	1	-	1	-	-	1	-

ARTIFACT TYPE DISTRIBUTION (CONT.)

	RbJr-1:		RbJr-4:			
	House 9	House 10	House 1	House 2	House 3	House 4
TRANSPORTATION						
Trace buckle	1	-	1	-	-	-
Toggle	-	-	-	1	-	-
Sled runner	-	-	-	-	1	-
Sled shoe	1	1	-	1	-	-
Sled slat	1	-	-	-	-	-
Umiak part	-	1	-	-	-	-
Kayak part	-	-	-	-	-	-
Paddle	-	-	-	-	-	-
MEN'S KNIVES						
Side-bladed	2	-	-	2	-	1
End-bladed	-	2	3	1	1	-
Transverse	-	-	-	-	-	1
WOMEN'S KNIVES						
Ulu (w. or w/o blade)	1	-	-	-	-	1
Ulu blade	1	-	-	-	-	3
MEN'S MANUFACTURING						
Engraving tool	1	-	2	-	-	-
Bow drill mouthpiece	1	1	-	-	-	-
Drill shank	-	-	-	-	-	-
Marline spike	1	-	1	-	-	1
Adze head	-	-	-	1	2	1
Axe/adze head	-	-	-	-	-	-
Maul	-	-	-	-	-	-
Wedge	1	-	-	2	-	-
Pick	1	-	-	1	2	1
Shaft wrench	1	-	-	-	-	-
WOMEN'S MANUFACTURING						
Needle	-	-	1	-	-	1
Needle case	-	-	-	1	-	-
Needle case toggle	1	-	-	-	-	-
Skin thimble	-	-	1	-	-	-
Thimble holder	-	-	-	-	-	1
Awl	-	-	-	-	1	2
Beamer	1	-	-	-	1	-
Scapula scraper	-	-	-	-	-	-
SOD HOUSE CONSTRUCTION						
Mattock blade	1	2	-	3	2	-
Mattock handle	-	1	-	3	2	1

ARTIFACT TYPE DISTRIBUTION (CONT.)

RbJr-5:

	House 2	House 3	Str. 4	House 5	Str. 26	Str. 29	Str. 33
TRANSPORTATION							
Trace buckle	1	-	-	1	-	-	-
Toggle	-	-	-	-	-	-	-
Sled runner	-	-	-	-	-	-	-
Sled shoe	-	-	-	-	-	-	-
Sled slat	-	-	-	-	-	-	-
Umiak part	-	-	-	-	-	-	-
Kayak part	-	-	-	-	-	-	-
Paddle	-	-	-	-	-	-	-
MEN'S KNIVES							
Side-bladed	1	-	-	1	-	-	-
End-bladed	-	-	-	-	-	-	-
Transverse	-	-	-	-	-	-	-
WOMEN'S KNIVES							
Ulu (w. or w/o blade)	-	-	-	1	-	-	-
Ulu blade	1	-	-	1	-	-	-
MEN'S MANUFACTURING							
Engraving tool	-	-	-	-	-	-	-
Bow drill mouthpiece	1	-	-	-	-	-	-
Drill shank	-	-	-	-	-	-	-
Marline spike	-	-	-	1	-	-	-
Adze head	-	-	-	-	-	-	-
Axe/adze head	-	-	-	-	-	-	-
Maul	-	-	-	-	-	-	-
Wedge	1	-	-	1	-	-	-
Pick	-	-	-	1	-	-	-
Shaft wrench	-	-	-	-	-	-	-
WOMEN'S MANUFACTURING							
Needle	-	-	-	-	-	-	-
Needle case	-	-	-	-	-	-	-
Needle case toggle	-	-	-	-	-	-	-
Skin thimble	-	-	-	-	-	-	-
Thimble holder	-	-	-	-	-	-	-
Awl	-	1	-	2	-	-	-
Beamer	-	-	-	-	-	-	-
Scapula scraper	-	-	-	-	-	-	-
SOD HOUSE CONSTRUCTION							
Mattock blade	-	2	1	-	-	-	-
Mattock handle	-	-	-	-	-	-	-

ARTIFACT TYPE DISTRIBUTION (CONT.)

RbJr-1:

	House 1	House 2	House 4	House 5	House 6	House 7	House 8
SNOW HOUSE CONSTRUCTION							
Snow knife (one-piece)	4	2	2	-	-	-	-
Snow knife (composite)	1	-	1	-	-	-	-
Snow shovel	-	-	-	-	-	-	-
Snow probe	-	-	-	-	-	3	-
FOOD PREPARATION							
Bent wood/baleen bowl	1	-	2	-	1	2	1
Bowl base	-	-	-	-	-	-	-
Bent wood/baleen cup	-	-	-	-	-	-	-
Cup base	-	-	-	-	-	1	-
Bone bowl	-	-	-	-	-	1	-
Pot hook	-	-	1	-	-	-	-
Marrow spatula	-	-	-	-	-	-	-
MISC. HOUSEHOLD ITEMS							
Snow beater	1	-	-	-	-	1	-
Lamp	-	-	1	-	-	-	-
Wick trimmer	-	-	1	-	-	-	-
Drying rack	-	-	-	-	-	-	-
Stone vessel fragments	6	3	3	-	-	-	2
Wooden box	1	-	-	-	-	-	-
Whetstone	1	-	-	1	-	-	-
Iron pyrites	-	2	2	-	-	-	2
Cutting board	-	-	-	-	-	-	-
Skin bag	3	1	-	-	-	1	-
CLOTHING							
Boot	-	-	-	-	-	4	-
Boot sole	-	-	-	-	-	-	-
Mitten	-	-	-	-	-	-	-
Hood	-	-	-	-	-	-	-
Brow band	-	-	-	-	-	-	-
ORNAMENTS/AMULETS							
Perforated bear canine	-	-	-	-	-	1	2
Perforated fox canine	2	1	2	-	2	2	2
Misc. perforated tooth	-	1	1	-	1	-	-
Misc. pendant	-	-	-	-	-	-	1
Amulet	-	-	-	-	-	1	-
Comb	1	-	-	-	-	-	-
Bead	-	-	-	-	1	-	-
Misc. carving	-	-	-	-	1	-	-
Bead figurine	-	-	1	-	-	-	-

ARTIFACT TYPE DISTRIBUTION (CONT.)

	RbJr-1:		RbJr-4:			
	House 9	House 10	House 1	House 2	House 3	House 4
SNOW HOUSE CONSTRUCTION						
Snow knife (one-piece)	2	2	-	-	2	-
Snow knife (composite)	-	-	-	-	-	-
Snow shovel	1	-	-	1	-	-
Snow probe	2	-	-	-	-	1
FOOD PREPARATION						
Bent wood/baleen bowl	-	-	-	-	-	-
Bowl base	1	1	-	1	-	-
Bent wood/baleen cup	-	-	-	-	1	-
Cup base	1	-	3	-	1	-
Bone bowl	-	-	-	-	-	-
Pot hook	1	-	-	-	-	-
Marrow spatula	-	-	-	-	-	-
MISC. HOUSEHOLD ITEMS						
Snow beater	1	-	-	-	2	-
Lamp	-	-	-	-	2	-
Wick trimmer	-	-	1	-	-	-
Drying rack	1	1	-	-	1	-
Stone vessel fragments	7	-	1	-	2	2
Wooden box	-	-	-	-	-	-
Whetstone	1	-	-	-	-	-
Iron pyrites	-	1	6	1	-	1
Cutting board	-	-	-	-	1	-
Skin bag	3	-	-	-	-	-
CLOTHING						
Boot	4	-	-	-	-	-
Boot sole	5	-	-	-	-	-
Mitten	1	-	-	-	2	-
Hood	1	-	-	-	-	-
Brow band	1	-	-	-	-	-
ORNAMENTS/AMULETS						
Perforated bear canine	2	1	-	-	-	-
Perforated fox canine	2	-	9	-	-	-
Misc. perforated tooth	-	-	1	-	-	-
Misc. pendant	-	1	-	-	-	-
Amulet	2	1	-	1	2	-
Comb	-	-	-	-	-	-
Bead	-	-	-	-	-	-
Misc. carving	-	-	-	-	-	-
Bead figurine	-	-	-	-	-	-

ARTIFACT TYPE DISTRIBUTION (CONT.)

RbJr-5:

	House 2	House 3	Str. 4	House 5	Str. 26	Str. 29	Str. 33
SNOW HOUSE CONSTRUCTION							
Snow knife (one-piece)	1	1	-	1	-	-	-
Snow knife (composite)	-	-	-	-	-	-	-
Snow shovel	-	-	-	-	-	-	-
Snow probe	-	-	-	1	-	-	-
FOOD PREPARATION							
Bent wood/baleen bowl	-	-	-	-	-	-	-
Bowl base	-	-	-	-	-	-	-
Bent wood/baleen cup	-	-	-	-	-	-	-
Cup base	-	-	-	-	-	-	-
Bone bowl	-	-	-	-	-	-	-
Pot hook	-	-	-	-	-	-	-
Marrow spatula	-	-	-	-	-	-	1
MISC. HOUSEHOLD ITEMS							
Snow beater	-	-	-	-	-	-	-
Lamp	-	-	-	-	-	-	-
Wick trimmer	-	-	-	-	-	-	-
Drying rack	-	-	-	-	-	-	-
Stone vessel fragments	-	-	-	-	-	-	-
Wooden box	-	-	-	-	-	-	-
Whetstone	-	-	-	1	-	-	-
Iron pyrites	-	-	-	1	-	-	-
Cutting board	-	-	-	-	-	-	-
Skin bag	-	-	-	-	-	-	-
CLOTHING							
Boot	-	-	-	-	-	-	-
Boot sole	-	-	-	-	-	-	-
Mitten	-	-	-	-	-	-	-
Hood	-	-	-	-	-	-	-
Brow band	-	-	-	-	-	-	-
ORNAMENTS/AMULETS							
Perforated bear canine	-	-	-	-	-	-	-
Perforated fox canine	-	-	-	-	-	-	-
Misc. perforated tooth	-	1	-	2	-	-	-
Misc. pendant	-	-	-	-	-	-	-
Amulet	-	-	-	-	-	-	-
Comb	-	-	-	-	-	-	-
Bead	-	-	-	-	-	-	-
Misc. carving	-	-	-	1	1	-	-
Bead figurine	1	-	-	-	-	-	-

ARTIFACT TYPE DISTRIBUTION (CONT.)

RbJr-1:

	House 1	House 2	House 4	House 5	House 6	House 7	House 8
MINIATURES/TOYS							
Figurine/doll	-	2	2	-	3	3	1
Toy harpoon head	-	-	-	-	-	3	-
Toy lance	-	-	1	-	-	-	-
Toy arrowhead	-	-	-	-	-	1	-
Toy bow	-	1	-	-	-	-	-
Toy throwing board	-	-	-	2	-	1	-
Toy sled slat	-	-	-	-	-	4	-
Toy shovel	-	-	1	-	-	-	-
Toy bucket	-	-	-	1	-	-	-
Toy ball	1	-	-	-	-	-	-
Toy drum rim	-	-	-	-	-	-	1
Toy boat	-	-	-	-	1	-	-
Toy paddle	-	-	-	-	-	-	-
Top	3	1	-	-	-	1	-
Seal radius Ajagak	1	1	-	-	-	-	-
Seal humerus Ajagak	-	-	-	-	-	-	-
Vertebrae on ribs	-	-	-	-	-	1	-
MISCELLANEOUS DORSET CULTURE ITEMS							
Chert end-blade	-	-	1	-	-	-	-
Misc. lithic artifacts	-	-	-	-	1	-	-
'Spatula'	-	-	1	-	-	-	-
Figurine/doll	-	-	-	-	-	1	-
FRAGMENTS							
Artifact fragment	67	47	39	11	32	37	35
Worked fragment	30	35	38	15	25	44	13
Totals:	156	121	159	46	93	172	79

ARTIFACT TYPE DISTRIBUTION (CONT.)

	RbJr-1: House 9	RbJr-1: House 10	RbJr-4: House 1	RbJr-4: House 2	RbJr-4: House 3	RbJr-4: House 4
MINIATURES/TOYS						
Figurine/doll	-	1	-	-	-	-
Toy harpoon head	-	-	1	-	-	-
Toy lance	-	-	-	-	-	-
Toy arrowhead	-	-	-	-	1	-
Toy bow	1	-	1	-	-	-
Toy throwing board	-	-	-	-	-	-
Toy sled slat	-	-	-	-	-	-
Toy shovel	-	-	-	-	-	-
Toy bucket	-	-	-	-	-	-
Toy ball	-	-	-	1	-	-
Toy drum rim	-	-	-	-	-	-
Toy boat	1	-	-	-	-	-
Toy paddle	1	-	-	-	1	-
Top	-	-	-	-	-	-
Seal radius Ajagak	-	-	-	-	-	-
Seal humerus Ajagak	1	-	-	-	-	1
Vertebrae on ribs	-	-	-	-	-	-
MISCELLANEOUS DORSET CULTURE ITEMS						
Chert end-blade	-	-	2	-	-	1
Misc. lithic artifacts	-	-	2	-	-	-
'Spatula'	-	-	-	-	-	-
Figurine/doll	-	-	-	-	-	-
FRAGMENTS						
Artifact fragment	51	10	24	8	40	6
Worked fragment	27	11	33	51	20	15
Totals:	170	52	110	88	102	53

ARTIFACT TYPE DISTRIBUTION (CONT.)

RbJr-5:

	House 2	House 3	Str. 4	House 5	Str. 26	Str. 29	Str. 33
MINIATURES/TOYS							
Figurine/doll	-	-	-	-	-	-	-
Toy harpoon head	-	-	-	-	-	-	-
Toy lance	-	-	-	-	-	-	-
Toy arrowhead	-	-	-	-	-	-	-
Toy bow	-	-	-	-	-	-	-
Toy throwing board	-	-	-	-	-	-	-
Toy sled slat	-	-	-	-	-	-	-
Toy shovel	-	-	-	-	-	-	-
Toy bucket	-	-	-	-	-	-	-
Toy ball	-	-	-	-	-	-	-
Toy drum rim	-	-	-	-	-	-	-
Toy boat	-	-	-	-	-	-	-
Toy paddle	-	-	-	-	-	-	-
Top	-	-	-	-	-	-	-
Seal radius Ajagak	-	-	-	-	-	-	-
Seal humerus Ajagak	-	-	-	-	-	-	-
Vertebrae on ribs	-	-	-	-	-	-	-
MISCELLANEOUS DORSET CULTURE ITEMS							
Chert end-blade	-	-	-	-	-	-	-
Misc. lithic artifacts	-	-	-	1	-	-	-
'Spatula'	-	-	-	-	1	-	-
Figurine/doll	-	-	-	-	-	-	-
FRAGMENTS							
Artifact fragment	6	5	1	3	1	1	-
Worked fragment	27	13	152	44	5	5	-
Totals:	46	25	153	73	10	8	2

APPENDIX 2. FAUNAL DATA

RbJr-1:

	House 1	House 2	House 4	House 5	House 6	House 7	House 8
SMALL SEAL	453 82.8% [8]†	403 64.8% [8]	1567 88.5% [26]	54 64.3% *	689 84.3% [19]	296 84.8% *	276 88.5% [10]
BEARDED SEAL	15 2.7% [1]	1 0.2% [1]	4 0.2% [1]	2 2.4%	2 0.2% [1]	10 2.9%	1 0.3% [1]
WALRUS	2 0.4% [1]	1 0.2% [1]	7 0.4% [1]	-	12 1.5% [1]	-	-
BELUGA	2 0.4% [1]	-	-	-	-	-	-
MUSKOX	1 0.2% [1]	2 0.3% [1]	1 0.1% [1]	-	-	1 0.3%	-
CARIBOU	20 3.7% [2]	28 4.5% [1]	7 0.4% [1]	-	2 0.2% [1]	1 0.3%	-
POLAR BEAR	13 2.4% [1]	4 0.6% [2]	25 1.4% [2]	-	11 1.3% [2]	7 2.0%	4 1.3% [1]
ARCTIC HARE	1 .02% [1]	1 .02% [1]	-	-	-	-	1 .03% [1]
ARCTIC FOX	28 5.1% [3]	174 28.0% [4]	109 6.2% [3]	21 25.0%	79 9.7% [7]	14 4.0%	16 5.1% [2]
DOG	5 .09% [2]	4 .06% [2]	30 1.7% [2]	5 6.0%	16 2.0% [3]	10 2.9%	11 3.5% [3]
WOLF	-	-	-	-	2 0.2% [1]	-	-

FAUNAL DATA (CONT)

	RbJr-1: House 9	RbJr-1: House 10	RbJr-4: House 1	RbJr-4: House 2	RbJr-4: House 3	RbJr-4: House 4
SMALL SEAL	548 52.0% [10]	295 59.9% [11]	1580 86.6% [26]	179 66.8% •	578 90.9% [9]	1491 96.4% [33]
BEARDED SEAL	6 .0.6% [1]	3 0.6% [1]	2 0.1% [1]	2 0.7% [1]	-	8 0.5% [1]
WALRUS	5 0.5% [1]	2 0.4% [1]	6 0.3% [1]	1 0.4%	1 0.2% [1]	6 0.4% [1]
BELUGA	-	-	-	-	-	-
MUSKOX	-	-	2 0.1% [1]	1 0.4%	-	1 0.1% [1]
CARIBOU	4 0.4% [1]	-	4 0.2% [1]	16 6.0%	4 0.6% [1]	19 1.2% [1]
POLAR BEAR	15 1.4% [1]	7 1.4% [1]	13 0.7% [1]	1 0.4%	10 1.6% [1]	5 0.3% [1]
ARCTIC HARE	-	4 0.8% [1]	3 0.2% [1]	-	-	-
ARCTIC FOX	362 34.4% [7]	165 33.4% [7]	175 9.6% [7]	63 23.5%	16 2.5% [1]	8 0.5% [1]
DOG	5 0.5%	13 2.6%	15 0.8%	-	11 1.7%	8 0.5%
WOLF	-	-	-	-	-	-

FAUNAL DATA (CONT)

RbJr-5:

	House 2	House 3	Str. 4	House 5	Str. 26	Str. 29	Str. 33
SMALL SEAL	92 62.6% [2]	55 45.1% [3]	-	73 57.5% [3]	15 41.7% [2]	10 45.5% [1]	-
BEARDED SEAL	-	-	-	7 5.5% [1]	1 2.8% [1]	-	-
WALRUS	-	-	-	1 2.8% [1]	1 2.8% [1]	-	-
BELUGA	-	-	-	13 10.2% [1]	-	2 9.1% [1]	-
MUSKOX	-	-	-	1 0.8% [1]	-	-	-
CARIBOU	2 1.4% [1]	9 7.4% [1]	-	2 1.6% [1]	-	1 4.5% [1]	-
POLAR BEAR	-	5 4.1% [1]	-	5 3.9% [1]	6 16.7% [1]	-	1 100.0% [1]
ARCTIC HARE	-	3 2.5% [1]	-	-	-	-	-
ARCTIC FOX	1 0.7% [1]	11 9.0% [1]	-	7 5.5% [2]	1 2.8% [1]	-	-
DOG	49 33.3% [3]	3 2.5% [1]	2 66.7% [1]	4 3.1% [1]	2 5.6% [1]	-	-
WOLF	-	-	-	-	-	-	-

FAUNAL DATA (CONT)

RbJr-1:

	House 1	House 2	House 4	House 5	House 6	House 7	House 8
GULLS	5 0.9% [1]	1 0.2% [1]	7 0.4% [1]	-	2 0.2% [1]	8 2.3% [1]	1 0.3% [1]
ARCTIC TERN	-	-	6 0.3% [1]	-	-	-	-
PLOVER (?)	-	-	-	-	-	-	-
SANDPIPER (?)	-	-	-	-	-	-	-
PTARMIGAN	-	1 0.2% [1]	4 0.2% [1]	-	1 0.1% [1]	-	-
RED-THROATED LOON	-	-	3 0.2% [2]	-	-	-	-
EIDER DUCK	-	2 0.3% [1]	-	-	-	2 0.6%	-
GOOSE (Brant?)	-	-	-	1 1.2% [1]	-	-	-
SNOW GOOSE	-	-	-	-	-	-	-
NORTHERN FULMAR	2 0.4% [1]	-	-	1 1.2% [1]	-	-	-
BLACK GUILLEMOT	-	-	1 0.1% [1]	-	1 0.1% [1]	-	-
FISH SP.	-	-	-	-	-	-	2 0.6% [1]

FAUNAL DATA (CONT)

	RbJr-1:		RbJr-4:			
	House 9	House 10	House 1	House 2	House 3	House 4
GULLS	97 9.2% [11]	2 0.4% [2]	4 0.2% [1]	2 0.7%	7 1.1% [1]	-
ARCTIC TERN	1 0.1% [1]	-	4 0.2% [1]	-	-	-
PLOVER (?)	3 0.3% [1]	-	-	-	1 0.2% [1]	-
SANDPIPER (?)	-	-	1 0.1% [1]	-	-	-
PTARMIGAN	-	1 0.2% [1]	-	-	1 0.2% [1]	-
RED-THROATED LOON	-	-	-	-	-	1 0.1% [1]
EIDER DUCK	3 0.3% [1]	1 0.2% [1]	5 0.3% [2]	- -	2 0.3% [1]	-
GOOSE (Brant?)	-	-	-	1 0.4%	1 0.2% [1]	-
SNOW GOOSE	-	-	1 0.1% [1]	-	-	-
NORTHERN FULMAR	1 0.1% [1]	-	9 0.5% [3]	2 0.7%	1 0.2% [1]	-
BLACK GUILLEMOT	3 0.3% [2]	-	-	-	3 0.5% [2]	-
FISH SP.	-	-	-	-	-	-

FAUNAL DATA (CONT)

RbJr-5:

	House 2	House 3	Str. 4	House 5	Str. 26	Str. 29	Str. 33
GULLS	2 1.4% [1]	27 22.1% [4]	-	11 8.7% [2]	-	-	-
ARCTIC TERN	-	-	-	-	-	-	-
PLOVER (?)	-	-	-	-	-	-	-
SANDPIPER (?)	-	2 1.6% [1]	1 33.3% [1]	-	-	-	-
PTARMIGAN	-	-	-	1 0.8% [1]	-	-	-
RED-THROATED LOON	-	-	-	1 0.8% [1]	-	1 4.5% [1]	-
EIDER	-	-	-	-	1 2.8% [1]	-	-
GOOSE (Brant?)	-	-	-	-	-	-	-
SNOW GOOSE	-	-	-	-	-	-	-
NORTHERN FULMAR	-	-	-	-	-	-	-
BLACK GUILLEMOT	-	-	-	1 0.8% [1]	-	-	-
FISH SP.	1 0.7% [1]	7 5.7% [2]	-	-	9 25.0% [5]	8 36.4% [1]	-

FAUNAL DATA (CONT)

RbJr-1:

	House 1	House 2	House 4	House 5	House 6	House 7	House 8
TOTAL:	547	622	1771	84	817	349	312

	RbJr-1:		RbJr-4:			
	House 9	House 10	House 1	House 2	House 3	House 4
TOTAL:	1053	494	1824	268	636	1547

RbJr-5:

	House 2	House 3	Str. 4	House 5	Str. 26	Str. 29	Str. 33
TOTAL:	147	122	3	127	36	22	1

† The numbers in square brackets indicate the minimum number of individuals represented (MNI).

* MNI's were not calculated for Houses 5 and 7 at RbJr-1 and House 2 at RbJr-4, because these houses were excavated over two years but the identified faunal remains come just from the first year's excavations. Therefore, they do not accurately represent the complete quantity of faunal remains from these houses.

APPENDIX 3. BOWHEAD WHALE BONES

RbJr-1:

	House 1	House 2	House 4	House 5	House 6	House 7	House 8
SKULL	-	-	-	-	-	-	-
[Fragments]	3	-	-	-	-	-	-
MAXILLA	-	-	-	-	-	-	-
[Fragments]	2	10	-	-	-	-	2
MANDIBLE	4	14	-	2	-	1	-
[Fragments]	3	8	1	-	-	-	-
RIBS	65	35	2	20	-	-	4
[Fragments]	15	15	13	-	2	1	4
VERTEBRAE	14	4	1	9	2	1	2
[Fragments]	-	1	-	-	-	-	-
VERTEBRAL EPIPHYSES	7	-	1	-	1	-	-
[Fragments]	-	-	-	-	-	-	-
SCAPULA	1	1	1	2	-	-	-
[Fragments]	1	-	3	-	-	-	1
PHALANGE	-	-	-	-	1	-	-
[Fragments]	-	-	-	-	-	-	-
TOTALS:	91	54	5	33	4	2	6
[Fragments]	24	34	17	0	2	1	7

WHALE BONES (CONT.)

	RbJr-1:		RbJr-4:			
	House 9	House 10	House 1	House 2	House 3	House 4
SKULL	1	-	1	2	1	-
[Fragments]	-	1	-	-	-	-
MAXILLA	-	-	-	-	-	-
[Fragments]	2	6	2	-	32	-
MANDIBLE	2	2	-	2	2	-
[Fragments]	2	3	1	-	4	-
RIBS	17	8	2	-	39	-
[Fragments]	13	11	6	5	15	3
VERTEBRAE	6	2	1	8	4	3
[Fragments]	2	-	-	-	-	-
VERTEBRAL EPIPHYSES	-	2	2	-	3	-
[Fragments]	-	-	-	-	-	-
SCAPULA	-	2	-	1	2	-
[Fragments]	2	1	1	-	-	-
PHALANGE	1	2	1	-	-	-
[Fragments]	-	-	-	-	-	-
TOTALS:	27	18	7	13	51	3
[Fragments]	21	22	10	5	51	3

WHALE BONES (CONT.)

RbJr-5:

	House 2	House 3	House 5	Str. 26	Str. 29	Str. 33
SKULL	-	-	-	-	-	-
[Fragments]	-	-	-	-	-	-
MAXILLA	-	-	-	-	-	-
[Fragments]	-	-	-	-	-	-
MANDIBLE	-	-	-	-	-	-
[Fragments]	-	-	-	-	-	-
RIBS	-	-	-	-	-	-
[Fragments]	3	-	4	-	-	-
VERTEBRAE	-	-	-	-	-	2
[Fragments]	-	-	-	-	-	-
VERTEBRAL EPIPHYSES	-	-	-	-	-	3
[Fragments]	-	-	-	-	-	1
SCAPULA	-	-	-	-	-	-
[Fragments]	-	-	-	-	-	-
PHALANGE	-	-	-	-	-	-
[Fragments]	-	-	-	-	-	-
TOTALS:	-	-	-	-	-	5
[Fragments]	3	-	4	-	-	1