BEYOND THE LAUNDRY LIST: THE ANALYSIS OF FAUNAL REMAINS FROM A DORSET DWELLING AT PHILLIP'S GARDEN (EeBi 1), PORT AU CHOIX, NEWFOUNDLAND

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Beyond the Laundry List:
The Analysis of Faunal Remains
From a Dorset Dwelling
at Phillip's Garden (EeBi 1),
Port au Choix, Newfoundland

by

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Abstract

The analysis of a large sample of faunal remains from a Middle Dorset semi-subterranean dwelling at the Phillip's Garden site (EeBi 1), Port au Choix, Newfoundland, was undertaken. Results indicate that harp seal hunting was the focus of the Dorset occupation in this location. The age profile of the sample suggests that the dwelling from which the bone material was obtained was utilized in the early winter for the hunting of harp seals on their southward migration past the Point Riche peninsula to the Gulf of St. Lawrence. A detailed study of Phocidae body part representation within the dwelling suggests that complete seal carcasses were brought to the site and butchered.

The study of refuse distribution and feature placement within the dwelling revealed a c-shaped activity zone located around the short axis of the central depression. Refuse was deposited within two large pit features and along the back of a raised rear platform. This pattern of house organization is unique to Phillip's Garden and suggests that there is greater variability in Dorset house form and use of internal house space than previously thought. This variability may be a function of seasonally specific dwelling use.

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Chapter 1

1.1 Introduction

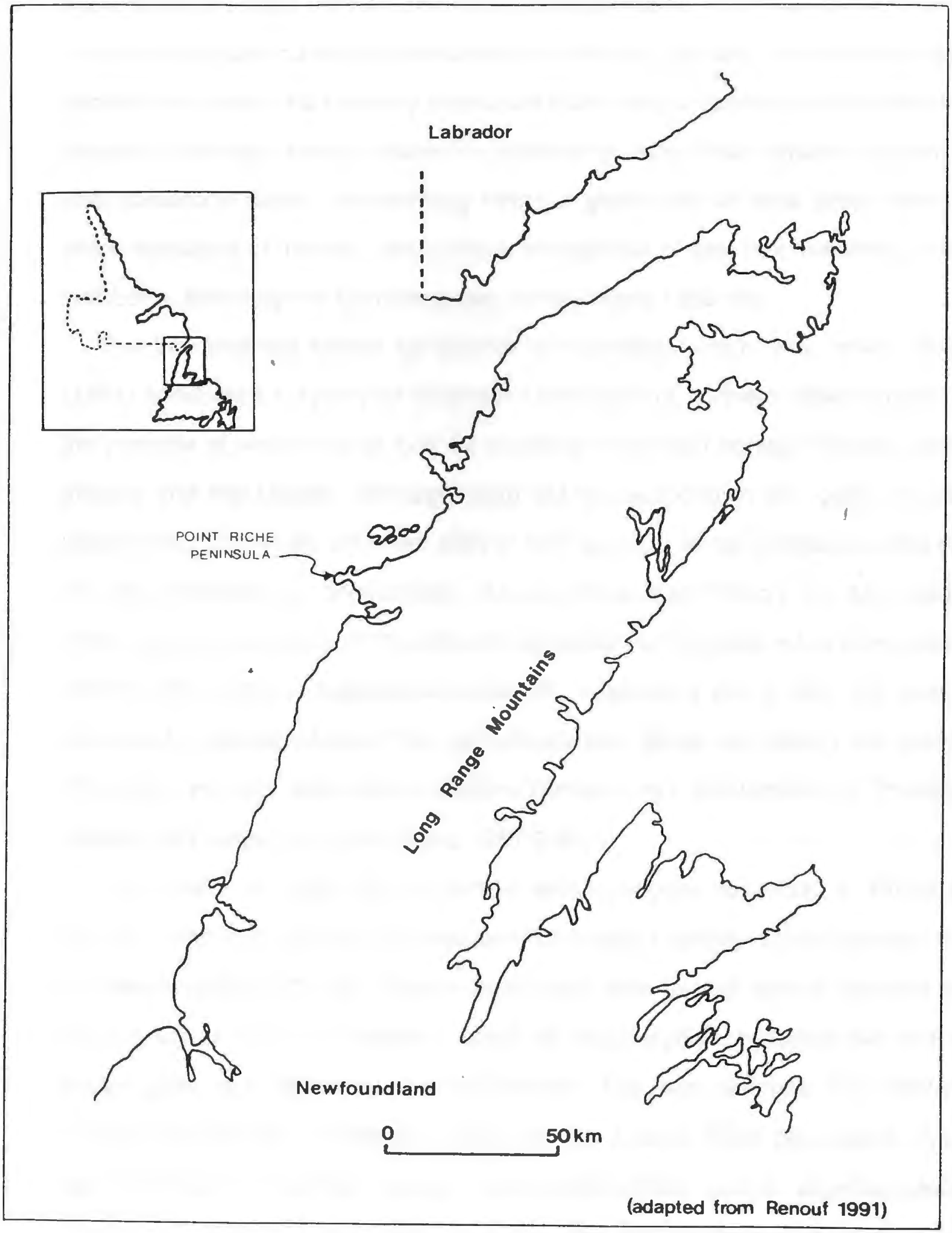
The Dorset Palaeoeskimo site known as Phillip's Garden (EeBi 1) is located on the north shore of the Point Riche peninsula on the northwest coast of Newfoundland (Figure 1.1). To date, it is the largest and most thoroughly excavated Palaeoeskimo settlement on the island. This thesis is the result of the examination of a collection of archaeological faunal bone from one dwelling on that site. The purpose of this research is to test previous assertions about the range of species represented at the site, the season of occupation and type of settlement, and to try and identify patterns in the Phocidae (seal) body part representation and distribution which might indicate particular butchery practices and organization of household space. Results of this study indicate that the range and ratio of species represented is consistent with earlier reports, and that there are only a few differences between midden and house feature contents. The site easily could have been occupied on a year round basis, and a semi-sedentary settlement pattern is suggested. It appears that some butchery was conducted inside the house, and that internal space was divided up into specific areas; however, house organization is not as rigid as previously suggested, possibly due to temporal and/or practical considerations.

1.2 Previous Research at Phillip's Garden

Phillip's Garden was first reported in the archaeological literature by Wintemberg in 1939. Although it had been known locally for many years, it wasn't until Wintemberg surface collected and tested it in 1927 and 1929 that it became the focus of scientific interest. Wintemberg described the site as "a flat

FIGURE 1.1

THE GREAT NORTHERN PENINSULA



(adapted from Renouf 1991)

area, about 5 acres...on the north shore of Cape Riche" and "exceedingly rich" in archaeological materials (Wintemberg 1939:86). Based on the artifactual remains recovered, he correctly concluded that it was a manifestation of Dorset culture in northern Newfoundland. In addition to forty-three artifacts of stone, and numerous flakes, Wintemberg noted a great deal of food bone debris, which consisted of beaver, otter, whale, two species of seal (not identified), and bird bone, including the Canada goose (Wintemberg 1939:86).

The site was not visited by another archaeologist until 1949, when Harp (1951) conducted a survey of southern Labrador and northern Newfoundland, the purpose of which was to look for evidence of contact between the Beothuk Indians and the Dorset. Although Harp did not accomplish this goal, he did locate many previously unknown sites in both areas, and he revisited several of the sites identified by Wintemberg. Among these was Phillip's Garden. Harp made some limited tests of the site and remarked that it appeared to have great potential for future archaeological research, suggesting that it was "not much cluttered by outside influence" i.e.; an undisturbed, single component site (Harp 1951:218). He was also able to confirm Wintemberg's identification of Phillip's Garden as a large Dorset site (Harp 1951:218).

From 1961 to 1964 Harp directed archaeological research at Phillip's Garden, mapping thirty-six houses and excavating twenty either partially or completely (Harp 1976:128). Based on this field work he was able to describe in detail a series of house features, which he suggested represented two basic house types, a winter and a summer variant. The best example of a "winter house" was House 2, which Harp described as a large, deep depression, that upon excavation became a square, semi-subterranean feature, approximately 4.5 meters on each side. A series of stone lined pits, running north-south, was located in the centre of the feature. On either side of these pits was a clear area, and at the rear of the house was a slightly raised area, which may have functioned as a sleeping area and which also contained several small pit features (Harp 1976:132). The "summer house" was typified by House 5, a small oval feature approximately 3 x 5.5 meters in diameter. The interior of this area had been cleared of beach rocks, however, there were no formal stone walls, nor were there any internal features (Harp 1976:132). Harp argued that the thick floor deposit in House 2 suggested a long term occupation (winter) while the thin floor deposit in House 5 indicated short term use (summer) (Harp 1976:132)

In addition to the identification of these two structural forms, Harp was able to recognize a pattern of site use outside the houses. A series of trench excavations revealed that hearth-like features were located outside the north walls of each house. On either side of each hearth was a small midden deposit, which appeared to be "manifestation[s] of individual household[s]" (Harp 1964:24).

Apart from the settlement data that Harp's research generated, a large quantity of artifactual and faunal material was also recovered. Over 25,000 animal bones were collected from House 4. These were identified in the field as 98% harp seal, 2% caribou, and negligible amounts of fox, beaver, migratory fowl and fish (Harp 1976:8).

Harp speculated that Phillip's Garden may have served as a permanent, possibly year round, base camp. The large quantity of harp seal implied that the site was used in the spring for hunting these animals as they passed the peninsula on their northward migration. Construction of the semi-subterranean houses would have best been accomplished in the summer when the ground was not frozen, and the mere presence of such substantial house features would suggest at least some occupation during the winter. Short trips could have been made throughout the year to the interior for hunting caribou and along the coast for various fish resources (Harp 1976:137).

Recently (Renouf 1985; 1986; 1987; and 1991) new excavations have been undertaken at Phillip's Garden. This work is part of a larger research programme, the Port au Choix Archaeology Project, directed by Dr. M.A.P. Renouf of the Memorial University of Newfoundland for the Canadian Parks Service. The purpose of this work is to examine how various prehistoric groups used the resources of the Port au Choix area. Two Honours theses (Wells 1988; Linehan 1990) have been written on various aspects of the midden faunal remains and two have been written on aspects of the lithics (Culletin 1991; Bates 1991) excavated during the project.

Renouf's work at Phillip's Garden began in 1984 during which time the site was remapped and tested for future potential. In addition to the 36 houses recorded and/or excavated by Harp, 28 new house depressions were located (Figure 1.2). The total area of the site is believed to be approximately 20,000 square metres and cultural material extends over the upper two beach ridges at eight and nine metres above sea level (Renouf 1985:38).

In 1985, one house depression, Feature 1, was excavated along with some associated exterior area. A separate midden, Feature 2, located approximately 40 metres east of Feature 1, was also excavated. The following year a second house, Feature 14, and nine metres of associated exterior area were excavated. In 1990, a further 84 square metres immediately surrounding the two houses was completed, in addition to the excavation of an external hearth, Feature 42, and the sampling of another unassociated midden, Feature 49. Figure 1.3

shows a schematic representation of these two house depressions and associated internal and external features. Uncalibrated radiocarbon dates[1] from the site indicate a period of occupation ranging from 2140±100 B.P. (Beta 23976) to 1250± B.P. (Beta 15639) (Renouf 1991:62).

Feature 1 is a semi-subterranean house feature, with a central depression measuring four by four metres. There is a low platform (28-35 cm above the bottom of the depression) approximately four metres wide by two metres deep which runs across the south end of the feature and a similar platform, approximately one metre deep, which runs across the north wall (Renouf pers. comm.). The west, north and south walls are fairly clearly defined as concentrations of limestone beach rock, raised 25-35 cm above the centre of the depression. There is a break in the north wall which is presumed to be a northeast facing entranceway. The south wall was never clearly defined during excavation, because it had been disturbed in prehistory, and also by Harp's earlier excavations (Renouf pers. comm.) The interior of the house contained three bone-filled pits, Features 5, 6, and 7. In addition to these pit features, there was one charcoal-stained area, Feature 4, on top of the southeast portion of the wall, and a second charcoal-stained area, Feature 8, beneath the east wall. Other features included: a small bone-filled pit, Feature 11, in the south wall; and just outside this wall, Feature 9, a shallow pit and Feature 13, a linear concentration of bone (Renouf 1986). A radiocarbon date from Feature 6, dates the occupation of Feature 1 to 1850 B.P. ±110 (Beta 15379) (Renouf 1991:72).

Feature 14, the second house depression, is a large oval, with external measurements of 11.5 metres north-south and 7.5 metres east-west. The interior of this feature is similar to Feature 1, in that there is a central depression (9.5 metres north-south and 4.5 metres east-west), three bone filled pits and two

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[1] Unless otherwise noted, all radiocarbon dates in this thesis are uncalibrated.

internal platforms, one along the north and one along the south side of the depression. There is also the possibility, as yet untested, that the east and west walls are in fact side platforms or benches (Renouf pers. comm.). Unlike Feature 1, the three bone filled pits line up along the long axis of the house, and the entrance way is located in the south wall. Furthermore, it is a version of a cold trap entrance, a feature previously unknown from Dorset sites in Newfoundland (Renouf 1987).

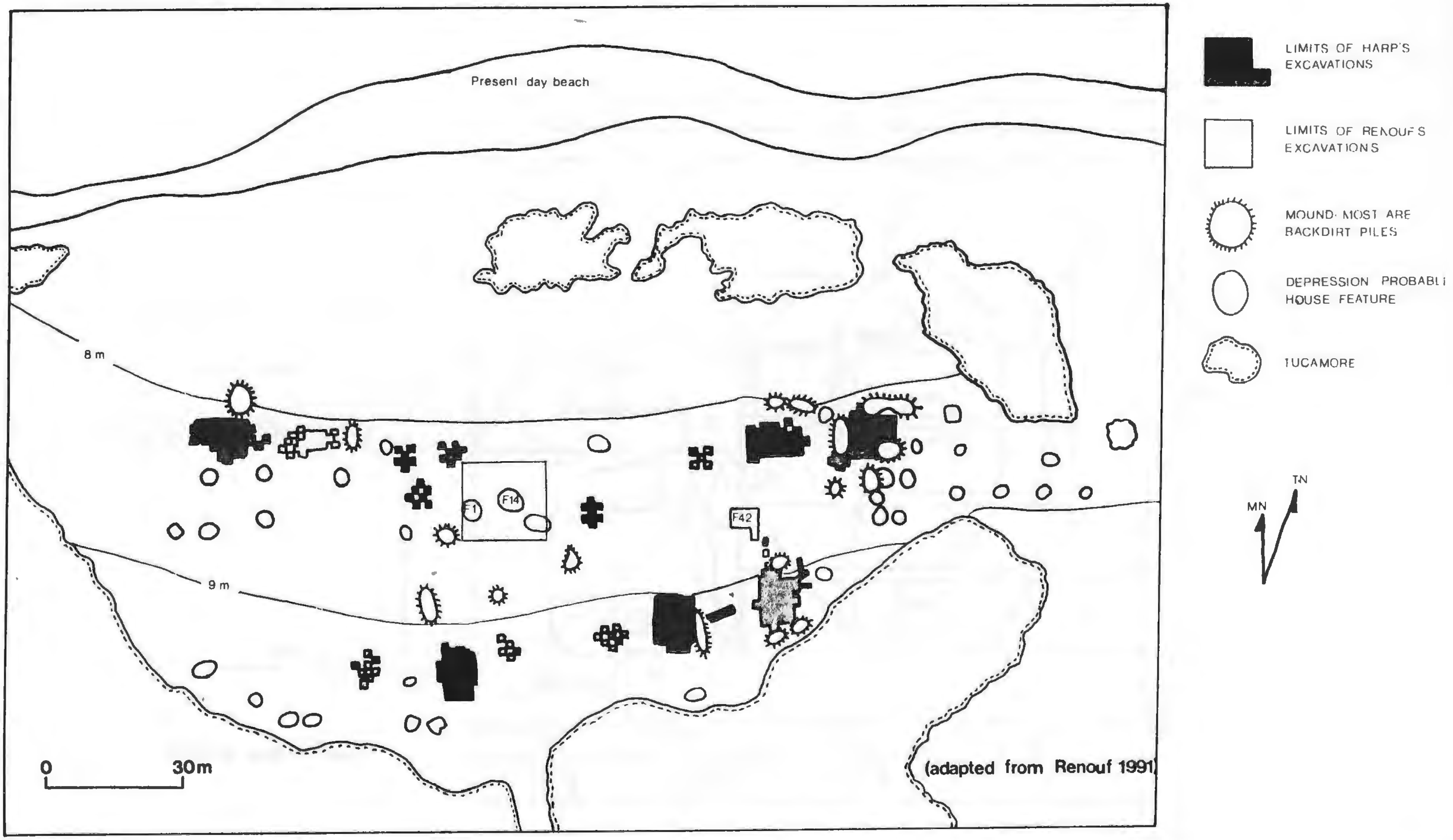
Trenches excavated around these two dwellings revealed several small midden deposits (Features 38 and 52), some external pits (Features 33, 35 and 48) and a large concentration of whale bone (Feature 41) but no hearth-like features similar to those reported by Harp (Renouf 1991).

The third structure, Feature 42, located approximately 60 metres east of Feature 14, is an external, axial hearth feature consisting of three large limestone slabs, oriented east-west and levelled on a bed of gravel. Between the two central slabs was a cleared area, and against each rock was a series of smaller slabs, which if placed upright could have formed a box hearth. Three possible post moulds were located along the northwest perimeter of this feature, suggesting that there may have been a windbreak constructed around it (Renouf 1991:56).

Renouf has speculated that Phillip's Garden may have served as a permanent base camp, from which small special purpose task groups would have exited at various times of the year in order to collect particular resources. Alternatively she has suggested that the site may have served as a centre for population aggregation on an annual basis for both social and economic purposes. It is also possible that some combination of both of the above may have occurred (Renouf 1991:62). These possibilities will be discussed in more

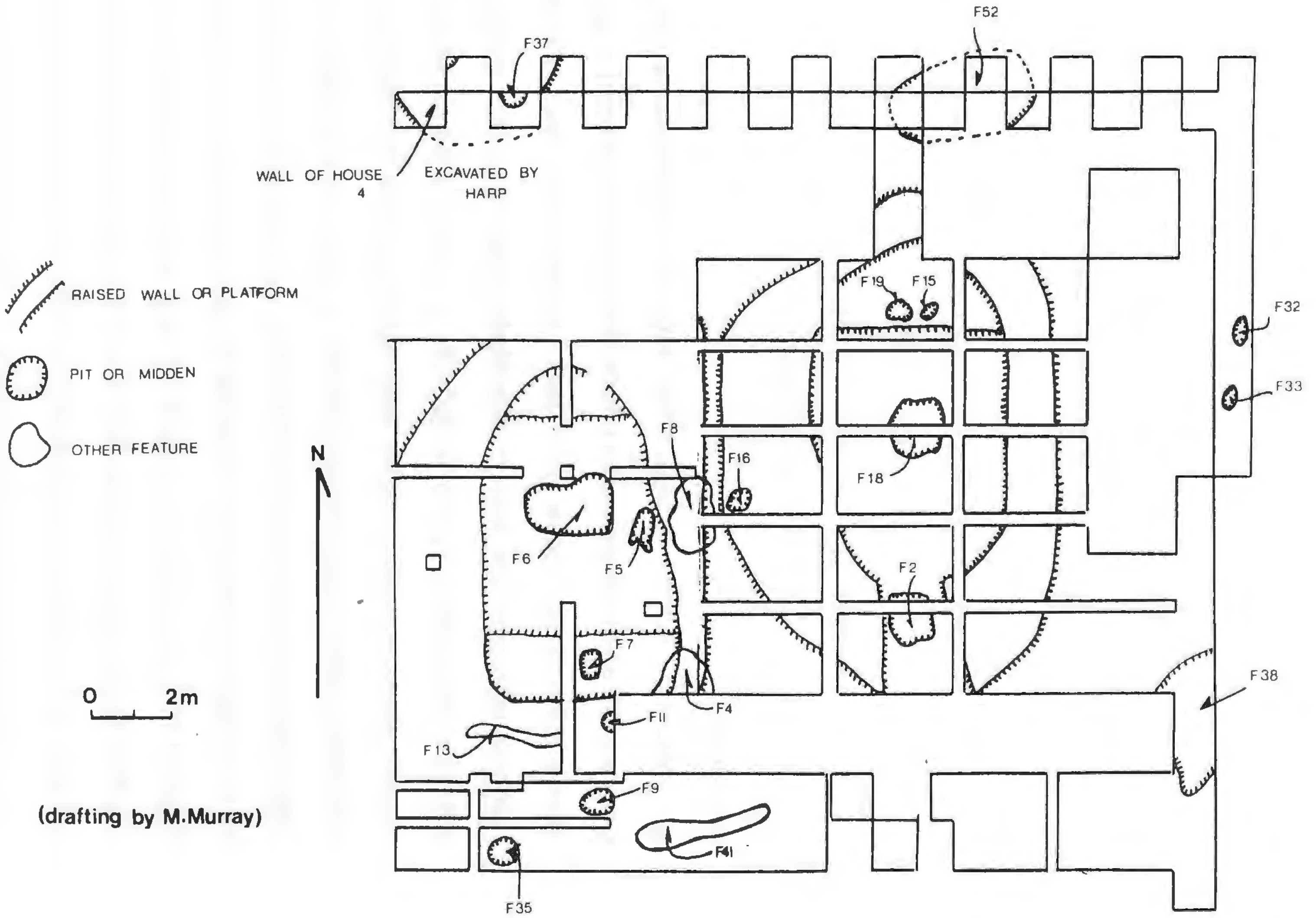
FIGURE 1.2

PLAN OF PHILLIP'S GARDEN
SURFACE FEATURES AND
EXCAVATED AREAS



(adapted from Renouf 1991)

FIGURE 1.3
PHILLIP'S GARDEN
FEATURES 1, 14,
SCHEMATIC



(drafting by M.Murray)

detail as the body of this work is presented.

In this chapter I have outlined the purpose and results of this thesis. In addition, the history of archaeological activities at Phillip's Garden has been discussed with particular reference to house types and speculations about site function and seasonality. In order to put this material and my own research into an environmental and cultural context, Chapter 2 consists of a discussion of the Newfoundland environment and resource base with particular reference to the northwest coast of the island. Chapter 3 presents information about Dorset culture history, material culture and settlement and subsistence strategies in Labrador and Newfoundland. In Chapter 4, I will discuss evidence for particular resource selection, site function and seasonality at Phillip's Garden. A detailed examination of Phocidae body part representation and distribution within Feature 1, a semi-subterranean house structure, is presented in Chapters 5 and 6. Chapter 7 wraps up this work with an evaluation of the results and conclusion.

Chapter 2

2.1 The Newfoundland Environment and Resources

In order to understand Dorset settlement and subsistence strategies in northwestern Newfoundland, and the Port au Choix research area in particular, it is imperative to be familiar with the various resources available for human use and the kind of environmental conditions which could place limits upon their exploitation. To that end, the following section includes a discussion of climate and ice conditions, plant resources, marine and terrestrial mammal populations, year-round and migratory bird availability and fish resources.

The island of Newfoundland is the most easterly part of North America, separated from Nova Scotia by the Gulf of St. Lawrence and the Cabot Strait, and from Labrador by the Strait of Belle Isle. In general it is a rolling plateau rising to peaks at the Long Range Mountains (Gutsell 1949:2). The northwest coast of Newfoundland from Bonne Bay to the tip of the Great Northern Peninsula has been described as low coastal plain, heavily covered in bush, with a thin, poor soil of glacial drift, underlain by sandstone, limestone and shale (Gutsell 1949:8). This plain is divided by a series of shallow river valleys, which stretch back to the escarpment of the Long Range mountains, a barren range which forms the spine of the Great Northern Peninsula (Harp 1964:15).

The general climate of the area is marine, but quite cold due to the influence of the Labrador current moving through the Strait of Belle Isle and the prevailing northwest winds blowing from Ungava. The island lies directly in the path of cyclonic storms, resulting in intense and variable winds which change direction quickly and result in frequent and intense winter storms (Gutsell 1949:16). Point Riche is a rocky, barren, headland which reaches out into the Gulf, some 65 km south of the Strait of Belle Isle. In this area, the mean summer temperature (July) ranges from 10 to 13^{o} C, and the mean winter temperature (January) from -6.5 to -10^{o} C. The average annual rainfall is 76-89 cm and the average annual snowfall from 254-318 cm (Gutsell 1949). The area is also quite foggy, averaging 125 foggy days per year, with July getting up to 17 of those (Gutsell 1949:21).

Field ice begins to form around the island in the fall and this is augmented by arctic pack ice from Davis and Hudson Straits which is carried into the Strait of Belle Isle by the Labrador current. By December, the Strait is blocked off, and by January or early February the ice has reached the Grand Banks. According to the Ice Atlas of the Eastern Canadian Seaboard, there is no area of permanent open water (a polynia) in the Strait during freeze up (Markham 1980) and, with the exception of the southwest coast, most of the island remains surrounded by ice until break-up begins, generally in March, but possibly as late as April (Gutsell 1949:26). In 1990 ice remained in the Point Riche area until well into June and Hare (1952:47) has noted that it is not uncommon to find ice laden water in this area until well into July, as was the situation in 1991.

Most of Newfoundland is boreal coniferous forest. The most commonly occurring tree species are: black spruce (Picea mariana); white spruce (Picea glauca); balsam fir (Abies balsamea); white birch (Betula papyrifera); and yellow birch (Betula lutea) (Cameron 1958:71). Much of the interior and the northwest coast is moss-barren plain and bog (Gutsell 1949:26). There is a wide variety of edible berries on the island, including: blueberries (Vaccinium angustifolium); cranberries (Viburnum trilobum); gooseberries (Ribes hirtellum); partridgeberries (Vaccinium vitis-idaea); and blackberries (Rubus sp.) all of which are found locally in the Port au Choix area (Ryan 1974).

A large number of animal resources are and were available for human exploitation on and around Newfoundland. There are only fourteen mammals native to the island, and two regular visitors. These are all listed in Table 2.1.

Table 2.1

Terrestrial Mammals Native to Newfoundland

Scientific Name	Common Name
Myotis lucifugus	little brown bat
Myotis keenii	Keen's bat
Lepus arcticus	arctic hare
Castor canadensis	beaver
Ondatra zibethicus	muskrat
Microtus pennsylvanicus	meadow vole
Canis lupus	wolf
Alopex lagopus	arctic fox
Vulpes vulpes	red fox
Ursus americanus	black bear
Ursus maritimus	polar bear
Martes americana	marten
Mustela erminea	ermine
Lutra canadensis	river otter
Lynx lynx	lynx
Rangifer tarandus	caribou

Nine of these sixteen species are carnivores, resulting in a short, unstable food web, top heavy with predators and likely susceptible to periodic population crashes, particularly of caribou (Bergerud 1983). Although it is likely that human groups would have exploited terrestrial mammals, Tuck and Pastore (1986) have argued that prehistoric human populations would have relied more heavily on the wider variety and greater number of marine species.

2.2 Terrestrial Mammals

To date, no bat remains have been found in an archaeological context on the island, and the species are not considered to have been of economic importance to any human groups. However, both species are known from the Port Saunders/Port au Choix area (Cameron 1958:75).

The arctic hare is generally distributed through the Ungava peninsula, Labrador and Newfoundland. It is fairly large, ranging from 2.7 to 6.8 kg. The hare tends to be a gregarious animal and in the winter can often be found in groups of ten or more on windswept plains (Peterson 1966:89). The arctic hare originally occurred throughout the wooded parts of island of Newfoundland, but presently is restricted to higher hills and barren areas. In the past it could have been hunted on the open plains in the winter, and in wooded areas during the summer and it was commonly snared in and around fishing villages. The population of arctic hare has been greatly reduced since the introduction of the snowshoe hare to the island (Cameron 1958:75).

The beaver is the largest rodent in Canada, weighing between 14 and 36 kg. It is found in most areas of eastern Canada where aspen and other suitable foods are available (Peterson 1966:133). Prior to 1922, the beaver was plentiful and well distributed on the island of Newfoundland; however, over-hunting after that time reduced the population nearly to the point of extinction. The Newfoundland beaver tend to move quite frequently, possibly due to the lack of suitable food trees like aspen and it is not unusual to find them living in barren areas, where they feed on the tubers of pond and water lilies (Cameron 1958:77-82).

The muskrat is distributed about the island of Newfoundland, but is most common on the Avalon peninsula and in the drainage systems of larger rivers in the Codroy and Humber valleys. Some can also be found in interior barren-ground ponds. They are currently scarce in the Port Saunders/Strait of Belle Isle area due to over-trapping and lack of suitable habitat (Cameron 1958:88). Muskrats are the largest members of the family Cricetidae, weighing between 0.8 and 1.5 kg. (Peterson 1966:170).

The meadow vole is widely spread through most of Canada and is present but uncommon in most of Newfoundland; however, they are known from the Port Saunders area as several specimens were collected there in 1950. They tend to burrow in loose turf, and prefer meadows, but they are also found in wooded areas (Cameron 1958:84-85).

The timber wolf ranged throughout most of Canada until the 1850's when human predation resulted in its extirpation from many southern locations. The Newfoundland wolf is a subspecies of the mainland variety and is now extinct, but was previously common throughout the island (Cameron 1958:90).

The arctic fox is circumpolar in distribution, and mainly restricted to tundra areas (Peterson 1966:205). It is an occasional visitor (and therefore not resident) to the island of Newfoundland, arriving on pack ice carried south on the Labrador current from Ungava and the arctic islands (Cameron 1958:91).

The red fox is found throughout eastern Canada and Newfoundland although it is now rare on the Point Riche peninsula. Local residents of Port au Choix suggest that it was a breeding resident at one time. These animals would have been available throughout the year (Northcott and Phillips 1976:18) but would probably have been most desirable in the fall and winter when their coats are the thickest.

The black bear is common throughout all of eastern Canada except for treeless tundra areas as it prefers wooded locations. It is widely distributed on the island of Newfoundland except in the Strait of Belle Isle region and the

Codroy Valley. Local residents say that bears were common in the Port au Choix area before the turn of the century (Northcott and Phillips 1976:19) and it is possible that increased human activity along the northwest coast has resulted in decimation of the population. The bears tend to be solitary for most of the year, hibernating through the winter; however, during the summer (July and August) they can be found congregating at salmon spawning grounds (Cameron 1958:95-96).

The polar bear is primarily a marine mammal, with a circumpolar distribution. It is not a resident of Newfoundland but is sometimes carried south to the island on drifting ice. One bear was killed at Port au Choix in the spring of 1936, but this is the only reported incident of the species on the northwest coast. They are more commonly found on the northeast coast (Cameron 1958:98).

The marten is distributed throughout the boreal forests of eastern Canada, except for the northern Ungava peninsula (Peterson 1966:252). Formerly available in great numbers on the island of Newfoundland the marten is now rare due to trapping pressure (Cameron 1958:99).

The ermine is found in woodlands in all parts of eastern Canada. In Newfoundland it was once abundant but is presently uncommon, probably due to the scarcity of mice, its principle prey species (Cameron 1958:99). As with all fur bearing species, their coats are most luxuriant during the winter and they are frequently trapped during that season (Peterson 1966:236).

The otter is found throughout the wooded parts of eastern Canada wherever there are lakes, marshes, streams and sea shores. Otters have the most durable pelts of all the fur-bearers and therefore are very valuable (Peterson 1966:273). Otters are found in Newfoundland and because they are very shy and difficult to locate, they are still fairly abundant (Cameron 1958:101).

The lynx is generally distributed through eastern Canada and through Newfoundland. It is believed to have been less common on the island in the past because of the limited number of prey species. A population increase has occurred with the introduction of the snowshoe hare to Newfoundland, now its staple food during the winter (Cameron 1958:101).

The Newfoundland woodland caribou is the least known of all Canadian caribou populations. It is subdivided into three groups: one migratory herd in the northern part of the island; a main migratory herd in central and southern Newfoundland; and a third, non-migratory herd on the Avalon peninsula. The northern herd would have been most accessible to people living in the Port au Choix area. In the 1950s, caribou hunting was still widely practiced in northern Newfoundland, and Cameron (1958:105) noted "most of the hunters maintained camps at varying distances between the settlement and the hunting grounds." The hunt would begin with the fall migration into the lowlands of central Newfoundland in late October or early November. It seems that the migration was triggered by the first heavy snowfall, so if the snow was late, the movement may have occurred later than usual. In the Port Saunders area, hunters would generally be absent for about one month, hunting around Mount Bluie, about 34 km inland. Older residents of the community have suggested that the position of the herds on the Long Range mountains was governed by wind direction, with the best hunting on the west side of the mountains after several days of westerly and southwesterly winds. In the spring, caribou returned to the Long Range Mountains and were more likely to be found on the shaded east side where there was still snow (Cameron 1958:105).

2.3 Marine Mammals

In addition to these terrestrial species, there are a large number of marine mammals which are abundant in Newfoundland waters. Table 2.2 lists all pinniped and cetacean species which would have been available for prehistoric exploitation.

Table 2.2

Marine Mammals in Newfoundland Waters

Scientific Name	Common Name
Delphinapterus leucas	beluga whale
Lagenorhynchus acutus	Atlantic white-sided dolphin
Orcinus orca	killer whale
Physeter catodon	sperm whale
Globicephala melaena	Atlantic pilot whale
Phocoena phocoena	harbour porpoise
Balaenoptera physalus	fin whale
Balaenoptera borealis	sei whale
Balaenoptera acutorostrata	minke whale
Balaenoptera musculus	blue whale
Megaptera novaeangliae	humpback whale
Eubalaena glacialis	right whale
Balaena mysticus	bowhead whale
Erignathus barbatus	bearded seal
Halichoerus grypus	grey seal
Phoca hispida	ringed seal
Phoca groenlandica	harp seal
Phoca vitulina	harbour seal
Cystophora cristata	hooded seal
Rosmarus rosmarus	walrus

The whale species which are relatively common along the northwest coast fall into two groups: baleen whales which include the fin whale, the minke whale, the blue whale the humpback whale, the right whale, the bowhead whale and the minke whale; and toothed whales which include the pilot whale, the harbour porpoise, the beluga whale, the killer whale and the white-sided dolphin. It has been suggested that because there is no evidence of specialized whaling gear in Dorset culture, the large baleen whales were not actively hunted, but rather were utilized only when found as strandings. The smaller toothed whales were more likely to have been pursued because they can be more easily driven ashore or killed offshore from boats (Renouf 1985:3).

The bearded seal is a large species, with both males and females reaching lengths of 2.25 metres and weights of up to 250 kg. It is found at the ice edge in all arctic waters and sometimes as far south as the Gulf of St. Lawrence (King 1983:101). They prefer coastal areas, and will sometimes move into bays and estuaries which may remain open during the winter when other parts of the coast are solid with fast-ice. They can often be found hauled out on ice pans, and occasionally on gravelly beaches (Maxwell et al. 1967:118). This species is generally solitary, although they tend to form small groups in the summer on beaches. They feed mainly upon invertebrate bottom dwellers including clams, shrimps, crabs and sometimes sculpin and flounder (Maxwell et al. 1967:120). During whelping, which happens in April and May on the ice, bearded seals may form loose groups of up to fifty individuals (Maxwell et al. 1967:121). Breeding occurs in May and moulting between March and June, although most commonly after mating (King 1983:103). Bearded seals are found along the the shores of the Point Riche peninsula in the spring and local residents still hunt a few each year (Northcott and Phillips 1976:25).

The grey seal is found in the temperate and sub-arctic waters of the North Atlantic. It is a large, sexually dimorphic animal and males may reach lengths of 2.2 metres and weights of 220 kg. Females are smaller, weighing up to 150 kg, with an average length of 1.8 metres (King 1983:76). These seals pup in the early winter and then breed from mid-December to early February on the ice of Northumberland Strait between Prince Edward Island and Cape Breton, and on Sable Island (Beck 1983b:2). Young seals in their first year of life travel great distances and by March may be found inshore near the Nova Scotia mainland, southern Newfoundland and the northeastern United States. Others venture up to Labrador and may spend the year as far north as Nain. Adult seals are gone from the breeding areas by mid-February and remain at sea feeding until early May when they move inshore to continue feeding and to moult. Some of the adults move offshore again in July, where they stay until the start of the breeding season (Beck 1983b:3). Based on their patterns of dispersion after breeding grey seals would have been most common in the Port au Choix area from late February/early March to November but probably concentrated in the late spring and summer.

Ringed seals are found in all northern polar regions. Along with the harbour seal, they are one of the smaller seal species found in the waters of Labrador and Newfoundland. Both males and females are about the same size, reaching lengths of 1.4 to 1.5 metres and average weights of 68 kg (King 1983:87). Ringed seals feed mainly on polar cod and crustaceans and are non-migratory, generally remaining inshore within the limits of the fast ice (Maxwell et al. 1967:123). Pups are born from mid-March to mid-May in dens on the ice close to shore (Maxwell et al. 1967:124) and the seals are at the fattest and healthiest just prior to and during this period (King 1983:86). Mating occurs concurrently with pupping and moulting happens in June and July (King 1983:88). Ringed seals are rare in the Port au Choix area as it is quite far south of their normal range (Peterson 1966).

Harp seals are the most abundant seal species in the North Atlantic, and are found in arctic and sub-arctic waters. They are medium sized seals, only slightly sexually dimorphic with weights ranging from 85-180 kg and lengths up to 169 cm (Bowen 1989:2). The harp seals are grouped into three separate breeding populations; one in the White Sea; one southeast of Spitzbergen and one off Newfoundland. The Newfoundland group is divided into two herds: the Front which breeds on the southward drifting pack ice of southern Labrador; and the Gulf, which breeds on the ice in the Gulf of St. Lawrence near the Magdalen islands (Bowen 1989:2).

During the spring, the Newfoundland herd migrates north following the receding pack ice. They remain in the arctic, west of southern Greenland, until the end of the summer (late September), when they begin to move south just ahead of the advancing ice. During this time the seals move in and out of bays along Baffin island and the Labrador coast and may be easily taken by nets (Sergeant 1991:33). The seals appear to avoid the ice at this time, probably because it is too thin to support their weight. Immature seals[2] are largely absent from this migration and may lag behind for a month, and some may even remain off Greenland until March (Sergeant 1991:34-35). The herd reaches northern Labrador in mid-October and the Strait of Belle Isle by mid-December where it splits into two groups. One third moves down the west coast of Newfoundland into the Gulf of St. Lawrence and the remainder moves along the east coast of the island. The seals are widely dispersed and feed heavily during January and early February (Bowen 1989:3). In late February and early March the seals haul out on the ice to whelp. The Gulf population generally whelps west or northwest of the Magdalen islands and the Front whelps off the south

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[2] Individuals which are not sexually mature but older than ragged-jackets. Female harp seals become sexually mature at about four years of age and males at about six years. Ragged-jackets are white coat pups which are begining to moult (Lavigne and Kovacs 1988).

coast of Labrador. The location of whelping is especially susceptible to wind conditions, and in some years the patch may be swept down to Belle Isle and even into the Strait (Sergeant 1991:38). In early March, there is normally moving ice in the Strait of Belle Isle which allows the seals to penetrate shoreward in leads, and in this manner they may move quite far north. However, if there is no pack ice the seals are forced to whelp on the land fast ice (Sergeant 1991:39). There may also be a small whelping population around Point Riche, for on March 20 and 21, 1962, when the Strait of Belle Isle was completely blocked with ice, approximately 120 white coats were taken in the area. In 1965, 19,635 harp seals were taken between Rose Blanche and Cape Norman on the west coast, 22, 626 were taken in 1966 and an aerial survey in the area in 1967, estimated a whelping patch eight by ten km, of about 20,000 adult seals (Sergeant 1991:41). Little else in known about the possibility of a whelping patch in the northern Gulf.

Whelping females tend to be somewhat dispersed on the ice, and much greater concentrations (up to ten times) form during the moulting period (Sergeant 1991:42). Whelping occurs in March, as does lactation and mating. At the end of March or in early April, females leave for a short feeding period. Moulting begins in late April or early May during which time the seals congregate on the ice. Adult males gather separately, immatures (excluding juveniles) of both sexes group together, and females join up last (King 1983:94). During moulting the seals lose about 20% of their body weight (Bowen 1989:4). By late April/early May the adult and immature Gulf population passes through the Strait of Belle Isle, followed by the juveniles in May and June (Sergeant 1991:44). The seals continue to move up the Labrador coast to Greenland and the Canadian arctic where they spend the summer (Sergeant

1991:45).

Until recently harp seal exploitation was a mainstay of the Newfoundland economy. Seals were captured from the shore in nets, from commercial offshore ships, and from smaller boats inshore from December to May (Bowen 1989:5). In the Port au Choix area the seals are available during the early winter (mid-December to early January) and in large numbers during the spring (March, April and May) migrations. If the indications of a breeding population in the vicinity are correct, the possibility exists that harp seals may also be available throughout the winter.

The harbour seal is a small, slightly sexually dimorphic species. Males may reach lengths of 1.8 metres and females lengths of 1.5 metres. The average weight for both sexes is around 113 kg (King 1983:80). Harbour seals are often found in estuaries, rivers and lakes around the coast of the Newfoundland and frequently haul out on inshore rocks and sand bars (Beck 1983a:2). Pups are born on shore in May and June and suckle for about one month, after which the adults mate. Moulting takes place in July, shortly after mating (King 1983:83). These seals are non-migratory although they may travel long distances when they are young (Bowen 1983:5). They feed mainly on inshore fish, herring and some flounder (King 1983:84). Prior to 1925, harbour seals were very common in the Port au Choix area from spring through to fall. Local residents report that it was quite common to find groups of these seals hauled out on the rocky shores and that they were easily hunted (Northcott and Phillips 1976:23).

The hooded seal is a large, sexually dimorphic animal; males may reach 3 metres and 400 kg; females about 2.4 metres and 270 kg. Like the harp, hooded seals are found in the North Atlantic and arctic waters and whelp in the spring on the pack ice. Both species are often found in the same breeding areas, although they appear to maintain separate groups (Maxwell 1967:93) with the hooded seals generally found farther out to sea than the harp (King 1983:101). Suckling lasts about eight days after which adult animals mate and disperse north from the whelping area (Lavigne and Kovacs 1988:51). Pups may be found on the ice until early April (Sergeant 1985:2) after which they migrate north, although some may remain in the Gulf of St. Lawrence (Sergeant 1985:3). The adults then congregate in the Denmark Strait where they moult in June, July and August (Lavigne and Kovacs 1988:17). The seals live over deep water and tend to be scarce in areas where the shallow-feeding harp seals are common (Sergeant 1985:4). Hooded seals are presently found offshore of Point Riche in the spring and local people catch a few each year (Northcott and Phillips 1976:25).

Walruses are extremely large, sexually dimorphic animals. Males may reach up to 3 metres and 1200 kg and females up to 2.5 metres and 800 kg (King 1983:68). They live in small herds of up to 100 animals and spend their days hauled out on land or ice (Marten 1977:116). It is a migratory species, moving southward in the winter and northward in the summer in order to maintain association with the ice-edge and open water (Peterson 1966:291). Calves are born between mid-April and mid-June during the northward migration and lactation may last up to 18 months. Moulting occurs in July and mating happens on the drifting pack ice, usually in mid-February (King 1983:70).

In the past the walrus ranged as far south as South Carolina but by the end of the eighteenth century they had been nearly wiped by hunters seeking tusks, pelts and oil. Now only stragglers are found in parts of Labrador (Maxwell et al. 1967:69). The last walrus seen in the Port au Choix area was in the spring of 1935 when one was killed on St. John Island about 16 km north of the Point

Riche peninsula (Northcott and Phillips 1976:23). Assuming the past migratory pattern was similar to the present, walrus would have been available in the Port au Choix in the late fall and early winter as the pack ice moved into the Strait of Belle Isle, and again in the spring as the ice receded.

2.4 Avian Resources

In addition to these terrestrial and marine mammals a large number of different birds are also available in the Port au Choix area, including: loons; fulmars; petrels; cormorants; bitterns; geese; salt water and fresh water ducks; swans; various birds of prey; ptarmigan; plovers; gulls; terns; murres; razorbills; guillemots; the great auk (now extinct); puffins; kingfishers; woodpeckers; and songbirds. Some of these species such as murres, gannets, puffins, gulls and auks are sedentary species, while others like the ducks, and geese are migratory. Sedentary species are most easily hunted in the late spring and summer when nesting, while migratory species like eider ducks and geese are available in the greatest numbers in the winter (Bellrose 1976).

2.5 Marine and Freshwater Fish Resources

Fish species available off the northwest coast of the island include: anadromous fish such as salmon, char and trout; groundfish such as cod, halibut and flounder; freshwater fish such as brook trout; and catadromous fish such as the American eel. A brief description of some of the more numerous species is found below.

The Atlantic salmon, (Salmo salar), is found throughout Newfoundland and Labrador, and there are several landlocked populations in both regions (Scott and Crossman 1973:193). The salmon move from the ocean into estuaries in the spring, and from there into fresh water through the summer in order to spawn in the early fall (October and November). Landlocked populations simply move into tributary streams. During migration and the spawning season these fish are available in dense concentrations (Scott and Crossman 1973:194). In the Port au Choix area, where the salmon population is managed, the prime fishing period is in August (Renouf pers. comm.)

The Arctic char, (Salvelinus alpinus), has a circumpolar distribution and there are both anadromous and landlocked populations in insular Newfoundland and Labrador. These fish spawn in September and October over gravel in lakes or quiet pools in rivers (Scott and Crossman 1973:202-203). They overwinter in lakes and in the spring, and before or during break-up, move downstream to the sea. Summer is the most productive time for fishing, with nets or traps; however char can also be caught through the ice with hand-lines, lures and spears (Scott and Crossman 1973:206).

The brook trout, (Salvelinus fontinalis), is widely distributed throughout the island of Newfoundland. It spawns in late summer/early fall over gravel beds in the headwaters of streams or in gravelly shallows of lakes and is available in the greatest concentrations at that time (Scott and Crossman 1973:210).

The Atlantic cod, (Gadus morhua), is a marine groundfish which occurs mainly in the northern seas. In the northwest Atlantic they occur from inshore shallow water (5 metres) to the edge of the continental shelf (600 metres) (Lear 1989:2). In Canadian waters, cod are divided into several stocks, some of which undergo long migrations. During the summer, the Belle Island Bank stock is found around southern Labrador, the Strait of Belle Isle and the northeast coast of Newfoundland (Lear 1989:3). In addition, some cod which overwinter on the south coast migrate north in the spring to the Strait of Belle Isle where they mingle with the Labrador-east/Newfoundland stock and the Belle Island Bank stock, just north of Point Riche (Lear 1989:4). Thus the maximal period for obtaining cod around the Port au Choix area is during the summer months. Throughout the historic period, inshore fishermen have exploited the cod using traps, line trawl, longline, gillnet, hand line, jigger and the cod seine (Lear 1989:6).

The American eel (Anguilla rostrata) is a catadromous fish, meaning it attains sexual maturity in fresh water and then moves downstream to the sea to spawn. Young eel migrate upstream in great numbers in the spring and large adults migrate downstream in the fall (Scott and Crossman 1973:625). In fresh water, eels spend most of their time buried in the silty bottoms of lakes, and some overwinter in the mud where they can be easily speared by fishermen (Scott and Crossman 1973:627).

One other species which deserves mention is the capelin, (Mallotus villosus). These smelt-sized fish are abundant in Newfoundland waters, spending most of their time offshore, but coming in to spawn on the beaches in June and July (Carscadden 1981:2). This spawning period may last from four to six weeks (Carscadden 1981:4), during which time the fish are often so numerous they may simply be picked up off the beach by hand.

I have discussed all available land mammal and seal species and a small number of avian and fish species in an effort to illustrate the seasonal availability and abundance of various animal resources found on and around Newfoundland. Given the appropriate technology, prehistoric populations would have had a wide array of resources from which to choose.

In the following chapter, I will present an outline of Dorset culture history in Newfoundland and Labrador and discuss several proposed settlement and subsistence strategies for those regions.

Chapter 3

3.1 The Dorset Occupation of Labrador and Newfoundland[3]

The focus of this thesis is the Middle Dorset Palaeoeskimo occupation at Phillip's Garden, a site located on the Point Riche peninsula in northwestern Newfoundland. In order to set the stage for that discussion it is necessary to first sketch the chronology of Dorset occupation in Labrador and Newfoundland, discussing briefly the material culture of each of the three defined phases and a number of proposed Middle Dorset settlement and subsistence strategies.

3.2 Culture History

In 1925, Diamond Jenness recognized and named a new archaeological culture from the eastern Canadian Arctic. This identification was based on his analysis of artifacts collected from Coats Island and Cape Dorset, Baffin Island. Because the materials were collected without regard to archaeological provenience, Jenness was forced to separate and classify them based on their physical forms (Jenness 1925:432). He identified concave base end-blades and curved-edged knives as new artifact types, unrelated to previously known Eskimo lithic assemblages. In addition there was a number of bone and ivory artifacts which he separated from Thule and modern Eskimo materials on the basis of very dark patination and the presence of gouged rather than drilled holes. In particular, the unique nature of these materials was embodied by variable forms of harpoon heads with gouged line holes and narrow rectilinear sockets (Jenness 1925:434). Based on these new forms, the apparent lack of bow drill technology, and the heavy patination of the bone and ivory artifacts, Jenness concluded that he had evidence of "an old culture, hitherto unknown"

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[3] Specific sites mentioned in this chapter can be found on Figure 3.1.

(Jenness 1925:436), which he named the Cape Dorset.

Following Jenness's identification, similar artifacts were recognized from other sites in the eastern Canadian Arctic (Rowley 1940), Greenland (Meldgaard 1952), Labrador (Leachman 1943; Harp 1951) and Newfoundland (Wintemberg 1939, 1940; Harp 1951, 1964). Since those early discoveries, research has become regionally specific, focusing on the setting up of cultural chronologies, and the determination of settlement and subsistence systems (Tuck 1975; Fitzhugh 1976; Maxwell 1980; and McGhee 1981). Dorset occupation in each geographical area (High Arctic, Greenland, Labrador and Newfoundland) has been subdivided into Early, Middle and Late periods, each of which corresponds to perceived differences in material culture.

The Palaeoeskimo occupations of Newfoundland and Labrador have been subdivided into two major periods or traditions. The first is known as the Early Palaeo-eskimo tradition (4000-2000 B.P.) and includes cultural groups variously identified as Independence 1 (Cox 1978; Fitzhugh 1980; Tuck 1975), Early Pre-Dorset (Cox 1978), Late Pre-Dorset (Cox 1978), Transitional Pre-Dorset (Cox 1978), and Groswater Dorset (Fitzhugh 1976), or Groswater Palaeoeskimo (Auger 1985). The second period, the Late Palaeoeskimo tradition (2600-650 B.P.) includes the Early, Middle and Late phases of Dorset occupation. It is currently a matter of debate whether or not the Dorset developed out of the Early Palaeoeskimo tradition or whether they represent a new migration into Labrador and eventually Newfoundland, from elsewhere in the eastern Canadian Arctic (Tuck and Fitzhugh 1986). However, it has been established on the basis of three radiocarbon dates from the Q-B2 site on Rose Island, and Dog Bite L3 site, that what is formally recognized as Early Dorset culture, first appears in northern Labrador approximately 2600-2400 B.P.

(Maxwell 1985).

Early Dorset sites in this region are currently known only from northern Labrador (Tuck and Fitzhugh 1986:165). The material culture of this early occupation is characterized by tip-fluted and bifacial triangular end-blades with straight or slightly concave bases; single or multiple notched symmetric bifaces; circular side-blades; triangular end-scrapers with lateral bifacial flaking; large numbers of microblades; stemmed or notched burin-like-tools; ground schist tablets; angular and rounded soapstone vessels; polished nephrite adzes; and notched or stemmed ground slate end- blades (Fitzhugh 1976, Cox 1978). The primary lithic raw material is Ramah chert, with the exception of the Nain area (Fitzhugh 1976:138), with additional use of small amounts of quartz crystal, nephrite, slate, schist and soapstone (Cox 1978:107). The full extent of dwelling types in not yet known, however some shallow, semi-subterranean house features identified as Early Dorset have been located at Iluvektalik-1 in Okak Bay (Cox 1978), Nukasusutok-12, slightly southeast of Nain (Hood 1986) and Komaktorvik in Seven Islands Bay (Fitzhugh 1980:598).

The transition from Early to Middle Dorset (2100-1800 B.P.) is not well understood because there are few sites dating to this time. According to Cox (1978:107) the onset of the Middle Dorset period in Labrador (2100 B.P.) is marked by the appearance of unifacial, triangular end-blades, and tip-fluted end-blades, both with concave bases and by the appearance of symmetric and asymmetric, stemmed triangular and rounded base bifaces. In addition, Middle Dorset sites in Labrador are characterized by the presence of bifacial and unifacial tip-fluted end-blades; symmetric and asymmetric bifacial knives; multiple notched bifaces; concave side-scrapers; unflared, tabular end scrapers; quartz and quartz crystal blades and microblades, which increase in width and decrease in frequency from the Early Dorset period. Also part of the Middle Dorset tool assemblage are stemmed nephrite burin-like-tools; fully ground, tabular burin-like-tools; rectangular soapstone vessels; and slotted, closed socket harpoon heads of ivory (Fitzhugh 1976; Cox 1978; Jordan 1980). Dwelling structures take two basic forms at this time. One, type A, is a rectangular semi-subterranean structure with a well-defined entrance passage, and a paved mid-passage feature. The other, type B, is a rectangular semi-subterranean structure with a rear wall expansion for cooking, and a basic mid-passage form with a cleared area on either side, but less well-defined than in Type A (Cox 1978:107).

In Newfoundland, where Middle Dorset is the only expression of Dorset culture, the material remains are much the same as in Labrador. Triangular, tip-fluted end-blades are common, as are unifacial and bifacial end-blades; multiple and single side-notched bifaces; microblade cores; unifacial, triangular end-scrapers; concave side-scrapers; ground and polished burin-like-tools; and rectangular soapstone vessels. Organic artifacts like sled runners, harpoon foreshafts, knife handles and harpoon heads are the same in both Newfoundland and Labrador (Jordan 1986:140-142). Dwelling structures take the basic semi-subterranean form known from Labrador, but have central stone lined pits instead of the paved axial feature. Most houses have one or more sleeping platforms (Harp 1976).

Unlike Labrador, where Ramah chert dominates the lithic assemblages, there appears to have been some regional variation in lithic raw material selection in Newfoundland, due to reliance on locally available materials. On the west coast of the island, Middle Dorset assemblages tend to be dominated by Cow Head and Port au Port cherts, with some Ramah chert, while on the northeast coast, blue/grey rhyolites are more common. On the south coast, chert from Trinity Bay seems to have been the preferred lithic material (Robbins 1986:121).

It has been suggested that the Dorset population expanded during the Middle phase of occupation because sites become more numerous, and are widespread from northern Labrador to the Hopedale area in central Labrador, and throughout the island of Newfoundland. Sites appear to be rare between Hopedale and Newfoundland, possibly due to a contemporaneous Indian occupation of that area (Fitzhugh 1980:599). The Middle Dorset period ends at about 1300 B.P. with a transition to Late Dorset in Labrador and the disappearance of Middle Dorset in Newfoundland. Like the Early to Middle transitional period, the Middle to Late transition (1300-1000 B.P.) is poorly understood due to a lack of sites dating to that time. Formerly widespread during the Middle period, the Late Dorset are known only from northern Labrador (Tuck and Fitzhugh 1986:166). Late Dorset material culture is characterized by bifacial flaked, untip-fluted, triangular end-blades with moderate to deeply concave bases; notched and stemmed bifaces; diagonal knives and scrapers; notched and stemmed flake knives; triangular or parallel sided end-scrapers; ground tabular burin-like-tools; ground schist; and round or oval soapstone vessels. Microblades are variable in size and decline in frequency from the Middle Dorset period. The preferred lithic raw material is Ramah chert. (Cox 1978:111). Houses are large and semi-subterranean, characterized by paved mid-passage features (Fitzhugh 1976:140) which may be marked by "upright parallel rows of boundary slabs with one or more hearths and a clear area on either side" (Cox 1878:111). The Late Dorset period ends around 650 B.P. with the arrival of the Thule in northern Labrador (Tuck and Fitzhugh 1986:166).

3.3 Middle Dorset Settlement and Subsistence in Labrador

The Middle Dorset occupation of Labrador seems to consist of a variety of site types, including seasonal settlements, quarries, caches, and interior special-purpose sites like caribou drives (Fitzhugh 1980:600). Based on site locations, faunal remains, house types and comparisons with the Historic Inuit seasonal round in the Okak area of Labrador, a pattern of resource exploitation has been suggested for the Dorset in a series of papers by Cox and Spiess (Cox 1977; Spiess 1978; Cox and Spiess 1980). In the Nain/Okak region of Labrador this proposed system involved fall and early winter settlement on the inner islands in semi-subterranean sod houses, for open water harp sealing, breathing hole sealing and walrus hunting (Cox 1977:320-321). These inner islands would have provided protection from the strong fall north westerly winds and moreover, their cover would have provided a good supply of fire wood (Cox and Spiess 1980:660). Mid- winter and spring settlement would have been in tent camps or semi-subterranean houses on the outer islands in order to hunt basking seals at the ice edge and harp seals during the ice break-up (Cox 1977:321). Summer activities are unclear, because unlike the historic Inuit, the Dorset appear not to have established summer camps in the inner bays for exploitation of terrestrial mammals and other bay resources like fish (Cox 1977:322).

Faunal evidence for such a cycle is marshalled by Spiess (1978) in his discussion of the faunal assemblage from the Middle Dorset inner island[4] site Koliktalik-1 (HdCg-2). Approximately 98% of the sample is small seal species, with a nearly fifty/fifty split between harp and ringed seal. Tooth sections from

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[4] These "inner island" sites are actually quite seaward, but they are sheltered from the sea by at least one row of "outer islands" (islands which face the open sea).

both species indicate fall and spring sealing activities. It is possible that the site was occupied from fall, through winter and into spring; however the relative absence in the sample of ice-edge species like walrus and bearded seal suggests that the site was abandoned during the winter (January through March) for more seaward outer islands located closer to the sina (ice edge) and then re-occupied during the late spring (Cox and Spiess 1980:660). One outer island site, on St. John Island (HeCf-1), produced a sample of seal and walrus bone, and has been interpreted as a winter/early spring camp used for hunting at the sina (Cox and Spiess 1980:660).

In extreme northern Labrador, faunal remains from coastal sites like Akulialuk (JeDe-6) on Cape Chidley, consist of large quantities of summer bird species and harp seal bone suggesting a summer/fall occupation (Cox and Spiess 1980:663). Outer Island sites like Avayalik-1 (JaDb-10) which have a good representation of summer bird species, in addition to a large percentage (35%) of walrus and ringed seal, were probably occupied from early winter into the summer. Tooth sections taken from samples in the Avayalik-1 midden indicate late winter, spring and summer occupation (Cox and Spiess 1980:665). Avayalik would have provided both easy access to the sina for hunting walrus and juvenile seals during the winter months, and open water resources (i.e., pelagic birds) during the summer.

In summary, one proposed settlement and subsistence system for the Dorset in the Nain/Okak area of Labrador involves settlement on inner islands in semi-subterranean houses for fall harp seal hunting and early winter ringed seal hunting. Mid-winter through to spring was spent on the outer islands possibly in sod, tent or snow houses, for ice-edge hunting of walrus and ringed seal. Spring would see a return to inner islands and fjords for a second harp seal hunt, although this may also have occurred at the outer island locations. Summer settlement activities in the Nain/Okak region are unclear.

The pattern for extreme northern Labrador is similar to that proposed for Nain and Okak with inner coastal locations used in the late summer for birding and the fall for harp seal hunting. These inner locations may also have afforded access to terrestrial resources like caribou and small fur bearing animals. Outer island locations were used in the winter for walrus and ringed seal hunting and in the spring and early summer for birding. Presumably harp seals could also have been taken from these locations in the spring.

Fitzhugh suggests (1980:598-590) that the physiographic and ecological variation in Labrador is so great as to preclude "broad regional generalizations on settlement patterns, subsistence strategies and even basic adaptations". Surveys indicate that the placement of Dorset sites along the mountainous, barren coastline of northern Labrador between Hebron and Cape Chidley essentially mimics the inner/outer island settlement pattern found in Nain and Okak to the south, with sites located located deep into and at the mouths of fjords (Fitzhugh 1980). However, there is some variation in settlement structure. For example, winter settlements in central Labrador tend to be dispersed, single dwelling sites, with minimal refuse debris suggesting short term occupation. In northern Labrador, winter settlements tend to be small, but multi-dwelling, with large external bone middens and thick house floor deposits suggesting a longer period of occupation through the winter and spring (Fitzhugh 1980:600). Outer island sites like Koliktalik-1 in central Labrador, which exhibit evidence of reflooring, may have been re-used annually during the fall seal hunting season (Fitzhugh 1976:130). Other outer island sites such as Nukasusutok-12 and No-Name Island just south of Nain may have been mid-winter camps (Cox and Spiess 1980) for ice-edge hunting of walrus and open water sealing (Sutton et al. 1981). They may also have been used in the late winter and early spring for hunting harp seals and basking seals during the break-up (Hood 1986:53).

3.4 Middle Dorset Settlement and Subsistence in Newfoundland

The Dorset settlement and subsistence pattern in Newfoundland is poorly understood. Seasonal cycles have been suggested mainly on the basis of site size and location, because in most areas bone preservation is poor to non-existent. Frequently, interpretations of exploitation patterns have been based on the faunal remains from Newfoundland sites like Phillip's Garden, or else on the Labrador sites. Given the differences in the species distribution on and around the island of Newfoundland, one might expect that the settlement and subsistence patterns would vary greatly from region to region (Pastore 1986, Robbins 1986, Jordan 1986). However, clear patterns of resource use have yet to be established due in part to the lack of bone preservation and in part to the small number of sites which have been extensively investigated. In an effort to summarize what various theories exist I will divide the island into three separate areas, after Robbins (1986): the south coast, the northeast coast and the west coast.

Most researchers agree that the primary economic pursuit of the Dorset in Newfoundland was seal hunting, mainly because seals are the only marine mammals available in great numbers and not as susceptible to population crashes like caribou (Tuck and Pastore 1985, Pastore 1986, Robbins 1986, Jordan 1986). On the south coast and around Trinity Bay harbour and grey seals are the most abundant seal species. In Placentia Bay, harbour seals congregate during the spring, summer and fall, providing an accessible source of food for anyone who might choose to live there. Dorset sites in this part of

Newfoundland are often located near beaches and sand bars upon which the harbour seals would have hauled out, suggesting a subsistence system directed toward the warm weather exploitation of those animals (Robbins 1986:122). This proposed summer seal hunting season may have been supplemented by some fishing and birding in addition to fall caribou hunting from sites like Stock Cove in Trinity Bay, (Tuck and Pastore 1985, Pastore 1985).

At the Beaches site (DeAk-1) in Bonavista Bay, northeastern Newfoundland, Carignan (1975) suggests that the unidentifiable seal bone recovered indicates a spring-summer-fall exploitation period, probably of harbour seals, although ringed, bearded and grey seals also occur in the area, as do harp and hooded seals. However, Carignan (1975:21) feels that the accessibility of harp and hooded seals would have been determined by wind conditions which would dictate whether or not pack ice was located miles out to sea or shoreward against the coast in Bonavista Bay. The implication here is that Dorset seal hunting was limited to warm weather exploitation of shore species (harbour, grey and bearded seal) on beaches and sand bars, and fortuitous pack ice hunting (harp and hooded seal) in late winter/early spring. This spring-summer-fall seal hunting period of shore species would have been supplemented by winter caribou hunting, which would have necessitated a move into the interior, probably along one of the river systems. The Pope's Point site (Deveraux 1969) located on the Exploits River may be an example of an interior Dorset caribou interception site.

Alternatively, it has been suggested that the primary resource for the Dorset in northeastern Newfoundland was the harp seal. Pastore (1986) has noted a concentration of large sites (1000 metres^2 or greater) on seaward locations adjacent to the harp seal herds' migration route. He suggests (1986:127) that the huge numbers of harp seal available on the northeast coast enabled the establishment of semi-permanent base camps at sites like Englee (EeBa-2). Hunting would have occurred primarily in the late winter and early spring as indicated by the presence of many juvenile seal bones at sites like Englee and site locations near the pack ice (Tuck and Pastore 1985:74). This suggests that open water sealing in the fall did not occur, possibly because that was the season for inland caribou hunting (Jordan 1986:139) or because open water hunting was not feasible. Extrapolating from faunal evidence on the west coast, most researchers suggest that fish and birds played only a minor role in the Dorset subsistence system in the northeast (Tuck and Pastore 1986; Pastore 1986; Jordan 1986; Robbins 1986).

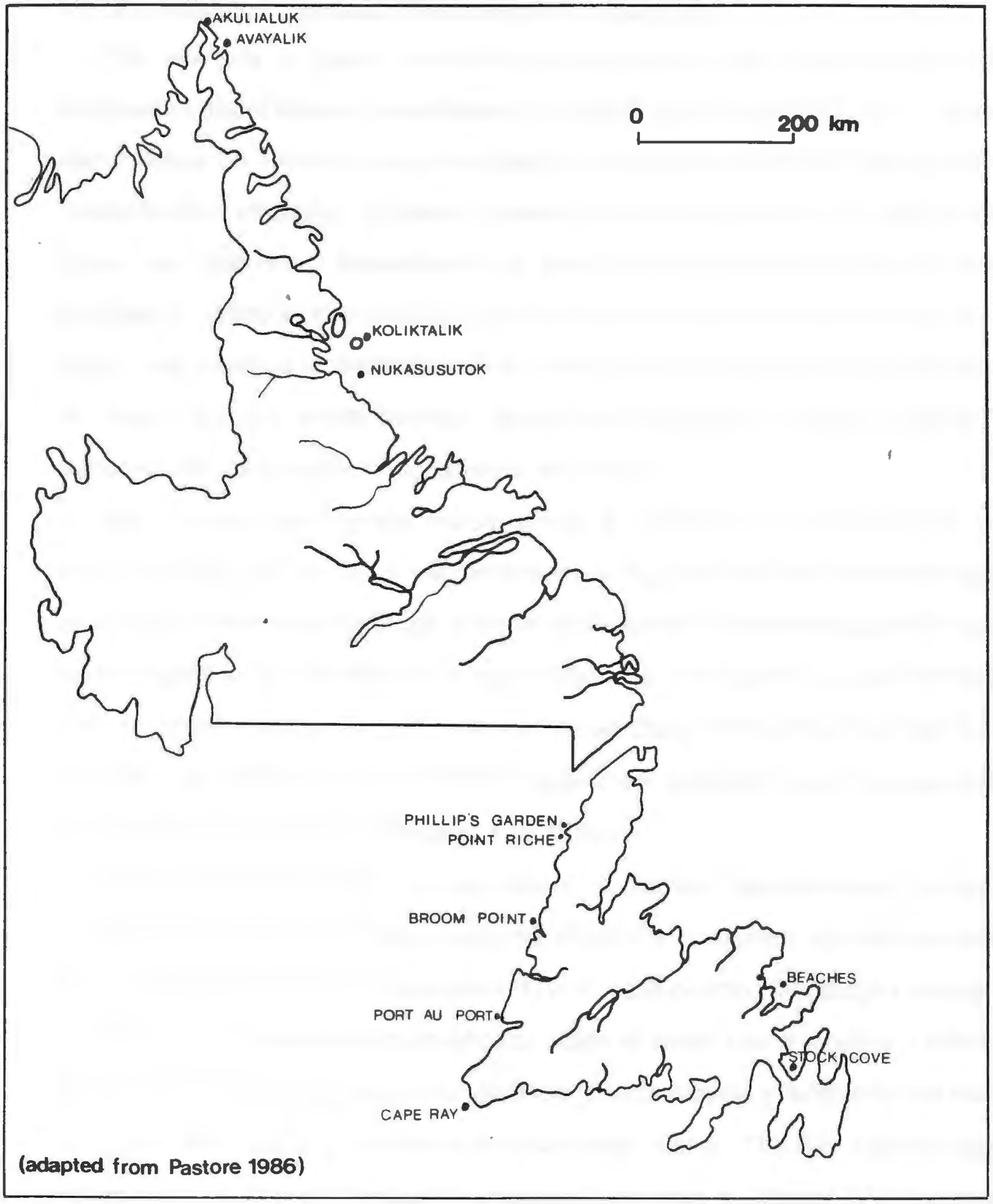
On the west coast, large sites like Cape Ray (CdBt-1), Phillip's Garden (EeBi-1) and Point Riche (EeBi-20) have been interpreted as either semi-permanent base camps re-occupied annually from fall through to spring for harp seal hunting (Jordan 1986, Tuck and Pastore 1985, Renouf 1991), or as permanent base camps which could have been occupied year round (Harp 1976; Renouf 1991) or else sporadically throughout the year (Renouf 1991). In either case, small, temporary camps may have been established in the interior for caribou hunting, birding and salmon fishing (Harp 1976, Jordan 1986). Jordan (1986), however, has ruled out salmon fishing because no Dorset sites have been located at the mouths of salmon rivers. Some small coastal sites have been interpreted as temporary special purpose camps. For example, Krol (1986) suggests that the Broom Point site functioned as a location for the manufacture of lithic tools from locally available cherts. Presumably this could be best accomplished from late spring through to early fall when chert sources were most accessible and subsistence would have been based on locally available summer seals (harbour and grey) and various fish resources (Krol 1986). Other small coastal sites, like the Port au Port site (Simpson 1987) have been interpreted (based on faunal remains of ringed seal, harbour seal, and caribou and murre) as summer base camps for marine mammal exploitation and locations from which forays into the highlands could be made. Possible mid-winter occupation of the Port au Port site is also indicated by the presence of harp seal, beaver and marten (Simpson 1987).

To summarize, Dorset settlement on the west coast of Newfoundland may have consisted of a series of large, multi-dwelling sites which could have been permanent year-round settlements utilized mainly for harp seal hunting in the late winter and early spring. Short trips from these large sites could have been made inland to hunt caribou in the fall, and down the coast in the summer to collect lithic materials. A second possibility is that these large settlements represent seasonal re-occupations and population aggregations during the harp seal hunt. Other, dispersed, sites could have been utilized from summer through fall for terrestrial and marine mammal hunting in addition to fishing and raw material procurement. A final possibility is that large sites like Phillip's Garden were utilized sporadically throughout the year for different purposes. For example some people may have spent the fall and winter at the site hunting harp seal on their southward migration and then moved inland to salmon rivers to take advantage of the spring salmon run. Other people may have utilized the site during the summer for harbour sealing and plant collecting and still others may have showed up for the spring harp seal hunt. People could have moved throughout the year in order to take advantage of different resources and Phillip's Garden may have been a multi-functional site depending upon the season. The question is then, does faunal and settlement evidence from

Phillip's Garden indicate which, if either, of these patterns most likely represents the Dorset occupation on the Point Riche peninsula and the northwest coast in general?

In this chapter I have outlined the Dorset occupation of Labrador and Newfoundland, focusing on material culture and different theories about Middle Dorset settlement and subsistence in both regions. In the following chapter, I will discuss the faunal sample from Feature 1, a semi-subteranean dwelling at Phillip's Garden, with specific references to quantification, species abundance and seasonality.

FIGURE 3.1
MIDDLE DORSET SITES
IN
LABRADOR AND NEWFOUNDLAND



(adapted from Pastore 1986)

CHAPTER 4

4.1 Quantification, Species Abundance and Seasonality

The analysis of faunal remains from archaeological sites can provide information about species abundance, estimates of occupation duration, human dependence on various resources, site and feature function and seasonality. Quantification of faunal materials allows comparison between samples (both intra- and inter-site), examination of past and present environments and analysis of variation in collection patterns (Klein and Cruz-Uribe 1984:24). But before any analysis is undertaken it is important to have a clear understanding of those factors which modify faunal assemblages, and the general assumptions upon which interpretations are based.

The primary assumption made about a collection of bones from an archaeological site is that it was intentionally accumulated by human beings and not by some other collector such as carnivorous or scavenging animals or by geological or water transport. In some locations, non-human sources of bone accumulation present real difficulties to researchers trying to define hominid activities as opposed to carnivore or scavenger activities (see for example Binford 1981; Brain 1981; Bunn and Krol 1986).

A second assumption made about a human accumulated faunal assemblage is that it reveals something about the behaviour of those people who produced it. Klein and Cruz-Uribe (1984) have defined five stages through which any faunal assemblage must pass, each of which has a modifying effect. Stage 1 is the life assemblage, for example, those species available in the Port au Choix area on a year round and seasonal basis. The life assemblage consists of individuals of all age groups and degrees of fitness. The second stage is the death assemblage. This consists of all carcasses available for collection by the human group and may include both scavenged and hunted individuals. Stage 3 is the deposited assemblage, that is those animal parts which are deposited at the site in question. Stage 4, the fossil assemblage, consists of those parts which survive until excavation and Stage 5 is the sample assemblage or those parts which are excavated. I would also add a Stage 6: quantification, or the means by which faunal assemblages are described, counted and manipulated. Except for stages 5 and 6 the archaeologist has no control over the modification of the bone sample. Humans may choose to exploit all or part of the death assemblage. They may choose to deposit all, part, or none of that assemblage on the site, and depending on local soil conditions, all, part, or none of the assemblage may preserve. Considering all the factors which affect an assemblage it must be stated that interpretation of human activities based on faunal remains should be treated with caution.

4.2 Quantification

The first goal of any study of faunal remains from an archaeological site is to determine the size of the sample, what portion of it is identifiable, and to obtain a general impression of the proportions of the various species within it. While there is a number of different techniques for this, the most commonly used are the Number of Identified Specimens method (NISP) and the Minimum Number of Individuals method (MNI). Both of these methods are used in this study, as is the Minimum Animal Units (MAU) method. Each is described and discussed below. However, before any of these techniques can be employed, the sample must be identified and sorted. Identification requires access to a good comparative collection of skeletal material in order that the bone fragments may be compared to specimens of known species and age. Once identification is complete, those fragments which cannot be identified to the taxonomic level lower than class are separated and counted. Usually these fragments receive no more attention, but occasionally they are used for studies of refuse distribution and site use (see for example Stahl and Zeidler 1990, and this thesis, Chapter 6). The bone fragments which remain are those which can be identified to a specific skeletal element (e.g., humerus) and species (e.g., harp seal) or family (seal family). These fragments are the data which are used to formulate estimates of species abundance through the NISP, MNI and MAU methods.

NISP is the simplest method of quantification. It merely involves adding the number of identifiable fragments for each species. The resultant numbers may then be expressed as raw counts or as percentages and are considered estimates of the relative abundance of species in the sample (Grayson 1984:96). It is important to realize that NISP is intended only to represent relative proportions of fragments per species within a sample. It is a simple method of quantification because it is easy to calculate and additive. This is important should the sample size increase through further excavation or through lumping of previously separated units. In addition NISP values are important because they indicate the sample size upon which MNI numbers are based.

There are several problems with the NISP technique. It is very sensitive to differential fragmentation and preservation and thus some species or elements which are more susceptible to fragmentation due to either cultural or post-depositional factors may be under- or over-represented in the NISP count (Klein and Cruz-Uribe 1984:25). For example, crania are very fragile elements and tend to break into many pieces. However a large number of those pieces like zygoma, palate, maxilla and teeth are easily recognized. Assuming that whole skeletons are present in the sample, the counting of each recognizable fragment of cranial bone could result in a disproportionately high number for that element category while other denser or more compact elements which are less likely to fragment (e.g., carpals) will be represented by low numbers. NISP also ignores variability in the number of skeletal elements (Klein and Cruz-Uribe 1984:25) which may cause animals that have a greater number of bones to appear more significant in the sample than animals with a fewer number of bones. The same is true for species which arrive at the site whole versus species whose carcasses or partial carcasses may be left elsewhere. In addition, the sample size may be inflated by the over-representation of those elements whose fragments are more readily recognized (Grayson 1984:23).

Perhaps the most commonly used method of quantification is MNI. This simply refers to the minimum number of individuals which can be determined per species within a faunal assemblage; i.e., "the number of individuals necessary to account for all the bones" (Klein and Cruz-Uribe 1984:26). There are several ways of calculating MNI. Chaplin (1971) suggests that each group of bones in the assemblage be sorted to element, each element identified to species, sided and paired and then MNI calculated for each species. This involves counting the number of bones represented in each element category. The maximum number of elements from either of the two sides will be the MNI, a conservative estimate of how many individuals are represented in the bone assemblage. The count can be increased by checking all like elements against one another for size and age (Chaplin 1971:71). For example, if an assemblage consisted of ten right femora and ten left femora (of the same species) the MNI count before aging and sizing would be ten. If aging and sizing were carried out, one might recognize that four of the left femora belonged to juvenile individuals while the remaining left and right femora belonged to adults. The four juvenile femora would be isolated as having no right partners and the MNI could be increased from ten to fourteen. Chaplin (1971:73) also suggests that metrical analysis to determine size difference between the bones could increase the MNI count.

MNI results are plagued by several problems. First and foremost there is a lack of consensus on the method of calculation. Many analysts do not perform aging and sizing on the sample. This means that results from different assemblages and different analysts may not be comparable. If an analyst chooses to measure bones in order to increase the MNI there is the problem of variability in technique which may result in different measurements for the same aspect of a single bone. Should this problem of inconsistency be overcome there is still the issue of the degree of difference in the measurement of two bones; i.e., how much larger or smaller must one bone be than another to be considered a different individual?

Aging of animal bones presents another problem, particularly for the analyst working with a sample of non-domesticated species. There are few aging data for non-domesticated species and therefore the number of animals that can be aged with any degree of accuracy is very small. Aging some animals and not others would result in a biased representation, increasing MNI figures for those species which could be aged while counts for unageable species would remain low.

There is disagreement over the treatment of complete bones in the MNI calculation (Klein and Cruz-Uribe 1984:26). By choosing to count only complete bones, an analyst will deflate the MNI figure. Furthermore, counting only whole bones will also decreases the sample size, which tends to exaggerate the importance of rare species (Grayson 1978:54). Sample size is a problem for MNI calculations in any event. As Grayson (1978, 1984) points out, a species represented by one element will have an MNI of one, while a species represented by as many as twelve or more bones may also have an MNI of one. The MNI figures would indicate that those two species are equally represented in the assemblage when in fact the opposite is true.

Other important considerations include the calculation of MNI based on logical spatial units. For example, while arbitrary units such as one metre squares are suitable for excavation, they are not suitable for computation of MNI numbers. Computing MNI for each one metre unit may result in misleading figures, by creating many small samples which will in turn exaggerate the importance of poorly represented species (Grayson 1978:54). In addition, the analysis of faunal material based on arbitrary units will also mask real associations within the site, and not allow the recognition of separate features. For example, there may be ten caribou elements representing two individuals within a midden area which has been divided into ten one metre^2 units for excavation purposes. If the analyst calculates MNI for each unit the count could conceivably be as high as ten, while computing MNI for the midden area as a single unit would result in a count of two individuals. Although few or no analysts would make this obvious a mistake, they may indeed make less obvious versions of it. In other words, faunal assemblages must be defined on the basis of significant provenience.

It should also be noted that the MNI result is based on the assumption that the entire animal was present in the deposit or on the site, and this need not be the case. For example, many hunter-gathers may utilize or transport and deposit partial carcasses depending upon their needs (see for example Yellen 1978).

This means that the MNI results do not reflect either the life or death assemblage but merely the number of individuals identifiable within the sample. Grayson (1984:28) suggests that this is not really a problem if MNI numbers are viewed simply as a comparison of the most frequently represented elements, which, in turn, provides an estimate of the relative occurrence of species within the sample.

Many of the problems with MNI can be corrected. In order to overcome the difficulties associated with arbitrary excavation units and small sample size MNI should be calculated for logical units like single house features or isolated midden deposits (Grayson 1984:66). This will enable inter- and intra-site comparisons.

MNI should always be presented in conjunction with NISP as there is a mathematical relationship between the two indices. For example, Grayson (1978) has noted that as NISP counts increase so do MNI counts. However, the rate of MNI increase slows as the NISP continues to climb. Presenting the MNI and NISP results together will allow the recognition of those species which may be over-represented due to small sample size. Grayson suggests that the problem of small sample size can be compensated for by dividing bone samples into "clusters of taxa" (animal families, or small mammal, large mammal groups), and "clusters of similar sample size", the constituents of which would be comparable with each other but not to other clusters (Grayson 1978:60). This method would be useful only for intra-sample comparisons. It has been suggested that if the rank order of species representation is the same for both MNI and NISP other phases of analysis can proceed without concern for the effect the choice of measurement may have had (Grayson 1984:07).

MAU or Minimum Animal Units is very similar to MNI; however it is simpler to calculate because it merely involves adding up the total for each skeletal element per species and dividing it by the number of times that the element appears in the the animal. The element which is most highly represented will provide the MAU figure for each species (Binford 1978). This method suffers from all of the same problems as MNI, (sample size, aggregation units etc.) and because aging and siding are not performed, this method tends to underestimate the number of individuals. However, this is not a problem as long as comparisons are amongst consistently calculated MAUs. The MAU method was included in this study simply as a third measure of abundance, and as a further means of substantiating the results of NISP and MNI calculations.

4.3 Species Abundance and Implications

The faunal sample used in this analysis was excavated from the following one $metre^2$ units within a house, Feature 1: E80 N00-N07[5]; E81 N00-N07; E82 N00-N07; E83 N00-N07; E84 N00-N07; E85 N00-N07; and E86 N00-N07. This encompasses the north wall and platform, the east and west walls, the central depression and the rear (southern) platform (Figure 4.1). Materials from the southern wall and from pit Features 11 and 13 are not included in this study because this area was highly disturbed and was never clearly defined (Renouf pers. comm.). There is no evidence of carnivore or scavenger activity in the form of gnaw marks, nor is there any indication that geological processes might be responsible for the large accumulations of bone at the site. Furthermore, the bone used in the study comes from a semi-subterranean house feature which is clearly the product of human activity.

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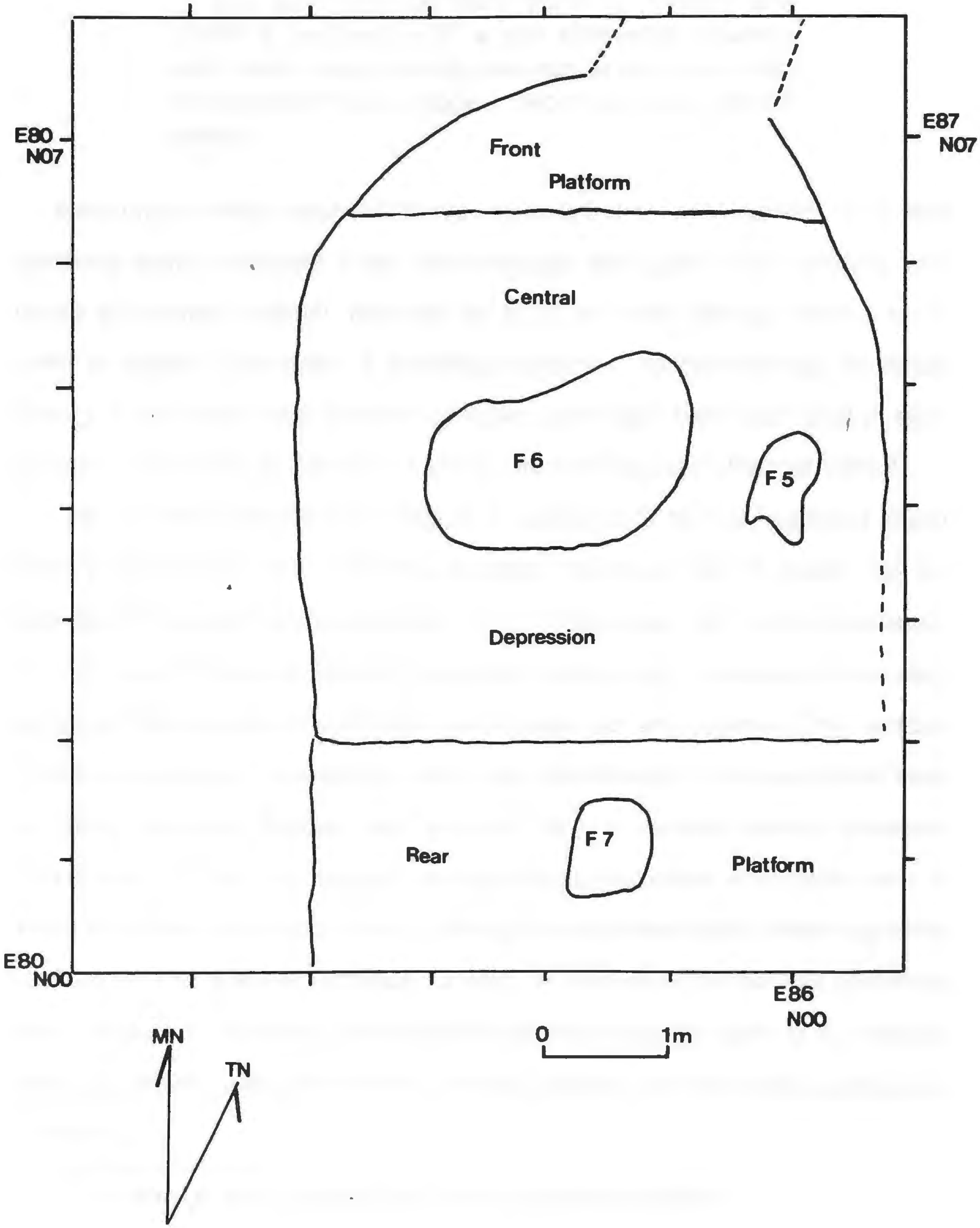
[5] Units are named from the southwest corner.

FIGURE 4.1
PLAN OF FEATURE 1



Excavation of Feature 1 proceeded in the following manner:

> sod was removed from 85m^2 of 7A283[6] and 7A284 in preparation for a plan excavation whereby each level would be fully exposed at one time, then photographed and mapped before removal (Renouf 1986:3).

Excavation within each level was conducted in one metre^2 units and "artifacts were measured three dimensionally and given a lot number, and flakes and faunal material, recorded by level and unit" (Renouf 1986:3-4). In order to obtain as complete a sample as possible, "all backdirt was screened through 3 mm mesh" and "flotation samples were taken from each level of each square in a north-south transect as well as from all features" (Renouf 1986:4).

The total bone sample from Feature 1 consisted of 18,452 fragments which were processed in the following manner: fragments which could not be assigned to a taxonomic level beyond that of Class (e.g., fish, bird or mammal), nor to a specific skeletal element or portion thereof (e.g., humerus, fibula etc.) were considered unidentifiable and were sorted out and counted. The number of bone fragments in the sample which were identifiable to the taxonomic level of Family, Genus or Species, was 3,058, or 16%, of the total number of bones. This is the NISP for the sample and all other calculations are based upon it. Table 4.1 shows the breakdown of identifiable to unidentifiable bone fragments for Feature 1 as a whole, and then for each of the smaller pit features contained within Feature 1. This table simply illustrates that a large majority of the sample was fragmentary and unidentifiable. Possible reasons for this will be explored in Chapter 5.

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[6] This refers to the Canadian-Parks Service provenience system.

The numbers given for Feature 1 always include the contents of the pit features, while the numbers given for each pit feature reflect only the contents of that feature.

Table 4.1

Description of Sample

Feature	Sample Size	Bone Identified to Class Only	Bone Identified to Family/Genus
Feature 1	18,452	15,344	3,058
Feature 5	1,731	1,558	173
Feature 6	1,581	1,384	197
Feature 7	783	706	77

The sums of the various animal classes were calculated in order to give a general impression of the ratio of different animal groups. Table 4.2 shows the breakdown of the sample into animal classes. These figures include both unidentifiable and identifiable bone fragments. The sample contained no amphibian, reptile, or mollusc fragments.

Table 4.2

Breakdown of Sample by Class

Feature	Fish	Bird	Mammal	Total
Feature 1	76	16	18,360	18,452
Feature 5	40	2	1,689	1,731
Feature 6	7	1	1,573	1,581
Feature 7	10	0	773	783

Table 4.3 shows the breakdown of the 3,058 bone fragments identifiable to the taxonomic level of Family or better according to class. The mammal class has been divided into land mammal and sea mammal. Seal is the only animal family represented in the sea mammal category.

Table 4.3
Breakdown of Sample Identified to
Taxonomic Level of Family or Genus

Feature	Fish	Bird	Land Mammal	Sea Mammal	Total
Feature 1	7	7	5	3,039	3,058
Feature 5	4	0	1	168	173
Feature 6	1	0	1	195	197
Feature 7	0	0	1	76	77

The emerging pattern indicates that seal is the most abundant animal group present in the sample. This is more clearly illustrated by the NISP, MNI and MAU figures which are presented together below in Table 4.4. All three methods give the same rank order of species abundance. The method for determining the MNI was as follows: for each species the number of bones in each element category was counted, and sided, and the element with the maximum representation was used to determine the MNI number. As suggested by Chaplin (1971:71) the MNI counts were increased by taking into consideration the age category of each bone. Age classification was made on the basis of epiphyseal fusion, the presence of juvenile bone cortex and the degree of bone character development. The age categories apply only to the bone itself, and following Balkwill (pers comm.) were determined using the following criteria:

Juvenile :	epiphyses unfused; underdeveloped morphological features; porous juvenile cortex.
Immature:	epiphysis unfused; juvenile cortex absent or present only around the margin of the epiphyses.
Immature Plus:	epiphyses partially fused, with fusion lines visible.
Adult:	epiphyses fully fused, fusion lines not visible.

The fourteen species listed in Table 4.4 are the only species identified in the faunal sample. It is clear that the proportion of seals is much greater than any other animal group, including fish and birds. Harp seal ranks number one and all other species are represented by negligible amounts.

Table 4.4

Phillip's Garden - Feature I

Species List with NISP, MNI and MAU Totals

Scientific Name	Common Name	NISP	MNI	MAU
Gadus morhua	atlantic cod	7	2	1
Somateria/ Melanitta	eider/scoter	4	1	1
Larus marinus	great black backed gull	1	1	1
Castor canadensis	beaver	2	1	1
Microtus pennsylvanicus	meadow vole	1	1	1
Canidae	wolf, arctic or red fox	1	1	1
Erignathus barbatus	bearded seal	8	1	1
Halichoerus grypus	grey seal	4	1	1
Phoca groenlandica	harp seal	178	28	31
Phoca vitulina	harbour seal	2	1	1
Cystophora cristata	hooded seal	2	1	1
Rangifer tarandus	caribou	3	1	1
	Total	213	40	42

Unfortunately most of the elements in a seal skeleton cannot be identified to species because they are not morphologically unique. Those elements by which species can be distinguished are the mandible, teeth, palate, humerus, and ulna. Thus a large amount of the bone in this assemblage could only be assigned to the family Phocidae. In order to give a more accurate representation of the proportion of seal, Table 4.5 shows the various species grouped by Family and their corresponding NISP numbers.

Table 4.5

Phillip's Garden - Feature 1
NISP for Each Animal Family

Animal Family	Common Name	NISP
Gadidae (Gadus morhua)	atlantic cod	7
Anatidae (Somateria/Melanitta)	eider/scoter	4
Laridae	gull	3
Castoridae	beaver	2
Cricetidae (Microtus pennsylvanicus)	meadow vole	1
Canidae	wolf, arctic or red fox	1
Phocidae	seal	3,039
Cervidae (Rangifer tarandus)	caribou	2
	Total NISP	3,058

There are several possible explanations for the overwhelming majority of sea mammal bone in the assemblage: 1) terrestrial mammals, fish and avian resources were exploited but did not preserve; 2) marine mammals were exploited almost exclusively by the occupants of Feature 1; 3) terrestrial mammals, fish and avian resources were exploited but not deposited in this house; 4) terrestrial mammals, fish and avian resources were exploited but not at this site.

4.3.1 Possibility 1

The topsoil at Phillip's Garden is underlain by a limestone beach. Limestone creates an alkaline soil environment suitable for minimal bone destruction (Davis 1987:27). The excellent state of bone preservation at the site has been commented on many times (Wintemberg 1939, Harp 1964, 1976, Renouf 1985) and is attested to by the presence of some very small and fragile fish bones in perfect condition. It is assumed then, that the species representation is not due differential preservation caused by geological conditions.

4.3.2 Possibility 2

It has been established that the Port au Choix ecosystem could have supplied any human group with a wide variety of animal resources. The minimal amounts of non-seal bone in the sample suggest that the Dorset were aware of and capable of exploiting those other resources; therefore it may be that that this sample is not representative of the full range and proportions of species exploited because it comes from only a single dwelling. Bearing in mind that the two samples were subjected to different methods of excavation, identification and quantification, it is interesting to note that the species proportions from Feature 1 are nearly identical to the sample excavated by Harp from House 4. That assemblage consisted of 98% harp seal and 2% caribou, fox, beaver, migratory waterfowl and fish (Harp 1976). Midden samples from Phillip's Garden exhibit a similar proportion of seal but a wider range of bird and fish species. For example, Table 4.6 compares a sample of bone from Feature 49, a midden in the southwest part of the site, and Feature 2, a midden in the east part of the site, to Feature 1. Feature 1 and 49 are nearly identical in size and in composition, with the exception of a greater amount of duck and the absence of fish from Feature 49. Feature 2 is much larger than either of the other two features and it contains a a much wider variety of bird and fish species. While it appears as though there are no large seals present in the midden samples, this is misleading. I have lumped all fragments which were identified as grey/harp, harbour/ringed, harbour/harp, harp/ringed and bearded/hooded from Features 2 and 49 into the Phocidae group as those distinctions were not made for fragments from Feature 1. The breakdown of those specimens identified to one of two species is shown in Table 4.7. The large seals in both samples are represented by very low numbers, in all cases, less than 10 fragments.

Table 4.6

Comparison of Species Proportions: Features 1, 2, and 49

Common Name	F1	F2[7]	F49[8]
atlantic cod	7	3	0
atlantic/Greenland cod	0	3	0
right eye flounder	0	0	4
smooth flounder	0	24	0
halibut	0	9	0
cunner	0	27	0
eider/scoter	4	36	28
common/king eider	0	52	4
white winged scoter	0	6	1
Canada goose	0	2	0
duck	0	108	27
willow/rock ptarmigan	0	1	0
great black backed gull	1	12	1
black backed/glaucous gull	0	5	0

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[7] This material was identified by D. Balkwill, of the Zooarchaeological Identification Centre, Canadian Museum of Nature.

[8] This material was identified by D. Balkwill, of the Zooarchaeological Identification Centre, Canadian Museum of Nature.

Common Name	F1	F2	F49
herring/glaucous gull	0	1	0
herring gull	0	3	0
herring/ringed bill gull	0	3	0
gull	2	42	1
dovkie	0	3	0
common raven	0	8	0
great auk	0	5	1
beaver	2	5	0
meadow Vole	1		0
wolf, arctic or red fox	1		17
arctic/red fox	0	47	0
red fox	0	4	0
bearded seal	8	6	3
grey seal	4	0	0
harp seal	178	157	86
harbour seal	2	0	0
hooded seal	2	0	0
seal family	3,039	11,418	3,258
caribou	2	8	0

Table 4.7

Features 2 and 49

NISP of Fragments Identified to One of Two Species

Species	F2	F49
grey/harp seal	178	8
harp/harbour	1	0
harbour/ringed seal	3	2
harp/ringed seal	18	12
bearded/hooded seal	0	1

The similarities between the proportion of seal in these three samples of bone, all from different contexts and different parts of the site, but all dating to the Dorset occupation suggest that Feature 1 is indeed a representative sample of bone and that seal were exploited almost exclusively by the inhabitants.

4.3.3 Possibility 3

The third possibility is that Phillip's Garden was occupied sporadically throughout the year for specific purposes (Renouf 1991). For example, some people might come to the site in the early winter to take advantage of the harp seal on their southern migration. Depending upon the success of this hunt, people may or may not have stayed at the site until the spring. A successful December hunt might allow people to travel elsewhere for other purposes, or to remain at the site through the relatively lean period in January and early February. One might expect that larger groups would congregate at the site for the northward migration of the harp seal in the spring because the seals are clustered more tightly at this time, and easy to hunt on the ice. As well, large numbers of hooded seals are also available. Others may have used the site in the summer for hunting harbour and grey seals, as well as for collecting various plant resources, fishing and birding. This type of seasonal use of the site should be reflected in the variety of dwelling types and the specific faunal remains. For example, Feature 1 could be a seasonally specific dwelling. If this were the case, one would expect to find different types of faunal remains in different dwelling structures and seasonally specific midden deposits.

4.3.4 Possibility 4

Phillip's Garden may represent a camp utilized almost exclusively for the hunting of harp and other seal species. Thus occupation of Feature 1 would have occurred primarily in the winter and spring. Alternative resources would have been exploited from other locations in the summer and fall, perhaps fishing and caribou hunting supplemented by small game hunting. Krol (1987) has suggested that the Broom Point site may have functioned as just such a camp for lithic extraction and hunting. In such a settlement system one might expect that Phillip's Garden would have been re-occupied annually in the winter and spring when substantial shelters would have been required in order to live comfortably. This could explain the extensive cultural debris and numerous semi-subterranean dwelling features at the site.

Alternatively, Phillip's Garden may represent a year-round settlement, at which the primary activity was the hunting of harp seals in the winter and spring. Year round occupation of Feature 1 could have been maintained through the use of storage, and stored goods could have been supplemented by the hunting of small game, caribou, birds, and some fishing. In addition edible plants could have been collected during the summer. Smaller sites like Broom Point may have functioned as satellite camps for the procurement of goods which were not available in the immediate area (i.e., lithics and terrestrial mammals).

Before either of these suggestions can be fully explored it is necessary to look at the seasonal indicators in the faunal material. This discussion is based primarily on the bone recovered from Feature 1.

4.4 Seasonality

Five species of seal were identified in Feature 1. It is important to bear in mind that the fragment count for all seal species is conceivably much higher than the numbers would indicate, but the difficulty in distinguishing species probably masks this. However, since all species in the family Phocidae are equally difficult to identify, the relative proportions discussed below are probably accurate. Harp seal dominates the assemblage at 178 fragments or 28 individuals, followed by bearded seal, grey seal, harbour seal and hooded seal. The number of fragments which were identified to seal family (Phocidae) was 3,040, or 99% of the sample.

The harp identified in the sample included auditory bullae (75 fragments), mandibles (22 fragments), humeri (21 fragments), ulnae (18 fragments) and bacula (two complete). The MNI number is based on a count of auditory bullae.

As discussed in Chapter 2, harp seals migrate past the Point Riche peninsula twice during the year. Once in the early winter (mid-December), just ahead of the advancing pack ice, and once in the late winter/early spring (late March/early April) following the retreating pack ice. During the December migration the herd consists of adults and immatures swimming in scattered groups, with immatures lagging behind adults by about one month. On the northward migration in the spring, the females and new pups are found on the pack ice. Small groups of immatures (both sexes) and males are also present on the ice. If hunting occurred from Phillip's Garden in December, it would have to have been from boats in the open water, while spring hunting could have been conducted from the edge of and/or on the pack ice. It has been suggested that most of the Dorset sealing in Newfoundland occurred during the spring (Pastore 1986; Jordan 1986; Tuck and Pastore 1985) because the harps are hauled out and by inference easier to hunt. However, open water seal hunting is not unknown amongst northern hunter-gatherers. For example, the Inuit of southwest Greenland would hunt seals from kayaks in open water using throwing harpoons (Balikci 1970:xvi). Good arguments have been made for sina hunting and open water hunting in Labrador, and given the close connection between the two Dorset populations there is no logical reason to assume that these hunting techniques were not practiced in Newfoundland or that a December hunt did not occur.

Some authors have argued that a high proportion of juvenile[9] individuals indicates a spring hunt (see Tuck and Pastore 1985). Of the 3,040 fragments identified as seal from Feature 1, only 32 belonged to juvenile animals. There was one juvenile zygomatic bone, one humerus, one radius, two metacarpals, fifteen phalanges (one belonging to either a hooded or a bearded seal), two ribs, one ischium, two femora, three fibulae, one tarsal and two metatarsals. Based on the one phalanx which is extremely large, and unlikely to belong to any of the small or medium seal species, I have calculated an MNI of two for juvenile seals. The three fibula fragments are all from a left element and could easily belong to the same individual. It is not possible to identify any of these bones to species; however, because the majority of identifiable seal in the sample is harp I believe it is not unreasonable to assume that the majority of juvenile seal is also harp.

There are several possible explanations for the dominance of subadult and adult animals in the sample. The first is that hunting occurred in the spring and juvenile seals were killed but their remains were not deposited in this house. Perhaps the pups were skinned and butchered on the ice and their skeletal elements were not brought back to Feature 1. Alternatively the pups could have been brought back but deposited in other features such as middens. Another

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[9] The term juvenile here refers to individuals seals which are new borns, white coats and ragged-jackets. Ragged-jackets are white coats which are beginning to moult. The identification of juvenile individuals in a faunal sample is based on comparisons of bone size and morphology with seal pups of known age.

possibility is that the seals were hunted in the spring and that pups were not selected for some cultural reason. Perhaps pups were not hunted because when compared to larger, subadult or adult individuals they were not considered as worthwhile, either in terms of nutritional or hide value. A larger seal would provide more meat, more blubber, and a bigger hide for only a slightly greater effort in transportation.

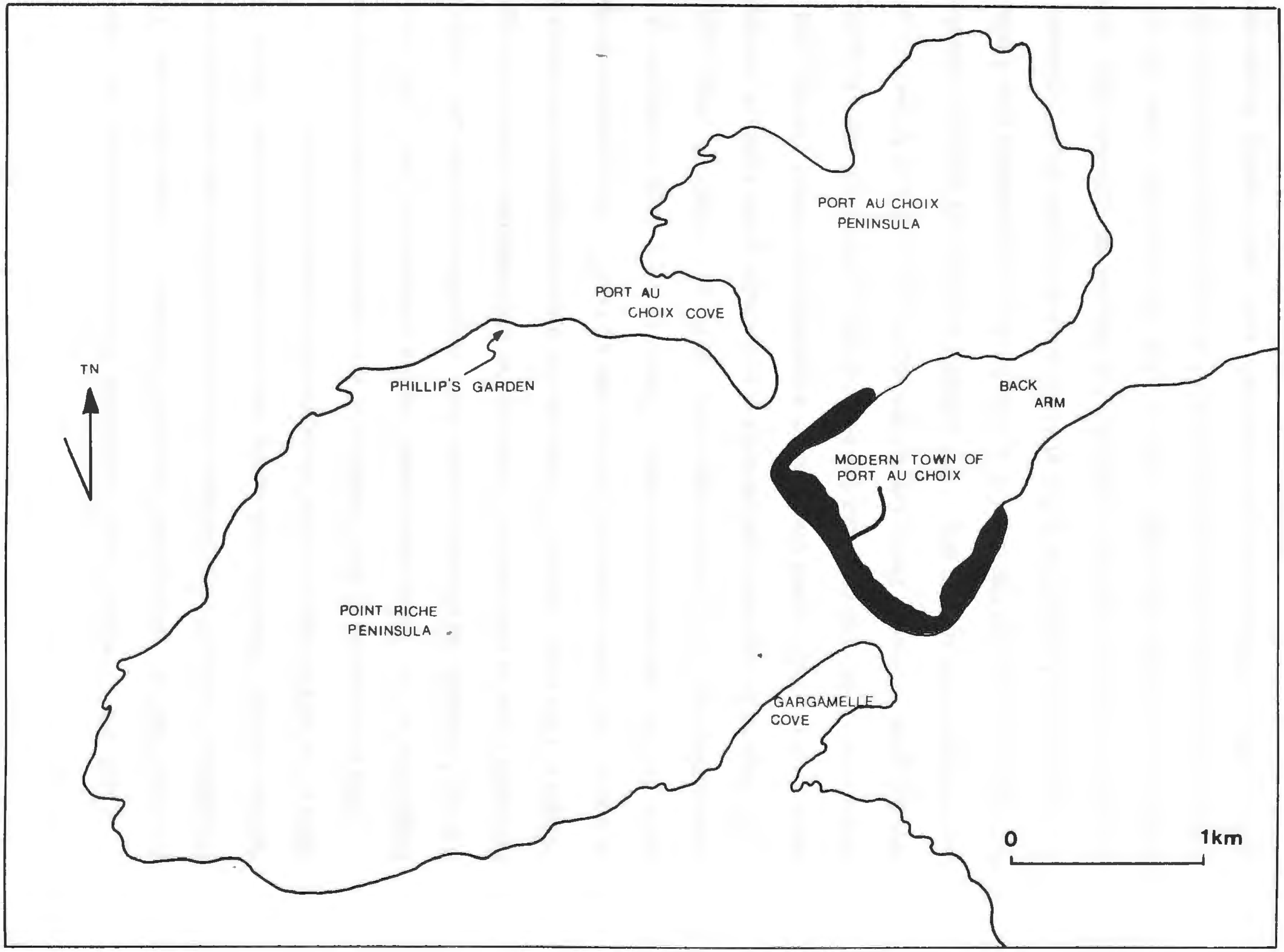
The final possibility is that the contents of Feature 1 represent a December harp seal hunt. The dominance of immature and adult seals in the sample is suggestive of a kill during the December migration especially since other deposits at Phillip's Garden tend to have a good representation of juvenile seal bone (Renouf pers. comm.), suggesting that pups were selected when available.

Hooded seals appear in the vicinity of Port au Choix with the harps in the winter and spring, during which time they whelp on the pack ice. The identification of hooded seal here is based on a single phalanx. A few fragments of bone identified as hooded seal were found in Feature 49 (see above) and hooded seal is known from the nearby Groswater Palaeoeskimo site Phillip's Garden East (EeBi-1) (Renouf 1991:41), indicating that the species was available for exploitation in the area. Hooded seal most probably would have been killed with the harp; however, because it is a very large animal, one might expect that it would be butchered into smaller packages before bringing it back to the site. This could account for the presence of only a flipper element here.

Grey seal is represented by four fragments, all of which are teeth from an adult animal, one or more than one individual. Grey seals would have been most common in the Port au Choix area from early spring through summer and into the early fall. If this seal represents a late spring or summer kill, it may be that it was not butchered inside the house. This would be a warmer time of year, and butchery outside would not have been uncomfortably cold. In this situation the large majority of skeletal remains could have been deposited outside, perhaps in a midden. Alternatively, a summer killed seal would be more difficult to transport because of the lack of snow upon which sleds could be easily hauled. In this situation, a seal might be butchered closer to, or at, the kill spot, and only desirable portions brought back to the main dwelling (i.e., meat, blubber and hide minus the skeletal material). The teeth may have been saved for the making of amulets and pendants. Harp (1969) notes that a number of perforated seal canines were recovered from other house features at Phillip's Garden and it may be that those species which were less common than harp seals were preferred for that purpose. It is also possible that because grey seals have larger teeth than harp and harbour seals, they would have made better pendants.

There are two fragments of bone which have been positively identified as harbour seal, one humerus and one auditory bulla, representing one individual. It has been suggested that harbour seals are most abundant and most easily hunted in the late spring and summer when they are pupping and hauled out on the shore or sand bars to bask in the sun (Robbins 1986). The most likely areas for procurement of harbour seals would be the Back Arm, Port au Choix cove, or Gargamelle cove (Figure 4.2). Again, one might assume the same principles of transportation would apply here as to the summer killed grey seals, thus explaining the lack of harbour seal skeletal material inside of Feature 1.

FIGURE 4.2
LOCATIONS FOR HARBOUR SEAL



There are, however, some indications of spring occupation. For example, bearded seal is represented by eight fragments or one individual. These fragments included five phalanges, one auditory bulla, one mandible and one carpal, all adult. Bearded seal would have been available in the Port au Choix area in the late spring and some stragglers into the early summer.

Only one species of fish, Atlantic cod, was identified, in the amount of seven fragments or two individuals based on the presence of two right quadrate bones. However, all elements come from large fish, for example, a left post temporal bone is comparable in size to the same element from a 9.5 kg cod caught in Red Bay, Labrador[10], and the two premaxilla bones are comparable in size to the same elements from a nine kg cod[11]. The presence of these large fish is somewhat surprising. There is very little evidence of fish exploitation from other Dorset sites (Cox 1977), so it might be presumed that these fragments represent the remains of bird meals or the stomach contents of seals. During 1990 I spent the summer excavating at Phillip's Garden, and was able to collect several cod from the surface of the site which were dropped by feeding gulls. However, these fish all ranged in size from one to two kg, and it seems highly unlikely that any of the resident bird species would be capable of transporting even just the head of a nine kg cod. It is possible that these fish fragments arrived at the site in the stomach of one or more seals; however, the primary food of the harp seal is capelin, the hooded seal prefers spiny redfish, halibut and squid (Sergeant 1985:4), the harbour and grey seals are opportunistic eaters, feeding on a variety of species, including some small cod (Beck 1983A, 1983B) and the bearded seal eats mainly crustaceans.

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[10] Zooarchaeological Identification Centre reference specimen NMC 77210.

[11] Zooarchaeological Identification Centre reference specimen NMC 77250.

Furthermore, none of these elements shows any evidence of etching or pitting, signs which are commonly taken as indications of digestion (Davis 1987:27). Because the sample is so small, it is impossible to make any definitive statement about Dorset cod fishing. If fishing occurred, it could have taken place inshore during the summer, possibly with nets or hook and line. The lack of evidence for fishing from other sites may be due to poor recovery techniques or poor preservation and the failure to identify artifacts as fishing implements. I suspect that fishing at Phillip's Garden may have played a greater role than can be substantiated here. For example, I identified fifteen cod elements from square E80:S02, a small section of a disturbed area which Renouf (pers. comm.) has interpreted as back dirt from one of Harp's excavations. Cod elements, along with sculpin, flounder, cunner, and halibut, have also been identified in a midden, Feature 2, (Balkwill pers. comm.). In addition, large fish vertebrae were noted during the 1990 excavation of trenches around Features 1 and 14 (Renouf pers. comm). Future analyses of faunal remains from the site should shed some light on this issue.

Four fragments of bone were identified as eider/scoter, both of which are migratory, salt water ducks. Unfortunately a species identification was not possible because these birds are osteologically difficult to distinguish and are represented here by incomplete elements which included one coracoid, one humerus, one scapula and one tibiotarsus. Eiders have long been of importance to various groups of people living in the coastal areas of the north, providing a source of meat, eggs, skin, feathers and nest down. The Inuit of the Belcher Islands used eider skins to make parkas and pants, and the down to stuff the lining of clothes and sleeping cloths (Reed 1986:138). In addition, duck could have been an alternative source of meat to seal and caribou. For example, eider provide between one and three percent of the wild food for Inuit groups in northern Quebec (Reed 1986:144). Both eiders and scoters are winter residents in Newfoundland, arriving during the fall and staying throughout until spring when they migrate north to nest (Reed 1986).

The great black backed gull (Larus marinus) is represented by one fragment, a tarsometatarsus. It is a year round resident in the Port au Choix area, and could have been utilized for food, eggs and/or feathers.

Beaver is represented here by two incisors. These animals are available year round but are perhaps most desirable in the winter when they are in their lodges. Fur is prime at this time, and the animals are carrying a good layer of fat. There are many examples of winter beaver hunting in the ethnographic literature (see for example Tanner 1979) and it is not improbable that the Dorset would have supplemented the early winter seal hunt with a small amount of mid-winter beaver trapping. A second possibility is that the beaver were sought simply for their incisors, which could have been used as tools of some sort or decorative objects. Harp reports the presence of several worked beaver incisors from an infant burial in House 12 at Phillips Garden. These incisors were perforated with one or two holes and Harp suggested that they were meant to hang as amulets or perhaps be sewn onto clothing (Harp 1969:119). It is possible that the two incisors from Feature 1 were set aside for a similar purpose.

A single meadow vole incisor was recovered in the sample. It seems unlikely that this tiny animal was a subsistence species, although the possibility can not be ruled out. However, since the vole is a burrowing creature, which prefers grassy meadows, and Feature 1 is located in just such an area, it seems more likely that its presence here is due to post-occupational activity than to human action.

One molar was identified as belonging to the family Canidae. This could be either wolf, or arctic or red fox. Domestic dog is highly unlikely as there are no known examples of dog in a Dorset context. I was unable to further refine the identification to species because of limitations of the comparative collection to which I had access.

Finally, there are two pieces of caribou bone, both phalanges. The minimal amount of caribou bone at the site is somewhat strange, given the excellent conditions for its preservation and the fact that it is the only land mammal which would have been available in great numbers at regular times of the year. It is possible that caribou is simply located elsewhere on the site and in an effort to test this possibility Renouf sampled several midden deposits, but with little success (Renouf 1991:43). The possibility exists that caribou was exploited only on a minimal basis. Nowhere in Newfoundland and Labrador is there evidence of large scale exploitation of caribou by the Dorset and there are only two Dorset sites in these regions which can genuinely be considered caribou interception sites. These are the Pope's Point site on the Exploits River in central Newfoundland (Deveraux 1969) and the Dorset caribou fence at Williams Harbour in northern Labrador (Fitzhugh 1978). It may be that because archaeological surveys have concentrated on coastal areas, interior caribou hunting sites have not yet been discovered. However, the William's Harbour caribou fence is a coastal site, suggesting that if large scale caribou hunting occurred in Labrador, it did so close to the areas of Dorset settlement. "Such a coastal hunting location would have been a great advantage for Dorset hunters, whose small sleds and lack of dogs would have discouraged their zeal for hauling meat from distant interior hunting sites" (Fitzhugh 1978:205).

In Newfoundland, the Pope's Point site (Deveraux 1969) and the Long

Pond site (Penney 1980), both well documented interior Dorset sites, are located on salmon rivers, quite some distance inland, probably at spawning pools. A third interior site, Triton Brook-1 on Gambo Pond is also well placed for fishing (Schwarz 1991). This does not mean that caribou were not hunted from these sites, but simply that there is more than one explanation for their locations.

If the Dorset were hunting caribou in the Port au Choix area, they could have travelled inland to the Long Range Mountains to do so in the late fall. This is the time when caribou fur is in its best condition, and they are bearing the most amount of fat. Hunting could have been accomplished from small, temporary camps established along the west side of the Long Range Mountains. If, as is generally believed, the Dorset did not have dogs and had to transport all this material overland themselves, one might expect that only the hides, and most meaty portions of the animal would be brought out to Phillip's Garden. The presence of a few toe bones could simply be a result of the schlepp effect (Daly 1969), i.e., these few elements were not removed from the hides before they were bundled up for transportation. If this was the case, one would expect to find primary butchery remains at the kill site, and secondary remains at the settlements.

A second possibility is that the Dorset went inland to hunt caribou in the spring, summer and fall from seasonal camps. Caribou could have been consumed for subsistence at these sites and not transported elsewhere.

Alternatively the Dorset may have exploited caribou fortuitously along the coast during the summer. In Labrador for example, caribou are quite numerous at the coast in the summer, where they head in order to avoid the flies (Hood pers. comm.). It is possible that caribou in Newfoundland would have behaved in a similar manner, in which case the Dorset could have maintained coastal settlements in the summer. If this were the case, one might expect to find more remains associated with summer dwelling features like the external hearth (Feature 42) than with winter houses.

The question of Dorset caribou hunting cannot be answered here. More extensive interior survey is needed before the possibility of interior hunting can be ruled out and without the preservation of caribou bone in a good Dorset context. very little can be said about hunting or butchery practices.

Table 4.8 summarizes the seasonal availability of species identified in Feature 1

Table 4.8

Seasonality for Phillip's Garden Feature 1

```
                      Jan  Feb  Mar  Apr  May  Jun  Jul  Aug  Sep  Oct  Nov  Dec
harp seal          xx/////////xxxxxxxxx//////////////                        xxxx
bearded seal                        xxxxxx/////////////////
grey seal                  |-------------------------------------------|
harbour seal        |----------------------xxxxxxxxx-----------------------------|
hooded seal        --|   xxxxxxxxxx                                            |--
atlantic cod                                   |------------|
eider/scoter          ---------------|                                   |-----------
black backed gull    -------------------------------------------------------------
beaver                -----prime-----|-----------------------------------|-prime-
caribou               ----interior------uplands-----on coast[12]----uplands--prime-
canidae               ------------------------------------------------------------
```

--------- = available

xxxxxx = available in large numbers

/////////// = stragglers

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[12] The presence of Newfoundland caribou on the coast in the summer has not been clearly established (Bergerud 1958).

When the faunal evidence from Feature 1 is combined with structural and artifactual evidence from elsewhere, a good case can be made for sporadic use of Phillip's Garden throughout the year. Based on the faunal remains discussed here it seems most probable that Feature 1 was utilized from summer through mid-winter, although occupation could have been narrower than that, for example, late summer to mid-winter. First of all, the large majority of seal bone (95%) comes from immature or adult individuals. Of the bone identifiable to species, 83% is harp seal. Harp seal are present in the vicinity of Port au Choix in December and early January and again in March, April and May. However, juvenile harp seal stragglers are known to be around as long as late June. For example, in the last week of June, 1992, two juveniles were found off Port au Choix (Renouf pers. comm.). The only time of year when juvenile harp seals are not present but immatures and adults are is in December and early January. Evidence from other deposits at the site suggest that the Dorset were taking seals of a variety of ages and, by inference, hunting in the spring. The logical conclusion is that if juvenile seals were available they would be present in the sample. Therefore the contents of Feature 1 most likely represents an early winter harp seal hunt.

There are several possible explanations for the presence of the two juvenile seals in this sample. Both hood and harp seals breed at the same time of the year, and if the large juvenile is a hood and the small juvenile is a harp, they may represent stragglers from the spring migration which were picked up in early summer. Alternatively, the large juvenile may be a bearded seal and the small a harbour seal, both of which are available in the Port au Choix area in the late spring and early summer, pupping at that time.

There are other indications of possible occupation of Feature 1 in the summer. For example, the presence of a few elements of adult harbour, grey and bearded seal suggests that some summer sealing was conducted by the inhabitants of Feature 1. Given the lack of snow cover which would facilitate transportation of these summer seals back to the site, these animals may have butchered at the kill spot and only selected elements deposited within Feature 1. A second possibility is that given warm weather, summer seals may have been butchered on the site out of doors and the majority of skeletal material deposited in an external midden.

A summer through fall occupation could easily have been maintained if supplemented by minimal amounts of cod, caribou and bird meat, as well as wild berries. It may have been preferable to arrive at the site in good weather in order to construct a dwelling and begin the preparation and repair of equipment needed for the early winter harp seal hunt. The artifact assemblage from Feature 1 includes both hunting and manufacturing and butchery items (i.e., end-blades, harpoon heads, burin-like tools, scrapers, cores, and microblades) suggesting a full range of human activity occurred there.

As further evidence for a summer through early winter occupation, I would note that Feature 1 is not as substantial as the "winter" dwellings described by Harp (1976). For example, Harp (1976) notes that some houses were banked with sod and had rather substantial walls. Feature 1 has low walls, and shows no evidence of sod construction either for reinforcing or for heat retention. This suggests the possibility that the house was not occupied during the coldest part of the year (i.e., January through March). However, Feature 1 does not correspond to the "summer" houses at Phillip's Garden which Harp (1976) describes as lacking in walls and internal features. Feature 1 has both walls and formal internal features, including raised platforms. What this suggests is that this dwelling lies somewhere between a classic "winter" and "summer" house, and that it could have easily served as a livable space in more than one season. This type of intermediate dwelling is not unknown among northern hunter-gatherers. For example, the Thule made use of *qarmat*, or autumn houses which were occasionally occupied into the winter. These were generally skin covered, semi-subterranean dwellings, with internal arrangements similar to winter houses (Park 1988).

An argument for summer through early winter occupation in Feature 1 has been presented based on faunal remains, artifact types and general dwelling form. The following chapter details the analysis of Phocidae body part representation in Feature 1 and further evidence is presented for a summer through early winter occupation.

Chapter 5

5.1 Phocidae Skeletal Element Frequency within Feature 1

The analysis of animal body part frequencies within archaeological contexts is a relatively new area of research in faunal studies (but see Frison 1970; Wheat 1967; and White 1952). The study of skeletal element representation involves the comparison of bone frequencies from a deposit in an attempt to identify patterns of differential representation. The presence or absence of certain elements (for example those which have a large amount of attached muscle) is then used to suggest strategies of hunting, scavenging, preferential selection of carcass parts for consumption and storage, as well as feature and site function (Thomas 1986:243). The interpretation of animal body part frequencies relies heavily on ethnoarchaeological and experimental research on contemporary hunter-gatherer hunting, butchery, consumption and disposal activities. For example Yellen (1977) studied !Kung butchery, meat distribution and disposal practices in an attempt to determine what factors played a role in the pattern of faunal assemblages at both kill and camp sites. He was able to identify a variety of processes which modified the skeletal part representation at !Kung camp sites. Cultural processes included primary and secondary butchery procedures, evaluation of animal body part worth, smashing of bone for marrow extraction and tool manufacture, along with cooking and meat distribution practices. Natural processes affecting skeletal part frequencies included bone disintegration due to fragility and destruction due to carnivore activity (Yellen 1978:315-322).

Other researchers have studied skeletal part representation in an attempt to differentiate between human and non-human accumulated and modified bone assemblages (Binford 1981, 1984; Brain 1981). The focus of these works was the identification of skeletal element and fragmentation patterns which could only have been produced by human behaviour and not by non-human agents like hyenas, lions, or dogs. It is believed that if a distinction can be made between the patterns produced by different bone collectors, it will be possible to distinguish early hominid and human activities from animal activities in the archaeological record. For example, Binford's study of the animal bone assemblage from the FLK Zinjanthropus site in Olduvai Gorge led him to conclude that it is composed of low frequencies of cranial parts, vertebrae, pelves, proximal humeri, and low frequencies of femora relative to tibiae. The under-representation of these elements is consistent with patterns produced by animal and hominid scavenging of carnivore killed animals (Binford 1981:287). This argument is based partly on the skeletal element representation at the site and partly on the paucity of cut marks on meaty elements like scapulae and upper hind limbs. Binford suggests that hominids only had access to relatively unmeaty elements as evidenced by the high frequency of cut marks on the the humerus and radio-cubitus, elements most like to have meat remaining on them after carnivore ravaging (Binford 1988:133). Binford feels the FLK site assemblage is composed of animal and hominid scavenged body parts of animals that died a natural death and some elements transported by hominids from animal kills. Alternatively Bunn and Kroll (1986, 1988), have examined a larger sample of the same assemblage and have drawn conclusions different than Binford's. They argue that the FLK assemblage is characterized by a high representation of limb bones versus cranial fragments, ribs and vertebrae. Furthermore, upper limb bones are better represented and have more cut marks on them than lower limb bones. This is a pattern frequently associated with human transportation of meaty body portions from a kill site to a camp or residential site. Bunn and Kroll suggest that hominids did have access to meaty body parts either through hunting or aggressive scavenging and were systematically butchering there body parts and transporting them back to the FLK site (Bunn and Kroll 1988:137).

Other researchers have used body part analysis to reconstruct human butchery practices. For example, McCartney and Helmer (1989:148) studied the skeletal element frequencies of samples obtained from three Palaeoeskimo sites in the Devon Island lowlands. They noted that seals[13] were represented by high numbers of skull fragments, slightly fewer numbers of limb fragments and low numbers of axial fragment. Based on this pattern and the identification of cut marks at crucial joints, they suggested a butchery process which involved disarticulation of flippers at the radio-ulnar and tibia-femoral joints. They also noted that vertebral elements were under-represented and suggested that although this could have been due to discard during the initial phase of butchery, it was unlikely, given the high number of cranial fragments. Presumably cranial and vertebral segments represent low meat yields and should be treated similarly and left behind at a kill or primary butchery site. Because cranial portions are present, it suggests that primary butchery occurred at these sites and that the low representation of other axial element like vertebrae may be due to post-depositional destruction.

In another study, Savelle (1984) looked at skeletal element frequencies of seal[14] remains in two Inuit snow-dwellings in Cresswell Bay as a means of determining seasonality. Savelle was provided with the context of the habitation by an informant who had occupied both structures during a single season.

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[13] These could be ringed, harbour, harp and/or bearded seals.

[14] These could be ringed or bearded seals.

Structure A was occupied in early winter and Structure B in late winter. According to Savelle, the faunal assemblage in Structure A consisted mainly of cranial, hind limb and flipper elements, while in Structure B, all body parts were well represented. Based on information provided by his informant Savelle suggested that the contents of Structure A represented the utilization of cached meat, while the contents of Structure B represented use of freshly killed seal. He notes that among the Inuit of the region:

> 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 1984:52)

In other words, there is an immediate consumption of meaty body parts in the summer and storage of less meaty parts for early winter use. Such a system makes sense in light of the practical considerations of butchery and storage. For example, flippers and heads are easily disarticulated, and relatively small body parts which could be stored in quickly constructed caches.

Savelle's work is the only ethnographic study of seal element representation in a dwelling structure resulting from Inuit hunting, storage and depositional practices. Other research of this type is strictly archaeological (e.g., McCartney and Helmer 1989) or research which relates to ungulate exploitation. For example, Binford was the first researcher to study these processes as they related to caribou and to quantify the usefulness of various caribou skeletal elements by ranking them in order of utility. This ranking system was based on the distribution of usable muscle mass on the skeleton and the evaluation of each body part with reference to ...the proportion of the total animal represented by the part and the proportion of the gross weight of the part represented by useable meat and fat... (Binford 1978:19). Referred to as a meat utility index (hereafter MGUI), this system allows the archaeologist to evaluate the different body parts of the animal according to their usefulness which is measured in terms of the quality and quantity of meat, fat, marrow and bone grease available from each segment. Since Binford first established the MGUI, a few general rules have been developed which can be applied to ungulate species. For example, Bunn and Kroll (1986) have noted that the heavier and less nutritious portions of a carcass (usually the axial skeleton) tend to remain at the kill sites while the meatier portions (usually the appendicular skeleton) are brought back to a base camp or habitation site. The major assumption behind this is that people choose to optimize their subsistence practices by selecting portions of animals which will provide the best quality and greatest amount of useable material. These parts will be transported by hunters back to a base camp for general consumption while lesser quality parts will be left behind and possibly consumed at a kill site or temporary camp.

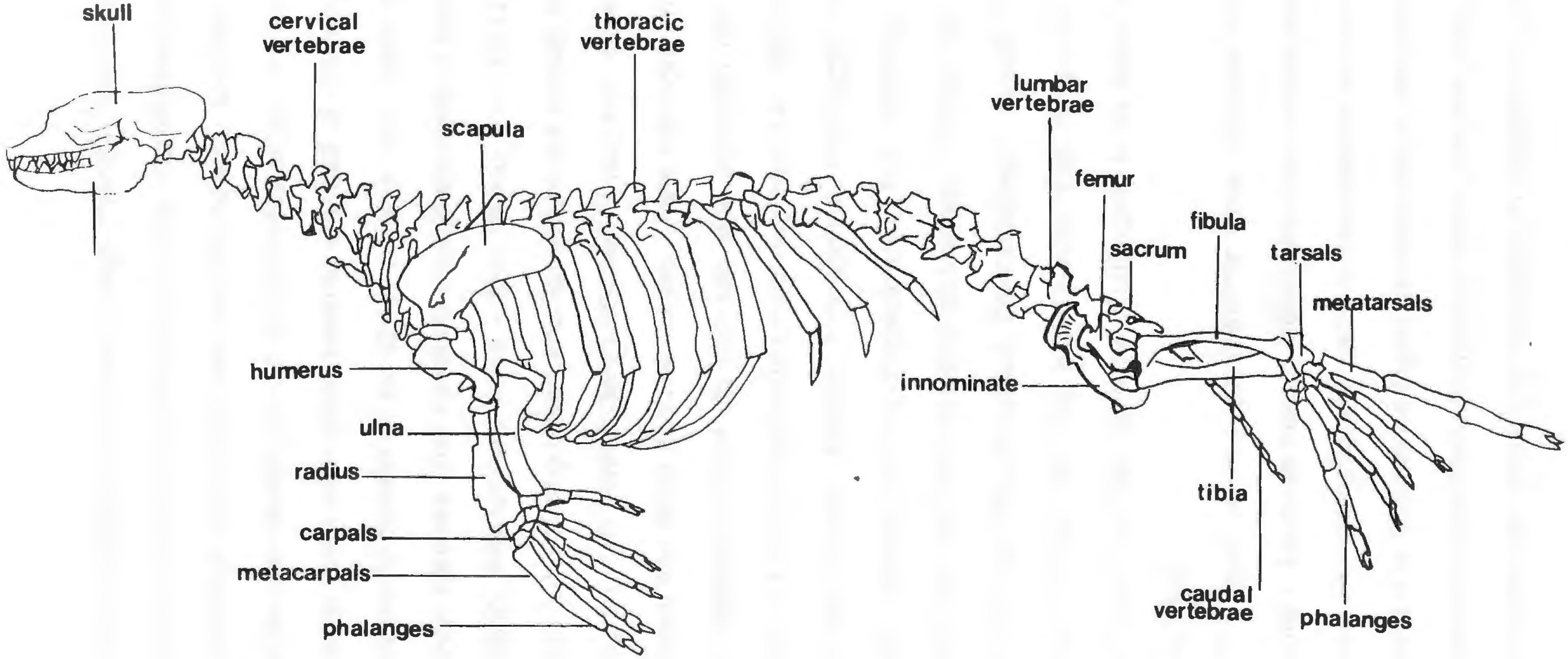
Legge and Rowley-Conwy (1988) have used this rule to argue that the British mesolithic site of Star Carr, variously interpreted as a base camp (Jacobi 1978), a butchering station (Andreson et al. 1981), and a kill site (Caulfield 1978), was in fact a hunting camp. The Star Carr assemblage consisted of a high proportion of ungulate mandibles, vertebrae, metacarpals, and metatarsals (low utility elements), and scapulae, radii, tibae (medium utility elements) and a low proportion of femora and humeri (high utility elements). This pattern was very similar to the pattern reported by Binford for a Nunamiut hunting camp, an intermediate site reflecting processes between the killing of caribou and their ultimate consumption. Legge and Rowley-Conwy speculated that Star Carr may have functioned as a hunting camp from which the meatiest upper limb joints were transported, while the medium utility portions were utilized on site (Legge and Rowley-Conwy 1988). Low utility, or the least meaty elements, are under-represented at Star Carr because they would have been left at the kill site. This type of subsistence and discard pattern has been well documented among hunter-gatherers who rely primarily on ungulates (see for example Yellen 1978; Binford 1978) and it is believed that utility indices devised are of some value for interpreting ungulate dominated assemblages. Unfortunately, no such indices have been developed for seal, and it is outside the scope of this research to do so. Therefore, Savelle's (1984) information from the two Inuit snow dwellings will be used as a measure of what the particular pattern of seal skeletal element representation in Feature 1 might indicate. This will be combined with information obtained from the analysis of cut marks and skeletal element frequencies in a sample of bone from Feature 2J, a midden deposit at Phillip's Garden (Wells 1988), and McCartney and Helmer's (1989) study of seal body part representation, in order to suggest a possible utilization pattern for seal at the site. However, these conclusion are very tentative, and the real value of this analysis is the description of the pattern present. This is the first detailed description of Phocidae body parts from a middle Dorset faunal assemblage in Newfoundland and Labrador, and it is hoped that the information presented will serve as a basis against which future patterns from this site and others can be compared.

This research is founded on two basic assumptions, the first being that the frequency of seal body parts represented is indicative of human behaviour; and the second that human behaviour is a reflection of both practical and social systems. For example, among the !Kung, the treatment of hunted animals depends upon the size of the animal, the distance from the kill site to the camp site, the amount of available labour, the availability of other resources and the social obligations of the hunter (Yellen 1977:279). It is assumed that the Dorset operated under similar constraints.

In order that the material discussed below can be better understood, I have included a brief description of the Phocidae skeleton and a diagram (Figure 5.1).

FIGURE 5.1

PHOCID SKELETON



(adapted from King 1983)

The Phocidae skull has a large rounded cranium, large eye orbits, and a relatively short snout. Skulls are highly identifiable, in particular the palate and the auditory bulla which are morphologically species specific (King 1983:150). The general dental formula for Phocidae is 3/2. 1/1 and 5/5. This is the number of upper teeth over lower teeth in one half of the mouth. A full complement of teeth would consist of six upper incisors, four lower incisors, four canines and 20 post canines. The vertebral column consists of seven cervical vertebrae, 15 thoracic, five lumbar, three - four sacral, and 10-12 caudal vertebrae (King 1983:154). All long bones and flat bones are paired; for example, there are two scapulae, two humeri, two radii, two ulnae, two innominates, two femora, two patellae, two tibiae and two fibulae. There are eight - nine pieces in the sternum and generally about 15 ribs per side although this number along with the number of thoracic vertebrae may vary from 14 - 16. In the front flipper there are six carpal bones: carpals 1 through 4, the carpal accessory and the carpal radial. There are five metacarpals, five proximal phalanges, five medial phalanges and five terminal phalanges. In the hind flipper there are seven tarsal bones: the astragalus, the calcaneum, tarsals 1 through 4 and the tarsal central. There are five metatarsals, five proximal phalanges, four medial phalanges and five terminal phalanges. Male seals also have a baculum, or penis bone.

The three internal pit features were included in this analysis as part of Feature 1, because treated individually they are not representative of the overall pattern. For example, the patterns represented by the 197 identifiable bones in Feature 6 is likely to be highly skewed due to the small sample size. Therefore the skeletal element frequency relies on the total of 3,039 fragments of identifiable seal bone first discussed in Chapter 4. Other species and families were excluded because they make up less than 1% of the total sample, and cannot be expected to provide any information about butchery or transportation practices.

The body part representation is displayed as NISP, MNE[15] (minimum number of elements) and MAU (minimum animal units). MNE and MAU numbers are most commonly used for body part studies because of the problem of over-representation associated with NISP numbers (Marshall and Pilgram 1991:152) which do not take into account non-equivalent frequencies of body parts. The discussion below clearly illustrates how the use of NISP for body part studies can distort skeletal element frequencies. Graph 5.1 is a bar graph showing the NISP counts for each skeletal element identified. The category Head includes the following fragments: auditory bulla; frontal; hyoid; maxilla; premaxilla; palate; temporal; zygomatic; and occipital. The category Vertebrae includes all identified vertebral fragments, including sacral and caudal vertebrae. The following categories: carpals; metacarpals; front phalanges; tarsals; metatarsal; and hind phalanges; include all associated elements. For example, the category Carpals contains all seven carpals. This graph is intended only to show how many fragments were identified from each body part; for example the category Humerus is represented by 86 fragments. This includes every piece of bone identifiable as part of a Phocidae humerus.

The graph below indicates that there is a very high representation of vertebrae (582), front phalanges (394) and hind phalanges (324). Cranial fragments (232), teeth (211), front limbs (181), carpals (157) and metacarpals (174), hind limbs (179), tarsals (105) and metatarsals (181), are well

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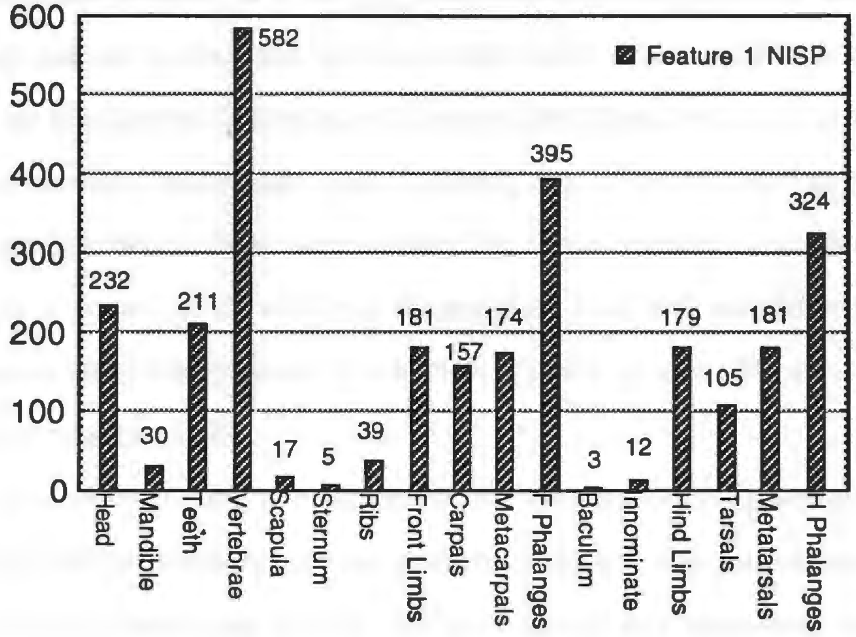
[15] MNE is simply the minmum number of bones in an element category needed to account for all fragments of that particular element. Essentially it is the first part of the MNI calculation.

represented while scapula (17), sternum (5), ribs (39), baculum (3) and innominates (12), seem under-represented.

Graph 5.1
Feature 1 - Phocidae Skeletal Element Frequencies
Expressed as NISP



The vertebrae, front and hind phalanges are clearly over-represented. The count of 582 vertebrae includes any and all pieces which could be identified as part of a seal vertebra. These elements are fragile and have many processes that protrude, making them susceptible to breakage. However, vertebrae are highly identifiable even when fragmented; for example the centrum and the vertebral epiphyses are easily recognized even when found as isolated pieces. The counting of each of these fragments increases the probability that some vertebrae will be included more than once, which will artificially inflate the NISP.

This inflation can be corrected by counting only vertebrae with part or all of the centrum present. This will provide a count of the minimum number of vertebrae present, or the MNE (Rowley-Conwy 1980).

Both front and hind phalanges are highly represented at 394 and 324 fragments, respectively. This is not unexpected given the high number of phalanges present in a single seal skeleton (58) and the fact that these are small, dense bones less prone to destruction than vertebrae or ribs. However, not all phalanges in the sample were complete, and it is probable that some were counted more than once, inflating the NISP. In order to correct this those phalanges which were represented by only a proximal or distal fragment were given a count of .5 with the expectation that this would prevent any single phalanx from being given more than a value of one. Those corrected phalanx counts are the MNE.

Cranial fragments are present in the amount of 222 pieces. Of these 143 are fragments of auditory bullae, and the rest are the miscellaneous identifiable fragments mentioned above. Auditory bullae are extremely hard, dense bone elements and therefore less prone to destruction than the fragile bones of the cranium and facial area. The cranium and face tend to break apart in an archaeological context, often resulting in a high number of unidentifiable skull fragments. However, some, like the zygoma, are quite dense and more likely to preserve in an identifiable form. Counting all identifiable cranial pieces inflates the NISP value for skulls and misrepresents the number of head portions actually present on the sample. Because the purpose of body part analysis is to get a picture of which body parts are present and absent, the head count in the Feature 1 sample was normed by counting only auditory bulla fragments; other cranial parts are not directly quantifiable (Rowley-Conwy 1980). In order to ensure that all elements are treated equally the MNE for auditory bulla is calculated by determining the maximum number of right and left medial and lateral fragments. Each bulla consists of a single medial and a single lateral portion which together form a whole. The MNE count is the number of whole right and left bulla.

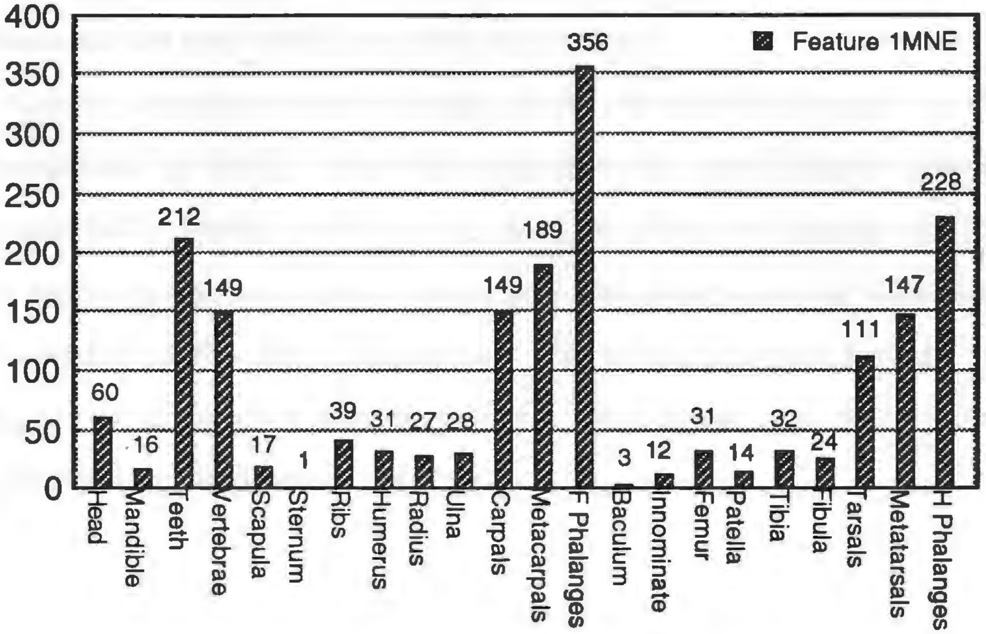
Teeth are represented in the amount of 211 fragments, none of which is directly associated with mandibles or maxillae. As each tooth is technically an individual element, the MNE remains at 211.

The front limb is the humerus, radius and ulna. The NISP count consists of all fragments which were identifiable to either of those elements. The possibility exists therefore that those elements may be over-represented by counting the same bone more than once. For the MNE this was corrected by giving each proximal and distal portion a count of .5 and a complete element a count of one. The hind limb, consisting of the femur, tibia and fibula was treated in the same way, as were metacarpals and metatarsals. Carpals and tarsal were rarely fragmented and each was given a count of one.

The following elements are very poorly represented: scapula, sternum, ribs, baculum and innominates. Except for the baculum, these are thin and fragile bones, and prone to break into many unidentifiable pieces (Daly 1969:151). Ribs and vertebrae are especially difficult to identify beyond the general category of class (Davis 1987:35); however the counts for scapula, ribs and innominate have already been normed, causing them to appear under-represented. For example, during identification, only the glenoid fossa and/or epiphysis of the scapula, the acetabulum of the innominate and rib fragments with heads present were counted.

Graph 5.2 shows the MNE values for each element. In order to illustrate the specific representation of each skeletal element, the composite categories of front and hind limbs have been subdivided into separate bone categories (i.e. humerus, radius and ulna).

Graph 5.2
Feature 1 - Phocidae Body Part Frequency
Expressed as MNE

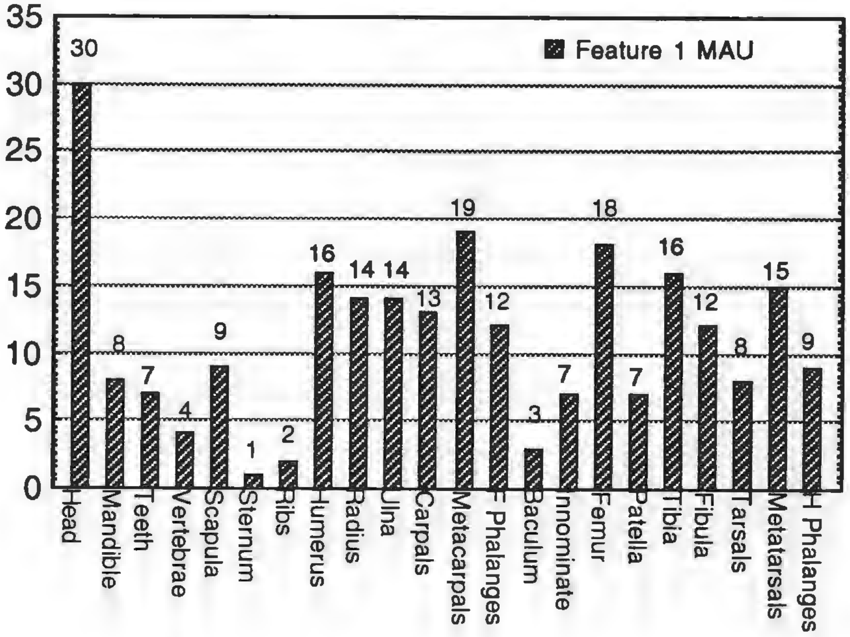


Graph 5.2 shows that the frequency of head and vertebral fragments expressed as MNE has decreased dramatically from the expression as NISP (Graph 5.1). However, the vertebrae, teeth, front and hind flippers are still well represented and the scapulae, sternum, bacula and innominates are still poorly represented. Nevertheless the pattern is still misleading because it shows the skeletal element frequencies without taking into account the fact that each bone is differentially represented in the body. For example, while there are only two humeri, there are 58 phalanges, and thus it is more probable that phalanges

will be better represented simply because there are so many of them. In order to correct this, it is necessary to norm the value once again, to obtain what Grayson (1984) refers to as the MAU or Minimum Animal Units. The MAU is simply calculated by dividing the MNE for each element by the number of times it is represented in a complete skeleton. For example, the MNE for humeri is 31, the humerus is found twice in each seal skeleton, and therefore the MAU would be 31 divided by two or 15.5, rounded up to 16. Thus a minimum of 16 individuals are needed to account for 31 humeri.

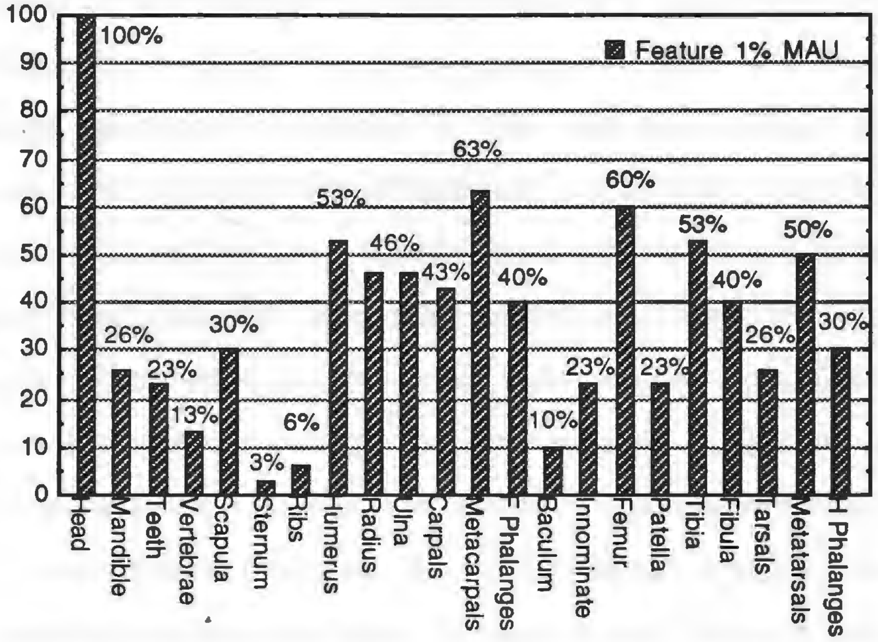
Graph 5.3 shows the Phocidae body part representation for Feature 1 represented by MAU. Graph 5.4 shows these same figures expressed as Percent MAU. Percent MAU is calculated by taking the highest value as 100% and then expressing all other values as a percentage of that. This exaggerates the pattern of the MAU frequencies and allows the comparison of relative frequencies of different elements on the same scale, regardless of the size of the whole sample (Binford 1978:72)

Graph 5.3
Feature 1 - Phocidae Body Part Frequencies
Expressed as MAU



Graph 5.4

Feature 1 - Phocidae Body Part Frequencis
Expressed as % MAU



On the basis of the corrected skeletal element frequencies shown in Graphs 5.3 and 5.4, this pattern best represents the utilization of complete seal carcasses at Feature 1.

The head, which is represented by auditory bulla, ranks number one at 100%, with an MAU of 30. The presence of a high percentage of cranial fragments is considered an indication of primary butchery by McCartney and Helmer (1989), or of the utilization of stored meat by Savelle (1984), because the head is a low utility body part. Most of the identifiable skull fragments present in this sample are auditory bullae (153, or 66% of the head NISP) and not cranium and facial pieces. The fact that these elements dominate the skull assemblage is not surprising, given that they are very dense and not likely to degrade or to be fragmented beyond recognition by butchery, trampling or post-depositional destruction. Linehan (1990) found a similar over-representation of auditory bulla in a sample of bone identified from a midden deposit located in sub-operation 394D[16], relatively close to Feature 42, the external hearth feature described in Chapter 1. The fact that auditory bullae are over-represented in two different contexts from the same site suggests that this is due to preservational factors. If heads were being stored and utilized throughout a period when there was less food available, as in Savelle's example, one might expect to find them over-represented in houses and other dwelling features and under-represented in midden deposits. However, this pattern has not yet been identified at Phillip's Garden. Alternatively, if heads were stored and utilized and then deposited in middens, one should expect that they would be under-represented in house deposits. As noted above, bullae are very hard and and most likely to survive deposition. I also think that destruction during excavation and storage is least likely to affect these elements. However, the possibility that these bullae represent the remains of primary butchery activities must also be considered. In such a situation one might expect find high numbers of other low utility elements. Given the generally even distribution of muscle and fat on a seal, it is difficult to determine which parts would be considered low utility. However, both the front and hind flippers are relatively lean when compared to other body segments. Furthermore, usable muscle and fat is difficult to obtain due to the numerous bones, tendons and ligaments which bind the flipper together as a unit. Wells' (1988) study of cut marks on seal elements from Feature 2J at Phillip's Garden supports the expectation that flippers are low

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[16] This refers to the Canadian-Parks Service provenience system.

utility elements. She found that the Dorset at the site were disarticulating front flippers at the radio-ulnar joint and hind flippers at the tibia-fibular joint and that there were very few cut marks on carpals, metacarpals, tarsals, metatarsals and phalanges. This suggests that flippers were seldom or not highly processed. Therefore one might expect the remains of primary butchery discard to contain a high frequency of flipper parts, vertebral segments, teeth and mandibles, in addition to abundant cranial material. Absent from the sample should be meaty elements like long bones, scapulae and pelves. What we find, however, is that mandibles and teeth are poorly represented at eight and seven MAU, or 26% and 23% MAU, respectively. Vertebral segments are also poorly represented at four MAU, or 13% MAU, while both front and hind flippers are extremely well represented ranging from 12 to 19 MAU (40-63% MAU) for front flippers and from nine to 15 MAU (30-50% MAU) for hind flippers. This, in combination with a very high representation of front (43-53% MAU) and hind (40-60% MAU) limb elements, suggests that this is not a deposit of waste materials from primary butchery activities.

If the sample was produced as a result of the utilization and consumption of stored body segments one would expect to find a relative absence of meaty front limbs, and a high proportion of hind limbs, and cranial fragments (after Savelle 1984). This is not the case, for the frequencies of front and hind limb elements are nearly identical. Front limb parts, including flipper segments, range from a low of 40%, or 12 MAU, for phalanges to a high of 63%, or 19 MAU, for metacarpals, while hind limb parts range from a low of 30%, or nine MAU, for phalanges to 60%, or 18 MAU, for femora. The only truly meaty bones which are poorly represented are scapulae (30% MAU) and pelves (23% MAU).

Taken as a whole the body part frequencies do not indicate selection of high utility parts and abandonment of low utility parts nor do they indicate storage of either lower utility hind limbs or higher utility front limbs. Nor is this pattern indicative of marrow processing activities. For example, bone assemblages which have been modified by marrow processing tend to be characterized by fragmented mandibles, isolated teeth, skull fragments, identifiable rib and vertebrae fragments and the articular ends of long bones (Davis 1987:26). That this sort of pattern is not present is hardly surprising as seals have no bone elements which contain significant amounts of marrow. The only elements which would provide any quantity of marrow would be the tibia and the humerus. It unlikely that marrow processing occurred here, particularly in light of the fact most bone diaphysis are not fragmented. Processing for marrow generally occurs amongst groups who rely heavily on ungulate species (see for example Binford 1978; Marshall and Pilgrim 1991). Marrow provides a source of fat in addition to that regularly obtained from the consumption of meat. Given the fact that Phocidae carry a thick layer of blubber at all seasons, and the abundance of seal available for exploitation near Phillip's Garden, it is highly probable that fat requirements were easily met. If the Dorset processed bones for marrow they did not do so at Feature 1. Most probably this sort of activity would have occurred in conjunction with caribou exploitation, for which there is no direct evidence at the site.

The best possible explanation for the pattern of Phocidae body part frequencies in Feature 1 is the utilization and deposition of complete seal carcasses with subsequent destruction of some elements via trampling and post-depositional weathering. Samples produced by these events should be characterized by relatively equal frequencies of all skeletal elements, except for an under-representation of fragile elements like vertebrae and mandibles and specific breakage patterns in long bones.

Table 5.1 shows the frequency of right and left long bone fragments.

Table 5.1
Frequency of Right and Left Long Bone Fragments

Element	Left	Right	Total NISP
Humerus	35	47	82
Radius	24	27	51
Ulna	21	20	41
Femur	23	25	48
Tibia	27	35	62
Fibula	15	24	39

The relatively equal representation of right and left fragments of these elements suggests that the sample is large enough to have not been biased by chance. The under-representation of the other bone elements can then be explained as a function of bone destruction via disintegration and trampling and possibly food processing and cooking. Trampled assemblages are characterized by simple fractures of long bones generally in the mid-shaft region and low frequencies of scapulae, ribs, and pelves (Davis 1987:26). This sample exhibits both of these features; however the long bones are not consistently fractured in the mid-shaft regions. This is probably due to the unique structure of the seal skeleton. Unlike ungulate long bones, those of seals tend to be short, thick and dense, with the exception of the tibia and fibula. This results in a very specific pattern of breakage at those parts of the bone which are thinnest, or weakest. For example, femora in this sample tended to be broken at the neck, resulting in total of 21 isolated femur heads. Humeri, on the other hand, tended to be broken around the centre of the diaphysis (the sample contains 23 proximal humeri plus shaft and 16 distal humeri plus shaft), more in keeping with ungulate breakage patterns. The tibia and fibula are the elements most similar to the long bones of an ungulate and therefore are the elements expected to be broken in the mid-shaft region. However most were fractured at the juncture of the proximal epiphysis and diaphysis for the tibia and the distal epiphysis and diaphysis for the fibula. These are areas where these elements are particularly thin, so this pattern is understandable.

The under-representation of scapulae, pelves, vertebrae and ribs is consistent with the explanation of the pattern of skeletal element frequencies as a result of trampling and post-depositional destruction. The unidentifiable fragment count for this sample was very high (15,344 pieces), of which some were classed as unidentifiable rib fragments, miscellaneous flat bone and cranial fragments and miscellaneous vertebral fragments. The large majority of unidentifiable fragments (80% or approximately 11,000 pieces) was smaller than two cm in diameter, suggesting that the material had been subjected to a substantial amount of breakage. It is highly probable that these fragments represent unidentifiable portions of flat bones, as well as rib shaft segments, and vertebral pieces. Given the fact that this sample was obtained from the interior of a dwelling structure, it is not unlikely that bone destruction would have occurred as a result of food processing, cooking, human traffic and cleaning events. While there is very little evidence for food processing in the form of cut marks (Wells 1988), there is a well defined hearth area and a clear pattern of cleaning behaviour (see discussion in Chapter 6) that could have contributed to bone destruction. Human movement into and out of the dwelling as well as movement within would result in the redistribution of bone material and most probably its further fragmentation (Stahl and Ziedler 1990). It is also probable that cooking contributed to the destruction of some bone; however, I have no direct evidence (i.e., burnt bone fragments) to indicate this.

What is unusual about this sample is the very low frequency of bacula, sternum and patellae. Assuming that male and female seals were equally valued, one would expect that bacula would be present in amounts of around 40-60% MAU instead of 10% MAU. This is expected because bacula are very dense bones, unlikely to be completely destroyed by household occupation activities or post-depositional weathering. Looking for an explanation for the poor representation, I examined the bone artifact collection from Phillip's Garden and found 2 pieces of worked baculum. Therefore, one possibility is that baculum are under-represented because they were selected for tool manufacturing. It is also possible that the stratification of the seal herd during the fall hunting period meant that only females were readily available for exploitation or that spring hunting focused on females. The under-representation of sternal segments and patellae is not so easily explained. At first I thought it might be due to some butchery procedure, such as the discard of those elements outside the house; however this same under-representation was found in the sample Wells (1988) analysed from Feature 2J. It is possible that these elements are more vulnerable to post-depositional destruction than originally thought, or perhaps they, like bacula, were selected as manufacturing materials or for some other purpose.

Perhaps the most interesting thing about this sample is that it is nearly identical in size and composition to Feature 2, subfeature 2J[17]. Graph 5.5 shows the skeletal element frequencies for Feature 2J as NISP. Graph 5.1 is presented again for comparative purposes.

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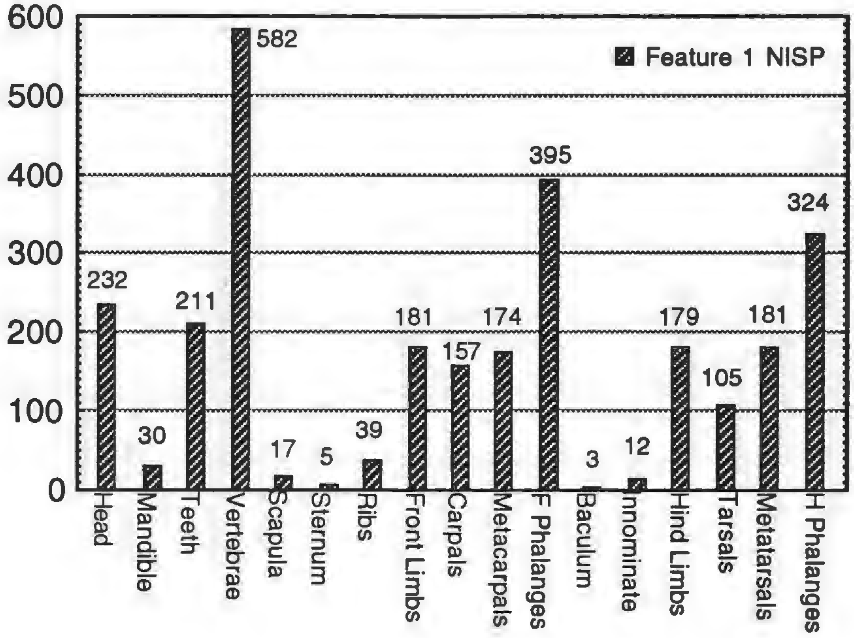
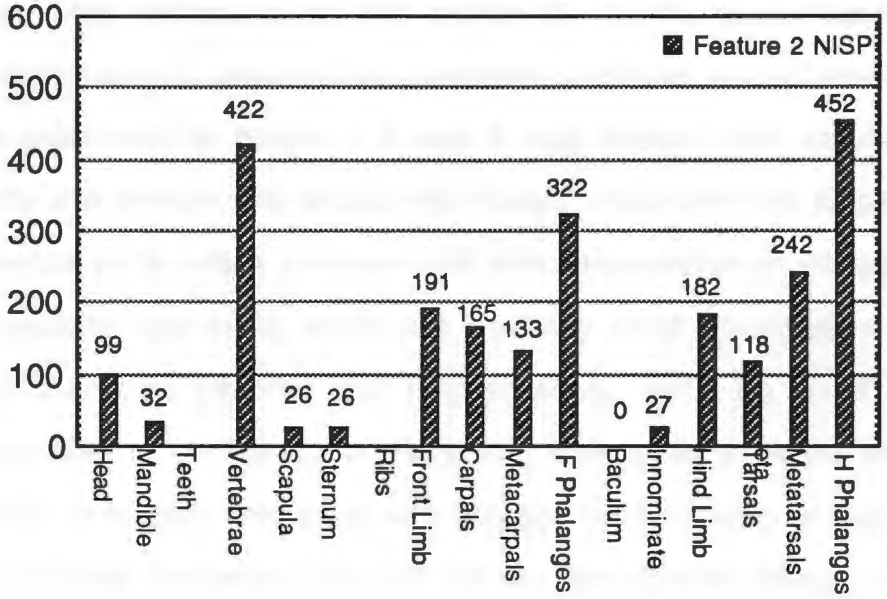
[17] A subfeature is simply an isolated deposit within a larger feature. In this case subfeature 2A is a small dunp contained with in the larger midden, Feature 2.

Graph 5.1
Feature 1
Skeletal Element Frequencies Expressed as NISP



Graph 5.5
Feature 2J
Skeletal Element Frequencies Expressed as NISP



Teeth and ribs have not been included on the graph of Feature 2J because Wells did not count teeth and she quantified ribs differently than I did, making the numbers uncomparable. In all other respects Feature 2J is similar to Feature 1. It should be noted that Feature 1 and 2J are not spatially associated, and probably do not represent use by the same people, however the similarity between the two deposits is striking. In Feature 2J there is no over-representation of scapulae, pelves, or sternum that one would expect if these parts were discarded into middens instead of house features. In fact these elements are under-represented as in Feature 1, and for now the tentative conclusion is that this under-representation is due the fragile nature of those body parts. Wells interpreted the contents of Feature 2J as the result of butchery and deposition of whole seals. I agree with this and suggest that the butchery of whole seals at Phillip's Garden is consistent with its location proximal to the large harp seal population available in early winter and late spring off the Point Riche peninsula. If the seals were available nearby, either in the water in December or hauled on the ice or the peninsula in the spring, it is not unreasonable to assume that complete carcasses would have been brought to the settlement for butchery. A seal is very different from an ungulate in that its body is a smooth and torpedo-like shape. Apart from the flippers, there are no obvious parts which stick out and make transportation difficult. Whole seals, especially harp seals, which are relatively small compared to the larger grey and the huge bearded and hooded seals, could be killed in the water in December or on the ice in the spring and towed to shore where they could easily be hoisted onto sleds and dragged back to camp or even, given enough snow cover, harnessed in some fashion and hauled without use of a sled. For example, after killing a ringed seal, (which is smaller than a harp), the Central Eskimo would cut a hole through the lower jaw, pass a thong though it and through the seal's mouth. A toggle called a ganging was then attached in order to keep the line from slipping and then the seal would be dragged to a sled and lashed on for later transportation back to the dwelling (Boas 1888:478-482). A similar method could have been utilized by the Dorset. The transportation of complete seal carcasses back to the site is logical in light of the fact the most seal species were and still are available only on a seasonal basis in the Port au Choix area. The best period for hunting seals would have been the few weeks of the spring and winter migrations and hunters may have sought to maximize their catches by leaving butchery tasks until the hunt was completed. In this manner, a greater number of seals could be taken each day and stored back at the main site. Given the fact that most hunting would have occurred during the cold weather, these carcasses would quickly freeze and spoilage would be prevented. When the hunt was completed, butchery could begin in earnest or else proceed as meat and fat was required. Alternatively, if individuals were hunting and bringing complete seals back to camp, butchery could have been conducted throughout the hunting period by other individuals on site. A maximal catch of seals would have been especially important in December because there is a relatively lean period at Port au Choix in January and February when no large animal species are available in good quantities.

To summarize, the skeletal element frequencies from two unassociated deposits: Feature 1, a semi-subterranean dwelling and Feature 2J, a midden deposit, suggest that the Dorset were bringing whole seals back to Phillip's Garden and butchering them at the site. The bone assemblage from Feature 1 suggests that possibly this took place even inside of the houses. High frequencies of auditory bullae, long bones and flipper elements, and low frequencies of vertebrae, ribs, scapulae, pelves and bacula are probably due to household activities like cooking, cleaning, artifact manufacturing, human traffic and some post-depositional destruction, although the degree to which this was a factor is difficult to asses at present. This interpretation is supported by negative evidence for bone processing, carnivore activity, differential transport, in addition to a consideration of the context of the sample (a house interior) and its proximity to abundant seal resources. This reconstruction is highly speculative. More analysis of other deposits at Phillip's Garden and other sites needs to be done before any of the arguments put forth here can be substantiated or negated.

In the following Chapter I will examine the distribution of faunal and artifactual remains within Feature 1 and the range of human activities which could be responsible for the patterns observed.

Chapter 6

6.1 Bone Distribution within Feature 1

In this chapter I describe the spatial distribution of the faunal material from Feature 1 discussed in Chapters 4 and 5 and suggest some possibilities for the internal division of house space and activity areas. The analysis of the distribution of faunal and artifactual remains can provide information about the use of space within a house or on a site. Assuming that the archaeological deposit is primary in nature the identification of specific artifact types in specific locations may suggest patterns of human organization and activity. For a single occupation dwelling like Feature 1, internal features are defined and artifact and bone distributions are plotted in an effort to detect patterning or clustering (Simek 1984:406). However, difficulty arises in trying to determine whether observed patterns are due to human behaviour or to random chance. In order to be sure that correlation of bone and artifacts with specific features is not spurious, it is important to conduct this type of analysis on many houses. Ideally one would want to observe a repetition of patterning between houses (Simek 1984:414). while at the same time realizing that at complex sites, there will be more than one pattern to observe. For example, at Phillip's Garden there are several different types of dwellings, which may be seasonal variants (Harp 1976). While within the likely different types, patterns would probably be similar, between the types they would be quite different. I have tentatively identified Feature 1 as a summer through early winter dwelling, possibly similar to a qarmat ,or fall house, occupied by the historic Inuit (Chapter 4). Therefore I would not expect the pattern of debris and feature distribution to be the same as that from a "winter house" as defined by Harp (1976). At present there is no directly comparable material available from Phillip's Garden which would enable me to test this hypothesis. For this reason the following discussion should be considered valuable for its descriptions, and the interpretation highly speculative. As future studies of house construction, faunal remains and debris distribution are conducted at the site, it may be possible to determine whether the pattern described for Feature 1 is truly a pattern common to Dorset qarmat-like dwellings, or simply a result of random chance.

As with body part analysis, the analysis of refuse distribution is dependent upon ethnographic analogy and ethnoarchaeological research. Chang notes that:

> ethnographic observations give archaeologists a context for interpreting how artifacts (objects) are manipulated and discarded by modern hunter-gatherers and how site areas are partitioned into discrete activity loci. (Chang 1988:146)

Savelle's (1984) work in Cresswell Bay, discussed in Chapter 5, is an excellent example of the use of ethnoarchaeology to aid in the interpretation of archaeological remains. For example, Savelle's informant described the layout of the snow houses, specific activity areas and the pattern of refuse disposal. The houses were designed with a main chamber, in which a raised platform that functioned as a sleeping and living area was located in the rear and two side benches, which functioned as cooking space and clothing and tool manufacturing areas were located in the front. A smaller central chamber was used for storage and there was also a covered entrance passage (Savelle 1984:515). Bone debris was deposited horizontally through the feature and vertically trampled into the floors. Upon excavation, Savelle found the densest bone concentrations in working and cooking areas, and the next densest concentrations in the entrance passage and the storage area. Bone was also found in the external midden features, but very little refuse was deposited in the sleeping platform. Savelle also noted that large bone pieces tended to be concentrated in the cooking areas and smaller pieces in the storage area and passage way (Savelle 1984:520).

Features often act as a magnet for artifact and bone refuse deposition either as a result of primary deposition or house cleaning events which result in secondary deposition. At the Reo Alto site in southwest Ecuador, Stahl and Zeidler (1988) were able to identify female dominated food processing and cooking areas within a house feature. This was based on the recurrent association of specific artifacts with certain features which were similar to associations noted during ethnographic studies of refuse distribution amongst people living in similar dwellings in the same area. For example, they found that hearths, food preparation areas, wall trenches[18] and floor space adjacent to house walls were "hot spots" for the

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[18] Shallow trenches excavated by house occupants for the purpose of wall construction.

accumulation of cultural material. This pattern was established as a result of repeated cleaning episodes, whereby high traffic areas were swept clean and debris was pushed into hearth or peripheral locations within the house. In addition to the information on debris distribution, Stahl and Zielder also noted that bone survivorship could serve as an indication of the type of activity conducted in a particular location. For example, they found that in the zone of foot traffic, bone concentrations were low and bone preservation was restricted to fragments which were small and dense. Larger, more fragile elements, tended to be found in greater concentrations in food preparation areas (Stahl and Zeidler 1988:283).

In a purely archaeological context, Dekin (1976) examined the distribution of artifacts and features in a dwelling at the Pre-Dorset Closure site (KdDq-11). Based on the shape of artifact distribution and the location of the dwelling Dekin suggested that it represented the remains of an elliptical tent. He divided the feature into four quadrants and compared it to the artifact distribution. A hearth feature was located in the upper left quadrant around which burins, burin spalls and burin fragments were clustered. He suggested that the hearth area served as a focus for activities ranging from cooking and heating to equipment repair and manufacture. Dekin noted that stone artifacts were clustered on the right side of the sleeping platform and, based on ethnographic analyses of Inuit tent and artifact use, suggested that it was divided into two activity areas, one "male", associated with the lithic cluster, and one "female", associated with the clean left side. He speculated that the relative infrequency of artifacts on the "female" side of the platform could be due to a lack of organic preservation. While interesting, these inferences are highly speculative and imply a division of labour and sex specific tool use which may not have applied to Pre-Dorset peoples. For example, Chang (1988) found that among hunter-gatherers at Nauyalik, in north Alaska, there was no spatial division between the sexes in the food processing area. Both men and women used this location despite the fact that tasks and tools were gender specific. Similarly, Kent (1984) notes that the division of house space into sex specific activity areas in which gender specific tools are used is much more common among industrial peoples.

Refuse deposited in a house feature should differ from that deposited in a midden because houses tend be areas where material are collected, stored and recycled while middens are utilized primarily for the disposal of non-usable materials (Chang 1988:152). In that regard, undisturbed house floor deposits should be primary in nature or put more simply, the artifacts and bone located within dwellings should reflect deposition at their place of use. However, since regular housekeeping activities such as sweeping and refuse removal occur within houses, one would also expect some displacement of material around the interior of the dwelling producing secondary refuse deposits (Schiffer 1987:18).

Feature 1 was described briefly at the beginning of this thesis; however for the sake of clarity I will review the house. The central depression is approximately four by four metres. There is one raised platform at the southern end of the depression which is two metres deep and four metres long and a second along the north wall, which is approximately one metre deep (Renouf pers. comm.). Exterior walls of limestone beach rock (25-35 cm high) circle the interior area. There are two large pit features, 5 and 6 located in the centre of the dwelling; Feature 6 is more or less central and Feature 5 is to the immediate right of it. Both features were filled with bone (Renouf 1986). A third pit, Feature 7, is located in the rear platform. The general layout of this house is similar to the winter house described by Harp (1976) in that there is a rear platform, low stone walls and several internal pit features. However, the pits in the winter houses described by Harp lined up along the long axis of the houses, and the walls were banked with sod, neither of which is the case for Feature 1.

The general structure of Feature 1 differs from other Dorset dwellings by virtue of the absence of a linear hearth feature aligned along the central long axis of the house. Plumet (1989) notes that this axial feature is commonly found in Dorset houses and that household space was organized around it. For example at the DIA.1-B site, there was an axial hearth structure in a Dorset house which was delimited by upright, parallel slabs, on either side of which was a relatively clean area (Plumet 1989). Plumet suggests that this axial structure may "correspond to a symbolic representation of the domestic area founded on a bilateral partition on each side of the axial zone." (Plumet 1989:313). Axial features were also found in the Late Dorset houses on Dundas Island where they were two to five metres long and paved with flagstones with vertical side walls and clear sleeping areas on either side (McGhee 1976:21). Axial features were also present at some Dorset houses from the Gulf Hazard site. For example, House 8 is a shallow semi-subterranean dwelling with low earthen walls, and a central pavement aligned along the long axis with hearth slabs at either end. The areas on either side of this feature are clear of rocks and debris (Harp 1976:132). In addition, paved axial features are known from the following locations in Labrador: two Early Dorset dwellings at Nukasusutok-12 (Hood 1986); a Middle Dorset dwelling at Avayalik-2 (Jordan 1980); a Middle Dorset dwelling at Koliktalik-1 (Fitzhugh 1976); a Middle Dorset sod house at Iglusuaktalialuk 4 West; and a Late Dorset house at Okak-3 (Maxwell 1985). A paved mid-passage structure was also found in dwelling Feature 3, at the Snowdrift Village site on Devon Island (Maxwell 1985). Other expressions of the axial feature are found at Phillip's Garden, in the form of stone lined pits aligned with the long axis of semi-subterranean Middle Dorset houses (Harp 1976).

Feature 1 is similar to some Dorset dwellings by virtue of the presence of raised platforms. Sleeping platforms are present in most houses at Phillip's Garden (Harp 1976) and at several other sites. For example, the Late Dorset houses on Dundas Island had gravel platforms on either side of the axial feature, which were cleared of beach rocks and pebbles and covered with wood chips and moss (McGhee 1976:23). At Igloolik, most Dorset houses had raised platforms on three sides (Meldgaard 1960), and raised platforms were also present in an Early Dorset house at the Morrison site on

Baffin Island (Maxwell 1985). Interestingly, the houses known from Labrador sites discussed above do not have raised platforms.Instead they have clear areas on either side of the axial feature (Hood pers. comm.).

To summarize, Feature 1 differs from other Dorset houses from all periods, because of the absence of a well defined axial feature. In this respect it is similar to some houses described from Igloolik, which simply had a large central hearth feature (Meldgaard 1960). Feature 1 also differs from some Dorset houses by virtue of the presence of raised platforms along the front and rear of the house. Raised platforms are absent from houses in Labrador and where present in the central and high Arctic are located along either side of the axial features. While similar to other houses at Phillip's Garden because of the presence of internal pit features and raised platforms, Feature 1 differs from "winter houses" because it does not have internal pit features arranged along the long axis of the house, nor does it have walls which are well constructed and banked with sod. Feature 1 is also quite different from the two known "summer houses" at Phillip's Garden which have no internal features or clearly defined external walls (Harp 1976), Nor is Feature 1 like Feature 42, a clearly defined slab hearth with no external walls (Renouf pers. comm.). In Chapter 4 I suggested, based on the faunal assemblage, that Feature 1 may have been an intermediate dwelling, utilized from summer through early winter, similar to qarmat dwellings used by the Thule and historically known Inuit. This possibility will be further explored through the examination of the bone and artifact distribution and pit placement within Feature 1.

The purpose of the bone distribution analysis within Feature 1 is to determine if actual areas of bone concentration correspond to areas which would be likely to accumulate debris. For example, one might expect that regular cleaning activities and human traffic would lead to an accumulation of bone around the central feature and the peripheral areas of the house, specifically the juncture of floor and walls. One might further expect to find a considerable amount of bone in the entranceway as refuse is commonly shoved out the door during periodic cleaning episodes. Finally, in keeping with the inferred function of the raised platforms as sleeping areas, one would expect to find them quite clean. These expectations are based on previous analyses of the spatial division of Dorset houses (see for example Harp 1976; Plumet 1988; Maxwell 1985), ethnoarchaeological studies of bone accumulation within dwellings (Stahl and Ziedler 1988; 1990; and Savelle 1984) and ethnographic discussions of Inuit house use and refuse disposal (Balikci 1970; Boas 1888, Briggs 1970, Jenness 1928).

In order to plot the distribution of bone in Feature 1, the number of identifiable and unidentifiable bone fragments for each one metre unit was calculated. Intervals for plotting were selected by dividing the highest total of bone fragments in a square, (1,773 NISP), by five. This resulted in five arbitrary units, each of which was assigned a shade or pattern and then plotted by one metre unit on a base map (Figure 6.1). The purpose of this was to illustrate areas of bone concentration. In order to clarify the distribution of bone I have included a second distribution map, (Figure 6.2), which shows the total number of fragments recovered from each square. It is readily apparent that bone is concentrated around the two central features and on the rear platform. There is relatively little material in the entranceway and very little around the perimeter of the living floor. There is a large number of fragments found within pit Features 5 and 6 and in the area immediately surrounding them, with the exception of the west and northwest portion of the central depression. Bone debris is also highly concentrated along the back metre of the rear platform and around and in pit Feature 7.

I next plotted the artifact distribution within the entranceway and central depression and discovered that this distribution corresponds to the general pattern of the bone distribution, with most artifacts located along the short axis of the central depression and the rear platform. What this suggests is that the central pit was the focus of activity, and that the relatively clear areas to the north, west and south may have been the zones of traffic and habitation. In order to illustrate this pattern more clearly I divided the house into three logical spatial units, the front platform and entranceway (Area 1), the central depression (Area 2) and the rear platform (Area 3). Figure 6.3 shows these divisions and the distribution of artifacts and Table 6.1 shows the numbers of artifact types in each area.

FIGURE 6.1
BONE FRAGMENT DISTRIBUTION
INSIDE FEATURE 1

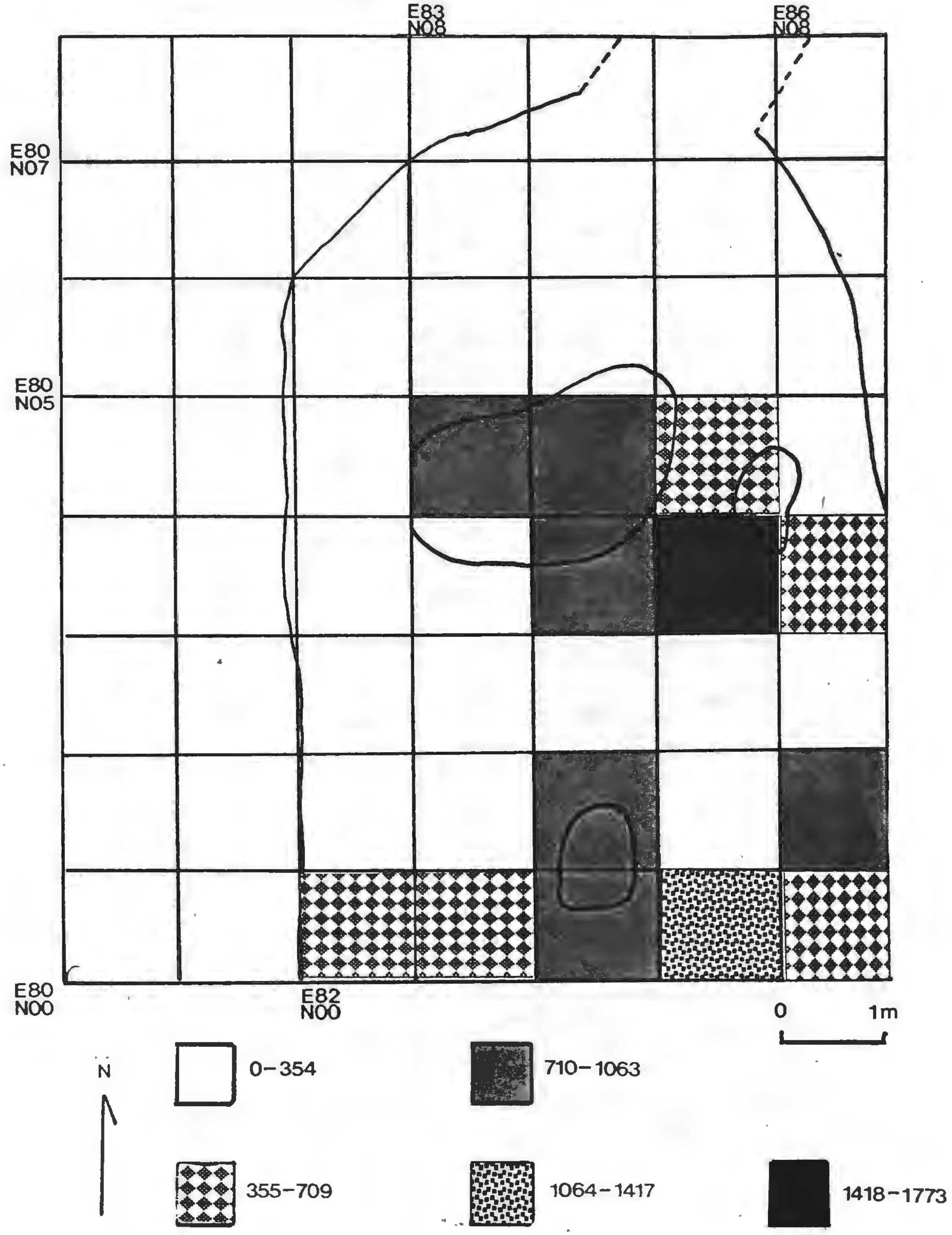


FIGURE 6.2
FEATURE 1
BONE FRAGMENT DISTRIBUTION
NISP PER 1 METRE UNIT

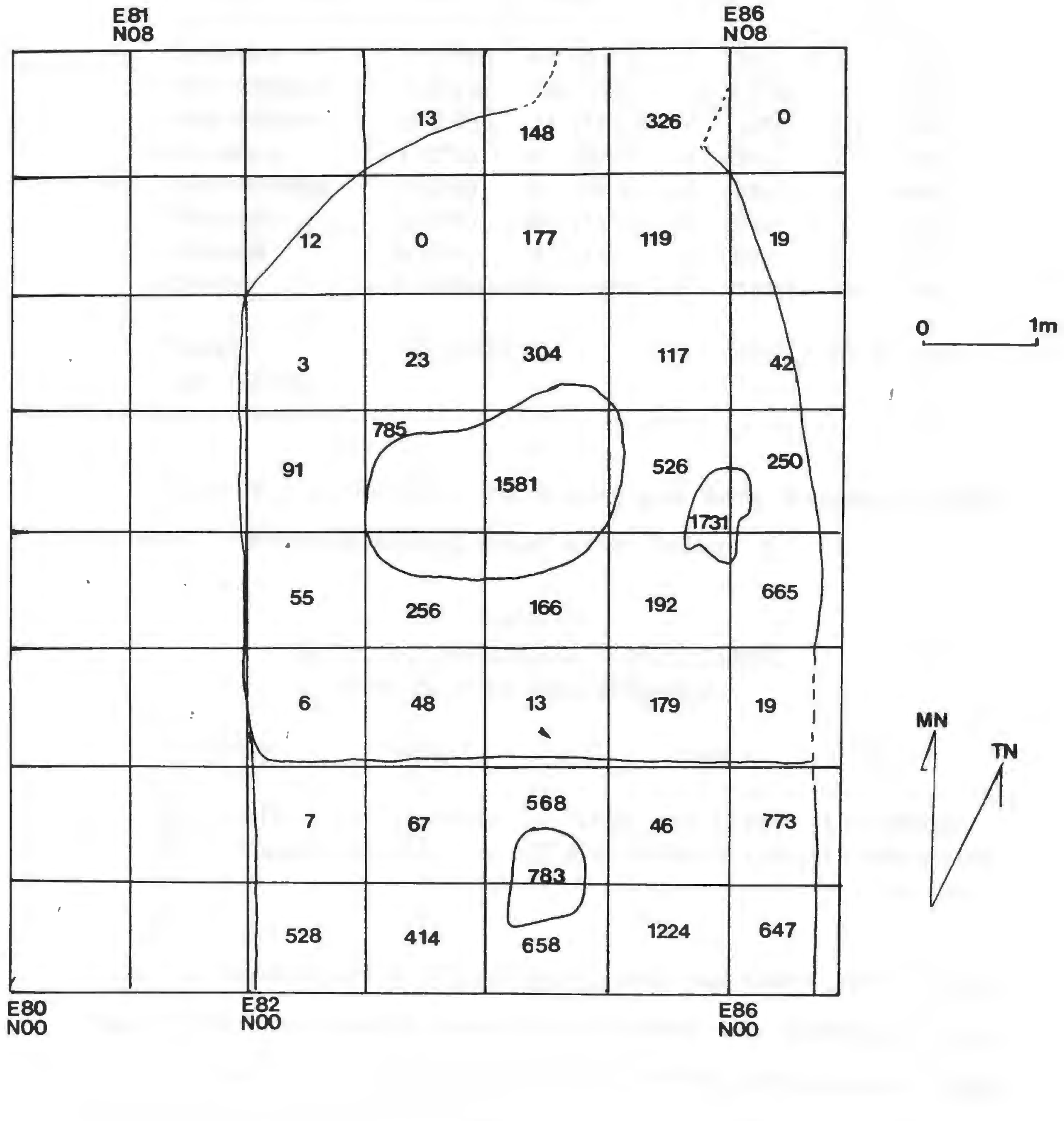


Table 6.1

Artifacts According to Area within Feature 1

Artifact Type	Area 1	Area 2	Area 3	Total
scrapers	3 (17%)	6 (8%)	2 (3%)	11 (7%)
microblades	5 (29%)	13 (17%)	19 (27%)	37 (23%)
end-blades	5 (29%)	11 (14%)	7 (10%)	23 (14%)
abraders	1 (6%)	4 (5%)	2 (3%)	7 (4%)
ground slate	0 (0%)	2 (3%)	4 (6%)	6 (4%)
bifaces	0 (0%)	9 (12%)	4 (6%)	13 (8%)
vessels	0 (0%)	3 (4%)	4 (6%)	6 (4%)
cores	2 (12%)	13 (17%)	8 (12%)	23 (14%)
Total	17 (100%)		77 (100%)	69 (100%)
163 (100%)				

Table 6.2 summarizes the artifact and bone fragment counts for each of the three defined areas within Feature 1

Table 6.2

Numbers of Artifacts and Bone Fragments

Within Defined Areas of Feature 1

Category	Area 1	Area 2	Area 3	Total
Artifacts	17 (10%)	77 (47%)	69 (43%)	163 (100%)
Bone Fragments	814 (7%)	5056 (41%)	6273 (52%)	12 143 (!00%

A careful examination of Figure 6.3 reveals that within each of the three defined areas debris tends to be clustered. For example in Area 1, 12 of the 17 artifacts are located in the entranceway. This concentration corresponds to the location of most of the bone in this area. For example squares E84 N06-N07 and E85 N06-N07 have a total of 802 bone fragments, while the units immediately to the west E82 N06 and E83 N06-N07 have a total of 25 bone fragments and zero artifacts. This western side of the platform is the cleanest part of the house.

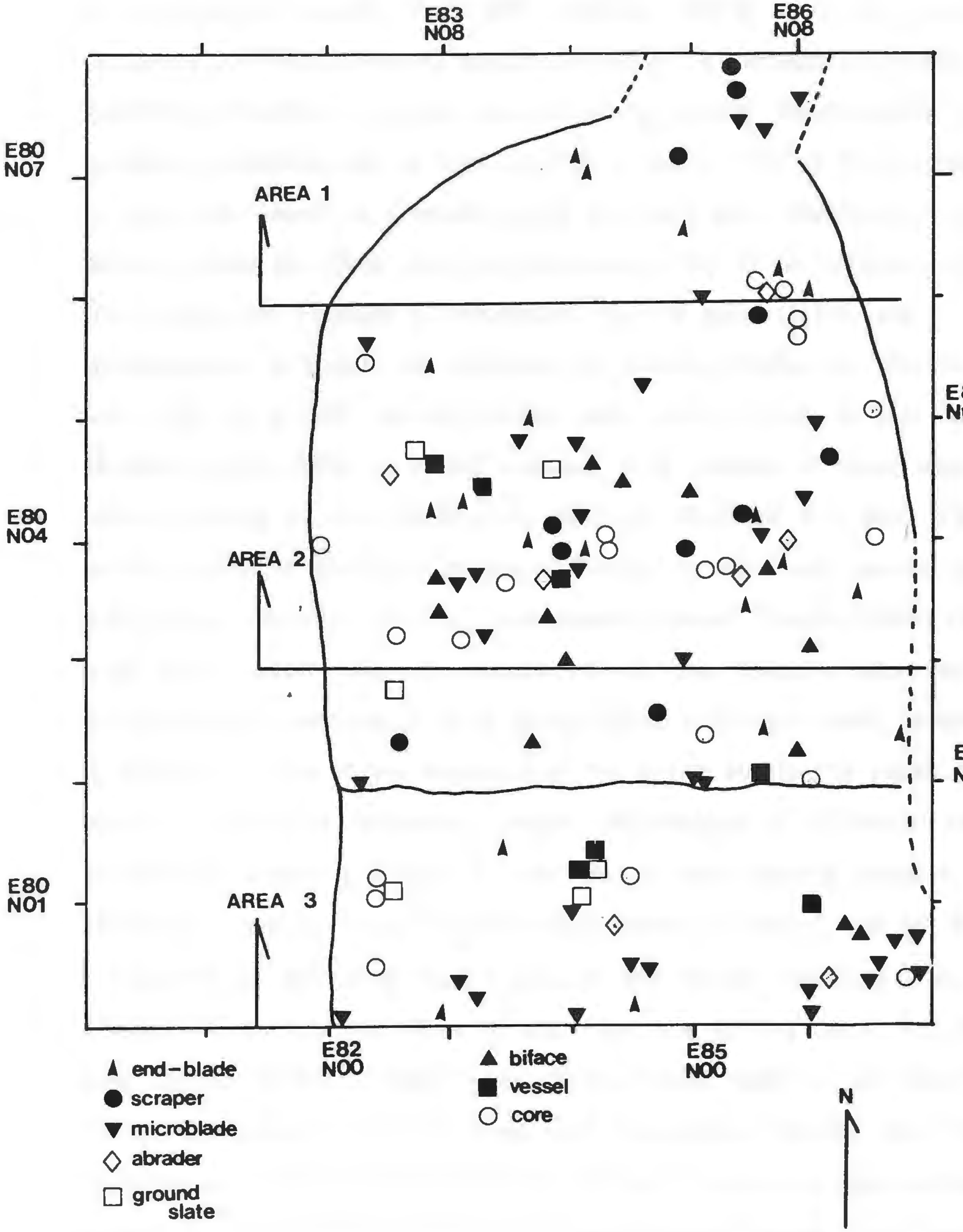
Area 2, the central part of Feature 1, is the second most cluttered part of the dwelling. For example in the 15 one metre units which comprise this area there is a total of 5,056 bone fragments. This includes the 1,581 fragments from Feature 7 and the 1,731 fragments from Feature 5. This area also contains the highest number of artifacts. One point of interest is that the squares immediately to the west and northwest of Feature 6, E82 N03, N04, N05 and E83 N05, are relatively clean, containing only 172 bone fragments and 18 artifacts.

Area three is the most cluttered part of the dwelling. It contains a total of 6273 bone fragments and 69 artifacts. However this material is not evenly spread through the area. For example units E82-E86 N02, the metre strip of floor space located directly in front of the rear platform, is relatively clean compared to both Area 2 and the platform in Area 3. It contains only 558 bone fragments and 20 artifacts. In contrast, debris is heavily concentrated on the rear platform, especially around Feature 7 and the back one metre strip (units E82-E86 N00). Interestingly, the cleanest part of Area 3 is the westerly portion, or units E82 N01-N02 and E83 N01-N02, and this corresponds to the cleanest portions in Areas 1 and 2. Referring to Figures 6.1 and 6.3, we can see that there is a roughly C-shaped clean zone (hereafter the "C-zone") which encompasses the western side of the front platform, the central depression and the rear platform with the exception of units E82 N00 and E83 N00.

This distribution of material does not correspond to all of the expectations about where refuse should be located. I expected that most material would be found in the central zone where the large pit features are located and that large amounts of debris would also be located along the juncture of floor and house walls and in the entranceway. I suggested that this pattern would be attributable to cooking and food processing activities as well as regular cleaning events. Instead the pattern for Feature 1 shows a lack of debris in the entranceway, and a concentration of material along the rear metre of the back platform. However, the concentration of debris in the central zone does fit with the stated expectations.

Interpreting this pattern, I think that the concentration of material in the central zone of Area 2 corresponds to the use of this area as a central hearth area. For example, there are two large stone lined, bone filled, pits here and a number of tools (microblades, scrapers, vessel fragments and bifaces) which suggest that this area was used for deposition of manufacturing, processing and possibly cooking refuse. The deposition of refuse material inside a dwelling is not unknown amongst northern hunter-gatherers. For example, Jenness notes that among the Inuit of Coronation Gulf, "refuse was deposited on the floor along both sides of the entrance way" (Jenness 1928:33). Assuming that the centre of the dwelling served as a hearth area which is not unreasonable given the presence

FIGURE 6.3
ARTIFACT DISTRIBUTION



of soapstone vessel fragments located there and the general tendency for Palaeoeskimo hearth areas to be centralized within the dwelling structure, people would likely locate themselves in a position advantageous to both light and heat. In most Palaeoeskimo houses, the hearth is oriented along the long axis, resulting in linear activity areas on either side. In Feature 1, this is not possible given the location of Feature 5 immediately to the east of Feature 6. The arrangement of these two features precludes division of this house into right and left activity areas and lends itself to the semi-circular pattern that is found instead. This pattern is most obvious when looking at the distribution of bone (Figures 6.1 and 6.2) It seems probable that this cleaner "C-zone" could have served as a sitting area, working location, and sleeping area. Chang (1988) notes that work areas are often denoted by the relative absence of artifacts. For example if hide preparation activities were occurring in Feature 1, one might expect that the areas where the hides were spread would be relatively clean. Alternatively, if these areas served as sleeping locations, one would also expect them to be relatively debris free. Furthermore this "C-zone" would have functioned as the main traffic area in the house because it is the easiest route from the front of the structure to the back. As Stahl and Zeidler (1988) note, these traffic areas tend to be clear of refuse because it gets pushed into peripheral regions and fixed features by human movement. In Feature 1 debris is concentrated around the central Features 5 and 6 and around Feature 7 on the rear platform. However, because bone material was not point plotted during excavation I was unable to determine whether the small amount of bone refuse located in the "C-zone" was found along the juncture of floor and walls.

The relatively low number of bone fragments in the entranceway and in Area 1 in general is attributable to the phenomenon of human traffic, and to periodic removal of waste from this area. For example, Table 6.3 shows that Area 1 has the lowest numbers of mandible, long bone, scapula and cranial fragments, all fragile elements susceptible to destruction via trampling. As Stahl and Ziedler (1990) note, bone survival in traffic areas is density dependant. In Area 1 those bone present in the greatest numbers are carpals, metacarpals, tarsals, metatarsals and phalanges, all of which are relatively small and dense elements. The fact that vertebrae also seem well represented might indicate that this pattern is not due to trampling; however, it must be remembered that these are NISP numbers and that the NISP for vertebrae in the complete sample was 582. Clearly 25 is a poor representation and trampling can be invoked to explain the present pattern.

However it is also possible that the pattern in Area 1 is attributable to the periodic removal of large bone fragments from an activity area or the entranceway. Savelle (1984) notes that among the Inuit of Cresswell Bay, bone deposited into the entranceway is occasionally removed if the area becomes too cluttered.

Table 6.3

Distribution of Bone Elements in Each Area

Element	Area 1	Area 2	Area 3
Unidentified	642	5,816	5,174
Cranial fragments	16	71	32
Teeth	16	98	59
Mandibles	0	7	12
Vertebrae	25	135	108
Ribs	3	30	5
Scapula	1	4	5
Sternum	0	4	0
Humerus	1	29	18
Radius	4	8	21
Ulna	1	9	12
Carpals	13	28	32
Metacarpals	14	29	71
Sacrum	0	1	1
Innominate	2	2	1
Femur	3	11	23
Patella	0	1	9
Tibia	1	17	13
Fibula	1	13	12
Tarsals	10	20	27
Metatarsals	8	25	74
Phalanges	42	138	241

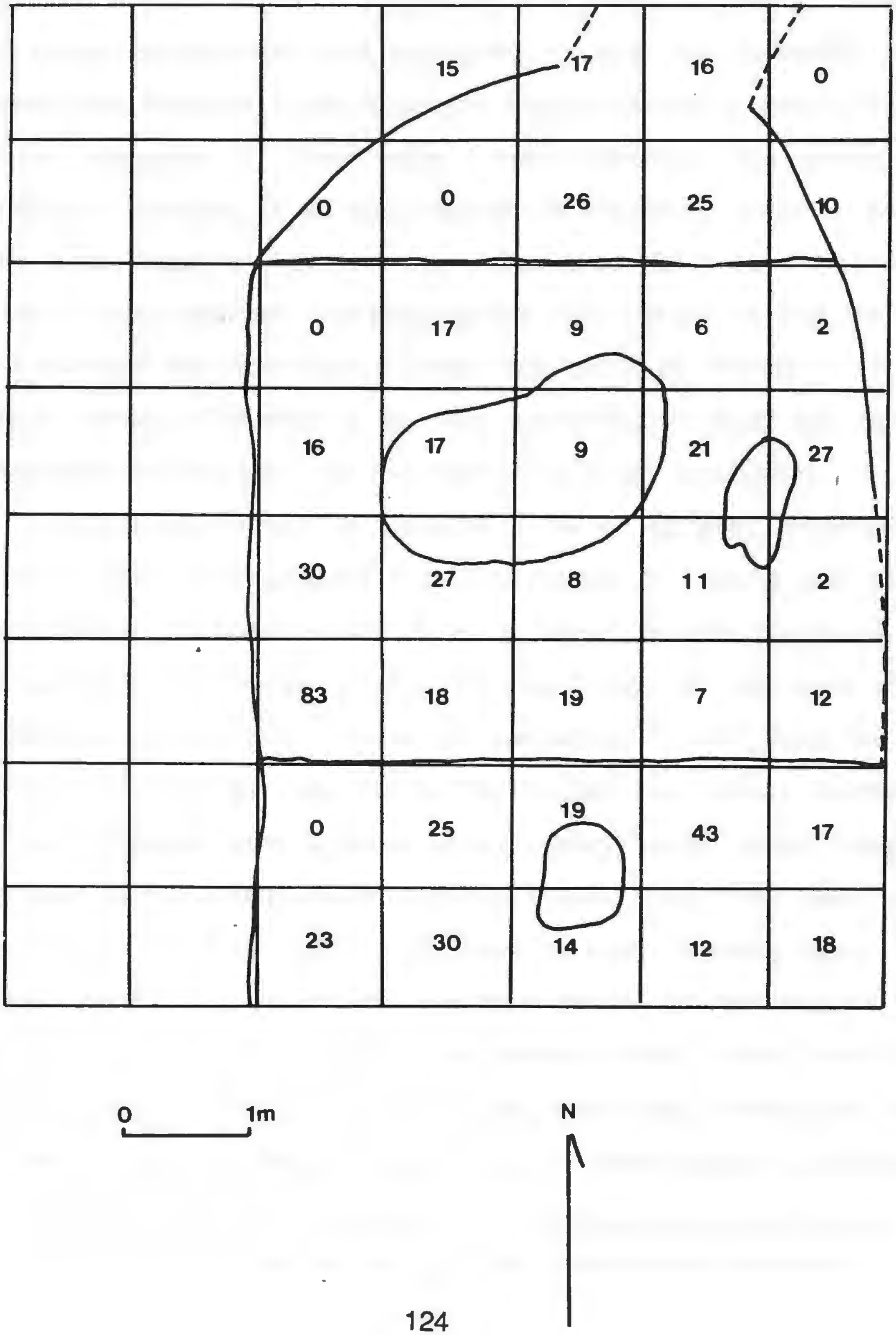
The pattern of debris concentrated along the back metre of the rear platform was unexpected. I supposed that this area functioned as a sleeping platform and therefore would be refuse free. However, use of this space as an activity area is quite common among Inuit groups. For example Briggs (1970) notes that among the Utkuhikhjalingmiut, this area may serve as storage and work space and must periodically be cleaned of debris. The Inuit of Coronation Gulf also used the rear platform as a sitting and working area during the day and a sleeping area at night (Jenness 1928:33). If the Dorset utilized this area in a similar way the pattern present may indicate that the back of the rear platform served as a peripheral area into which refuse from the processing of material and manufacturing of objects on the platform was deposited via periodic cleaning episodes.

Assuming that the more trampling an area is subjected to the less likely it is that the bone fragments in that area will be identifiable, I plotted the identifiable fragments for each one metre unit as a percentage of unidentifiable bone in an effort to determine if there was a difference in the ratio of identifiable to unidentifiable bone within particular areas in Feature 1. The purpose of this was to determine if there was a pattern in the distribution of unidentifiable material. For example, a greater amount of unidentifiable material in the "C-zone" or the entranceway might indicate this these areas were subjected to more trampling than the central hearth area. Figure 6.4 shows that the percentage of identifiable bone varies from a high of 83% in front of the rear platform in unit E82 N02, where 5 of 6 bones were identifiable, to a low of 0% in front of the front platform in E82 N06, where zero or none of the 12 bone fragments was identifiable. In Area 1, the percentage of identifiable bone varies from a low of 0% to a high of 26%, in Area 2 from a low of 2% to a high of 30% and in Area 3 from a low of 0% to a high of 43%. This random pattern suggests that individual one-metre squares are inappropriate for determining the degree of bone fragmentation within activity areas because they are too small. In order to correct this I calculated the percentage of identifiable bone in each of the three Areas, and found that Area 2 had the lowest percentage of identifiable bone at 12%, Area 3 had the second highest percentage of identifiable bone at 17% and Area 1 had the highest percentage of identifiable bone at 19%. The low percentage of identifiable bone in Area 2 is surprising if trampling is considered the main force of bone destruction as this area is presumed not to be a traffic area. However, there are processes which operate in in non-traffic areas that contribute to bone destruction. For example, if the interpretation of Area 2 as a hearth area is correct the low percentage of identifiable bone may be attributable to cooking and food processing, activities which both cause bone fragmentation.

To summarize, I suggest that the placement of internal features inside of Feature 1, a middle Dorset semi-subterranean dwelling resulted in a clean semi-circular area, (the "C-zone"), on the west side of the dwelling. This zone encompasses the central depression and portions of the front and rear platforms. Refuse was deposited in the central pit features, a pit feature on the rear platform, and along the back of the rear platform. This pattern is attributable to both human traffic and periodic cleaning episodes. There were no discernible differences in the distribution of specific artifacts or skeletal elements within Feature 1, suggesting that refuse was randomly deposited in specific locations within Areas 2 and 3. It is not known if this pattern is unique to Feature 1 at Phillip's Garden,

FIGURE 6.4

IDENTIFIABLE BONE EXPRESSED
AS A PERCENTAGE OF NISP PER
1 METRE UNIT



but it appears to be different from patterns described for Dorset houses in other regions, suggesting that there is greater variability in house organization than previously thought. The possibility does exists that Features 5 and 6 are not contemporaneous, and Feature 1 is a palimpsest, in which case I have described two overlapping patterns. However, it is not possible to determine whether this is the case because there are no radiocarbon dates from Feature 5 which could establish contemporaniety with Feature 6 and there is no evidence for more than a single occupation in Feature 1 (Renouf pers. comm). Therefore it is most productive to treat the pattern described for Feature 1 as the result of a single occupation.

If the interpretation of Feature 1 as a qarmat structure is correct, then it is possible that the pattern of feature and refuse distribution observed within it is a result of the nature of the occupation. For example, it may be that Dorset fall and early winter dwellings like Feature 1 were not permanent[19], and therefore less formally constructed than the "winter houses" at Phillip's Garden. A house occupied from summer through early winter would likely be smaller as much of the warm weather season could have been spent out of doors thereby reducing the need for indoor working space. This could result in a less formal arrangement of interior features, for example the absence of an axial feature. Park (1988) notes that Thule qarmat features are generally less well constructed than winter houses. At Phillip's Garden, as the colder season progressed,

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[19] Permanent refers to houses which may have been re-occupied annually in a particular season, but not neccessarily occupied for the whole of that season.

more activities would occur indoors and eventually as the dwelling became cluttered with debris, probably at the end of the December harp seal hunt, a move could be made either to a second house at the same site, or to a different location altogether. Dwellings like House 5, described by Harp (1976), and Feature 14, described by Renouf (1987), which are large and more substantial than Feature 1, could have been occupied during the coldest part of the year, late winter and early spring. Given this period of use, a great deal of time would have been spent indoors and therefor a larger, more formalized and more rigidly organized dwelling would have been advantageous. Once such a house was constructed it could probably be re-occupied annually with minimal up-keep. Boas (1888:547) notes that the central Eskimo frequently occupied previously built dwellings and a similar settlement pattern was reported by Captain George Lyon of the ship Hecla, among Inuit at Igloolik in 1822. For example, Lyon noted that in July the Inuit were living in domed structures of earth, bone and moss, approximately nine feet high and seventeen feet across, with low arched entrance ways. In September, these same houses were still occupied but were by then covered with transparent animal skins. By late October, the houses were lined with seal skin for greater warmth, and occupation continued into January at which time a move was made to snow houses on the sea ice (from discussion of Lyon 1924 in Park 1988:169).

To summarize, I have suggested that Feature 1 was a temporary qarmat-like structure, and that the nature of this type of occupation resulted in the irregular placement of internal pit features and the absence of a formalized axial feature. The placement of these pit features along the short axis of the house meant that traffic from the front of the dwelling to the back was restricted to the west side. Platform areas at the front and back of the structure were used as activity areas and possibly sleeping areas. In particular the back platform seems to have functioned as a location for manufacturing, processing and deposition of debris.

In the following chapter I will conclude by drawing together the arguments presented in this thesis for subsistence strategies, season of occupation and house use at Feature 1.

Chapter 7

7.1 Summary, Broader Implications and Conclusions

This thesis is the result of the analysis of a large collection of faunal material from one semi-subterranean Middle Dorset dwelling (Feature 1), at the Phillip's Garden site in Port au Choix, Newfoundland. Results indicate that this house was utilized from early summer to mid-winter and that the focus of the occupation was hunting harp seal on their December migration through the Strait of Belle Isle to the Gulf of St. Lawrence. This interpretation is based on the large amount of immature and adult harp seal and the virtual absence of juvenile seal in the assemblage. Some summer and fall occupation is indicated by small amounts of cod fish, and summer seal species like grey and harbour seal. Minimal amounts of non-marine species like eider duck, scoter, beaver, and caribou suggest that there was an avian and terrestrial component to subsistence at Feature 1. It is possible that these non-marine resources were used as supplementary food sources during periods of seal unavailability. Rowley-Conwy (1984) notes that hunter-gatherers often use permanent resident species as stop-gap resources when migratory animals are unavailable.

In addition to evidence for the seasonal occupation of Feature 1, a description of Phocidae skeletal elements frequencies within Feature 1 was presented. The purpose of this was primarily to provide other researchers with information against which future studies of seal use at Dorset sites can be compared. At present there is a lack of material comparable with the Feature 1 pattern, and so the interpretation is highly speculative. However, a good representation of all skeletal elements except those most susceptible to differential destruction due to weathering, trampling and human processing activities suggests that complete seal carcasses were brought back to the site for butchery. This pattern of exploitation is not unexpected given the proximity of Phillip's Garden to the migrating harp seal population and the short length of time that the seals are available in the early winter. A short hunting period could result in the storage of complete carcasses at a main settlement for later butchery. In this way more time could be devoted to procurement of animals during their peak period of availability

Finally, a study of bone refuse distribution within Feature 1 indicates that In contrast to other Dorset houses at Phillips Garden and several other Dorset sites, Feature 1 did not have a central hearth feature aligned along the long axis of the house with clear areas on either side, indicating work and sleeping space. Instead the household space was organized in a C-shaped zone around two central pit features located along the short axis of the dwelling. Front and rear platforms served as activity areas from which refuse was deposited into the central pit features and along the back of the rear platform. It was suggested that Feature 1 was similar to fall and winter dwelling utilized by Thule and Historic Inuit and that the temporary nature of this type of dwelling would result in a less formalized organization of house space than that noted for more typical "winter" houses at Phillips Garden and elsewhere.

This research has implications for studies of Dorset settlement and subsistence both at Phillip's Garden and in the eastern Arctic in general. For example, the results presented here support hypotheses about year-round and sporadic site use at Phillip's Garden (Harp 1976; Renouf 1991). Previous analyses of faunal material from midden deposits at the site indicated a spring sealing season by virtue of the presence of large numbers of juvenile individuals (Renouf pers. comm.) Speculation about other seasons of occupation was based on differences in house structure (Harp 1976; Renouf 1991). This study has provided good evidence that some settlement did occur at the site from summer to early winter and that December harp seal hunting was an important phase in the seasonal subsistence pattern. In addition, the analysis of the structure of Feature 1 indicates that the range of dwelling types at the site is greater than previously suggested. For example, Harp defined two house types, one summer and one winter, described in Chapter 1. Feature 1 appears to be an intermediate form, being more formally constructed than the "summer houses" but with less internal organization then a "winter house", and possibly similar to the Thule fall semi-subterranean tent dwelling known as a qarmat. A fourth dwelling type was located in 1990 (Renouf 1991) when an external axial hearth feature was excavated. Renouf has suggested that this structure may have been utilized in the summer behind a tent or a wind break.

The evidence for different seasonal use at large hunter-gatherer sites like Phillip's Garden is not surprising since large settlements tend to be varied in content and used throughout the year for a variety of purposes (Binford 1978:492). For example, the Inuit of West Greenland would gather at major settlements in May after the late spring seal hunting season, to fish and hunt harp seal and porpoise. They would then disperse during the summer for caribou hunting, return to the settlement in September to build winter houses and then leave again for a short sealing period before settling into the winter dwellings for a period lasting from November to March (Grønnow et al. 1983:21).

The recognition and description of seasonal features and site use is crucial to our broader understanding of Dorset adaptation in Newfoundland and beyond. For example, the variation in dwelling type observed at Phillip's Garden suggests that Dorset habitations may exist in a greater variety of forms throughout the eastern Arctic. The notion of Dorset division of house space into clear areas on either side of a central axial feature may not be as broadly applicable as previously thought, and could be instead characteristic of seasonally specific dwellings. This would be consistent with existing knowledge of hunter-gatherer settlement variability. For example, the Utkuhikjalingmiut (Briggs 1970) change their settlement type and dwelling structure depending on upon the season and the availability of food. In the summer, when food is scarce, people live communally in tent camps, but in the winter when the need to share food is not as great, people move into single family dwellings. Other groups, like the Historic Inuit in northern Alaska, had large winter settlements on the coast and small dispersed summer settlements inland. Changes from one settlement system to the other were co-ordinated with major migratory movements of specific animal species like fish or caribou (Chang 1988:146). Within these general settlement patterns, a less obvious diversity existed. For example, among the Tareumiut of northern Alaska, semi-subterranean houses at large coastal settlements were occupied in the winter, while tents in dispersed camps (inland and coastal) were utilized in the summer. However, the large winter sites sometimes continued to be occupied through the summer either by elderly people, or by a few families in tents (Spencer 1957). In the eastern Arctic, at Igloolik, several different versions of fall and winter houses were utilized (Park 1988) and we see at Phillip's Garden different house varieties.

The evidence for December harp seal hunting suggests that the Dorset were capable of open-water sealing. While some researchers have speculated about this (see for example the discussion of Cox and Spiess, this thesis Chapter 3), there is no direct evidence. Winter hunting, either through breathing holes or on the ice, is generally believed to have been the method of seal hunting used by the Dorset in Newfoundland and Labrador. However, I suggest that this model needs to be re-evaluated for Newfoundland. For example, the Strait of Belle Isle is ice free in December (early winter), when land fast ice has formed and pack ice has arrived in Labrador. Therefore, early winter hunting in Labrador would of necessity be different than early winter hunting in Newfoundland. People living in at Port au Choix in early winter and wanting to take advantage of the December harp seal migration would have had little choice but to hunt in open water. Environmental variables like the presence or absence of ice, and the range of species present for exploitation, can set bounds within which certain strategies must be employed, but within those bounds there are a number of strategies which can be selected (Weissner 1982:177). What this means is that while the Dorset in different areas may have operated under similar environmental constraints, there was still room for flexibility in practical adaptations. Therefore, activities like open water sealing, perhaps not part of the "normal" Dorset hunting repertoire in Labrador, could have been a regularly practiced in northwestern Newfoundland.

All archaeologists recognize the need to describe variability in our data; however this is not always possible due to time constraints and the difficulties involved in excavating large portions of sites. Small scale studies which are part of a larger research goal are important because they provide detailed descriptions of variability which in turn leads to a better understanding of the flexibility involved in hunter-gatherer lifeways. This thesis is one example of how a small but detailed study can contribute to the better understanding of prehistoric resource use, settlement and dwelling variability.

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Appendix

Feature 1 -Element NISP

Element	NISP
Auditory Bulla	109
Cranial Fragments	28
Frontal Bone	5
Hyoid	17
Mallus	2
Mandible	31
Premaxilla	1
Temporal	7
Maxilla	5
Palate	1
Zygomatic	7
Occipital	6
Canine	121
Incisors	30
Post Canine Teeth	61
Cervical Vertebra	27
Thoracic Vertebra	21
Lumbar Vertebra	5
Caudal Vertebra	43
Unidentified Vertebra	430
Rib	39
Scapula	17
Sternum	5
Humerus	86
Radius	54
Ulna	41
Carpal 1	25
Carpal 2	27
Carpal 3	22
Carpal 4	24
Carpal Accessory	16
Carpal Radial	26
Carpal Ulnar	17

Element	NISP
Metacarpal 1	40
Metacarpal 2	40
Metacarpal 3	39
Metacarpal 4	25
Metacarpal 5	36
Unidentified MC	43
P1 Front	190
P2 Front	119
P3 Front	84
Innominate	12
Bacculum	3
Sacrum	4
Femur	59
Patella	18
Tibia	63
Fibula	26
Astragalus	25
Calcaneum	11
Tarsal 1	11
Tarsal 2	16
Tarsal 3	14
Tarsal 4	21
Tarsal Central	14
Metatarsal 1	45
Metatarsal 2	39
Metatarsal 3	24
Metatarsal 4	4
Metatarsal 5	25
Unidentified MT	50
P1 Hind	149
P2 Hind	86
P3 Hind	55
Sesamoids	49

Summary of Bone Identified To Family or Better

Square	Seal	Land Mammal	Fish	Aves	Total
E080:N000	193				193
E080:N001	14				14
E080:N002	0				0
E080:N003	9				9
E080:N004	12	1			13
E080:N005	17				17
E080:N006	31				31
E080:N007	206			2	208
E081:N000	270			1	271
E081:N001	100				100
E081:N003	3		1		3
E081:N004	3				3
E081:N005	3				3
E081:N006	2				2
E081:N007	78				78
E082:N000	126				126
E082:N001	0				0
E082:N002	5				5
E082:N003	17				17
E082:N004	15				15
E082:N005	0				0
E082:N006	0				0
E082:N007	1				1
E083:N000	126				126
E083:N001	17				17
E083:N002	9				9
E083:N003	72				72
E083:N004	161	1			162
E083:N005	4				4
E083:N006	0				0
E083:N007	2				2
E084:N000	148	1			149
E084:N001	187				187
E084:N002	26				26

Square	Seal	Land Mammal	Fish	Aves	Total
E084:N003	66		1		67
E084:N004	66	1			67
E084:N005	29	1			30
E084:N006	47				47
E084:N007	26				26
E085:N000	142			2	144
E085:N001	20				20
E085:N002	12				12
E085:N003	194		5		200
E085:N004	114	1		1	115
E085:N005	7				7
E085:N006	30				30
E085:N007	53				53
E086:N000	118				118
E086:N001	138				138
E086:N002	24				24
E086:N003	15				15
E086:N004	73				73
E086:N005	1				1
E086:N006	2				2
E086:N007	0				0
Total	3039	6	7	6	3058